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Planning

Working Beyond Expectations

Statement of Environmental Effects

Proposed Battery Storage Facility

Property:
Approved Lot 1102 and Part Lot 1101 within Lot 12 DP 280089,
27D Riverside Drive, Mayfield West

Applicant:
Steel River West Pty Ltd

Date:
December 2020

Document Control Sheet

Issue No.	Amendment	Date	Prepared By	Reviewed By
A	Working Draft	17/12/2020	LD/ZS	ZS/CM (ADWJ) JA (Precinct Group) / PD & KL (Edify Energy)
B	Final	23/12/2020	ZS	ZS/CM (ADWJ)

Limitations Statement

This report has been prepared in accordance with and for the purposes outlined in the scope of services agreed between ADW Johnson Pty Ltd and the Client. It has been prepared based on the information supplied by the Client, as well as investigation undertaken by ADW Johnson and the sub-consultants engaged by the Client for the project.

Unless otherwise specified in this report, information and advice received from external parties during the course of this project was not independently verified. However, any such information was, in our opinion, deemed to be current and relevant prior to its use. Whilst all reasonable skill, diligence and care have been taken to provide accurate information and appropriate recommendations, it is not warranted or guaranteed and no responsibility or liability for any information, opinion or commentary contained herein or for any consequences of its use will be accepted by ADW Johnson or by any person involved in the preparation of this assessment and report.

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The Client should be aware that this report does not guarantee the approval of any application by any Council, Government agency or any other regulatory authority.

Table of Contents

APPENDIX M

QUANTITY SURVEYING REPORT (DENARY QUANTITY SURVEYING)

APPENDIX N

WASTE MANAGEMENT PLAN

APPENDIX O

STEEL RIVER STRATEGIC IMPACT ASSESSMENT CHECKLIST

APPENDIX P

AHIMS SEARCH RESULTS

LIST OF FIGURES

1.0 Introduction

1.1 INTRODUCTION

This Statement of Environmental Effects (SoEE) has been prepared by ADW Johnson Pty Ltd on behalf of Steel River West Pty Ltd to accompany a Development Application (DA) to the City of Newcastle (CN) for a proposed Battery Storage Facility known as the Steel River Battery, within the Steel River Estate located at 27D Riverside Drive, Mayfield West.

1.2 DEVELOPMENT APPLICATION DETAILS

STATEMENT OF ENVIRONMENTAL EFFECTS PREPARED BY:	
Name:	ADW Johnson Pty Ltd Unit 7, 335 Hillsborough Road WARNERS BAY NSW 2282
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PROJECT DETAILS:	
Applicant Name:	Steel River West Pty Ltd & Edify Energy Pty Ltd
Applicant Address:	27D Riverside Drive, Mayfield West.
Property Description:	Lot 12 DP 280089. The site is currently approved for further subdivision and is situated within approved Lot 1102 and Lot 1101, part of future Stage 11 Steel River Estate.
Project Description:	Proposed Battery Storage
PROJECT TEAM:	
Project Manager:	Precinct Capital & Edify Energy
Designer:	GCA Australia
Survey:	Monteath & Powys
Civil Engineering:	GCA Australia
Town Planning:	ADW Johnson
Landscaping:	Terras Landscape Architects
Heritage:	Eikos Environment and Heritage
Acoustic:	Spectrum Acoustics
Hazard Assessment:	ARUP
Geotechnical:	RCA Australia
Quantity Surveyors:	Denary Quantity Surveying
Waste Management:	ADW Johnson

1.3 BRIEF OVERVIEW OF THE PROPOSAL

The subject site has a property description of Lot 12 DP 280089 with a street address of 27D Riverside Drive, Mayfield West. The site is currently approved to be further subdivided, with the subject site situated within approved Lot 1102 (DA2006/2076.02 as most recently amended) which forms part of Stage 11 of the Steel River Estate.

The owner of the subject site is Steel River West Pty Ltd. The Certificate of Title and Deposited Plan for the site are attached at **Appendix A**.

The land subject to the proposed development is zoned IN1 General Industrial zone under the Newcastle Local Environmental Plan 2012 (NLEP). The proposed Battery Storage Facility is defined as "Electricity Generating Works" (which includes electricity storage) is not listed as a permissible use within the IN1 zone. The proposed use falls within the provisions of SEPP (Infrastructure) 2007, with this policy prevailing over Newcastle LEP 2012 as identified by Clause 8 of the SEPP.

The proposed development is permissible with consent in accordance with Division 4, Clause 34 (1), (a) and (b) of SEPP (Infrastructure) 2007.

As outlined within the Quantity Survey Report provided within **Appendix M** the proposal will have a capital investment value of more than $5 million and will trigger Regionally Significant Development. Given this, the City of Newcastle will be responsible for the environmental assessment of the Development Application, with the application determined by the Hunter and Central Coast Reginal Planning Panel.

The proponent is seeking development consent from City of Newcastle for the proposed battery storage facility including associated earthworks, landscaping, stormwater management and utility infrastructure.

The subject site is currently vacant industrial zoned land which is situated within approved Stage 11 of the Steel River Estate. The lots within Stage 11 are to be delivered as part of the third stage of the Steel River Estate, which also includes the construction of the proposed intersection with Maitland Road and dedication of the section of public road to the southern boundary of Approved Lot 1203, located within future Stage 12.

The site is bound to the west by a railway line, the south by approved Lot 1101, to the north by approved Lot 1103 and to the east by Riverside Drive (being Lot 1 Property and Open Accessway).

The subject site described as approved Lot 1102 has a total area of 5,986m².

The following figure shows the site and immediate surrounds:

Figure 1: Site locality plan.

1.4 PURPOSE OF THE REPORT

This Statement of Environmental Effects (SoEE) has been prepared pursuant to Section 4.12(9) of the *Environmental Planning and Assessment Act 1979* and accompanying Regulation. Its purpose is to:

- Describe the proposed development;
- Identify and summarise the relevant controls which guide assessment of the proposal;
- Provide information on the site and its context;
- Review the key issues associated with the proposal to aid in assessment by the Consent Authority and other relevant authorities; and
- Consideration has been given to Council's guidelines in preparing this Statement of Environmental Effects as well as the Pre-DA Meeting Minutes dated 18th September 2020 and the full range of other relevant legislation and development guidelines.

1.5 CONSULTATION

In establishing parameters and detailed design for the project, consultation was carried out by Edify Energy, Precinct Capital and ADW Johnson with key authorities as detailed below.

Contact was made prior to lodgement of the DA with the following public authorities:

- City of Newcastle;
- NSW Fire & Rescue;
- Ausgrid; and
- Hunter Water.

The project was discussed and considered by Council in a Pre-DA Meeting held on the 18th September 2020. Preliminary discussions touched on site constraints, design issues and legislative requirements, which have been taken into account as part of the design. A copy of the minutes from the Pre-DA Meeting have been provided within **Appendix L.**

A meeting was held with NSW Fire and Rescue on Friday 9th October 2020. Present at that meeting was representatives from Edify Energy and ARUP. A copy of the Preliminary Hazard Assessment was issued to NSW Fire & Rescue for review and comment prior to the meeting. Based on the outcome of this meeting ARUP has incorporated the comments received in the final Preliminary Hazard Assessment provided within **Appendix G** and addressed further within **Section 5.0**.

As outlined in the Pre-DA Minutes, the applicant has undertaken early consultation with Ausgrid. Ausgrid's System Planning group have completed a review and provided advice on the connection options and related network requirements to support the proposed Battery Storage Facility to connect a battery of up to 28MW capacity to their network.

A Section 50 Application has been submitted to Hunter Water Corporation prior to lodgement of the Development Application, a copy of the stamped plans are provided within **Appendix C**.

Further opportunity for involvement of both authorities and the community will occur during the notification and referral phase of the assessment.

2.0 Proposed Development

2.1 OBJECTIVES OF THE PROPOSAL

The objective of the proposal is to provide significant benefits to the local Newcastle area as well as the wider New South Wales electricity network.

The proposal aligns with the objectives of the *Newcastle Climate Action Plan 2021-25* through the development of a large scale battery storage facility, which embraces new technologies and innovative practices to improve the resilience of the local area. The proposal also supports emissions reductions through the improved ability to facilitate renewable energy integration.

2.2 DESCRIPTION OF PROPOSED DEVELOPMENT

The proposed development has been designed by GCA Engineers and Edify Energy and a copy of the development plans are provided within **Appendix C** of this report. More specifically, the proposal incorporates the following:

Battery Storage Facility:

The Steel River Battery will comprise of a 28MW lithium ion battery energy storage facility located on part of approved Lot 1102 which is owned by Precinct Capital at the Steel River Estate.

The Project will connect to the local Ausgrid 33kV electrical distribution network and will provide benefits to the local electricity network as well as network services to the wider New South Wales grid.

Two (2) Battery model options are being considered for the site:

- Modular cubical cabinets (similar to the Megapack system) that are installed in an array around an inverter pack as illustrated in **Figure 2** below); and

- Containerised modules (containerised system) that have been preassembled in modified shipping containers prior to transport to site as illustrated in **Figure 3** below.

Figure 2: Indicative image of a Megapack system.

Figure 3: Indicative image of a Containerised modules.

The proposed battery storage facility as described above will comprise multiple individual cubicles (which would be directly mounted on a concrete plinth and connected together on-site or skid mounted and pre-commissioned) or the alternate containerised modules. Either option would appear similar, as the individual cubicles would be arranged in such a way as to appear as a single container.

The overall system will comprise of lithium ion battery system with a bi-directional (charge and discharge) power conversion system and site controller. The system is expected to be highly modular and based on individual smaller power blocks to achieve the required system size. Each battery pack is comprised of thousands of smaller lithium ion cells which are fully enclosed (within a climate controlled HVAC system) connected together to form an integrated system. The battery storage facility will be required to comply with the following safety standards:

- UL 1642: Standard for Lithium Batteries.
- UL 9540: Standard for Energy Storage Systems and Equipment.

A summary of the main project details is provided in **Table 1** below:

Table 1 – Summary or project details

Project Detail	Description
Project Type	Stand-alone large scale battery storage connected to the National Electricity Market.
Electrical Connection	Ausgrid 33kV distribution network.
Battery Technology	Lithium ion battery system.
Battery Capacity	Up to 28MW.
Battery Configuration	Twelve (12) outdoor modular battery units or containerised battery system with ancillary balance of plant equipment.
Battery Storage Duration	2 hours.
Project Location	Approved Lot 1102 and Lot 1101 Riverside Drive, Mayfield West. Part of future Stage 11 of Steel River Estate.

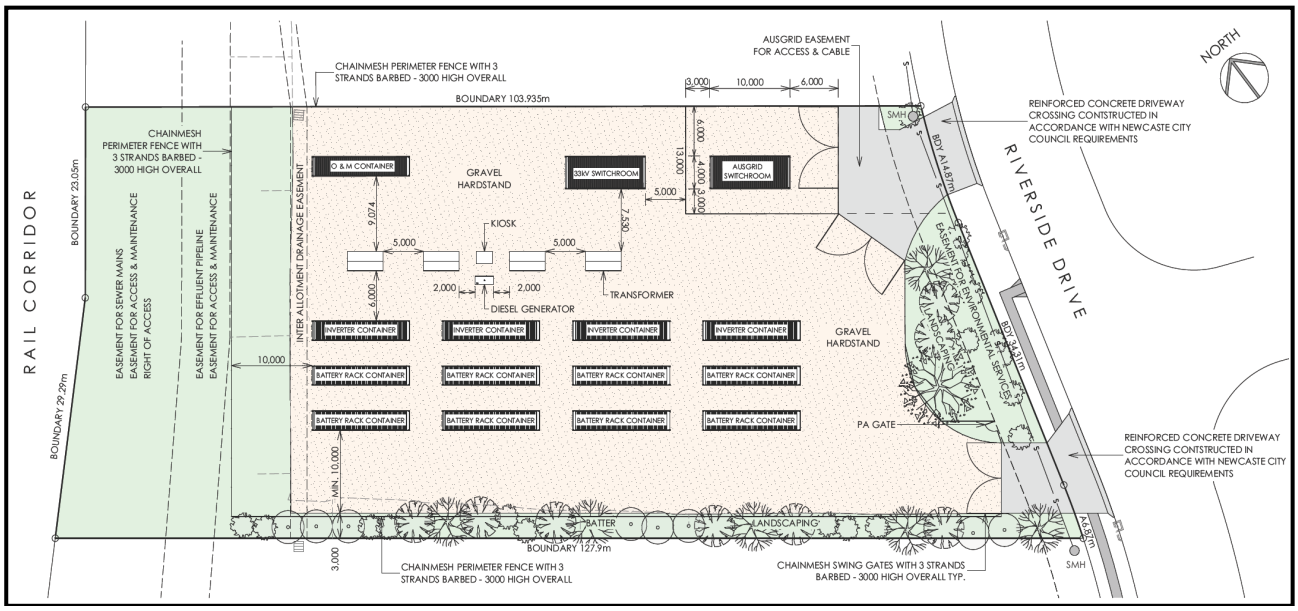


Figure 4: Proposed Battery Storage Facility within Approved Lot 1102.

As shown on the concept layout figure below, the Ausgrid electrical grid connection that will service the battery is located south of Approved Lot 1102 in Stage 11 as shown in **Figure 5** below. The proposed 33kv cable connection will extend from the south eastern corner of the subject site, along the frontage of Approved Lot 1101 within an existing easement for environmental services and will be delivered as part of the Stage 11 subdivision works.

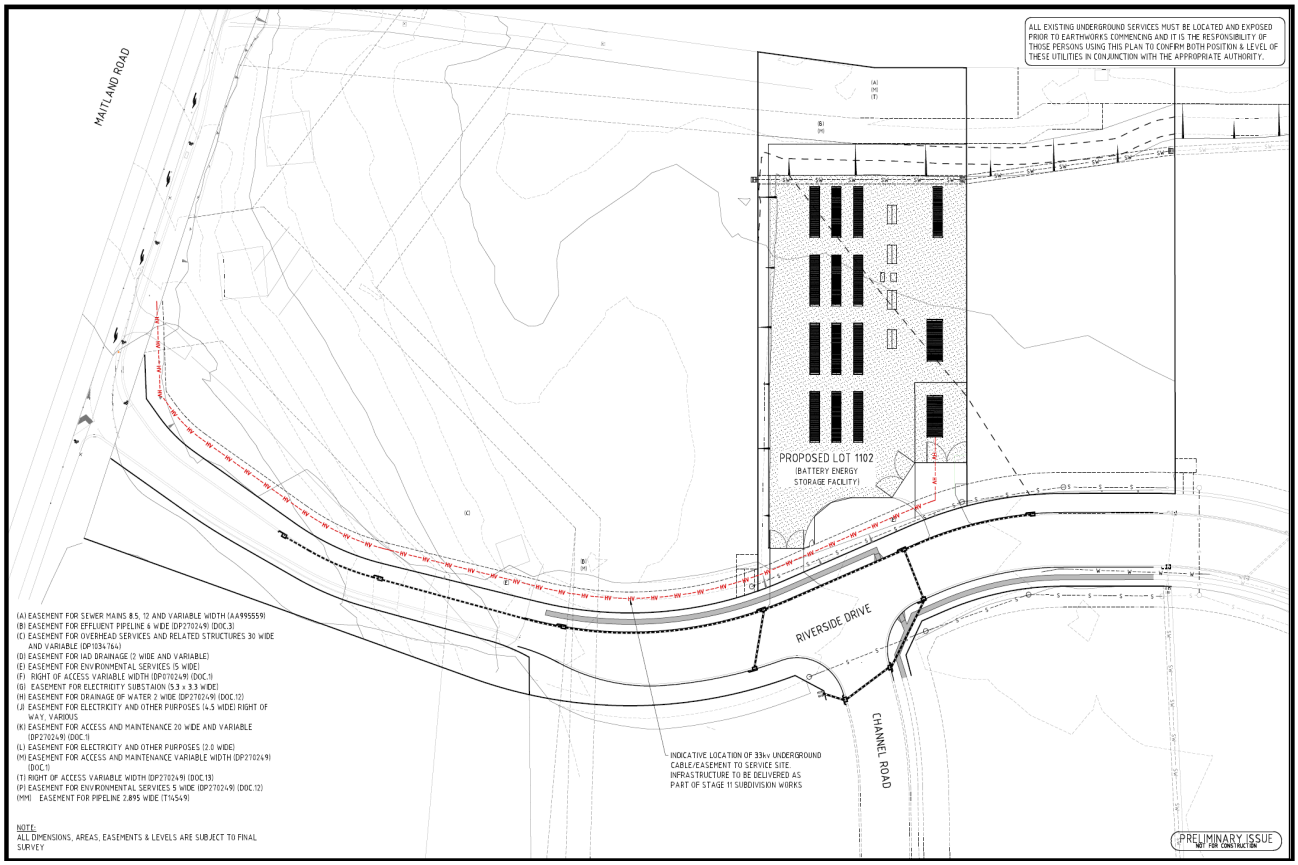


Figure 5: Indication of Ausgrid Connection Point from Approved Lot 1102 through Approved Lot 1101.

Proposal Summary:

Generally the proposed Battery Storage Facility will include the following components:

- Twelve (12) above ground battery enclosures (either modular battery units or containerised battery system as described above);
- Four (4) transformers;
- One (1) 33kv switchroom and Ausgrid switchroom;
- One (1) operation and maintenance container; and
- One (1) diesel generator and kiosk.

Construction Works:

It is anticipated that the total construction and commissioning period for the project will span approximately 6-9 months. The construction activities to be undertaken as a part of the project include:

- Minor earthworks including site levelling and digging of shallow trenches for cabling. Underground cable would require trenching with approximately 1.2m in depth and 0.6m in width;
- Establishment of concrete slabs for installation of battery systems and associated balance of plant;
- Erection of battery equipment and plant onto slabs and installation of the equipment;
- Installation of electrical cabling and connection of facility to the 33kV Ausgrid electrical network along the frontage of approved Lot 1102 and Lot 1101. This will likely incorporate a ground mounted circuit breaker with associated isolators, current transformers (CTs), voltage transformers (VTs) and protection equipment using Ausgrid approved equipment; and
- Initial testing and commissioning of the battery storage.

It is anticipated that during the peak of construction approximately 20 construction personnel will be on site during the main period for installation of the equipment.

Operation and Maintenance:

The proposed Battery Storage Facility is expected to operate in conjunction with the electrical grid to provide the following functions:

- Charging and discharging of energy from the electrical grid for shifting of energy to peak consumption periods when electricity is needed the most; and
- Participate in the electricity market to provide ancillary services which help contribute to the stability and functionality of the electrical grid.

The primary modes of operation are:

- Charging of the battery from the external electrical grid; or
- Discharging of the battery to the external electrical grid.

It should be noted that during regular operations of the proposed facility, no dangerous goods will be consistently used.

General operations, testing and preventative maintenance activities by staff would be undertaken during standard working hours of:

- Monday to Friday: 7:00 am to 5:00 pm.
- Saturday: 8:00 am to 1:00 pm.

Outside of emergencies, plant outages, major asset inspection and maintenance programs, night works and work on Sundays and public holidays would be minimised.

Decommissioning:

The Battery Storage facility's life is specified for 15 years, as such it is likely that the battery enclosures would be refurbished at the end of year 15. The facility would operate for another 15 years, assuming the power plant's life is extended by an overhaul of the battery cells and associated power system equipment.

The refurbishment of the batteries at the end of year-15 would occur of over a 2 to 3 month window. No changes to the concrete slab, cables and transformers would be expected, due to the longer design life of this infrastructure.

Landscaping:

New Landscaping is proposed to be provided throughout the development site as shown on the Landscape Plans provided within **Appendix D**.

Landscaping will include the installation of small trees, screening shrubs and sections of turf. The proposed landscaping will provide screening and a visual buffer around the eastern and southern perimeter of the site. The landscaping has been proposed to provide adequate screening of the proposal when viewed from Maitland Road to the south west and Riverside Drive to the east.

Perimeter Fencing:

A 3m high chainmesh security fence with three (3) strands barbed will be installed around the entire perimeter. The two (2) access driveways will feature 3m high chainmesh swing gates with three (3) strands barbed. A PA gate will also be provided. The site will be permanently monitored for security purposes by a security system.

There will be a buffer of 10m between battery containers and the boundary of the site in accordance with the recommendations of the Preliminary Hazard Analysis provided within **Appendix G**.

Access:

Access to the site will be provided via Riverside Drive (Lot 1 Property and Accessway) once constructed as part of the Steel River Estate in accordance with DA2006/2076.02 as most recently amended. As shown on the plans provided, a concrete bidirectional access driveway has been provided to service the development with entrance / exit at the north eastern and south eastern corners of the site ensuring vehicles can enter and exit the site in a forward direction. Swept Turing Paths have been shown on the plans provided to demonstrate that a 12.5m ridged truck can adequately enter and exit the site in a forward direction and manoeuvre throughout the site.

The site will comprise a compacted gravel hardstand which will allow maintenance vehicles

to manoeuvre throughout the site as required. A secure gated access will also be provided to the Ausgrid switch room. The secured access and fencing locks shall be installed in accordance with the requirements of NEG EP07 *Network Access and Security - Locks and Keys* and Ausgrid specifications, such as T0057 NEG EP09 *Intruder Resistant Fences for Zone and Sub-transmission Substations*".

As shown on the plans provided necessary easements for access will also be created.

Given the nature of the proposal, once operational the site will only be accessed for periodic maintenance involving one vehicle attending site typically a few times per month.

Traffic, access and parking is further discussed within **Section 3** and **Section 5** of this report.

Stormwater Management:

A stormwater management system will be implemented as part of the proposal to manage surface water quality and quantity.

Concept Engineering Plans has been designed for the site and will be provided as part of the proposed development. A copy of the Concept Engineering Plans prepared by GCA are provided within **Appendix E.**

2.3 DOCUMENTATION

The following documentation has been provided to support the proposed development and includes the following:

- Certificate of Title and Deposited Plan – **Appendix A**.
- Detail Survey Plan (Monteath & Powys) – **Appendix B**.
- Development Plans (GCA Engineering Solutions) – **Appendix C.**
- Landscape Plans (Terras Landscape Architects) – **Appendix D**.
- Stormwater Management Plan and Erosion and Sediment Control (GCA Engineering Solutions) – **Appendix E.**
- Approved Subdivision Plan (Precinct Group) – **Appendix F.**
- Preliminary Hazard Assessment (ARUP) – **Appendix G.**
- Site Management Plan and Remediation Certificate B (RCA Australia) – **Appendix H.**
- Acid Sulfate Soils Potential Letter (RCA Australia) – **Appendix I.**
- Statement of Heritage Impact (Eikos Environment and Heritage) – **Appendix J.**
- Acoustic Assessment (Spectrum Acoustics) – **Appendix K.**
- Pre-DA Meeting Minutes (Newcastle City Council) – **Appendix L.**
- CIV Report (Denary Quantity Surveyors) – **Appendix M.**
- Waste Management Plan (Pro-Forma) – **Appendix N.**
- Steel River Strategic Impact Assessment Checklist – **Appendix O.**
- AHIMS Search Results – **Appendix P**.

3.0 Project Context

3.1 PROPERTY DESCRIPTION

The land subject to the proposal is described as:

- Approved Lot 1102 within Lot 12 DP 280089, with a physical address of 27D Riverside Drive, Mayfield West.

The site is currently approved for further subdivision and is situated within approved Lot 1102, part of future Stage 11 Steel River Business Estate. The approved lot has a total area of 5,986m². The site is currently vacant IN1 General Industrial zone land.

The subject site is owned by Steel River West Pty Ltd and a copy of the Certificate of Title and Deposited Plan are included as **Appendix A** of this report. Landowners consent has been provided with the Development Application form.

3.2 LOCALITY

The development site is located within the Steel River Estate. The site is bound to the west by a railway line, to the south by approved Lot 1101, to the north by approved Lot 1103 and to the east by future Riverside Drive. The following map (**Figure 6**) shows the location of the site within the context of the broader Newcastle Area.

Figure 6: Location of subject site within broader Newcastle area.

The aerial photographs below provide an indication of the current built form and pattern of development within the locality.

Figure 7: Aerial photo of the subject site.

As outlined above, the site is currently approved for further subdivision and is situated within approved Lot 1102, part of future Stage 11 Steel River Estate. The below figure provides an indication of where approved Lot 1102 is situated within the approved Steel River Estate (DA2006/2076.02 as most recently amended).

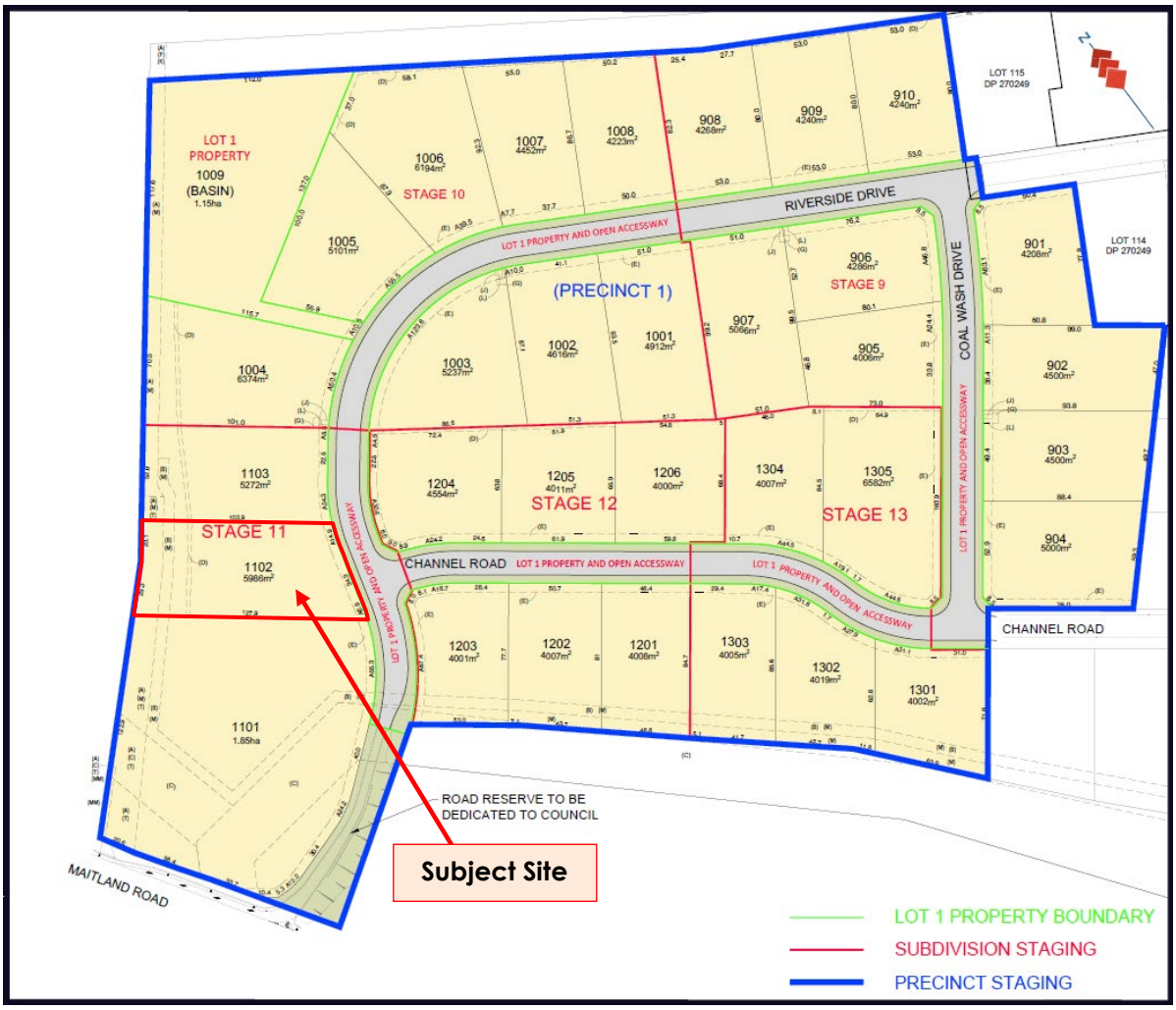


Figure 8: Subdivision Plan.

3.3 TOPOGRAPHY, DRAINAGE & FLOODING

Topography

The site is relatively flat with some fall across the site from east to west, with a small embankment along the western portion of the lot. It is understood that site drainage is proposed to be towards existing stormwater infrastructure located adjacent to the existing rail line along the north western boundary.

The site is generally bound by vacant land with Riverside Drive located to the east and the existing rail line to the west.

The site has been used for the stockpiling of materials sourced during the Stage 9 construction works of the Steel River Estate.

Stormwater

Stormwater from the site is proposed to be captured and directed into the overall stormwater management system being constructed as part of the Steel Rover Business Park.

A copy of the Concept Engineering Plans prepared by GCA are provided within **Appendix E.** Stormwater is also discussed further within **Section 2** and **5** of this report.

Flooding

The potential for flooding of the site is considered to be low based on the sites elevation above the Hunter River and the extensive low lying land on the opposite side of the River.

The subject site has been identified on the City of Newcastle Flood Prone Land Map (**Figure 9**) as being Very Low Risk and is not considered to be Flood Prone Land (FPL) as it is outside the 1% AEP.

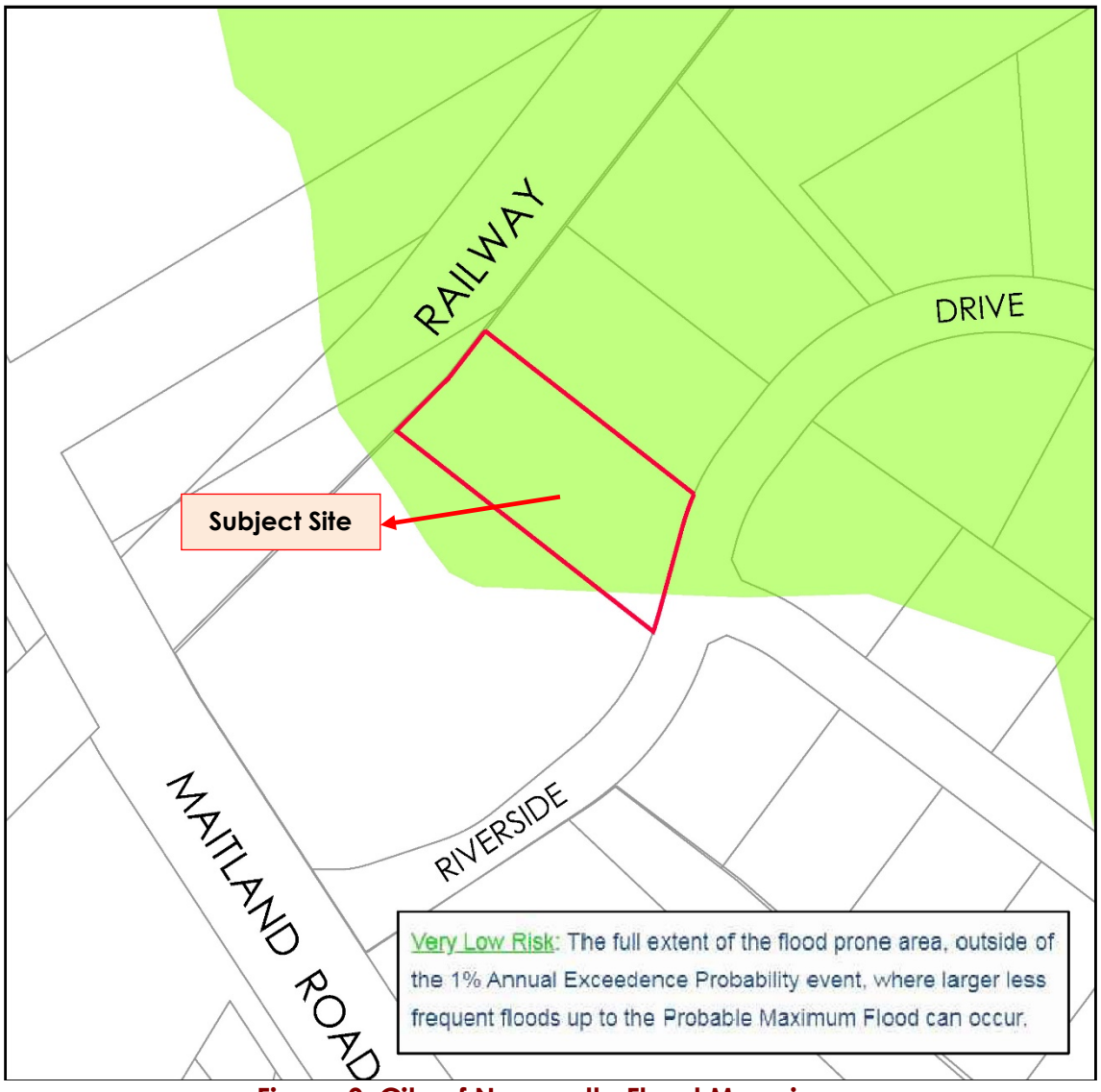


Figure 9: City of Newcastle Flood Mapping.

3.4 EASEMENTS

The site contains a number of easements. These are mapped and documented in **Figure 10** below.

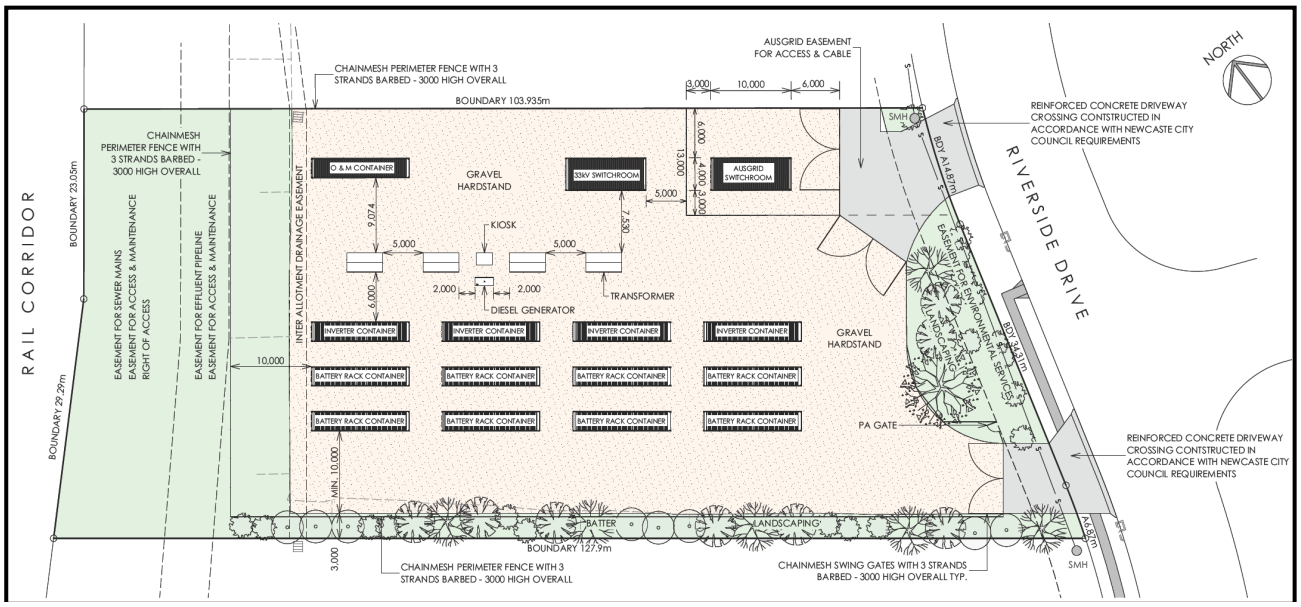


Figure 10: Easement Location within Subdivision Map.

As shown on the Development Plans provided within **Appendix C**, the proposed battery storage facility has been sited on approved Lot 1102 to be clear of the easements which extend through the rear of the allotment.

3.5 CONTAMINATION & GEOTECHNICAL CHARACTERISTICS

3.5.1 Contamination

The broader Steel River Estate has been subject to remediation works which encompasses a staged validation process. The Site benefits from a Validation Certificate 'A' and a Validation Certificate 'B'. Certificate 'A' validated early works undertaken as part of the staged development of the estate, whilst the Certificate 'B' provides site specific validation.

A Site Management Plan has been prepared by RCA Australia and is provided within **Appendix H**. Contamination is addressed further in **Section 4.0** and **5.0** of this report.

3.5.2 Mine Subsidence

The site is not located within a Mine Subsidence District and therefore referral to the Subsidence Advisory Board is not required. See **Figure 11** below.

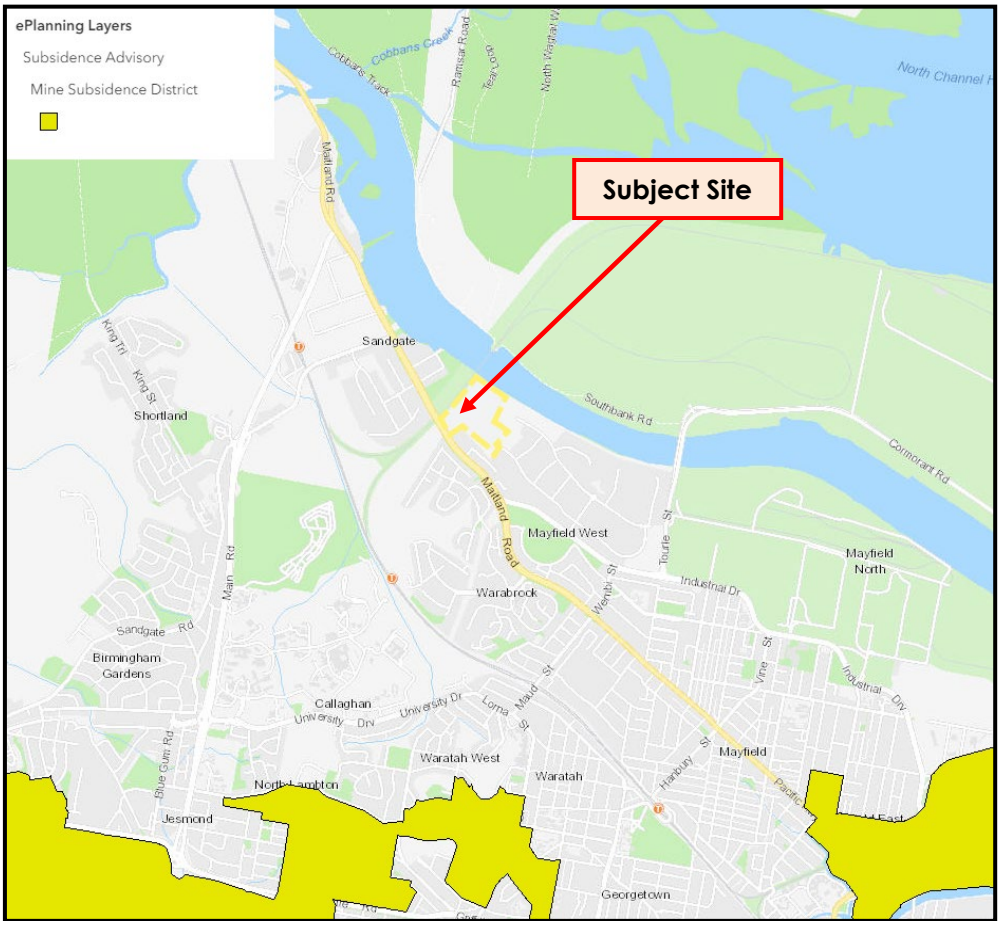


Figure 11: Mine Subsidence Map extract from NSW Planning Portal.

3.6 ACID SULPHATE SOILS

The subject site is identified as containing Class 2 Acid Sulfate Soils. See **Figure 12** below.

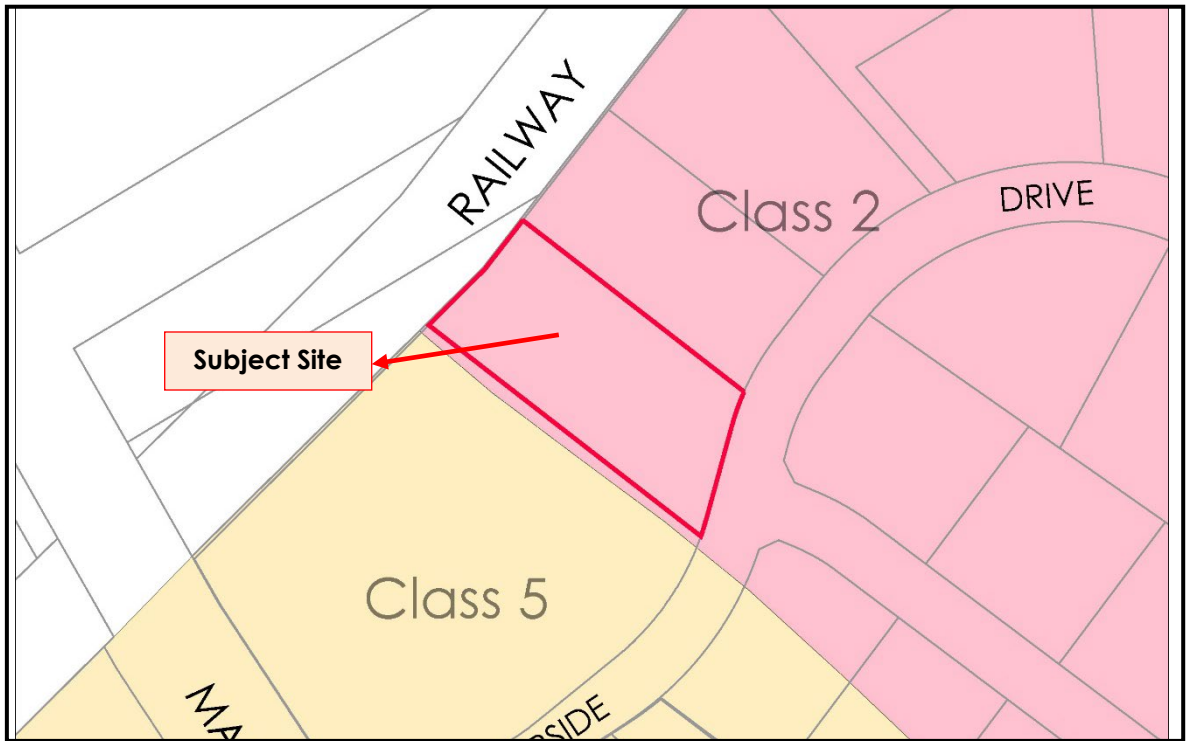


Figure 12: Acid Sulfate Soils Map extract.

A letter regarding Acid Sulfate Soil potential has been prepared by RCA Australia and is provided within **Appendix I**. This is addressed further in **Section 3.7** of this report.

3.7 VEGETATION

The subject site is does not contain any significant vegetation.

3.8 BUSHFIRE

The subject site is not identified on Council's Bushfire Prone Land map as being bushfire prone land.

3.9 ABORIGINAL & CULTURAL HERITAGE

The subject site is not identified as containing any items of Aboriginal or European Heritage Significance. Based on a search of the OEH Aboriginal Heritage Information Management System (AHIMS) register on 7 December 2020, there are no recorded sites within the project site. A copy of the AHIMS search has been provided within **Appendix P.**

The site is located approximately 100 m from the Heritage Item I291 known as the former Migrant Camp.

A Statement of Heritage Impact has been prepared by Eikos Environment and Heritage and is provided within **Appendix J**. This is address further in **Section 5.0** of this report.

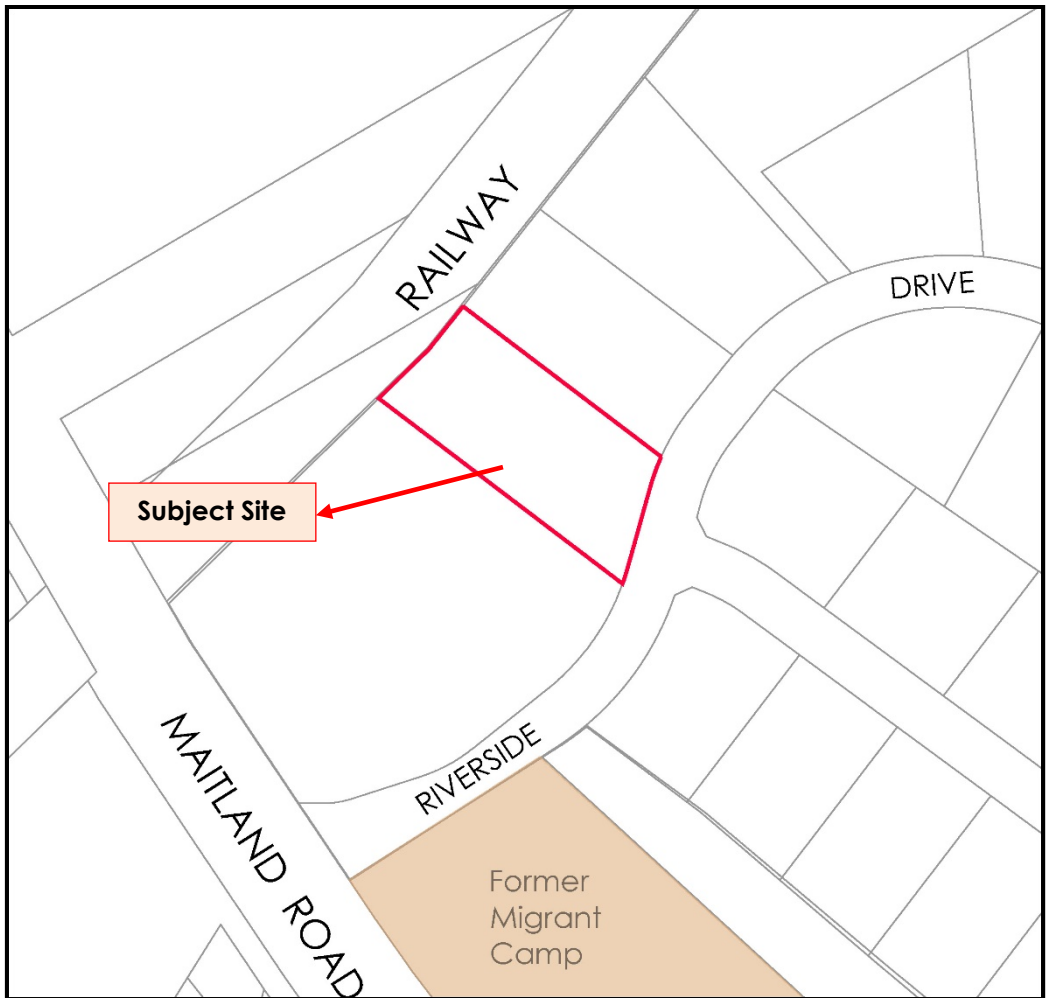


Figure 13: Heritage Map extract.

3.10 TRAFFIC, ACCESS & ROAD NETWORK

The subject site is to be accessed off Riverside Drive (once constructed). Access to Riverside Drive is provided via Steel River Boulevarde and Channel Road to the east. Direct access to Riverside Drive will also become available off Maitland Road, once the intersection with Maitland Road is delivered as part of the Stage 11 subdivision works in accordance with DA2006/2076.02 as most recently amended. A portion of this road is to be dedicated as public road to the southern boundary of Approved Lot 1203, located within future Stage 11.

It is considered the Steel River Estate road network once constructed and the general surrounding local road network has sufficient spare capacity to cater for the small increase in traffic generated by the development and the development will not adversely impact on the surrounding and local road network.

A Traffic and Parking Assessment is also addressed further in **Section 5.0** of this report.

3.11 COASTAL ZONE

The subject site has been identified as being within the Coastal Environment area under the State Environmental Planning Policy (Coastal Management) 2018. An extract of the mapping is shown below. The provision of this SEPP is further addressed in **Section 4.0** of this report.

The subject site is not located within the Coastal Use area.

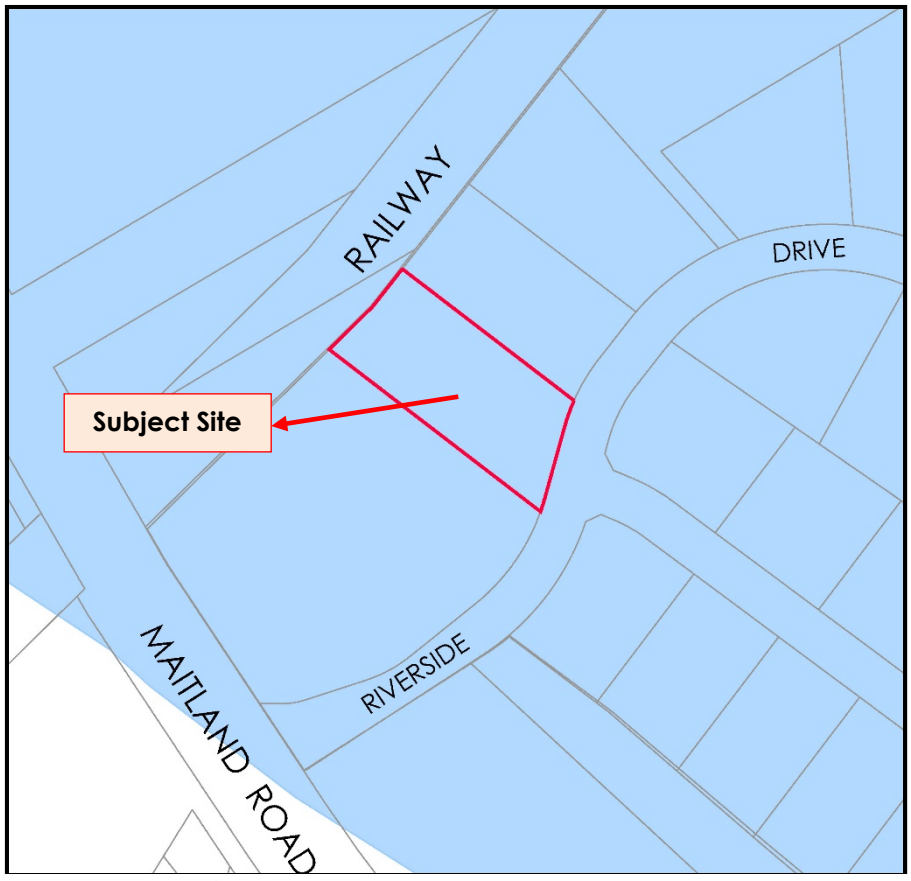


Figure 14: Coastal Environment Area Map – SEPP (Coastal Management) 2018.

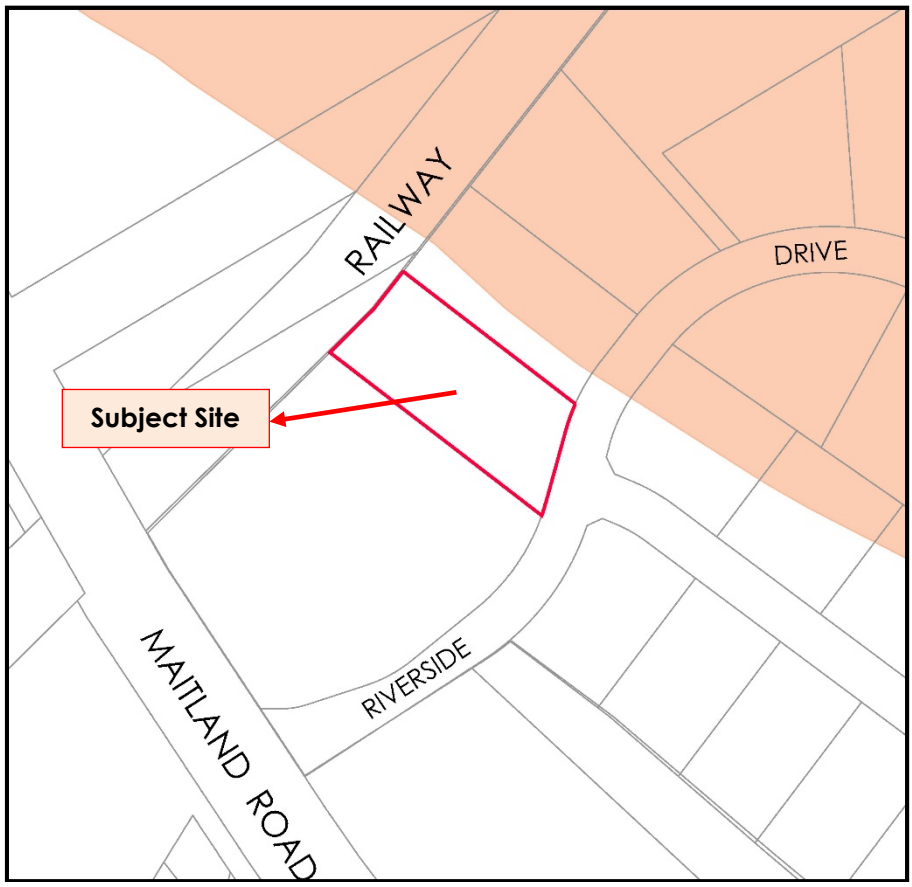


Figure 15: Coastal Use Area Map – SEPP (Coastal Management) 2018.

3.12 UTILITY SERVICES

At the completion of Stage 11 of the broader subdivision, all public utility services including reticulated water and sewer, electricity and telecommunications will be available to the site, and will be upgraded where necessary to service the proposed development.

4.0 Planning Controls

4.1 RELEVANT LEGISLATION

4.1.1 Environmental Planning and Assessment Act 1979

The EP&A Act provides the framework for environmental planning and development approvals and includes provisions to ensure that the potential environmental impacts of a development are assessed and considered in the decision-making process.

As outlined previously, the proposed development is permissible with consent in accordance with Division 4, Clause 34 (1), (a) and (b) of SEPP (Infrastructure) 2007. The proposal is subject to assessment under Part 4 of the EP&A Act.

Integrated Development

The proposed development is not considered to be integrated development under Section 4.46 of the Environmental Planning and Assessment Act, 1979.

4.1.2 Environmental Planning and Assessment Regulation 2000

The proposal does not fall within the definition of "*Electricity Generating Station*" in accordance with Schedule 3 Designated Development, Part 1, Clause 18 of the Regulation, accordingly an EIS is not required.

4.1.3 Protection of the Environment Operations Act 1997

Activities required to obtain a licence under the Protection of the Environment Operations Act 1997 (POEO Act) are detailed in Schedule 1 of the Act.

The proposal is not consistent with the description of any activity listed in Schedule 1 of the POEO Act.

4.2 STATE PLANNING CONTROLS

A review of all State Environmental Planning Policies has been undertaken and the following policies are applicable to the proposed development.

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

State Environmental Planning Policy No 33 – Hazardous and Offensive Development (SEPP 33) aims to identify potentially hazardous or offensive industry and ensure that adequate measures are implemented to reduce the impact of such development.

The Department of Planning, Industry and Environment (DPIE) guideline, Applying SEPP 33 (2011), provides an approach to the identification of developments which must be assessed under SEPP 33, and explains the assessment requirements of the policy.

The proposal is not one which is likely to potentially impact on human health or the biophysical environment. Appendix 3 of Applying SEPP 33 provides a list of industries that may be potentially hazardous and fall within SEPP 33. Development for the purpose of battery storage is not included within the list provided in Appendix 3.

ARUP have prepared a Preliminary Hazard Assessment (PHA) which has considered the applicability of SEPP 33 and undertaken a screening of the proposal against SEPP 33. A copy of this assessment is provided within **Appendix G.**

All the dangerous goods screened by ARUP do not exceed the SEPP 33 threshold, a PHA is not required for the development by SEPP 33. It should be noted that by taking a conservative approach to land use planning, a PHA has been prepared to address the potential risks that may arise from this development.

The proposed development is not considered to meet the definition of hazardous industry or offensive industry, as defined by SEPP 33 and described in Applying SEPP 33.

4.2.2 SEPP 55 – Remediation of Land

State Environmental Planning Policy No 55 – Remediation of Land (SEPP 55) introduces state-wide planning controls for the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed.

Clause 7 of SEPP 55 requires contamination and remediation to be considered in determining a development application.

The broader Steel River Estate has been subject to remediation works which encompasses a staged validation process. The Site benefits from a Validation Certificate 'A' and a Validation Certificate 'B'. Certificate 'A' validated early works undertaken as part of the staged development of the estate, whilst the Certificate 'B' provides site specific validation.

A Site Management Plan and Remediation Certificate B prepared by RCA has been provided within **Appendix H** of this report. The certificate confirms:

> "*The Lot is suitable for commercial / industrial development subject to works being undertaken in accordance with the Steel River Construction Guidelines (Ref [4]), relevant management plan (Ref [5]), and Certificate C and Site Management Plan(s) that are yet to be prepared for the site*".

For the purpose of Clause 7 of SEPP 55, the consent authority can be satisfied that the land has been appropriately remediated.

Notwithstanding, the staged validation process requires further site-specific certification of known as the 'Certificate C' and the preparation of a Site Management Plan based on the Steel River Site Development Guidelines. Having regard to the findings of Validation Certificate B, it is appropriate that any Notice of Determination Issued by Council requires that:

- *A project specific Site Management Plan is prepared prior to the release of a construction certificate; and*
- *A Validation Certificate C is prepared and submitted to the Principle Certifying Authority prior to the release of the construction certificate.*

As required by Certificate B a Site Management Plan has been prepared for the proposed works associated with the Battery Storage Facility on approved Lot 1102 and is provided within **Appendix H**.

This approach would ensure that the Certificate C is based on the approved documentation related to the project whilst providing a safeguard to ensure the certificate is in place prior to the commencement of works.

Based on the above findings it is evident that the land is suitable for the intended use, and that measures will form part of the detailed design and certification process to ensure the integrity of the estate specific validation process is maintained.

4.2.3 SEPP (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (Infrastructure SEPP) aims to facilitate the effective delivery of infrastructure across the State of NSW.

Division 4 Electricity generating works or solar energy systems

SEPP (Infrastructure) 2007, provides permissibility for this use as follows:

In accordance with *Part 3, Division 4, Clause 33* of SEPP (Infrastructure) 2007 (ISEPP) The proposed Battery Storage is defined as:

> "***electricity generating works*** *means a building or place used for the purpose of—*
> *(a) making or generating electricity, or*
> *(b) electricity storage".*
>
> ***"prescribed rural, industrial or special use zone*** *means any of the following land use zones or a land use zone that is equivalent to any of those zones-*
>
> *(e) IN1 General Industrial,"*

"Electricity Generating Works" are 'permitted with consent' under *Part 3, Division 4, Clause 34* of ISEPP. Clause 34 states:

> ***"34 Development permitted with consent***
> *(1) Development for the purpose of electricity generating works may be carried out by any person with consent on the following land—*
> *(a) in the case of electricity generating works comprising a building or place used for the purpose of making or generating electricity using waves, tides or aquatic thermal as the relevant fuel source—on any land,*
> *(b) in any other case—any land in a prescribed rural, industrial or special use zone".*

The proposed development is permissible with consent in accordance with Division 4, Clause 34 (1), (a) and (b) of SEPP (Infrastructure) 2007.

Division 5 Electricity or Distribution Networks

A review of survey information indicates that the connection to the Ausgird network will require the 33kv cable to extend through an easement for overhead services.

This connection will be delivered as part of Stage 11 subdivision works, however in accordance with Clause 45(1) (b)(i) SEPP Infrastructure, it is understood Council will refer the Development Application to the electrical supply authority (Ausgrid) for their consideration taking into account the relevant response.

Division 17 Roads and Traffic

Clause 104 of the ISEPP refers to traffic-generating development as listed in Column 1 of Schedule 3. The proposed development does not meet the parameters listed for industry in Schedule 3 and therefore is not considered a traffic-generating development in accordance with the ISEPP.

4.2.4 SEPP (State and Reginal Development) 2011

The aims of this Policy are to identify development that is State significant development, State significant infrastructure and critical State significant infrastructure; and to confer functions on Joint Regional Planning Panels to determine development applications.

Schedule 7, Clause 5 (a) of SEPP (State and Reginal Development) 2011 states:

"5 Private infrastructure and community facilities over $5 million

Development that has a capital investment value of more than $5 million for any of the following purposes—

(a) air transport facilities, electricity generating works, port facilities, rail infrastructure facilities, road infrastructure facilities, sewerage systems, telecommunications facilities, waste or resource management facilities, water supply systems, or wharf or boating facilities,"

The proposal will have a capital investment value of more than $5 million and will trigger Regionally Significant Development. Given this, the City of Newcastle will be responsible for the environmental assessment of the Development Application, with the application determined by the Hunter and Central Coast Regional Planning Panel.

4.2.5 SEPP (Coastal Management) 2018

The aim of this Policy is to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the Coastal Management Act 2016. The SEPP seeks to manage development in the coastal zone and the environmental assets of the coast by employing different management techniques to areas within the coastal zone.

The development site has been mapped within the Coastal Environment Area by the SEPP. The applicable of the SEPP have been addressed below:

Clause 13 Coastal Environment Area

(1) Development consent must not be granted to development on land that is within the coastal environment area unless the consent authority has considered whether the proposed development is likely to cause an adverse impact on the following:

(a) the integrity and resilience of the biophysical, hydrological (surface and groundwater) and ecological environment,

(b) coastal environmental values and natural coastal processes,

(c) the water quality of the marine estate (within the meaning of the Marine Estate Management Act 2014), in particular, the cumulative impacts of the proposed development on any of the sensitive coastal lakes identified in Schedule 1,
(d) marine vegetation, native vegetation and fauna and their habitats, undeveloped headlands and rock platforms,
(e) existing public open space and safe access to and along the foreshore, beach, headland or rock platform for members of the public, including persons with a disability
(f) Aboriginal cultural heritage, practices and place,
(g) the use of the surf zone.

Comment:
The development site has negligible ecological values and the proposal will not adversely impact the integrity and resilience of the biophysical environment. Contemporary stormwater management techniques will be employed to ensure stormwater drainage is of a suitable quality before leaving the site. The proposal is unlikely to impact coastal processes, Aboriginal heritage or use of the surf zone.

(2) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that:
(a) the development is designed, sited and will be managed to avoid an adverse impact referred to in subclause (1), or
(b) if that impact cannot be reasonably avoided—the development is designed, sited and will be managed to minimise that impact, or
(c) if that impact cannot be minimised—the development will be managed to mitigate that impact.

Comment:
The development site is spatially separated from significant coastal processes and the proposal is not likely to cause adverse impact to the functioning of the coastal zone.

Division 5 General
Cl. 15 Development in coastal zone generally—development not to increase risk of coastal hazards

Development consent must not be granted to development on land within the coastal zone unless the consent authority is satisfied that the proposed development is not likely to cause increased risk of coastal hazards on that land or other land.

Comment:
The site is spatially separated from significant coastal processes and the proposal is not likely to cause adverse impact to the functioning of the coastal zone.

4.3 REGIONAL PLANNING CONTROLS

4.3.1 Hunter Regional Plan 2036

The NSW Government has developed the Hunter Regional Plan 2036 as an overarching framework to guide land use planning priorities and infrastructure funding decisions in the Hunter region over the next 20 years.

The Plan sets priorities and provides a direction for regional planning decisions. It focuses on new housing and jobs, and targets growth in strategic centres and renewal corridors close to transport to deliver social and economic benefits. It sets in place line-of-sight land use planning for the region, regional districts like the Greater Newcastle metropolitan area and each council area.

The vision of the Hunter Regional Plan 2036 is for the Hunter to be the leading regional economy in Australia with a vibrant new metropolitan city at its heart. To achieve this vision, the NSW Government has acknowledged the growing importance of Greater Newcastle and set the following regionally focused goals:

- The leading regional economy in Australia;
- A biodiversity-rich natural environment;
- Thriving communities; and
- Greater housing choice and jobs.

Figure 16 below provides the indicative boundaries of the Greater Newcastle area and identifies the location of the subject site within the Newcastle area.

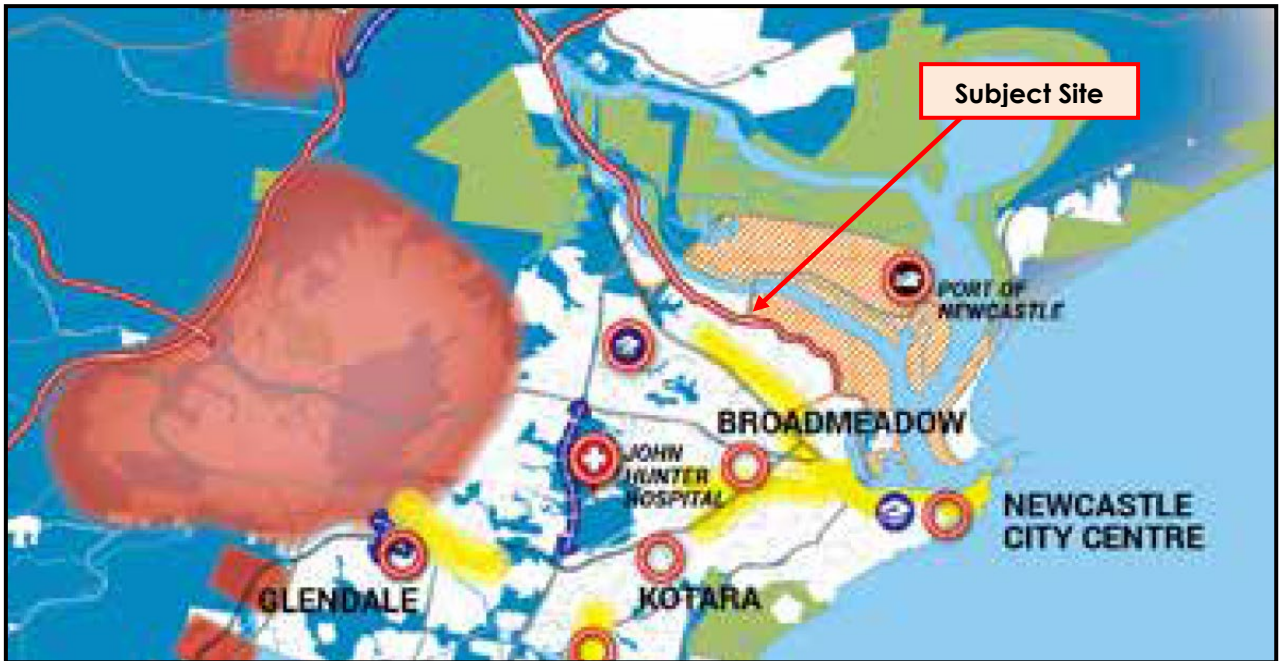


Figure 16: Extract from Hunter Regional Plan 2036 - Greater Newcastle area.

The proposed battery storage facility is entirely consistent with Goal 1, Direction 12 of the Plan to Diversify and Grown the Energy Sector.

The Energy efficient and renewable energy technologies can drive innovation, improve business and agricultural productivity and underpin long term economic growth. Ground–source heat exchange, solar pumping in agriculture, bioenergy, small-scale hydro and storage technology advances have enormous potential to contribute to the regional economy.

With its energy industries and research base, the Hunter region has the potential to be a major hub for next-generation power.

It is considered that the proposal is entirely consistent with the relevant Direction and Actions within the Hunter Regional Plan 2036.

4.3.2 Greater Newcastle Metropolitan Plan 2036

The Greater Newcastle Metropolitan Plan 2036 is a priority action of the above referenced Hunter Regional Plan 2036. The vision set out for the greater Newcastle area in the plan is:

> *Australia's newest and emerging economic and lifestyle city, connected with northern NSW and acknowledged globally as:*
>
> - *dynamic and entrepreneurial, with a globally competitive economy and the excitement of the inner city and green suburban communities;*
> - *offering great lifestyles minutes from beaches or bushland, the airport or universities, and from the port to the lake; and*
> - *a national leader in the new economy, with smarter cities and carbon neutral initiatives, and with collaborative governance that makes it a model to others in creating and adapting to change.*

The Plan sets out strategies and actions that will drive sustainable growth across Cessnock City, Lake Macquarie City, Maitland City, Newcastle City and Port Stephens communities, which together make up Greater Newcastle.

The site is identified within Figure 17 of the Greater Newcastle Metropolitan Plan 2036 Catalyst Area Port of Newcastle which is provided below in **Figure 17.**

The plan identifies the site as being located within the Steel River Precinct, City of Newcastle will align local plans to facilitate engineering, research and high-tech manufacturing uses.

The proposed development supports these outcomes by providing a new and emerging technology in a suitable area which has been identified as requiring separation from adjoining land uses. It is considered that the proposed battery storage facility is compatible with the aims and objectives of the Greater Newcastle Metropolitan Plan 2036.

Figure 17: Extract from Greater Newcastle Metropolitan Plan 2036 Catalyst Area Port of Newcastle.

4.4 LOCAL PLANNING CONTROLS

4.4.1 Newcastle Local Environmental Plan 2012

The land subject to the proposed work is zoned IN1 General Industrial zone under the Newcastle Local Environmental Plan 2012 (NLEP). The proposed Battery Storage Facility is defined as "Electricity Generating Works", which is not listed as a permissible use within the IN1 zone.

However, the proposed works fall within the provisions of SEPP (Infrastructure) 2007, this policy prevails over Newcastle LEP 2012 as identified by Clause 8 of the SEPP and has been addressed in Section 4.2 above.

The objectives of the IN1 General Industrial Zone are:

- *To provide a wide range of industrial and warehouse land uses.*
- *To encourage employment opportunities.*
- *To minimise any adverse effect of industry on other land uses.*
- *To support and protect industrial land for industrial uses.*

- *To allow commercial, retail or other development where it is—*
  (i) ancillary to the use of land in this zone for industrial, research, service or storage purposes, or
  (ii) primarily intended to provide personal services and community facilities to persons occupied or employed in activities otherwise permitted in this zone or for the benefit of the local community.
- *To ensure that any such commercial, retail or other development is unlikely to be prejudicial—*
  (i) to employment-generating activities, or
  (ii) to the viability of existing commercial centres.

The proposed development is considered to be consistent with the relevant objectives of the zone, in particular noting the following:

- The proposal provides a new technology on a site that is suitable within the Steel River Estate;
- The proposal will see the creation of 20 jobs during the construction period and up to two (2) full time equivalent roles once operational; and
- The subject site is considered to be an ideal location for the proposal with good connection to the local Ausgrid network.

Figure 18 is an extract from Newcastle LEP 2012 zoning map and illustrates the zoning of the site in the context of the surrounding locality.

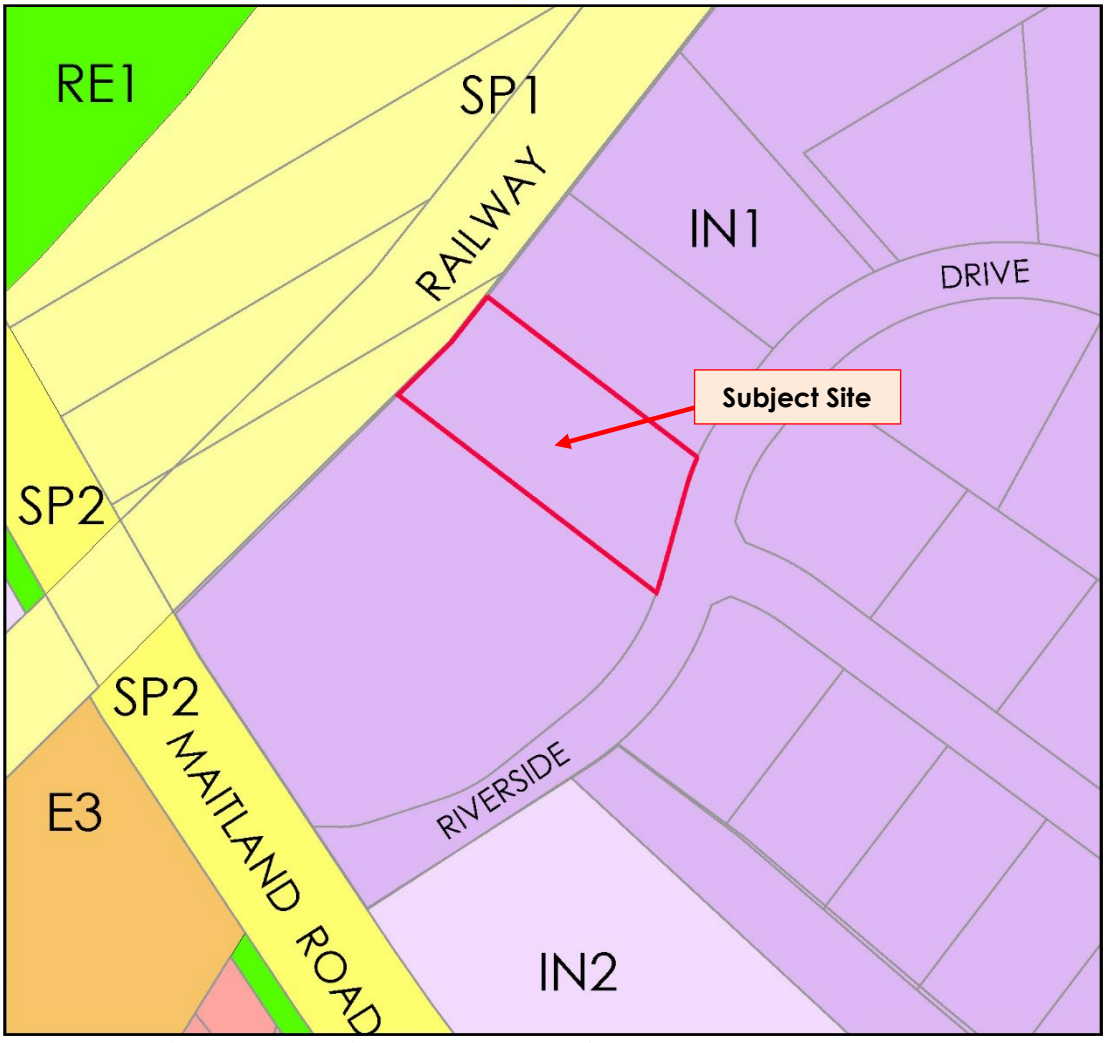


Figure 18: Zoning map extract from Newcastle LEP 2012.

4.4.2 Land Use Definitions & Permissibility

SEPP (Infrastructure) 2007 (ISEPP) "Electricity Generating Works" are defined as:

> *"electricity generating works means a building or place used for the purpose of—*
> *(a) making or generating electricity, or*
> *(b) electricity storage".*
>
> ***"prescribed rural, industrial or special use zone** means any of the following land use zones or a land use zone that is equivalent to any of those zones-*
>
> *(e) IN1 General Industrial,"*

"Electricity Generating Works" include electricity storage and are 'permitted with consent' under *Part 3, Division 4, Clause 34* of ISEPP. Clause 34 states:

> ***"34 Development permitted with consent***
> *(1) Development for the purpose of electricity generating works may be carried out by any person with consent on the following land—*
> *(a) in the case of electricity generating works comprising a building or place used for the purpose of making or generating electricity using waves, tides or aquatic thermal as the relevant fuel source—on any land,*
> *(b) in any other case—any land in a prescribed rural, industrial or special use zone".*

The proposed battery storage facility is a type of "Electricity Generating Works" and is permissible with consent in accordance with Division 4, Clause 34 (1), (a) and (b) of SEPP (Infrastructure) 2007.

4.4.3 Specific Newcastle LEP 2012 Clauses

- **Clause 5.10 – Heritage Conservation**

The subject site is in the vicinity of a heritage item listed in Schedule 5 of the Newcastle LEP and is therefore subject to Clause 5.10 of the Newcastle LEP.

The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned.

The heritage impact assessment prepared by Eikos Environment and Heritage which is provided within **Appendix J** has considered the effect of the proposed development on the heritage significance of the Former Migrant Camp (State nominated heritage item I291) and the extent to which the development would affect the heritage significance of the item.

To what extent does the proposal impact adjacent heritage items?

It is highly unlikely that the proposed development will have any significant impact on the adjacent Former Migrant Camp site. This site is located on top of a high ridge that runs parallel to Maitland Road with the main buildings and curtilage located on the opposite side of the Lot to the proposed development. Conversely, the proposed development site is located on low lying land below the ridge. In addition, there is a remnant native vegetation community on the western

boundary of the site that provides a visual barrier between the proposed development site and the Former Migrant Camp site. It is recommended that this remnant vegetation be retained.

To what extent does the proposal impact the heritage conservation area?

Not Applicable – the proposed development is not in or adjacent to a Heritage Conservation Area.

To what extent does the proposal impact any significant fabric or heritage values of the subject site?

Not Applicable – as outlined in this SoHI, the proposed development will be located on land well below the ridge line and curtilage of the Former Migrant Camp site and not have any significant impact on either the aesthetic outlook or heritage values of the site.

A Statement of Heritage Impact prepared by Eikos Environment and Heritage is provided within **Appendix J**. Heritage is address further in **Section 5.0** of this report.

- **Clause 7.1 - Acid Sulfate Soils**

The objective of this clause is to ensure that development does not disturb, expose or drain acid sulphate soils and cause environmental damage.

As outlined in **Section 3** the subject site is identified as containing Class 2 Acid Sulfate Soils.

In accordance with Clause 7.1 (6) the proposed works are highly unlikely to disturb more than 1 tonne will not lower the water table. As such it is considered that an Acid Sulfate Soils Management Plan is not required to be prepared for this application.

Letter advice has been prepared by RCA Australia regarding Acid Sulfate Soil potential and is provided within **Appendix I**. This advice has indicated that Acid Sulfate Soils would not be encountered within the upper 2m of the site and likely until depths of up to 9m at the site.

- **Clause 7.2 - Earthworks**

The objective of this clause is to ensure that earthworks for which development consent is required will not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding land.

In consideration of the reports accompanying this application, no significant impacts that cannot be mitigated have been identified.

4.4.4 Newcastle Development Control Plan 2012

Newcastle Development Control Plan 2012 (DCP 2012) applies to the proposed development. The purpose of the DCP 2012 is to provide detailed provisions relating to matters of environmental planning significance for Newcastle to be taken into consideration by Newcastle City Council when exercising its environmental assessment and planning functions under the *Environmental Planning and Assessment Act 1979*.

DCP 2012 has been reviewed and the following elements are relevant for consideration:

Section 3.13 Industrial Development

The aims of this section are:

- *To outline Council's requirements for development within industrial, business development zones*
- *To promote the efficient and economic use of the city's industrial resources by ensuring that development proposed is appropriate to industrial areas.*
- *To outline Council's requirements for development on sites that are zoned SP1 under State Environmental Planning Policy (Three Ports) 2013 and are located outside of the Port of Newcastle Lease Area.*

It is considered that the development is consistent with the aims and objectives of this section of the DCP based on the following:

- The proposal will result in an efficient use of available area within an ideally zoned site within the Steel River Estate;
- The proposal will see the establishment of new innovative electrical technologies which will contribute to the efficient use of resources within the Newcastle LGA;
- The proposed industrial premises will result in a positive contribution to the surrounding development;
- The proposed development is considered to be of an appropriate scale and form in the context of the area; and
- As shown on the Development Plans provided within **Appendix C**, the proposal has been appropriately designed and will provide an appropriately landscaped frontage to Riverside Drive.

Section 4.04 Safety and Security

The aims of this Section are:

- *To ensure safe and activated places that are used by people day and night; and*
- *To encourage a built environment that maintains and enhances our sense of identity.*

The proposed development is consistent with this section of the DCP 2012 and is addressed further in **Section 4.0** of this report.

Section 4.05 Social Impact

This section applies to any development as required under Council policy *Social Impact Assessment Policy for Development Applications*, 1999.

The aims of this Section are:

- *To provide clear guidelines as to the level of assessment required for a development application;*
- *To consider both positive and negative social impacts in achieving socially sustainable development through an evidence based approach;*
- *To ensure consultation is undertaken with the community, stakeholders and relevant groups to identify public values and concerns; and*
- *To consider how potential social impacts of change can be best managed and mitigated.*

The proposed development is consistent with this section of the NDCP 2012 and social

impact is addressed further in **Section 5** of this report.

Section 5.01 Soil Management

The aims of this section of the DCP are:

- *To prevent export of sediments from the site during construction;*
- *To prevent litter, sediment, nutrients and oils from entering waterways; and*
- *To minimise potential for landslip on sloping sites.*

An Erosion and Sediment Control Plan has been prepared for the site by GCA Engineering Solutions and provided within **Appendix E.**

Section 7.02 Landscape, Open Space and Visual Amenity

This section applies to all new buildings on land under NLEP 2012, and as such is applicable to the proposed development.

The aims of this section are:

- *To create public places that strengthen our social connections;*
- *To ensure public places provide for diverse leisure opportunities;*
- *To ensure landscaping is integrated into the design of the development;*
- *To improve stormwater quality and reduce quantity;*
- *To provide habitat for native plants and animals;*
- *To improve the microclimate and solar performance within the development;*
- *To improve urban air quality;*
- *To plan and implement significant development with provision for open space, in scale with the development that can be linked to a local open space network;*
- *To encourage development that respects landscape opportunities, conserves significant and useful landscape elements and does not detract from the local environment; and*
- *To ensure buildings and structures do not detract from the character of rural areas.*

A category 3 Landscaping Plan is included as **Appendix D** of this report. Landscaping is also discussed further in **Section 3.0** and **5.0** of this report.

The landscape requirements for the site are also addressed within Steel River Strategic Impact Assessment Checklist provided within **Appendix O**.

Section 7.03 Traffic, Parking and Access

Aims of this section:

- *To ensure that parking and service provision is adequate relative to the likely demand;*
- *To encourage measures to reduce motor vehicle dependency and increase the use of public transport, walking and cycling;*
- *To ensure that the design of parking, access and servicing areas is in accordance with best practice standards; and*
- *To provide adequate and safe vehicle access to sites without compromising pedestrian access and streetscape qualities.*

Traffic, Parking and Access is also discussed further in **Section 3.0** and **5.0** of this report.

Parking requirements for the site are also addressed within Steel River Strategic Impact Assessment Checklist provided within **Appendix O**.

Section 7.05 Energy Efficiency

This section applies to all development subject to the provisions of the NLEP 2012 and as such is applicable to the proposed development.

The aims of this section are:

- *To encourage sustainable development;*
- *To encourage the innovation of energy efficient technologies and processes;*
- *To encourage efficient use of resources and the use of recycled materials;*
- *To promote best practice energy use;*
- *To improve the efficiency of energy use and reduce the long term energy consumption for residential, business and industrial uses; and*
- *To restrict the reflection of sunlight from buildings onto surrounding areas and buildings.*

The proposal will see the establishment of new innovative electrical technologies which will contribute to the efficient use of resources within the Newcastle LGA.

The proposed Battery Storage Facility will play an integral role in enhancing overall electric grid efficiency and reliability, while reducing reliance on fossil fuel generation. It can serve as an efficient investment alternative to more expensive, traditional network solutions, resulting in lower overall costs for electricity customers within the Newcastle LGA.

Section 7.06 Stormwater

This section applies to all development in the Newcastle LGA and as such is applicable to the proposed development.

The aims of this section are:

- *To outline Council's requirement for stormwater management for development;*
- *To adopt a whole of water cycle approach to development; and*
- *To ensure an appropriate quality and quantity of water enters waterways.*

A Concept Stormwater Management Plan has been prepared by GCA and is provided within **Appendix E** and addressed further in **Section 5.0** of this report.

Section 7.08 Waste Management

This section applies to all development requiring consent, which is likely to create waste, including demolition, construction or change in use. As such, it is applicable to the proposed development.

The aims of this section are:

- *To facilitate sustainable waste management within the local government area in a manner consistent with the principles of ESD,*

- *To assist applicants in planning for sustainable waste management, through the*

preparation of a site waste minimisation and management plan,

- *To assist applicants to develop systems for waste management that ensure waste is transported and disposed of in a lawful manner, and*
- *To provide guidance in regard to space, storage, amenity and management of waste management facilities for new development.*

Waste management for the proposed development will be carried out in accordance with Council's Waste Management Guidelines. A Site Waste Minimisation and Management Plan (SWMMP) has been prepared and is included as **Appendix N.**

Waste management for the proposed development is also further addressed in **Section 5.0** of this report.

4.4.5 Strategic Impact Assessment Study

The Section 8.9 of the Steel River Strategic Impact Assessment Study provides estate specific development guidelines that are relevant to the assessment of the subject application.

A comprehensive assessment of the proposal against the relevant elements of Section 8.9 Development Guidelines and Objectives has been undertaken and is provided within **Appendix O**.

4.4.6 Other Relevant Policies, Strategies & Controls

Newcastle 2030 – Community Strategic Plan

The Newcastle 2030 – Community Strategic Plan (CSP) identifies the main priorities and aspirations of the community and aims to integrate principles of equity, access, participation and rights, and addresses social, environmental, economic and governance matters into Newcastle's future development. The plan identifies seven strategic directions developed to attain these goals.

The strategic directions within the CSP that are applicable to the proposed development include:

- *Protected Environment – Our unique environment will be understood, maintained and protected.*
- *Smart and Innovative – A leader in smart innovations with a prosperous, diverse and resilient economy.*

The proposed development is consistent with the CSP as it represents innovation and creativity within the electrical network by providing the implementation of renewable energy technologies.

It is considered that the proposed development is compatible with the provision of the Newcastle 2030 – Community Strategic Plan.

Newcastle Local Planning Strategy

The Local Planning Strategy has been adopted by City of Newcastle as a means of providing direction to future development patterns throughout the city of Newcastle.
The Local Planning Strategy is a comprehensive land use strategy to guide the future growth and development of Newcastle.

The Strategy implements the land use directions from the Newcastle 2030 Community Strategic Plan. The Strategy also reflects the outcomes of the Council's other strategies as they relate to land use. The Local Planning Strategy replaces the Newcastle Urban Strategy as the principal land use strategy for Newcastle.

The Strategy underpins the Newcastle Local Environmental Plan 2012 providing a land use planning platform to move towards a smarter, more liveable and sustainable Newcastle.

The proposed development is consistent with the intent of this strategy.

Newcastle Climate Action Plan 2021-25

The Newcastle Climate Action Plan (CAP) sits under the City of Newcastle's 2030 Community Strategic Plan (CSP) and environmental strategy, and its primary goal is to reduce emissions in the city. The CAP is separated into two parts – an action plan to reduce the City of Newcastle's operational emissions and an action plan to reduce emissions from the city as a whole.

The objectives of the CAP are:

- *To utilise 100% renewable energy supply for City of Newcastle operations.*
- *Ensure best practice use of resources across all City of Newcastle facilities and operations.*
- *Identify and implement actions to reduce emissions in products and procedures across City of Newcastle operations.*
- *Supporting the transition to clean, efficient, emissions-free transport across City of Newcastle.*
- *To create a resilient city that reduces its share of emissions to ensure a cleaner and more sustainable future.*

The proposed development aligns with the objectives of the CAP through the development of a large scale battery storage facility. This facility embraces new electrical technologies and innovative practices, which include:

- The operation as a flexible and dispatchable generator, providing electricity to the market to meet electricity needs during times of peak demand;
- The operation as a flexible and dispatchable load, with the ability to store excess electricity on the electrical network and provide for lower loading on particular areas of the network during times when they may otherwise be overloaded; and
- The provision of a range of network ancillary services including frequency control, which assists the improvement of stability and resilience of the local electrical network.

The proposed development significantly improves electrical network reliability and resilience in the local area and supports emission reductions through the improved ability to facilitate renewable energy integration.

Newcastle Employment Lands Strategy 2019

The Newcastle Employment Lands Strategy analyses population and demographic trends to understand and plan for employment generation and appropriate land uses within the Newcastle LGA into the future.

The Strategy identifies that whilst generally employment in the industrial sector is predicted to decline, overall employment in industrial areas in Newcastle is expected to increase. The strategy highlights the importance of protecting the existing industrial precincts within the Newcastle LGA and creating mechanisms to deliver cost effective and reliable inputs, such as electricity, to Newcastle's industrial operators.

The proposed development is consistent with this plan as it is located within the Steel River Estate, and with the forecasted growth in renewable energies, it will be a key factor in the growth and protection of the area.

5.0 Development Issues

5.1 DEVELOPMENT DESIGN & BUILT FORM

The proposed development plans have been prepared by GCA Engineering Solutions and are provided within **Appendix C** of this report.

The proposed battery storage facility will comprise multiple individual cubicles (which would be directly mounted on a concrete plinth and connected together on-site or skid mounted and pre-commissioned) or otherwise a containerised system. Either option would appear similar, as the individual cubicles would be arranged in such a way as to appear as a single container.

5.2 LANDSCAPING

A Landscape Plan has been prepared by Terras Landscape Architects and is provided within the architectural set within **Appendix D** of this report.

The site is currently undeveloped and contains no significant landscaping. The proposal aims to develop the site in alignment with the objectives of Newcastle Council's planning controls.

The proposed battery containers will be situated on concrete slabs within a compacted gravel area of the site which comprises approximately 47% of the site. The Landscaped areas of the site comprise approximately 28% of the site area and are focused around screening and visual relief along the southern and eastern boundaries.

The landscape design includes the provision of new landscaping in the form of trees and groundcovers along the Riverside Drive frontage, providing a significant buffer between the proposed development and the street. This form of landscaping will be duplicated along the southern boundary to screen the site from Maitland Road.

The landscape proposed is consistent with the recommendations of the Preliminary Hazard Assessment, with all proposed landscaping being setback 10m from the proposed batteries. Landscaping along the rear setback has also been restricted due to a number of easements extending along the rear of the site along which has limited available area for landscaping outside the 10m setback requirement. Sandstone spallings are to be provided along the rear of the site, which is also consistent with the findings of the Preliminary Hazard Assessment. Given the location and nature of the proposal, this is considered to be acceptable in this instance.

The proposed landscaping will contribute towards achieving an aesthetically pleasing development within the industrial locality.

5.3 STORMWATER MANAGEMENT

Concept Engineering Plans have been prepared by GCA Engineering Solutions and is included as **Appendix E** of this report. A stormwater drainage concept plan has been prepared to demonstrate how the runoff generated by the proposed development is captured and conveyed to the Steel River Estate stormwater system to be constructed along Steel River Drive.

The majority of the site will be constructed as a gravel hardstand which will be impervious and as such the proposal will require limited formal stormwater infrastructure.

The site will be graded to ensure major flows are conveyed from the subject site to Riverside Drive and the inter allotment drainage running along the rear of the site.

Erosion and Sediment Control:

An erosion and sediment control plan has been prepared in accordance with Council's requirements. A copy of this plan is included within the Concept Stormwater Management Plan provided within **Appendix E**.

Erosion and Sedimentation Control can be adequately treated within the space available on site to minimise sediment migration from the site during construction.

5.4 ACCESS, TRAFFIC & PARKING

Access:

The subject site is to be accessed off Riverside Drive (once constructed). Access to Riverside Drive is provided via Steel River Boulevarde and Channel Road to the east. Direct access to Riverside Drive will also become available off Maitland Road, once the intersection with Maitland Road is delivered as part of the Stage 11 subdivision works in accordance with DA2006/2076.02 as most recently amended. A portion of this road is to be dedicated as public road to the southern boundary of Approved Lot 1203, located within future Stage 11.

The proposed development will see vehicles enter the site via a bidirectional access driveway, with entry and exists at the north eastern and south eastern corners of the site ensuring they can enter and exit the site in a forward direction. Chainmesh swing gates will be provided to both entry / exists. Swept Turing Paths have been shown on the plans provided to demonstrate that a 12.5m ridged truck can adequately enter and exit the site in a forward direction and manoeuvre throughout the site.

Vehicle access to the site would generally be confined to the standard hours of construction. Exceptions would occur as staff arrive and leave the site, before and after shifts for maintenance or emergency maintenance which may take place outside normal working hours.

The majority of the battery storage facility site will be a compacted gravel hardstand area which will allow maintenance vehicles to manoeuvre throughout the site for maintenance as required.

Traffic:

The additional traffic associated with the construction and operation of the Battery Storage Facility would make up a minor component of the existing traffic loads on the surrounding local and state roads which are considered to have ample capacity to accommodate additional vehicle movements to and from the works area during the construction period.

Traffic impacts during the construction period are expected to be limited to delivery vehicles for the battery equipment to site which is expected to occur with heavy vehicle

movements. There are not expected to be any oversize vehicle movements or any significant increase to local traffic. It is expected that a Construction Environmental Management Plan (CEMP) will be required to be prepared by the contractor prior to works commencing. The CEMP will include details on the required traffic and access management measures.

During operation, vehicles would use the local road network to access the site and travel within the site during the operational phase. Once operational attendance to site will be via light vehicle, with the exception of extremely rare events resulting from a major equipment replacement, and occur typically a few times per month. Overall, traffic impacts from the proposal are expected to be low and manageable.

No major operational impacts are expected to be required during the course of normal operations. As such, the project is expected to generate minimal traffic.

Parking:

No formal or dedicated parking facilities are proposed or required to be provided throughout the site, as the maintenance vehicles will park around the site as needed to service the batteries.

5.5 CONTAMINATION

A Site Management Plan and Remediation Certificate B prepared by RCA has been provided within **Appendix H** of this report.

As outlined in Section 4.1.3 above, the broader Steel River Estate has been subject to remediation works which encompasses a staged validation process. The Site benefits from a Validation Certificate 'A' and a Validation Certificate 'B'. Certificate 'A' validated early works undertaken as part of the staged development of the estate, whilst the Certificate 'B' provides site specific validation.

A Remediation Certificate B prepared by RCA has been provided within **Appendix H** of this report. The certificate confirms:

> "*The Lot is suitable for commercial / industrial development subject to works being undertaken in accordance with the Steel River Construction Guidelines (Ref [4]), relevant management plan (Ref [5]), and Certificate C and Site Management Plan(s) that are yet to be prepared for the site*".

Notwithstanding, the staged validation process requires further site-specific certification of known as the 'Certificate C' and the preparation of a Site Management Plan based on the Steel River Site Development Guidelines. Having regard to the findings of Validation Certificate B, it is appropriate that any Notice of Determination Issued by Council requires that:

- A project specific Site Management Plan is prepared prior to the release of a construction certificate; and
- A Validation Certificate C is prepared and submitted to the Principle Certifying Authority prior to the release of the construction certificate.

As required by Certificate B a Site Management Plan has been prepared for the proposed works associated with the Battery Storage Facility on approved Lot 1102 and is provided

within **Appendix H**.

This approach would ensure that the Certificate C is based on the approved documentation related to the project whilst providing a safeguard to ensure the certificate is in place prior to the commencement of works.

In accordance with Condition D.1.5 of DA2006/2076.02 a Validation Monitoring Report is required to be prepared for the completion of the Stage 11 subdivision works. The report is to be submitted to the appointed NSW Site Auditor and Council for review and approval prior to issue of the subdivision certificate for Stage 11.

Based on the above findings it is evident that the land is suitable for the intended use, and that measures will form part of the detailed design and certification process to ensure the integrity of the estate specific validation process is maintained.

5.6 VISUAL IMPACT

Visual impact assessment is concerned with changes to the physical landscape in terms of features/ elements that may give rise to changes in character. Visual appraisal is concerned with the changes that arise in the composition of available views as a result of changes to the landscape, people's responses to the changes and to the overall effects on visual amenity. Changes may result in adverse (negative) or beneficial (positive) effects.

The nature of landscape and visual assessment requires both objective analysis and subjective professional judgement. Accordingly, the following assessment is based on the best practice guidance listed above, information and data analysis techniques, uses subjective professional judgement.

A number of potential viewpoints were assessed for inclusion in this report, refer to **Figure 19** below. Due to local topography, existing vegetation and existing road alignment the proposal would only have visual effect upon those areas within or immediately adjacent to the site, and only experienced by road users for a very short period of time as they drive south east along Maitland Rd.

Viewpoint – Maitland Road

The impact on road users travelling south east on Maitland Road is minimal due to the following:

- Visual access into the site is minimal due to the limited extent and short exposure of the site. As motorists travel past the site there is some existing vegetation adjacent to the road which will screen the development which allows only a relatively minor window which the development can be seen.
- The site is part of a larger industrial subdivision which has been partially developed with large warehouses, workshops and office buildings. When considering the scale of the existing development this proposal is relatively low scale in comparison.
- The views currently experienced from Maitland Road are across the existing railway corridor and also to the existing above group electrical infrastructure which extends through part of the Steel River Estate.

- While there are some limitations to the amount of screening vegetation provided due to a fire safety risk assessment, a number of small trees have been proposed along the southern and eastern boundaries to screen where possible.

It should be noted that the site will not be visible to motorists travelling in a north west direction due to the existing vegetation identified (show in **Figure 19** below) and topography of the site off Maitland Road.

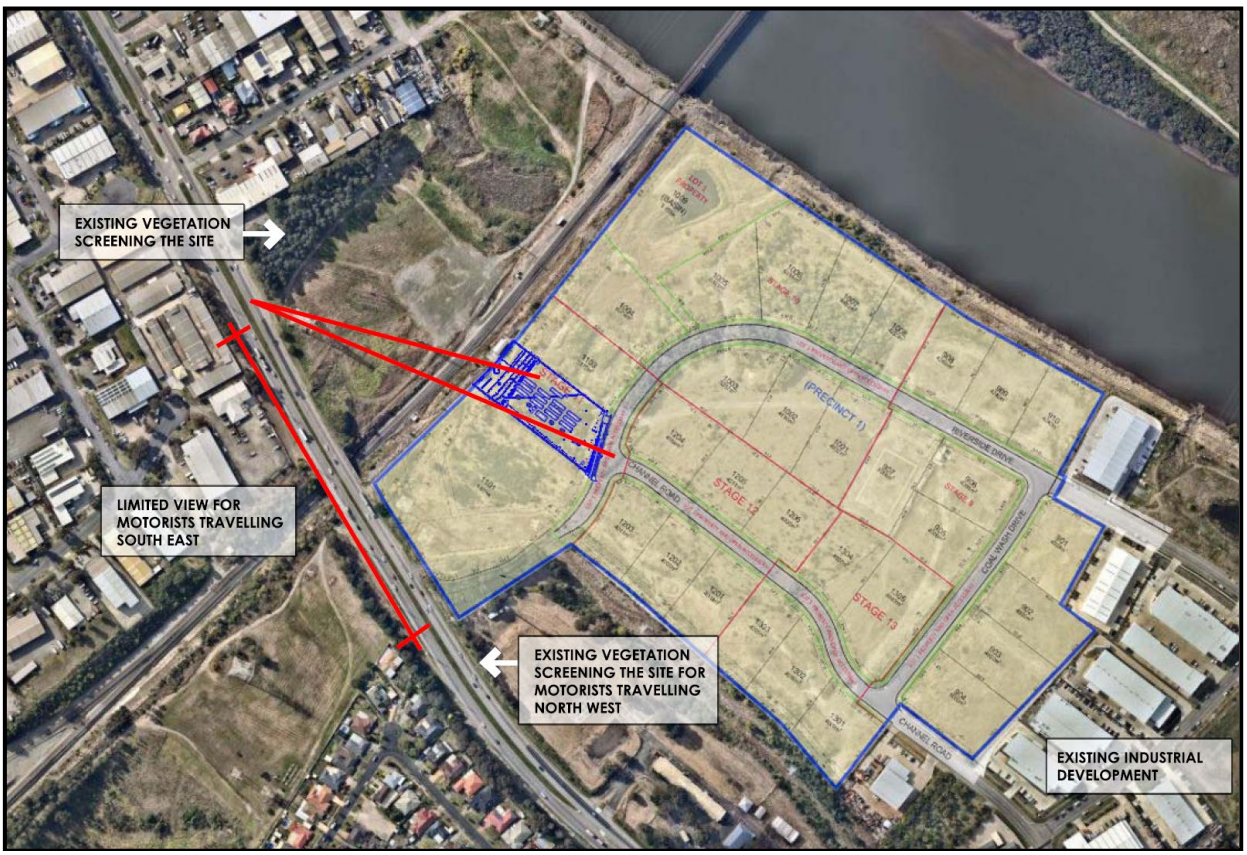


Figure 19: Viewpoint Locations.

Viewpoint – Riverside Drive:

Visually the project will present from street level as a modern, low scale development, enabling the surrounding landscaping to further add to the quality of the Steel River Estate.

The surrounding buildings in Steel River includes a variety of energy-based businesses such as CSIRO Energy Research, Line Gas, Yanmar Diesel amongst others, which will complement the character of the proposed project.

The impact on users within the subdivision will be limited due to the relatively low scale of development when comparing it to the existing development. New landscaping in the form of trees and groundcovers will be provided along the Riverside Drive frontage, providing a significant buffer between the proposed development and the street. The proposed security gates will be setback from Riverside Drive with one of the entrance gates partially screened by landscaping, particularly for vehicles travelling north along Riverside Drive as shown in **Figure 20** below.

Figure 20: Landscape screening when viewed from Riverside Drive.

5.7 HERITAGE

A Statement of Heritage Impact (SoHI) has been prepared by Eikos Environment and Heritage and is provided within **Appendix J** of this report.

The SoHI has considered the proposal and assessed any potential heritage impacts on the Former Migrant Camp which is within proximity to the subject site. The report has also considered the proposal against the requirements of the Newcastle Local Environment Plan 2012 (LEP) and relevant heritage legislation by considering the effects of the proposal on this State nominated heritage item.

This SoHI prepared by Eikol Environment and Heritage has been prepared in accordance with the Australia International Council on Monuments and Sites (ICOMOS) Charter for Conservation of Places of Cultural Significance (Burra Charter) and assists in the consideration of the proposed development using the methodology outlined in *Statements of Heritage Impact*, Heritage Office/ Department of Urban Affairs and Planning, 1996, and *Conservation Areas*, published by the Heritage Office and department of Urban Affairs & Planning, 1996.

Eikos Environment and Heritage has considered the effect of the proposed development on the heritage significance of the Former Migrant Camp (State nominated heritage item I291) and the extent to which the development would affect the heritage significance of the item.

To what extent does the proposal impact adjacent heritage items?
It is highly unlikely that the proposed development will have any significant impact on the adjacent Former Migrant Camp site. This site is located on top of a high ridge that runs parallel to Maitland Road with the main buildings and curtilage located on the opposite side of the Lot to the proposed development. Conversely, the proposed development site is located on low lying land below the ridge. In addition, there is a remnant native vegetation community on the western boundary of the site that provides a visual barrier between the proposed development site and the Former Migrant Camp site. It is recommended that this remnant vegetation be retained.

To what extent does the proposal impact the heritage conservation area?
Not Applicable – the proposed development is not in or adjacent to a Heritage Conservation Area.

To what extent does the proposal impact any significant fabric or heritage values of the subject site?
Not Applicable – as outlined in this SoHI, the proposed development will be located on land well below the ridge line and curtilage of the Former Migrant Camp site and not have any significant impact on either the aesthetic outlook or heritage values of the site.

Based on the findings of the SoHi, Eikos Environment and Heritage have confirmed that there is adequate separation both in elevation and distance between the location of the proposed development and the curtilage of the Former Migrant Camp to ensure that the heritage significance of the site is not adversely impacted.

In addition, the remnant native vegetation community including mature Spotted Gum and Ironbark on the south eastern boundary of the development site provides a visual buffer to the Former Migrant Camp and should be retained.

5.8 PRELIMINARY HAZARD ANALYSIS

A Preliminary Hazard Assessment has been prepared by ARUP and is provided within **Appendix G** of this report.

This Preliminary Hazard Analysis (PHA) has been prepared in accordance with the relevant guidelines from NSW DPIE's *Multi-level Risk Assessment* and Hazardous Industry Planning Advisory Papers (HIPAPs) No. 4 – *Risk Criteria for Land Use Safety Planning* and No. 6 – *Hazard Analysis*. During the analysis of the identified risks, reference was made to the relevant general principles as defined by HIPAP 4 Section 2.4.1:

- The avoidance of all *avoidable* risks;
- The risk from a major hazard should be reduced wherever practicable, even where the likelihood of exposure is low; and
- The effects of significant risks should, wherever possible be contained within the site boundary.

Hazards and Consequences

The hazards assessed to be 'medium' risk or higher in the hazard identification study (HAZID), or where offsite consequences were anticipated have been carried forward for qualitative assessment. The following hazards have been assessed:

- Security breach leading to injury;
- Electrocution from an electrical facility;
- Injury to construction or operations personnel;
- Exposure to dangerous goods during a site emergency;
- Battery fire; and
- Battery explosion.

The two hazards that were identified as having the potential to cause offsite impacts, namely a battery fire and battery explosion, were carried forward for quantitative consequence analysis.

As the final battery technology has not yet been chosen for the site, these hazards were considered for both modular and containerised solutions.

For a fire in the modular system, it was concluded that significant heat input is required to generate conditions that will result in a lithium ion cell thermal runaway.

For a fire in a container, in order to have a received radiant heat flux of less than 4.7 kW/m^2 at the site boundary, the required minimum separation distance between the:

- Front/end of the container and site boundary = 5.5m; and
- Side container wall and site boundary = 5.25m.

Similarly, in order to have a received radiant heat flux of less than 12.6 kW/m^2 on the adjacent containers, the required minimum separation distance between the:

- Front/end of the container and adjacent container = 3.25m; and
- Side container wall and adjacent container = 2.0m.

For an explosion of the modular system, the testing performed for NFPA found that there was no pressure build-up or release, consistent with an overpressure event, occurred inside the modular system enclosure or initiator pod.

For an explosion in the container, a vapour cloud explosion of vented gas was modelled. An overpressure of 7 kPa – the accepted minimum for injury or fatality – was found to extend to a distance of 24m, and an overpressure of 35 kPa – corresponding to significant damage of structures – was found to extend to a distance of 7.5m.

Recommendations

ARUP makes the following recommendations to ensure that the residual risks for the identified hazards will be reduced So Far as is Reasonably Possible (SFAIRP):

- Separate containerised BESS 24 m from the site boundary unless the following are met:
    1. Containerised BESSs shall have a means to safely vent or prevent an explosion designed to NFPA 68, NFPA 69, or an international equivalent to reduce this risk SFAIRP. Where provided with such system; and
    2. Containerised BESSs shall be separated from one another by not less than 3.25m end to end and not less than 3m side to side, and separated from the site boundary by not less than 10m.
- Ensure the BESS manufacturer supplies the UL9540A fire test report for further refinement of separation distances.

- Ensure containerised BESSs have a fire suppression system, if they are to be entered for maintenance. Additionally:
    1. It is preferred for the fire suppression system to not rely on shutdown of the battery cooling system.

The fire suppression system design should also consider the explosion hazard.

As shown on the Development Plans provided within **Appendix C**, the proposed Battery Storage Facility has taken into considerations the recommendations of the Preliminary Hazard Assessment which are reflected within the design.

5.9 ACOUSTIC IMPACT

A Noise Impact Assessment has been prepared by Spectrum Acoustics and is provided within **Appendix K**.

Assessment Methodology

Confidential sound power test results proprietary to a modular system supplier were provided to inform the noise impact assessment and are suggested as indicative across a range of battery enclosure types supplied by other tier 1 vendors in the market. Under conditions that would occur for well over 95% of the time, mainly being temperatures less than 40C, the sound power level of a modular system, is 84 dB(A). The sound power level was established using acoustic intensity measurements on top of the unit where fans discharge air (and noise) vertically. A correction of -5 dB has been applied for calculation of propagation in a horizontal plant to the assessed residential receiver. There would be twelve of these units.

There are two options proposed for the battery units being the modular cubical cabinets and containerised modules. The data provided are for the modular units. There are no measurements for the containerised option, but it can be reasonably assumed that these would be quieter by an unknown amount. This assessment considers the modular units as a worst case for noise emissions.
The other significant noise sources are four transformers. These would be of the oil distribution type and data provided by the Proponent for another of their sites suggests a sound power level of 81 dB(A).

Results Operational Noise

As outlined in the assessment the calculated cumulative noise level at the closest receiver from all noise sources is 25 dB(A),Leq. Assuming constant operation for a 15-minute assessment period, this will equal the LA10 level. The predicted level is well below the SIAS criteria of 48 dB(A) (day) and 30 dB(A) (night). Being considered as a constant noise source implies no exceedance of the 55 dB(A),L1 sleep disturbance criterion.

The noise impact assessment has found no exceedance of daytime off-site traffic noise criteria, construction or operational noise criteria at any industrial or residential receiver.

Based on these findings of this assessment, Spectrum Acoustics have recommended that the project may proceed without the need for targeted noise monitoring.

5.10 SOCIAL & ECONOMIC IMPACTS

The following further addresses the key social and economic considerations of the proposed development:

- The proposed development will see a direct investment of $28 Million into the Newcastle LGA;
- The proposal will provide significant benefits to the local Newcastle area as well as the wider New South Wales electricity network;
- The proposal will see the introduction of a new technology and innovative practice to the area;
- The proposal is entirely consistent with the objectives of the Newcastle Climate Action Plan 2021-25;
- The proposal will generate local employment opportunity with approximately 20 jobs during the construction period and the equivalent of approximately 2 full time equivalent roles during operations and maintenance;

- Alignment with the objectives of the NSW Electricity Strategy through the implementation of electricity technologies aligned with the principles of a firmed renewable energy supply and reserve power demand to meet the objectives of the Energy Security Target; and
- The proposed development is unlikely to be a high risk development with respect to crime and public safety, and will improve casual surveillance from the site with an increased regular physical presence on the site.

The proposed development is considered to provide a net social and economic benefit.

5.11 CRIME PREVENTION

In 2001 the then Department of Urban Affairs and Planning produced a guideline titled "Crime Prevention and the assessment of development applications". The purpose of the guidelines is to assist Councils identify crime risk and minimise opportunities for crime through the appropriate assessment of development proposals.

Crime prevention for environmental designs seeks to influence the design of buildings and places by:

- Increasing the perception of risk to criminals by increasing the possibility of detection, challenge and capture;
- Increasing the effort required to commit the crime by increasing the time, energy or resources which need to be expended; and
- Reducing the potential rewards of crime by minimising, removing or concealing crime benefits and removing conditions that create confusion about required norms about behaviour.

During the design and development consideration has been given to the four (4) basic design principles contained in the guideline titled "Crime Prevention and Assessment of Development Applications", these are addressed as follows:

Surveillance:

The attractiveness of crime targets can be reduced by providing opportunities for effective surveillance, both natural and technical.

The proposal incorporates:

- Clear sightlines between public and private spaces;
- Landscaping that does not provide opportunity for offenders to hide or entrap victims;
- Improved casual surveillance opportunities; and
- A physical presence through the redevelopment of the site for the purpose of a secure Batter Storage Facility.

The proposed Battery Storage Facility will be covered by an operations and maintenance contract which provide for regular and appropriate maintenance and inspections of the project as well as continuous 24/7 remote monitoring of the system from a remote location.

Operations personnel will attend site periodically as required for routine and scheduled maintenance activities. The site will be remotely monitored from an operations facility utilising the site SCADA system for continuous site monitoring and operations.

This site-based SCADA system will be designed to provide alarms and automatic operations

to manage events.

Access Control:

Physical and symbolic barriers can be used to attract, channel or restrict the movement of people. They minimise opportunities for crime and increase the effort required to commit crime.

A 3m high security fence will be installed around the entire perimeter. A security gate at the site entrance will allow controlled access. The site will be permanently monitored for security purposes by a security system.

Territorial Reinforcement:

Community ownership of public space sends positive signals. People often feel comfortable in, and are most likely to visit places which feel owned and cared for. Well used places also reduce opportunities for crime and increase risk for criminals.

The design ensures a clear distinction as to what areas of the site are public versus private.

Space Management:

Popular public space is often attractive, well maintained and well used space. Linked to the principle of territorial reinforcements space management ensures that space is appropriately utilised and well cared for.

The physical spaces have been designed such that they are able to be maintained so that the site appears to be well kept and therefore deter crime.

Overall, the proposed development will not introduce any specific elements likely to encourage crime.

5.12 UTILITIES & SERVICES

At the completion of Stage 11 of the broader subdivision, all public utility services including reticulated water and sewer, electricity and telecommunications will be available to the site, and will be upgraded where necessary to service the proposed development.

5.13 WASTE MANAGEMENT

Waste management for the proposed development will be carried out in accordance with Council's Waste Management Guidelines.

A Site Waste Minimisation and Management Plan has been prepared and is included within **Appendix N** of this report.

A range of general waste and recycling products will be generated during the construction phase and, to a lesser extent, the operational phase. These will include wooden pallets, plastic wrapping, cans and bottles, and metal offcuts. A dedicated waste storage and handling area will be provided during construction. During the operation of the site, waste will be removed from the site by maintenance contractors and no on-site waste storage is required.

The following is a breakdown of the waste generated from the proposal and the proposed

method of disposal.

Construction:

Where possible materials will be re-used on site, and where not possible, materials will be sent to an appropriate recycling contractor to be recycled. Given the nature of the proposed development, a large portion of the built for will be prefabricated and large amounts of waste are not envisioned during construction.

In all instances correct quantities will be ordered to minimise waste on the site.

The Contractor is to utilise techniques that will minimise demolition and construction waste such as:

- Building to standard sizes;
- Building for deconstruction;
- Implementing data gathering processes to monitor waste generation;
- Litter management on site; and
- Litter abatement on site.

The Contractor's on-site representative will remain responsible for coordinating the removal of waste from the site once construction works have commenced. All waste will be disposed of at an appropriately licensed waste facility.

Operation:

The operation of the battery storage facility will not generate significant volumes of waste. There will not be a permanent staff present on the site, with all maintenance and operational management undertaken by contractors.

The proposed development is a low maintenance facility. Contractors would access the site infrequently for maintenance and testing and as required if a fault occurs. All waste materials generated during maintenance and operational management activities will be removed from the site by the contractors which generated the waste. No storage of waste will occur on-site.

Batteries which are defective or at the end of their life will be returned to the manufacturer for recycling. Defective and end of life batteries will be removed from the site once removed from service, and transported to their recycling destination. Damaged or defective batteries will not be stored on the site. Any packaging associated with new batteries or components will be removed from the site by maintenance contractors and appropriately disposed of.

6.0 Conclusion

This Statement of Environmental Effects and supporting documentation comprehensively demonstrates that the proposed battery storage facility is an appropriate and suitable development when tested against the relevant heads of consideration detailed within Section 4.15 of the *Environmental Planning & Assessment Act 1979*.

The proposal can be supported based on the following:

- The proposed battery storage facility is permissible with consent in accordance with Division 4, Clause 34 (1), (a) and (b) of SEPP (Infrastructure) 2007;
- The proposed development will provide significant benefits to the local Newcastle area as well as the wider New South Wales electricity network;
- The proposal is consistent with the objectives of the Newcastle Climate Action Plan 2021-25 through the development of large scale battery storage facilities and embrace new technologies;
- The site is ideally positioned for connection into the Ausgrid network;
- Appropriate vehicle access will be provided; and
- No adverse social, economic or environmental impacts are likely to be generated by the proposal. The proposal will deliver net benefits to the local community and broader Newcastle LGA.

This statement has illustrated that the proposal will satisfy both statutory and merit based planning considerations and that the proposal will make a positive contribution to the site and surrounding area. It is considered that there is no matter which should preclude the approval of the proposed development.

Appendix A

CERTIFICATE OF TITLE AND DEPOSITED PLAN

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 12/280089

SEARCH DATE	TIME	EDITION NO	DATE
21/9/2020	10:56 AM	2	20/6/2020

LAND

LOT 12 IN PRECINCT PLAN DP280089
AT MAYFIELD WEST
LOCAL GOVERNMENT AREA NEWCASTLE
PARISH OF NEWCASTLE COUNTY OF NORTHUMBERLAND
TITLE DIAGRAM DP280089

FIRST SCHEDULE

STEEL RIVER WEST PTY LTD

SECOND SCHEDULE (31 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S) WITHIN THE PART(S) SHOWN SO INDICATED IN THE TITLE DIAGRAM
2 LAND EXCLUDES MINERALS BY CROWN GRANT WITHIN THE PART SHOWN SO INDICATED IN THE TITLE DIAGRAM
3 LAND EXCLUDES MINERALS (S.141 PUBLIC WORKS ACT, 1912) BY CROWN GRANTS WITHIN THE PART SHOWN SO INDICATED IN THE TITLE DIAGRAM
4 BK 1726 NO 548 LAND EXCLUDES MINERALS WITHIN THE PART SHOWN SO INDICATED IN THE TITLE DIAGRAM
5 EXCEPTING LAND BELOW A DEPTH FROM THE SURFACE OF 121.92 METRES BY CROWN GRANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM
6 INTERESTS RECORDED ON REGISTER FOLIO 1/280089
7 ATTENTION IS DIRECTED TO THE MANAGEMENT STATEMENT AND DEVELOPMENT CONTRACT OF THE PRECINCT SCHEME FILED WITH THE PRECINCT PLAN
8 THIS PRECINCT SCHEME FORMS PART OF A COMMUNITY SCHEME - SEE INTERESTS RECORDED ON REGISTER FOLIO 1/270249
9 BK 1726 NO 548 EASEMENT TO LET DOWN THE SURFACE OF THE LAND AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM
10 F702707 SUBJECT TO THE PROVISIONS OF CLAUSE 29 SET OUT IN SCHEDULE TO BROKEN HILL PTY. LTD (RECLAMATION AND EXCHANGE) AGREEMENT RATIFICATION ACT 1950, AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM
11 DP1034764 EASEMENT FOR OVERHEAD SERVICES AND RELATED STRUCTURES 30 METRE(S) WIDE AND VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
12 DP270249 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (4) IN THE S.88B INSTRUMENT (DOC.1)
13 DP270249 RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND

END OF PAGE 1 - CONTINUED OVER

SECOND SCHEDULE (31 NOTIFICATIONS) (CONTINUED)

		NUMBERED (5) IN THE S.88B INSTRUMENT (DOC.1)
14	DP270249	RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (2) IN THE S.88B INSTRUMENT (DOC.4)
15	DP270249	RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (3) IN THE S.88B INSTRUMENT (DOC.4)
16	DP270249	RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (4) IN THE S.88B INSTRUMENT (DOC.4)
17	T14549	EASEMENT FOR PIPELINE 2.895 WIDE AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM
18	DP270249	EASEMENT FOR ENVIRONMENTAL SERVICES 5 WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED (DOC.2)
19	DP270249	EASEMENT FOR ENVIRONMENTAL SERVICES 5 WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED (DOC.3)
20	DP270249	EASEMENT FOR ACCESS AND MAINTENANCE VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM (DOC.1)
21	DP270249	EASEMENT FOR ENVIRONMENTAL SERVICES 5 WIDE "B" APPURTENANT TO THE LAND ABOVE DESCRIBED (DOC.1)
22	AA995559	EASEMENT FOR SEWER MAINS 8.5, 12 & VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM
23	DP270249	RESTRICTION(S) ON THE USE OF LAND REFERRED TO AND NUMBERED (6) IN THE S.88B (DOC.1)
24	DP270249	EASEMENT FOR ENVIRONMENTAL SERVICES 5 WIDE 'P' APPURTENANT TO THE LAND ABOVE DESCRIBED (DOC.10)
25	DP270249	EASEMENT FOR DRAINAGE OF WATER 2 METRE(S) WIDE (H) APPURTENANT TO THE LAND ABOVE DESCRIBED (DOC.12)
	DP270249	EASEMENT RELEASED IN SO FAR AS IT AFFECTS THE PART WITHIN RIVERSIDE DRIVE (DOC.17)
26	DP270249	EASEMENT FOR EFFLUENT PIPELINE 6 METRE(S) WIDE AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM (DOC.13)
27	DP270249	RIGHT OF ACCESS VARIABLE WIDTH (T) AFFECTING THE PART(S) SHOWN SO BURDENED IN THE TITLE DIAGRAM (DOC.13)
28	AK112224	EASEMENT FOR ENERGY TRANSMISSION AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM
29	DP270249	EASEMENT FOR ENVIRONMENTAL SERVICES 5 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED (DOC.15)
30	DP270249	EASEMENT FOR ENVIRONMENTAL SERVICES 5 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED (DOC.16)
31	DP270249	EASEMENT FOR ENVIRONMENTAL SERVICES 5 METRE(S) WIDE APPURTENANT TO THE LAND ABOVE DESCRIBED (DOC.17)

NOTATIONS

DP1024393 NOTE: PLAN OF PROPOSED EASEMENT

END OF PAGE 2 - CONTINUED OVER

FOLIO: 12/280089 PAGE 3

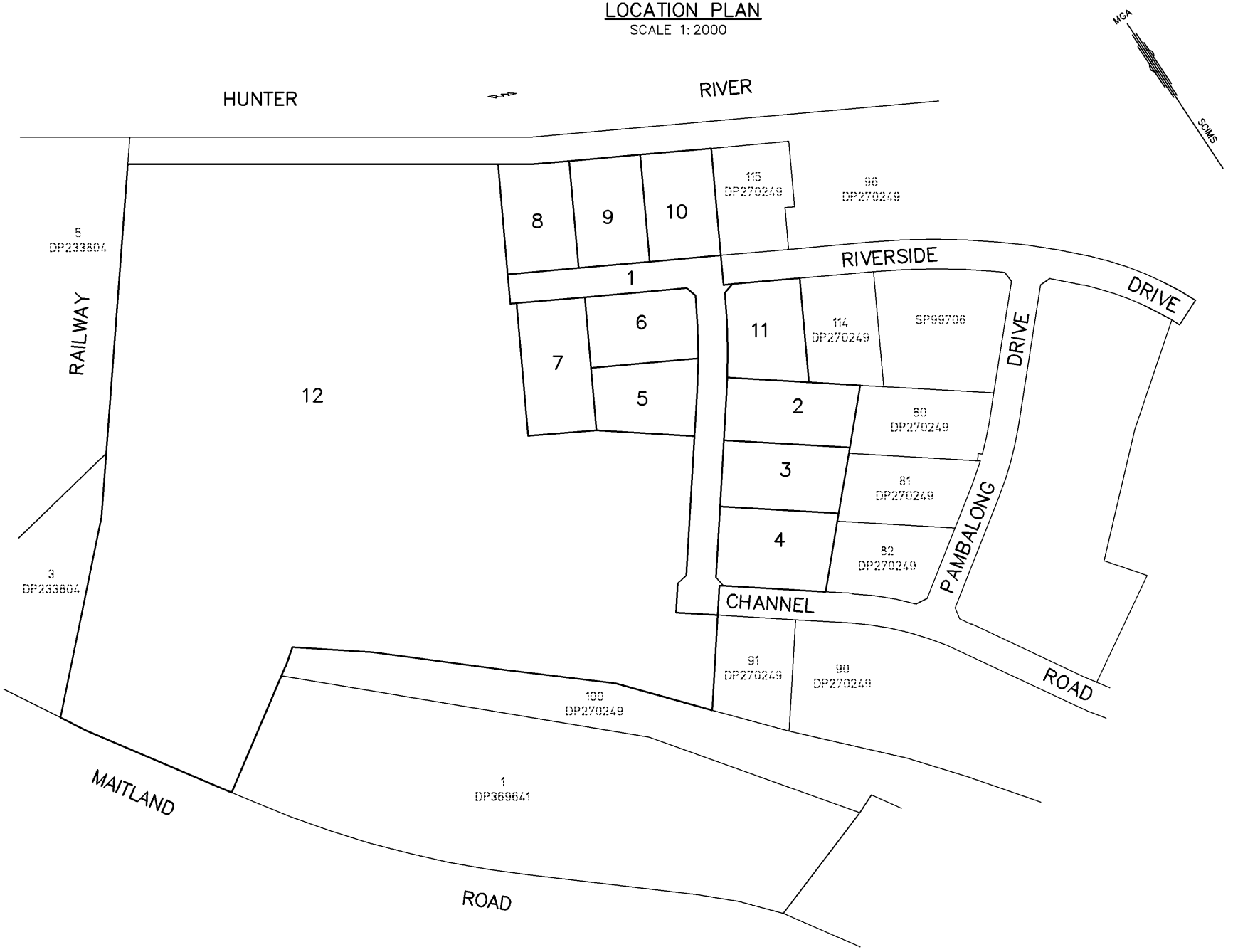
NOTATIONS (CONTINUED)

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

LOCATION PLAN

SCALE 1:2000



THIS SHEET IS BEING CONTINUALLY UPDATED TO SHOW THE CURRENT SUBDIVISION PATTERN OF THE SCHEME. FOR DETAILS OF UPDATES AND ADDITIONAL AND REPLACEMENT SHEETS SEE SCHEDULE BELOW.

SCHEDULE OF CHANGES TO THE SCHEME

LOT No	DETAILS	SHEET No

Subdivision Certificate No: 9580

Date: 17th February 2020

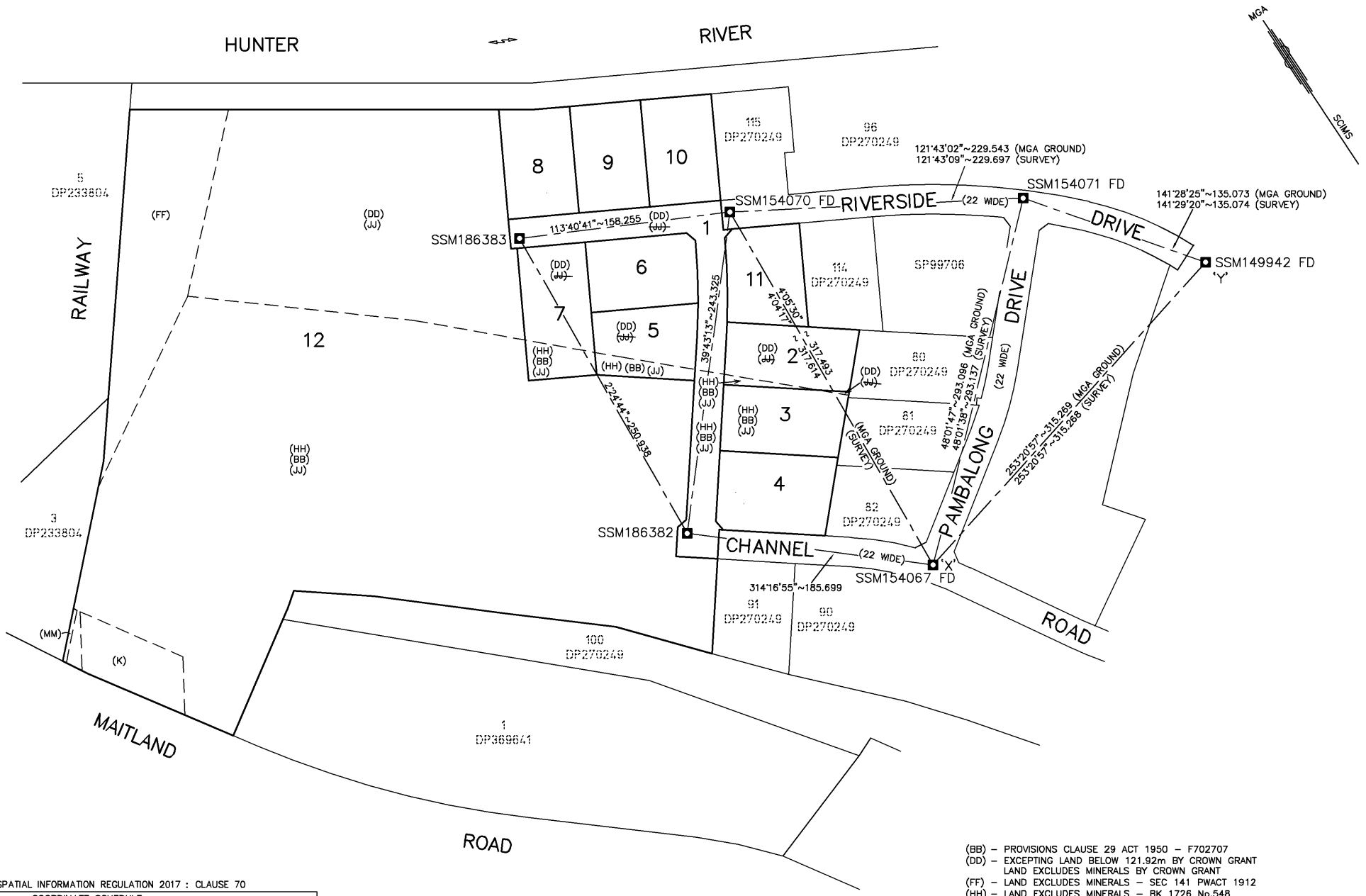
Surveyor: DAVID CRAIG WALLACE

Surveyor's Ref: 170137DPB

Registered 24.3.2020

PRECINCT PLAN

DP280089



SURVEYING AND SPATIAL INFORMATION REGULATION 2017 : CLAUSE 70

COORDINATE SCHEDULE

MARK	MGA COORDINATES EASTING	MGA COORDINATES NORTHING	CLASS	ORDER	METHOD	STATE
SSM149942	380565.396	6361465.897	D	4	SCIMS	FOUND
SSM154067	380263.417	6361375.581	D	4	SCIMS	FOUND
SSM154070	380285.962	6361692.321	D		CADASTRAL TRAVERSE	FD DIST'D
SSM154071	380481.282	6361571.543	D	4	SCIMS	FOUND
SSM186382	380130.503	6361505.205	D		CADASTRAL TRAVERSE	PLACED
SSM186383	380141.050	6361755.866	D		CADASTRAL TRAVERSE	PLACED

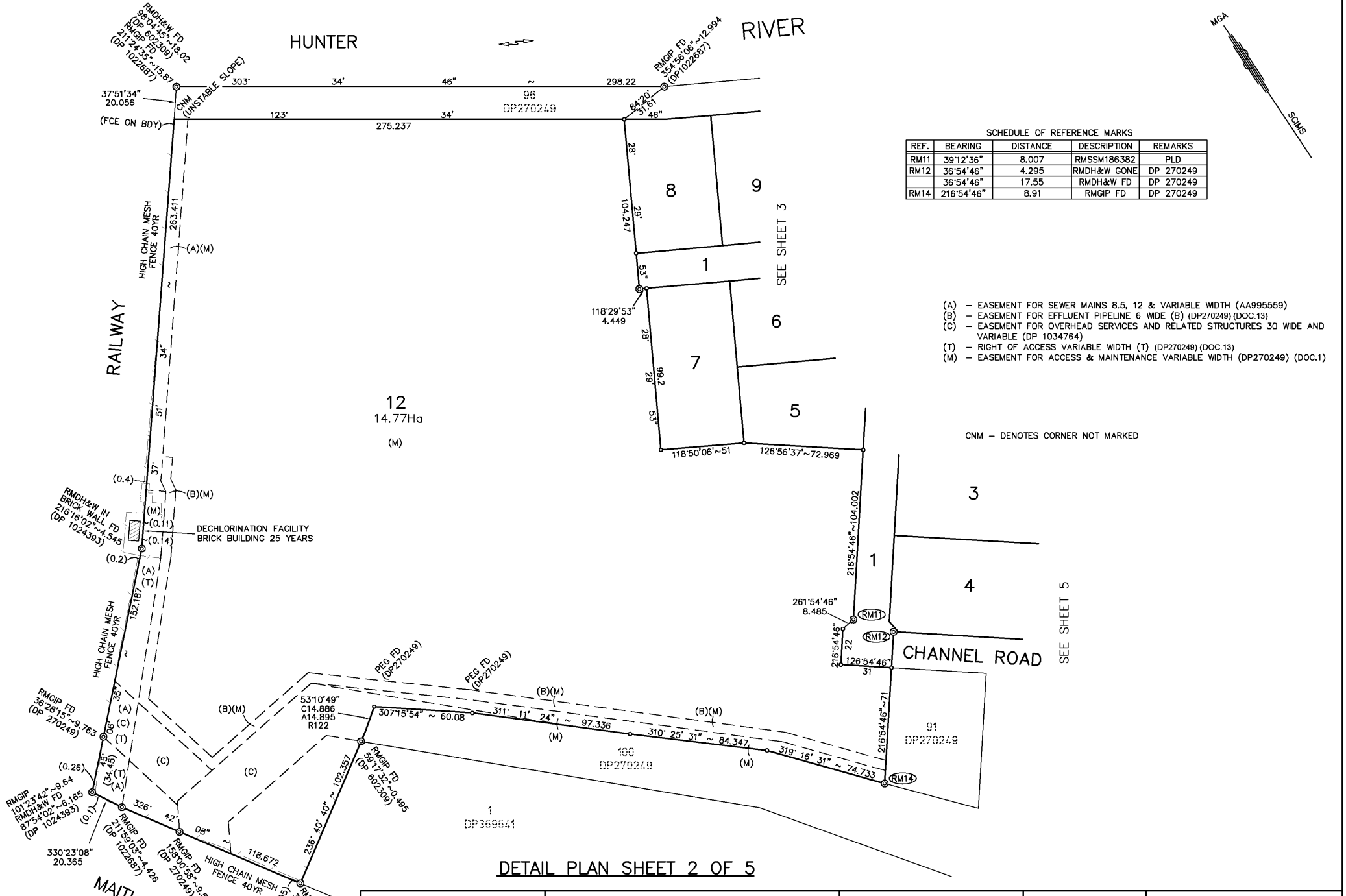
COMBINED SCALE FACTOR = 0.999770 | MGA ZONE: 56 | MGA DATUM: GDA94

DATE OF SCIMS CO-ORDINATES: 16-07-2019.

(BB) – PROVISIONS CLAUSE 29 ACT 1950 – F702707
(DD) – EXCEPTING LAND BELOW 121.92m BY CROWN GRANT
LAND EXCLUDES MINERALS BY CROWN GRANT
(FF) – LAND EXCLUDES MINERALS – SEC 141 PWACT 1912
(HH) – LAND EXCLUDES MINERALS – BK 1726 No.548
EASEMENT TO LET DOWN SURFACE – BK 1726 No.548
(JJ) – RESERVATIONS & CONDITIONS IN THE CROWN GRANT
(MM) – EASEMENT FOR PIPELINE 2.895 WIDE (T14549)
(K) – EASEMENT FOR ENERGY TRANSMISSION (DP1033736, AK112224)

DETAIL PLAN SHEET 1 OF 5

SURVEYOR Name: DAVE CRAIG WALLACE MONTEATH & POWYS PTY LTD Date: 21/08/2019 Reference: 170137DPB REPORT	PLAN OF SUBDIVISION OF LOT 98 DP 270249	LGA: NEWCASTLE Locality: MAYFIELD WEST Reduction Ratio: 1:2000 Lengths are in metres.	REGISTERED 24.3.2020	DP280089



SCHEDULE OF REFERENCE MARKS

REF.	BEARING	DISTANCE	DESCRIPTION	REMARKS
RM11	39°12'36"	8.007	RMSSM186382	PLD
RM12	36°54'46"	4.295	RMDH&W GONE	DP 270249
	36°54'46"	17.55	RMDH&W FD	DP 270249
RM14	216°54'46"	8.91	RMGIP FD	DP 270249

(A) – EASEMENT FOR SEWER MAINS 8.5, 12 & VARIABLE WIDTH (AA995559)
(B) – EASEMENT FOR EFFLUENT PIPELINE 6 WIDE (B) (DP270249) (DOC.13)
(C) – EASEMENT FOR OVERHEAD SERVICES AND RELATED STRUCTURES 30 WIDE AND VARIABLE (DP 1034764)
(T) – RIGHT OF ACCESS VARIABLE WIDTH (T) (DP270249) (DOC.13)
(M) – EASEMENT FOR ACCESS & MAINTENANCE VARIABLE WIDTH (DP270249) (DOC.1)

CNM – DENOTES CORNER NOT MARKED

DETAIL PLAN SHEET 2 OF 5

SURVEYOR Name: DAVE CRAIG WALLACE MONTEATH & POWYS PTY LTD Date: 21/08/2019 Reference: 170137DPB REPORT	PLAN OF SUBDIVISION OF LOT 98 DP 270249	LGA: NEWCASTLE Locality: MAYFIELD WEST Reduction Ratio: 1:1500 Lengths are in metres.	REGISTERED 24.3.2020	DP280089

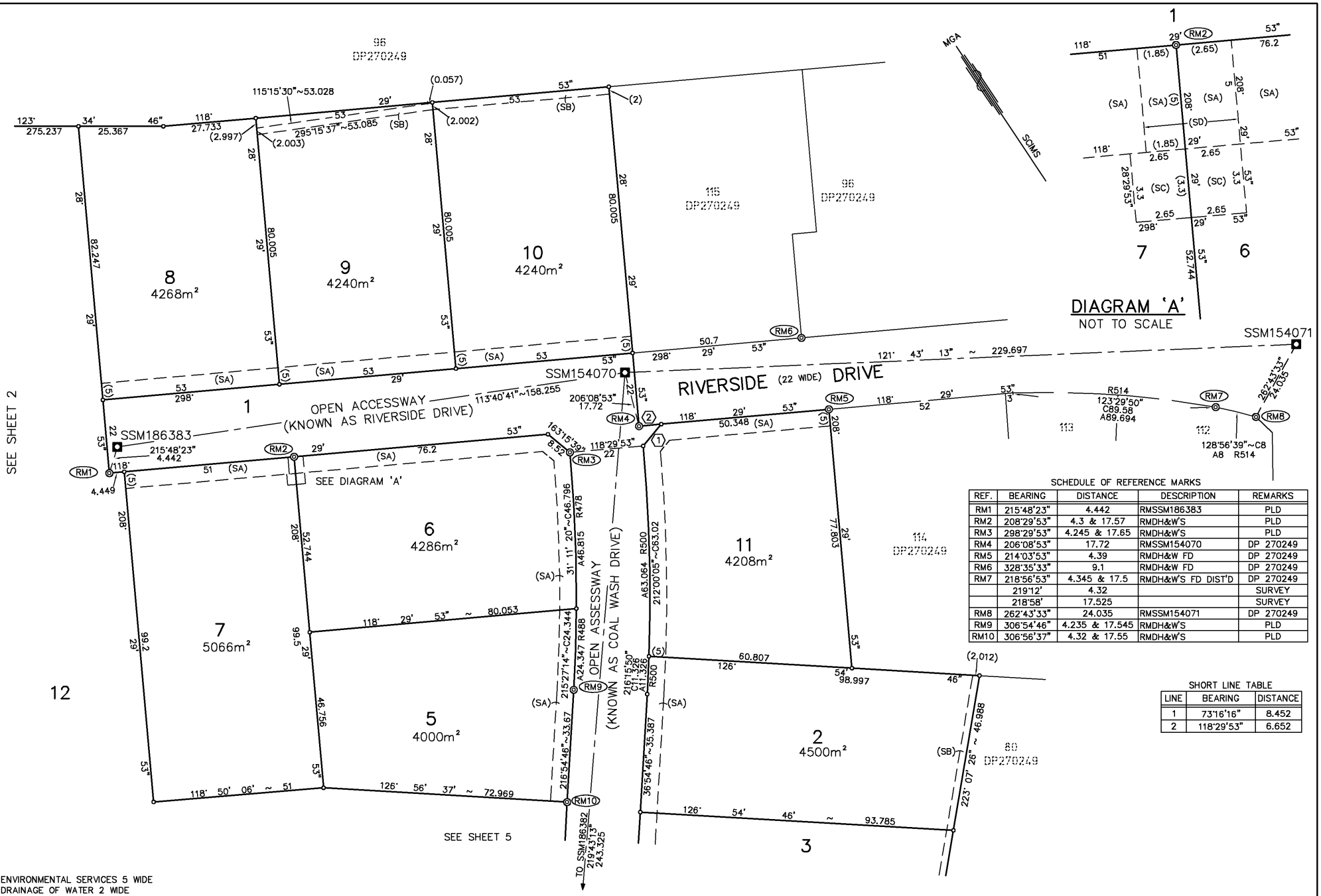


DIAGRAM 'A'
NOT TO SCALE

SCHEDULE OF REFERENCE MARKS

REF.	BEARING	DISTANCE	DESCRIPTION	REMARKS
RM1	215°48'23"	4.442	RMSSM186383	PLD
RM2	208°29'53"	4.3 & 17.57	RMDH&W'S	PLD
RM3	298°29'53"	4.245 & 17.65	RMDH&W'S	PLD
RM4	206°08'53"	17.72	RMSSM154070	DP 270249
RM5	214°03'53"	4.39	RMDH&W FD	DP 270249
RM6	328°35'33"	9.1	RMDH&W FD	DP 270249
RM7	218°56'53"	4.345 & 17.5	RMDH&W'S FD DIST'D	DP 270249
	219°12'	4.32		SURVEY
	218°58'	17.525		SURVEY
RM8	262°43'33"	24.035	RMSSM154071	DP 270249
RM9	306°54'46"	4.235 & 17.545	RMDH&W'S	PLD
RM10	306°56'37"	4.32 & 17.55	RMDH&W'S	PLD

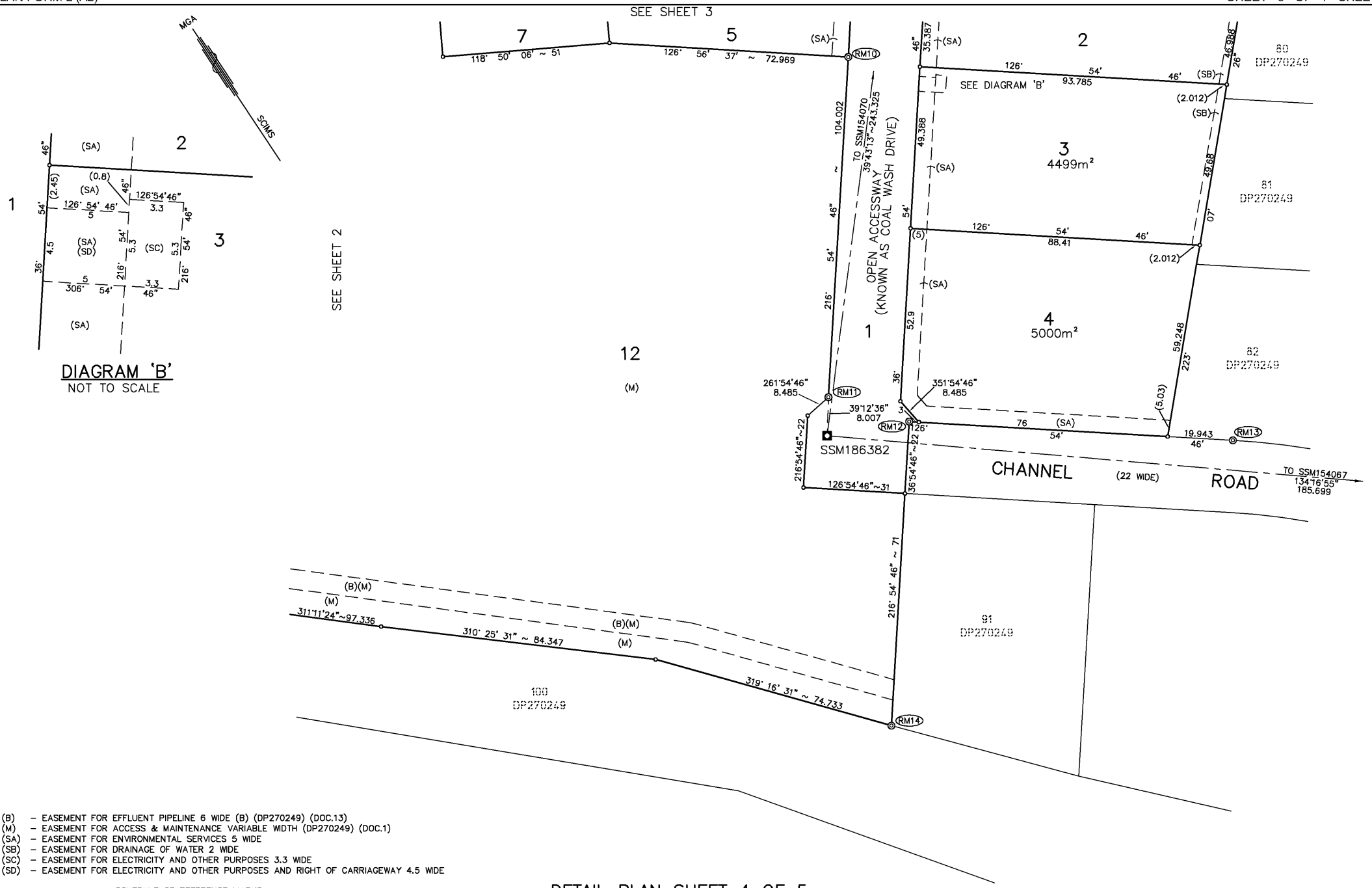
SHORT LINE TABLE

LINE	BEARING	DISTANCE
1	73°16'16"	8.452
2	118°29'53"	6.652

(SA) – EASEMENT FOR ENVIRONMENTAL SERVICES 5 WIDE
(SB) – EASEMENT FOR DRAINAGE OF WATER 2 WIDE
(SC) – EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.3 WIDE
(SD) – EASEMENT FOR ELECTRICITY AND OTHER PURPOSE AND RIGHT OF CARRIAGEWAY 4.5 WIDE

DETAIL PLAN SHEET 3 OF 5

SURVEYOR	PLAN OF SUBDIVISION OF LOT 98 DP 270249	LGA: NEWCASTLE	REGISTERED	DP280089
Name: DAVE CRAIG WALLACE MONTEATH & POWYS PTY LTD Date: 21/08/2019 Reference: 170137DPB REPORT		Locality: MAYFIELD WEST Reduction Ratio: 1:750 Lengths are in metres.	24.3.2020	



(B) – EASEMENT FOR EFFLUENT PIPELINE 6 WIDE (B) (DP270249) (DOC.13)
(M) – EASEMENT FOR ACCESS & MAINTENANCE VARIABLE WIDTH (DP270249) (DOC.1)
(SA) – EASEMENT FOR ENVIRONMENTAL SERVICES 5 WIDE
(SB) – EASEMENT FOR DRAINAGE OF WATER 2 WIDE
(SC) – EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 3.3 WIDE
(SD) – EASEMENT FOR ELECTRICITY AND OTHER PURPOSES AND RIGHT OF CARRIAGEWAY 4.5 WIDE

SCHEDULE OF REFERENCE MARKS

REF.	BEARING	DISTANCE	DESCRIPTION	REMARKS
RM10	306°56'37"	4.32 & 17.55	RMDH&W'S	PLD
RM11	39°12'36"	8.007	RMSSM186382	PLD
RM12	36°54'46"	4.295	RMDH&W GONE	DP 270249
	36°54'46"	17.55	RMDH&W FD	DP 270249
RM13	36°54'46"	4.31 & 17.485	RMDH&W'S FD	DP 270249
RM14	216°54'46"	8.91	RMGIP FD	DP 270249

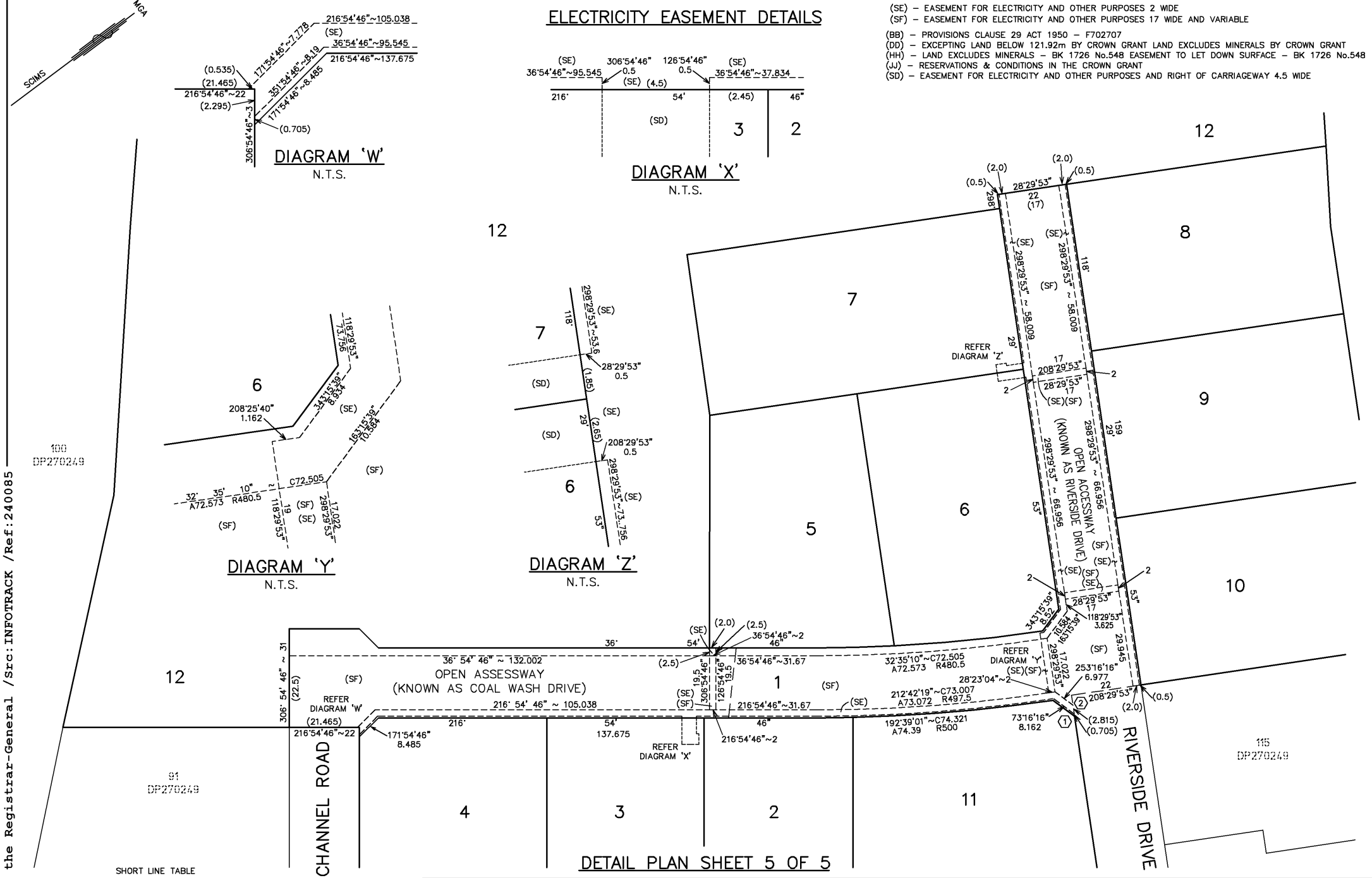
DETAIL PLAN SHEET 4 OF 5

SURVEYOR Name: DAVE CRAIG WALLACE MONTEATH & POWYS PTY LTD Date: 21/08/2019 Reference: 170137DPB REPORT	PLAN OF SUBDIVISION OF LOT 98 DP 270249	LGA: NEWCASTLE Locality: MAYFIELD WEST Reduction Ratio: 1:750 Lengths are in metres.	REGISTERED 24.3.2020	DP280089

ELECTRICITY EASEMENT DETAILS

(SE) – EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 2 WIDE
(SF) – EASEMENT FOR ELECTRICITY AND OTHER PURPOSES 17 WIDE AND VARIABLE

(BB) – PROVISIONS CLAUSE 29 ACT 1950 – F702707
(DD) – EXCEPTING LAND BELOW 121.92m BY CROWN GRANT LAND EXCLUDES MINERALS BY CROWN GRANT
(HH) – LAND EXCLUDES MINERALS – BK 1726 No.548 EASEMENT TO LET DOWN SURFACE – BK 1726 No.548
(JJ) – RESERVATIONS & CONDITIONS IN THE CROWN GRANT
(SD) – EASEMENT FOR ELECTRICITY AND OTHER PURPOSES AND RIGHT OF CARRIAGEWAY 4.5 WIDE



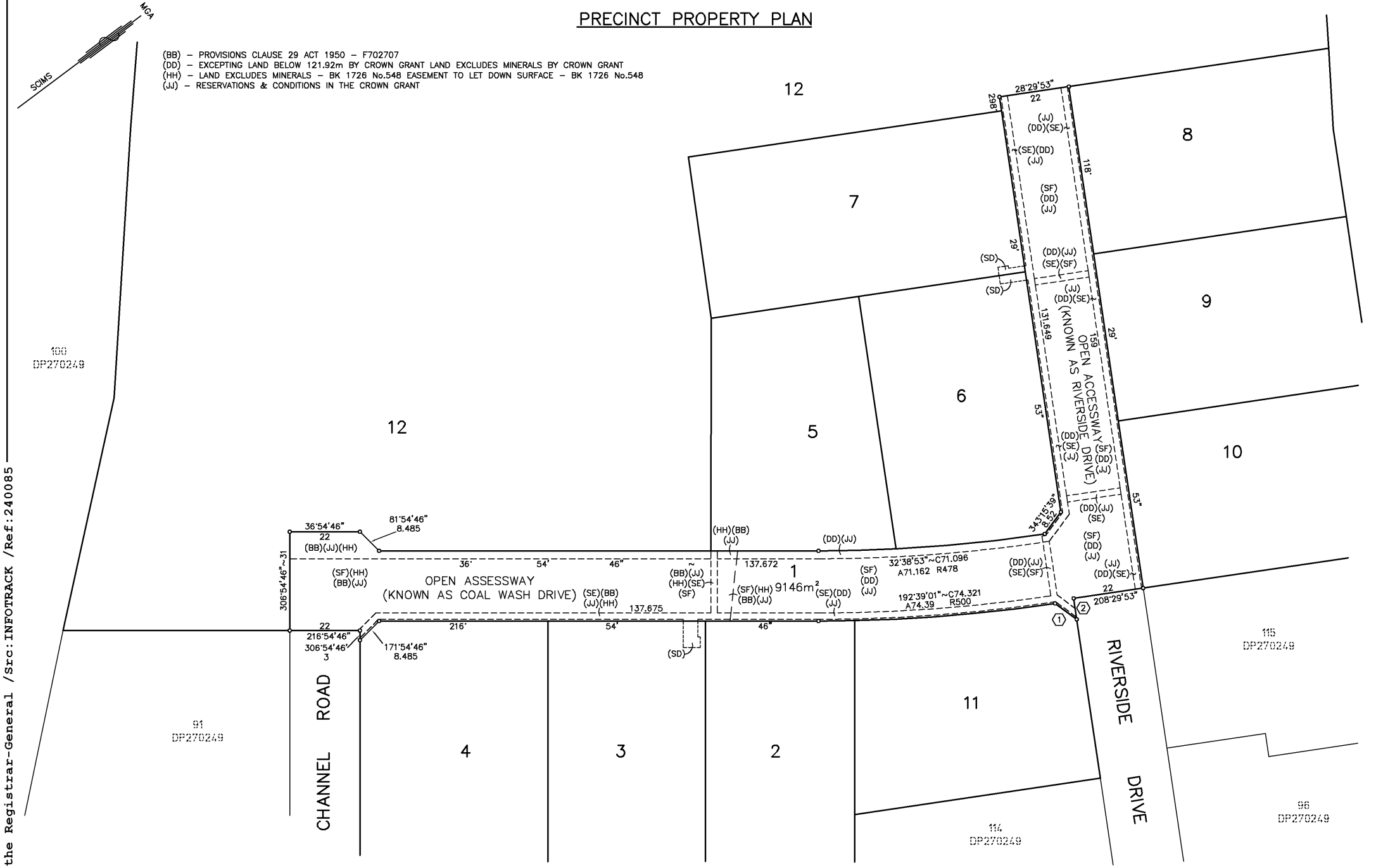
SHORT LINE TABLE

LINE	BEARING	DISTANCE
1	253°16'16"	8.452
2	118°29'53"	6.652

SURVEYOR Name: DAVE CRAIG WALLACE MONTEATH & POWYS PTY LTD Date: 21/08/2019 Reference: 170137DPB REPORT	PLAN OF SUBDIVISION OF LOT 98 DP 270249	LGA: NEWCASTLE Locality: MAYFIELD WEST Reduction Ratio: 1:750 Lengths are in metres.	REGISTERED 24.3.2020	DP280089

PRECINCT PROPERTY PLAN

(BB) – PROVISIONS CLAUSE 29 ACT 1950 – F702707
(DD) – EXCEPTING LAND BELOW 121.92m BY CROWN GRANT LAND EXCLUDES MINERALS BY CROWN GRANT
(HH) – LAND EXCLUDES MINERALS – BK 1726 No.548 EASEMENT TO LET DOWN SURFACE – BK 1726 No.548
(JJ) – RESERVATIONS & CONDITIONS IN THE CROWN GRANT



SHORT LINE TABLE

LINE	BEARING	DISTANCE
1	253°16'16"	8.452
2	118°29'53"	6.652

SURVEYOR Name: DAVE CRAIG WALLACE MONTEATH & POWYS PTY LTD Date: 21/08/2019 Reference: 170137DPB REPORT	PLAN OF SUBDIVISION OF LOT 98 DP 270249	LGA: NEWCASTLE Locality: MAYFIELD WEST Reduction Ratio: 1:750 Lengths are in metres.	REGISTERED 24.3.2020	DP280089

DP280089

COVER SHEET FOR SIGNATURE/ADMINISTRATION SHEETS

.....
ATTENTION
.....

A Neighbourhood Plan may be subject to future subdivision that may contain a Signature/Administration Sheet. This document will then comprise separate Signature/Administration Sheets registered on different dates.

Particulars of each Signature/Administration Sheet are as follows:-

Sig/Admin Sheet Number	Number of Sig/Admin Sheets	Contains U.E. Schedule (Y/N)	Registration Date	Number of Sheets in Subject Plan	Lot Numbers Created
Document A	6	Y	24.3.2020	7	12

ePlan

PLAN FORM 6 (2017)	DEPOSITED PLAN ADMINISTRATION SHEET	Sheet 1 of 6 sheet(s)

Office Use Only

Registered: 24.3.2020

Title System: TORRENS

Office Use Only

DP280089

(DOC.A)

PLAN OF SUBDIVISION OF LOT 98 DP 270249

LGA: Newcastle

Locality: Mayfield West

Parish: Newcastle

County: Northumberland

Survey Certificate

I, David Craig Wallace of Monteath & Powys Pty Ltd, a surveyor registered under the *Surveying and Spatial Information Act 2002*, certify that:

*(a) The land shown in the plan was surveyed in accordance with the *Surveying and Spatial Information Regulation 2017*, is accurate and the survey was completed on 21 August 2019.

~~*(b) The part of the land shown in the plan (*being/*excluding) was surveyed in accordance with the *Surveying and Spatial Information Regulation 2017*, the part surveyed is accurate and the survey was completed on ..... the part not surveyed was compiled in accordance with that Regulation, or~~

~~*(c) The land shown in this plan was compiled in accordance with the *Surveying and Spatial Information Regulation 2017*.~~

Datum Line: 'X' – 'Y'

Type: *Urban/*~~Rural~~

The terrain is *~~Level-Undulating / *Steep-Mountainous~~.

Signature: ..... Dated: 18-12-19

Surveyor Identification No: 7663
Surveyor registered under
the *Surveying and Spatial Information Act 2002*

*Strike out inappropriate words.

**Specify the land actually surveyed or specify any land shown in the plan that is not the subject of the survey.

Crown Lands NSW/Western Lands Office Approval

I, ... (Authorised Officer) in approving this plan certify that all necessary approvals in regard to the allocation of the land shown herein have been given.

Signature: .....

Date: .....

File Number: .....

Office: .....

Subdivision Certificate

I, BRIAN CAMERON

Authorised Person/~~General Manager/*Accredited Certifier~~, certify that the provisions of s.6.15 of the *Environmental Planning and Assessment Act 1979* have been satisfied in relation to the proposed subdivision, new road or reserve set out herein.

Signature: .....

~~Accreditation number~~: .....

Consent Authority: Newcastle City Council

Date of endorsement: 17 FEBRUARY 2020

Subdivision Certificate number: 9580

File number: DA2006/2076

*Strike through if inapplicable.

Plans used in the preparation of survey/~~compilation~~.

DP 270249

DP 1033736

Statements of intention to dedicate public roads, create public reserves and drainage reserves, acquire/resume land.

Surveyor's Reference: 170137DPB REPORT

Signatures, Seals and Section 88B Statements should appear on PLAN FORM 6A

PLAN FORM 6D (2016)(Community annexure) WARNING: Creasing or folding will lead to rejection ePlan

DEPOSITED PLAN ADMINISTRATION SHEET

Office Use Only

Registered: 24.3.2020

Office Use Only

DP280089

(DOC.A)

PLAN OF SUBDIVISION OF LOT 98 DP 270249

Signatures and Consents, a schedule of lots and addresses and statements relating to a section 88B instrument should be provided on Plan Form 6A

Subdivision Certificate number: 9580

Date of endorsement: 17 FEBRUARY 2020

Name of Development (Optional)

Steel River Estate – Stage 9

Address for Service of Notices

50 McIntosh Drive, Mayfield NSW 2304

WARNING STATEMENT (Approved Form 7)

This document shows an initial schedule of unit entitlements for the ~~Community~~, Precinct ~~or Neighbourhood~~ Scheme which is liable to be altered, as the scheme is developed or on completion of the scheme, in accordance with the provisions of section 30 *Community Land Development Act 1989*.

Any changes will be recorded in a replacement schedule.

UPDATE NOTE (Approved Form 8)

This document contains an *updated/*revised Schedule of Unit Entitlements and replaces the existing schedule registered on ^ .....

** Strike through if inapplicable*
^ Insert registration date of previous schedule

VALUER'S CERTIFICATE (Approved Form 9)

I, Nick Cesta

of Skelton Valuers

being a qualified valuer, as defined in the *Community Land Development Act 1989*, certify that;

*(a) The unit entitlements shown in the schedule herewith are based upon valuations made by me on ^ 16-9-2019

~~*(b) The unit entitlements shown in the schedule herewith, for the new lots created by the subdivision, are based upon their market value on ^ ..... being the date of the valuer's certificate lodged with the original initial schedule or the revised schedule.~~

Signature: ..... Dated: 18-12-2019

** Strike through if inapplicable*
^ Insert date of valuation

INITIAL SCHEDULE OF UNIT ENTITLEMENT

Lot No.	Unit Entitlement	Subdivision
1	Precinct Property	
2	285	
3	285	
4	341	
5	272	
6	312	
7	320	
8	310	
9	309	
10	309	
11	293	
12	6964	
TOTAL	10000	

If space is insufficient use annexure sheet –Plan Form 6A

Surveyor's Reference: 170137DPB

ePlan

PLAN FORM 6A (2017) **DEPOSITED PLAN ADMINISTRATION SHEET** Sheet 3 of 6 sheet(s)

Office Use Only

Registered: 24.3.2020

Office Use Only

DP280089

(DOC.A)

PLAN OF SUBDIVISION OF LOT 98 DP 270249

Subdivision Certificate number: 9580

Date of Endorsement: 17 FEBRUARY 2020

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2017*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

SCHEDULE OF STREET ADDRESSES

Lot Number	Sub-Address Number	Address Number	Road Name	Road Type	Locality Name
1		1R	Riverside	Drive	Mayfield West
2		6	Coal Wash	Drive	Mayfield West
3		4	Coal Wash	Drive	Mayfield West
4		2	Coal Wash	Road	Mayfield West
5		5	Coal Wash	Drive	Mayfield West
6		7	Coal Wash	Drive	Mayfield West
7		25	Riverside	Drive	Mayfield West
8		46	Riverside	Drive	Mayfield West
9		44	Riverside	Drive	Mayfield West
10		42	Riverside	Drive	Mayfield West
11		19	Riverside	Drive	Mayfield West
12		27D	Riverside	Drive	Mayfield West

Pursuant to Section 88B of the Conveyancing Act 1919, as amended, it is intended to create:

1. Easement for Environmental Services 5 Wide.
2. Easement for Drainage of Water 2 Wide.
3. Easement for Electricity and Other Purposes 3.3 Wide.
4. Easement for Electricity and Other Purposes and Right of Carriageway 4.5 Wide.
5. Easement for Electricity and Other Purposes 2 Wide.
6. Easement for Electricity and Other Purposes and Right of Carriageway 17 Wide and Variable.

If space is insufficient use additional annexure sheet

Surveyor's Reference: 170137DPB

ePlan

PLAN FORM 6A (2017) **DEPOSITED PLAN ADMINISTRATION SHEET** Sheet 4 of 6 sheet(s)

Office Use Only

Registered: 24.3.2020

Office Use Only

DP280089

(DOC.A)

PLAN OF SUBDIVISION OF LOT 98 DP 270249

Subdivision Certificate number: 9580

Date of Endorsement: 17 FEBRUARY 2020

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2017*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

Executed by **Steel River West Pty Limited** (ACN: 618 054 550) in accordance with Section 127 of the Corporations Act 2001 (Cth) by:

.....

Signature of Sole Director

BRUCE WARREN BAUDINET

.....

Name of Sole Director

If space is insufficient use additional annexure sheet

Surveyor's Reference: 170137DPB

ePlan

PLAN FORM 6A (2017) **DEPOSITED PLAN ADMINISTRATION SHEET** Sheet 5 of 6 sheet(s)

Office Use Only

Registered: 24.3.2020

Office Use Only

DP280089

(DOC.A)

PLAN OF SUBDIVISION OF LOT 98 DP 270249

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2017*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

Subdivision Certificate number: 9580

Date of Endorsement: 17 FEBRUARY 2020

Signed for and on behalf of **Westpac Banking Corporation** (ABN 33 007 457 141) by its attorney under a Power of Attorney Registered Book ..... No. .....

.....
Signature of Attorney

.....
Name of Attorney

.....
Signature of Witness

.....
Name of Witness

.....
Address of Witness

I certify that the Attorney for the Mortgagee, with whom I am personally acquainted or as to whose identity I am otherwise satisfied, signed this.

PLAN OF SUBDIVISION
in my presence.

.....
Signature of Witness

SAM TOBB
Name of Witness

LEVEL 2, 27 DONALD STREET
Address of Witness HAMILTON NSW 2303

Westpac Banking Corporation
ABN 33 007 457 141 hereby consents to the within

* Linen Plan ~~* Lease~~
* ~~Instrument~~ ~~* Deed~~

.....
Signature

GRAEME NEIL CROUCH
Name of Attorney
THEIR THREE ATTORNEY
UNDER POWER OF ATTORNEY
BOOK 4299 NO 332
*Delete whichever not applicable

If space is insufficient use additional annexure sheet

Surveyor's Reference: 170137DPB

ePlan

PLAN FORM 6A (2017) **DEPOSITED PLAN ADMINISTRATION SHEET** Sheet 6 of 6 sheet(s)

Office Use Only

Registered: 24.3.2020

Office Use Only

DP280089

(DOC.A)

PLAN OF SUBDIVISION OF LOT 98 DP 270249

Subdivision Certificate number: 9580

Date of Endorsement: 17 FEBRUARY 2020

This sheet is for the provision of the following information as required:

- A schedule of lots and addresses - See 60(c) *SSI Regulation 2017*
- Statements of intention to create and release affecting interests in accordance with section 88B *Conveyancing Act 1919*
- Signatures and seals- see 195D *Conveyancing Act 1919*
- Any information which cannot fit in the appropriate panel of sheet 1 of the administration sheets.

Certified correct for the purposes of the Real Property Act 1900 by the

Transferee's/Lessee's/Prescribed Authority's {strike out those not applicable} attorneys who

Signed this dealing pursuant to the power of attorney specified.

ERIC Alpha Asset Corporation 1 Pty Ltd ACN 612 974 044
ERIC Alpha Asset Corporation 2 Pty Ltd ACN 612 975 023
ERIC Alpha Asset Corporation 3 Pty Ltd ACN 612 975 032
ERIC Alpha Asset Corporation 4 Pty Ltd ACN 612 975 078
Blue Asset Partner Pty Ltd ACN 615 217 493

On behalf of **Alpha Distribution Ministerial Holding Corporation** pursuant to S.36 of the Electricity Network Assets (Authorised Transactions) Act 2015 by its attorneys under power of Attorney Registered Book 4734 No. 366.

Signature of Attorney	Signature of Attorney
TREVOR MARK ARMSTRONG	NIGEL PETER JOHN LOWRY
Name of Attorney	Name of Attorney
I certify that I am an eligible witness and that the Transferee's / Lessee's / Prescribed Authority's *[strike out those not applicable]* attorney signed this dealing in my presence. [See note * below].	I certify that I am an eligible witness and that the Transferee's / Lessee's / Prescribed Authority's *[strike out those not applicable]* attorney signed this dealing in my presence. [See note * below].
Signature of Witness	Signature of Witness
Effie Dimitriou	Alesa Matis
Name of Witness	Name of Witness
24 Campbell Street, Sydney	24 Campbell Street, Sydney
Address of Witness	Address of Witness

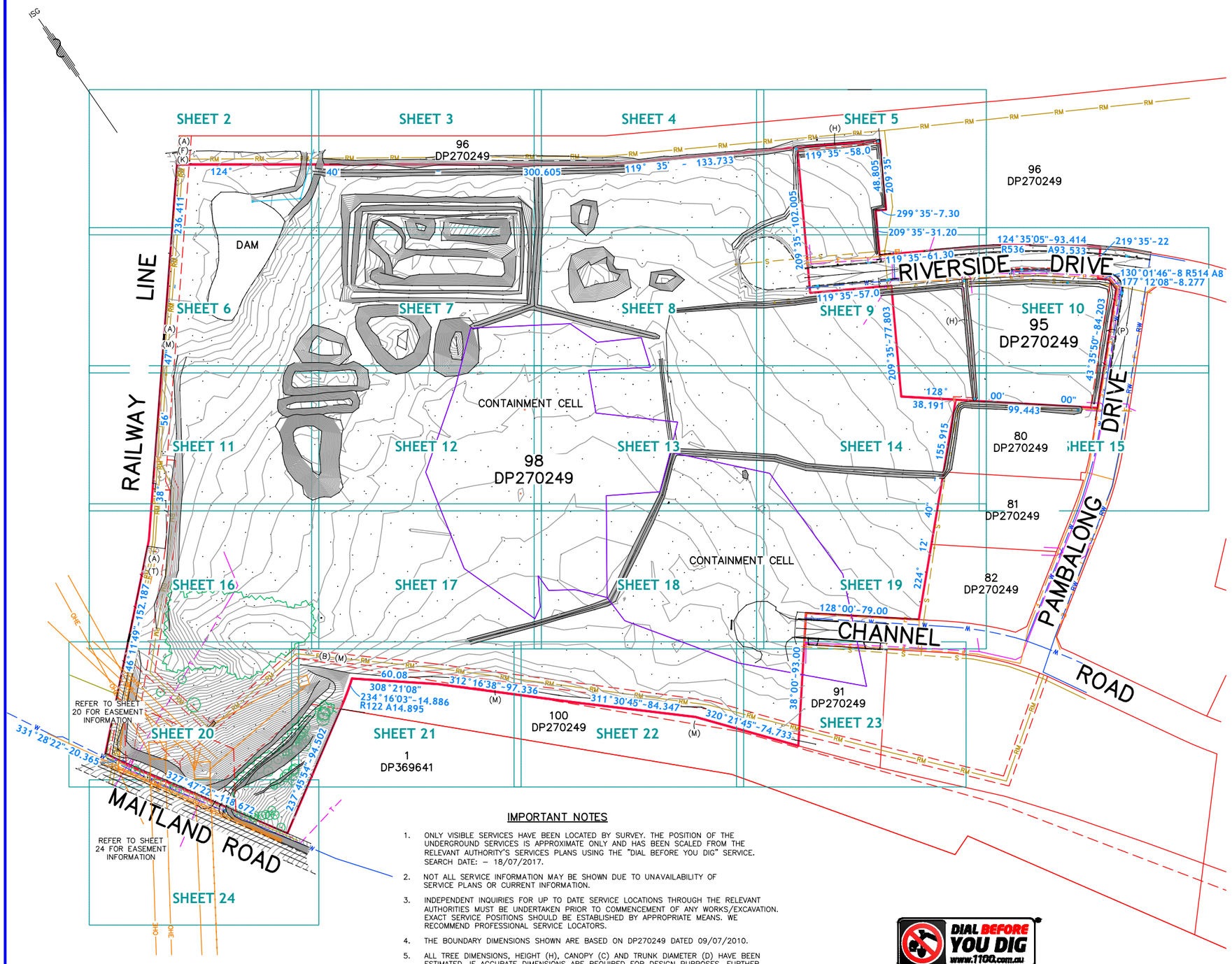
*s117 RP Act requires you must have known the signatory for more than 12 months or have sighted identifying documentation

If space is insufficient use additional annexure sheet

Surveyor's Reference: 170137DPB

Appendix B

DETAIL SURVEY PLAN (MONTEATH & POWYS)



LINE TYPES

- E — DENOTES UNDERGROUND ELECTRICITY CABLE
- E — DENOTES UNDERGROUND ELECTRICITY CABLE (DBYD)
- OHE — DENOTES OVERHEAD ELECTRICITY CABLE
- T — DENOTES TELECOMMUNICATIONS CABLE (DBYD)
- G — DENOTES GAS MAIN (DBYD)
- S — DENOTES SEWER MAIN (DBYD)
- RM — DENOTES SEWER RISING MAIN (DBYD)
- W — DENOTES WATER MAIN (DBYD)
- RW — DENOTES RECYCLED WATER MAIN (DBYD)
- DENOTES FENCING
- DENOTES EDGE OF CONCRETE
- TOP — DENOTES TOP OF BANK
- TOE — DENOTES TOE OF BANK
- TOP — DENOTES TOP OF WATER LINE
- DENOTES CENTRELINE OF BITUMEN
- DENOTES CENTRELINE OF GRAVEL
- DENOTES EDGE OF BITUMEN
- DENOTES EDGE OF GRAVEL
- DENOTES EDGE OF TREE LINE
- DENOTES EASEMENTS
- DENOTES CONTAINMENT CELL

LEGEND

DRAINAGE
- INV — INVERT LEVEL
- KIP — KERB INLET PIT
- SIP — SURFACE INLET PIT

ELECTRICITY
- ESS — ELECTRICITY SUB STATION
- EPI — ELECTRICITY PILLAR
- EPT — ELECTRICITY PIT
- LP — LIGHT POLE
- PP — POWER POLE

GAS
- GM — GAS MARKER

MISCELLANEOUS
- MPILL — MISCELLANEOUS PILLAR
- MPIT — MISCELLANEOUS PIT
- MW — MONITORING WELL

SEWER
- SMH — SEWER MANHOLE
- IPS — SEWER INSPECTION POINT

STRUCTURE
- BOL — BOLLARD
- SGN — SIGN POST

TELECOMMUNICATIONS
- TPT — TELECOMMUNICATIONS PIT

TREES
- TR — TREE
- H — HEIGHT OF TREE
- C — SPREAD OF CANOPY
- D — DIAMETER OF TRUNK

WATER
- HYD — HYDRANT
- SV — STOP VALVE
- WMT — WATER METER

SURVEY INFORMATION

1c. THE SURVEY IS ON GROUND INTEGRATED SURVEY GRID (ISG). BASED ON SSM 44486 – E368001.916 N1359643.965

2a. ALL REDUCED LEVELS ARE BASED ON AUSTRALIAN HEIGHT DATUM (A.H.D)

3. ORIGIN OF LEVELS PM 14304 RL13.129 (A.H.D) INDUSTRIAL DRIVE.

4. CONTOUR INTERVAL IS 0.2m.

IMPORTANT NOTES

1. ONLY VISIBLE SERVICES HAVE BEEN LOCATED BY SURVEY. THE POSITION OF THE UNDERGROUND SERVICES IS APPROXIMATE ONLY AND HAS BEEN SCALED FROM THE RELEVANT AUTHORITY'S SERVICES PLANS USING THE "DIAL BEFORE YOU DIG" SERVICE. SEARCH DATE: – 18/07/2017.
2. NOT ALL SERVICE INFORMATION MAY BE SHOWN DUE TO UNAVAILABILITY OF SERVICE PLANS OR CURRENT INFORMATION.
3. INDEPENDENT INQUIRIES FOR UP TO DATE SERVICE LOCATIONS THROUGH THE RELEVANT AUTHORITIES MUST BE UNDERTAKEN PRIOR TO COMMENCEMENT OF ANY WORKS/EXCAVATION. EXACT SERVICE POSITIONS SHOULD BE ESTABLISHED BY APPROPRIATE MEANS. WE RECOMMEND PROFESSIONAL SERVICE LOCATORS.
4. THE BOUNDARY DIMENSIONS SHOWN ARE BASED ON DP270249 DATED 09/07/2010.
5. ALL TREE DIMENSIONS, HEIGHT (H), CANOPY (C) AND TRUNK DIAMETER (D) HAVE BEEN ESTIMATED. IF ACCURATE DIMENSIONS ARE REQUIRED FOR DESIGN PURPOSES, FURTHER SURVEY SHOULD BE REQUESTED.
6. CONTOURS SHOWN DEPICT THE TOPOGRAPHY. CONTOURS DO NOT REPRESENT THE EXACT LEVEL AT ANY PARTICULAR POINT, EXCEPT AT SPOT LEVELS SHOWN.
7. THIS PLAN MUST REMAIN UNALTERED AS ISSUED BY MONTEATH AND POWYS. ALTERING ANY PART OF THIS PLAN DESTROYS THE INTEGRITY OF THE PLAN. ANY REVISIONS REQUESTED MUST BE ISSUED BY MONTEATH AND POWYS.
8. THESE NOTES ARE AN INTEGRAL PART OF THIS PLAN. REPRODUCTION OF THIS PLAN OR OF ANY PART OF THIS PLAN WITHOUT THESE NOTES BEING INCLUDED IN FULL WILL RENDER THE INFORMATION SHOWN ON SUCH REPRODUCTION INVALID AND NOT SUITABLE FOR USE.

DIAL BEFORE YOU DIG www.1100.com.au

(A) – EASEMENT FOR SEWER MAINS 8.5, 12 AND VARIABLE WIDTH (AA995559)
(B) – EASEMENT FOR EFFLUENT PIPELINE 6 WIDE (DP270249) (DOC.3)
(C) – EASEMENT FOR OVERHEAD SERVICES AND RELATED STRUCTURES 30 WIDE AND VARIABLE (DP1034764)
(F) – RIGHT OF ACCESS VARIABLE WIDTH (DP270249) (DOC.1)
(H) – EASEMENT FOR DRAINAGE OF WATER 2 WIDE (DP270249) (DOC.12)
(K) – EASEMENT FOR ACCESS AND MAINTENANCE 20 WIDE AND VARIABLE (DP270249) (DOC.1)
(M) – EASEMENT FOR ACCESS AND MAINTENANCE VARIABLE WIDTH (DP270249) (DOC.1)
(T) – RIGHT OF ACCESS VARIABLE WIDTH (DP270249) (DOC.13)
(P) – EASEMENT FOR ENVIRONMENTAL SERVICES 5 WIDE (DP270249) (DOC.12)
(MM) – EASEMENT FOR PIPELINE 2.895 WIDE (T14549)
(Z) – EASEMENT FOR ENERGY TRANSMISSION (AK112224)

0 20 40 60 80 100m
REDUCTION RATIO – 1:1500 (A1)
REDUCTION RATIO – 1:3000 (A3)

DRAFT

REVISIONS						
No	REVISION	SVY	DFT	CHK	DATE	
4	UNDERGROUND ELECTRICAL DATA		KE	DS	06/11/17	
3	ADDITION OF ELECTRICAL DATA	LT	KE	DS	17/08/17	
2	UPDATES TO EASEMENTS	EM	KE	DS	09/08/17	
1	ISSUE TO CLIENT	EM	KE	DS	08/08/17	

Monteath & Powys Pty Ltd
ACN 000 861 110
SURVEYING PLANNING ENGINEERING DESIGN PROJECT MANAGEMENT
125 Bull Street Newcastle NSW 2300 PO Box 2270 Dangar NSW 2309 T 61 2 4926 1388 F 61 2 4929 3475
Suite 405, 486 Pacific Highway St Leonards NSW 2065 T 61 2 94364210
88 Marquis St Gunnedah NSW 2380 PO Box 328 Gunnedah NSW 2380 T 61 2 6742 0166
E survey@monteathpowys.com.au W www.monteathpowys.com.au

Surveyed	Drafted	Checked
EM/LT/CC	KE	DS

REGISTERED SURVEYOR
Scale @A1 : 1:1500
@A3 : 1:3000
DO NOT SCALE
Original Size A1

Client: BAUDINET GROUP

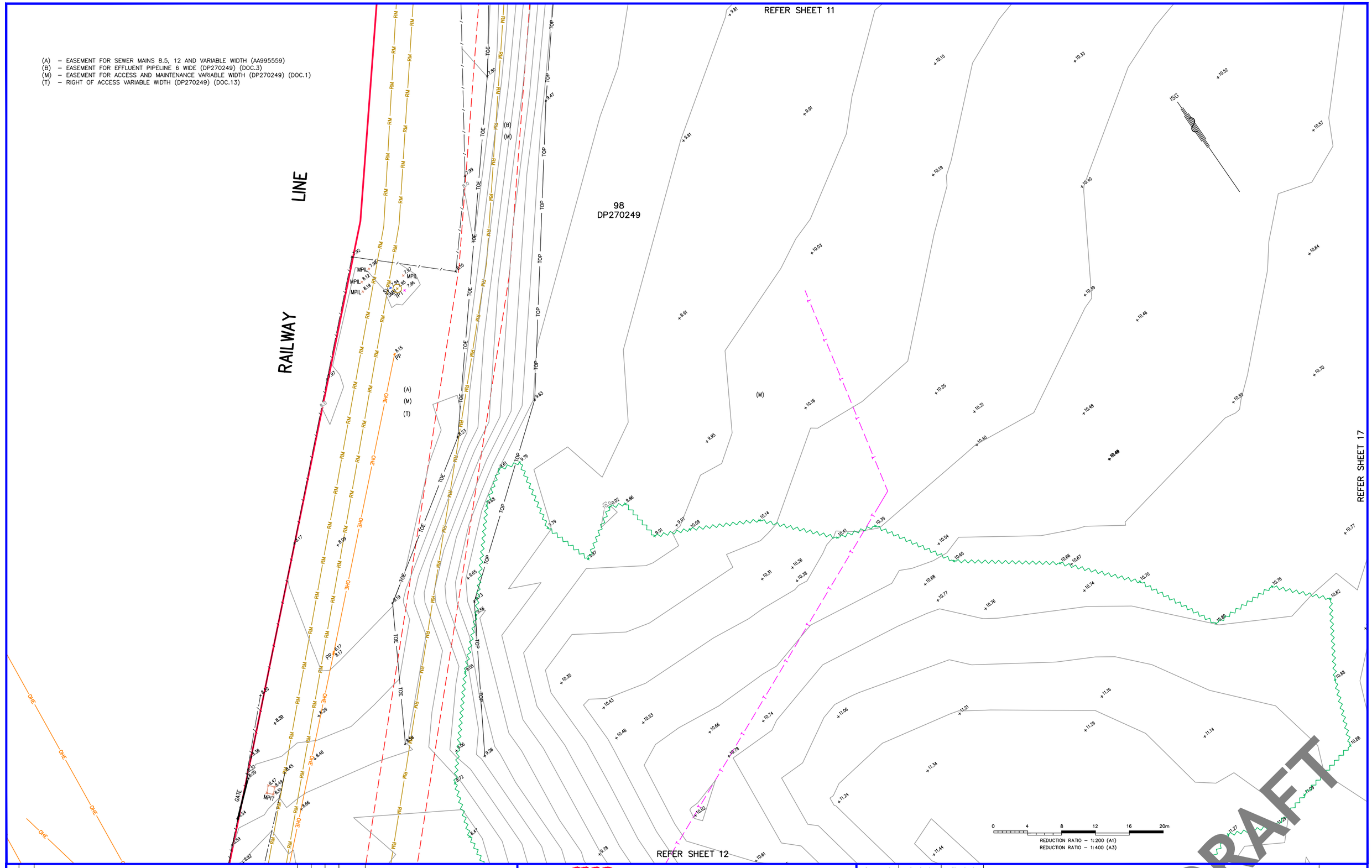
Title: DETAIL SURVEY OF LOTS 95 AND 98 DP270249 MAYFIELD WEST

CAD File: 170137A_04 Ref No: 17/0137 Date: 08/08/2017

Sheet No. 1/24

Revision 4

(A) – EASEMENT FOR SEWER MAINS 8.5, 12 AND VARIABLE WIDTH (AA995559)
(B) – EASEMENT FOR EFFLUENT PIPELINE 6 WIDE (DP270249) (DOC.3)
(M) – EASEMENT FOR ACCESS AND MAINTENANCE VARIABLE WIDTH (DP270249) (DOC.1)
(T) – RIGHT OF ACCESS VARIABLE WIDTH (DP270249) (DOC.13)



DRAFT

REVISIONS						
4	UNDERGROUND ELECTRICAL DATA		KE	DS	06/11/17
3	ADDITION OF ELECTRICAL DATA	LT	KE	DS	17/08/17
2	UPDATES TO EASEMENTS	EM	KE	DS	09/08/17
1	ISSUE TO CLIENT	EM	KE	DS	08/08/17
No	REVISION	SVY	DFT	CHK	DATE

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E survey@monteathpowys.com.au W www.monteathpowys.com.au

Surveyed	Drafted	Checked
EM/LT/CC	KE	DS

REGISTERED SURVEYOR
Scale @A1 : 1:200
@A3 : 1:400
DO NOT SCALE
Original Size A1

Client: BAUDINET GROUP
Title: DETAIL SURVEY OF LOTS 95 AND 98 DP270249 MAYFIELD WEST
CAD File: 170137A_04 | Ref No: 17/0137 | Date: 08/08/2017

Sheet No. 16/24
Revision 4

REFER SHEET 16

REFER SHEET 17

REFER SHEET 24

98
DP270249

RAILWAY LINE

(A) – EASEMENT FOR SEWER MAINS 8.5, 12 AND VARIABLE WIDTH (AA995559)
(B) – EASEMENT FOR EFFLUENT PIPELINE 6 WIDE (DP270249) (DOC.3)
(C) – EASEMENT FOR OVERHEAD SERVICES AND RELATED STRUCTURES 30 WIDE AND VARIABLE (DP1034764)
(F) – RIGHT OF ACCESS VARIABLE WIDTH (DP270249) (DOC.1)
(T) – RIGHT OF ACCESS VARIABLE WIDTH (DP270249) (DOC.13)
(MM) – EASEMENT FOR PIPELINE 2.895 WIDE (T14549)
(Z) – EASEMENT FOR ENERGY TRANSMISSION (AK112224)

NOTE:
OVERHEAD ELECTRICAL CONDUCTORS LOCATED AT AN AMBIENT AIR TEMPERATURE OF 18°C.

TRANSMISSION TOWER

TRANSMISSION TOWER

ISG

GUARD RAIL

ROAD

LANE

LINES

0 4 8 12 16 20m
REDUCTION RATIO – 1:200 (A1)
REDUCTION RATIO – 1:400 (A3)

DRAFT

REVISIONS						
No	REVISION	SVY	DFT	CHK	DATE	
4	UNDERGROUND ELECTRICAL DATA		KE	DS	06/11/17	
3	ADDITION OF ELECTRICAL DATA	LT	KE	DS	17/08/17	
2	UPDATES TO EASEMENTS	EM	KE	DS	09/08/17	
1	ISSUE TO CLIENT	EM	KE	DS	08/08/17	

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T 61 2 6742 0166
E survey@monteathpowys.com.au W www.monteathpowys.com.au

Surveyed	Drafted	Checked
EM/LT/CC	KE	DS

REGISTERED SURVEYOR

Scale @A1 : 1:200
@A3 : 1:400

DO NOT SCALE

Original Size A1

Client: BAUDINET GROUP

Title: DETAIL SURVEY OF LOTS 95 AND 98 DP270249
MAYFIELD WEST

CAD File: 170137A_04 | Ref No: 17/0137 | Date: 08/08/2017

Sheet No. 20/24

Revision 4

Appendix C

DEVELOPMENT PLANS (GCA ENGINEERING SOLUTIONS)

DEVELOPMENT APPLICATION
PROPOSED BATTERY STORAGE FACILITY
RIVERSIDE DRIVE MAYFIELD WEST

PROPOSED LOT 1102

SUBDIVISION OF LOT 12 DP 280089

DRAWING SCHEDULE

PROJECT	SHEET	TITLE	REVISION
20269A	DA01	SITE PLAN	5
20269A	DA02	PERSPECTIVE VIEWS	5
20269A	DA03	VEHICLE MOVEMENT PLAN	5
20269A	DA04	VEHICLE MOVEMENT PLAN	5
20269A	DA05	VEHICLE MOVEMENT PLAN	5

NORTH

LOCALITY PLAN

NOT TO SCALE

Council

NEWCASTLE CITY COUNCIL

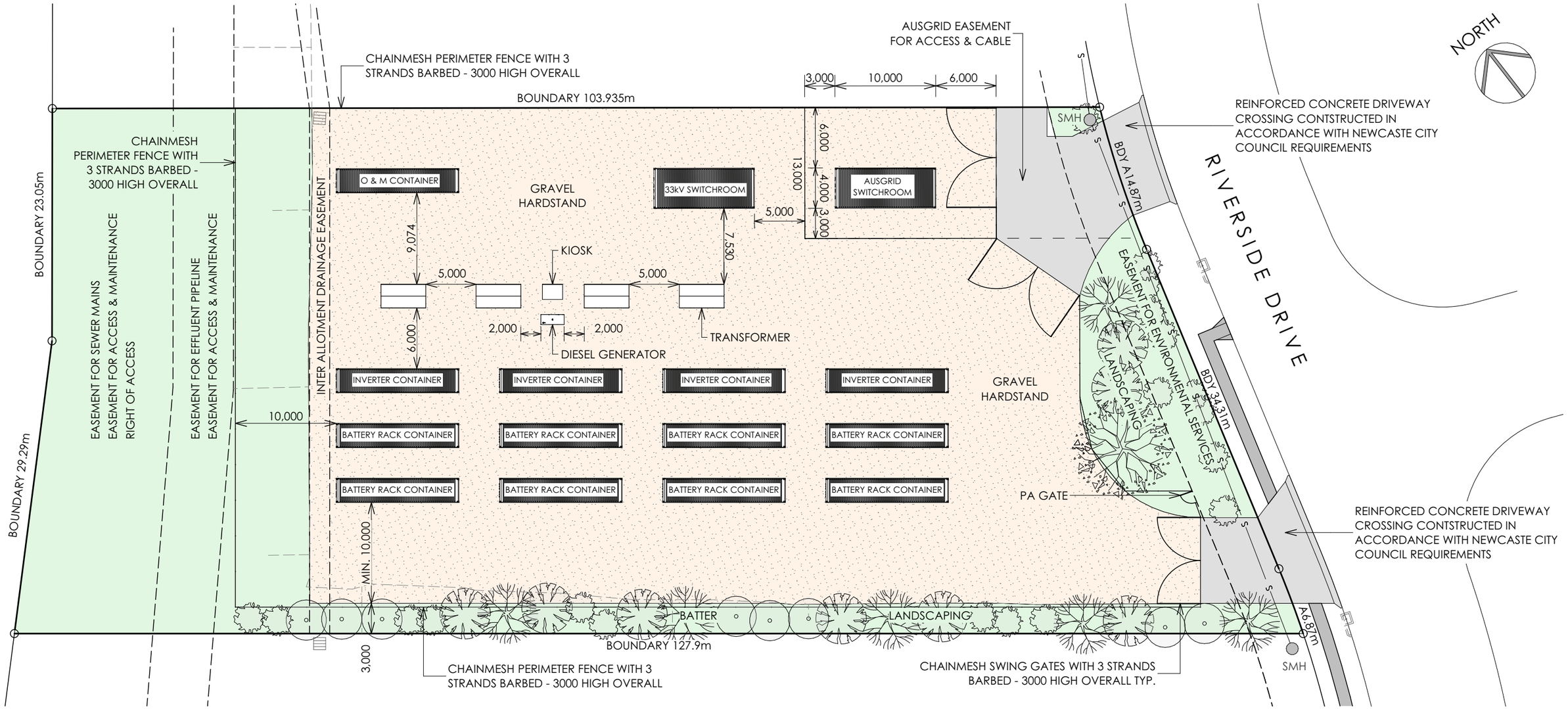
Client

STEEL RIVER WEST PTY LTD

STEEL RIVER BUSINESS PARK

GCA ENGINEERING SOLUTIONS

GCA Engineering Solutions
1 Hartley Drive (PO Box 3337),
Thornton NSW 2322
Ph 02 4964 1811
www.gca.net.au



SITE PLAN

Scale 1:400

LEGEND

- SMH — SEWER MAN HOLE
- s — SEWER MAIN
- EXISTING KERB INLET PIT
- EXISTING STORMWATER PIT

Scale 1:400

5 0 5 10 15 20 25m

NOTES

FENCE WILL BE BUILT IN ACCORDANCE WITH:
- *T0057 NEG EP09 [INTRUDER RESISTANT FENCES FOR ZONE & SUBTRANSMISSION SUBSTATIONS]*; AND *ENA DOC-15* [NATIONAL GUIDELINE FOR PREVENTION OF UNAUTHORISED ACCESS TO ELECTRICITY INFRASTRUCTURE].

- *ALL SUBSTATION BUILDING AND FENCING LOCKS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF NEG EP07 NETWORK ACCESS AND SECURITY - LOCKS AND KEYS*."

NOTE

- ALL LOT BOUNDARIES, EASEMENTS, DIMENSIONS AND AREAS TO BE CONFIRMED WITH THE REGISTERED DEPOSITED PLAN & ARE SUBJECT TO FINAL SURVEY.
- LOCATIONS OF SERVICES TO BE CONFIRMED.

REV.	DATE	DESCRIPTION	DRAWN
5	14.12.20	REVISED SITE LAYOUT	BB
4	10.12.20	REVISED SITE LAYOUT	BB
3	27.11.20	REVISED SITE LAYOUT	MC
2	24.11.20	AMENDED TRANSFORMER DESIGN	MC
1	24.11.20	ORIGINAL ISSUE	MC

20269A DAr5.pln Last saved on 14/12/2020 by Bernie

STEEL RIVER BUSINESS PARK

GCA ENGINEERING SOLUTIONS
GCA Engineering Solutions
1 Hartley Drive (PO Box 3337),
Thornton NSW 2322
Ph 02 4964 1811 www.gca.net.au

Client
STEEL RIVER WEST PTY LTD

Project Status
DEVELOPMENT APPLICATION

Drawings scaled to an A3 sheet

Project Title
PROPOSED BATTERY STORAGE FACILITY

Project Address
RIVERSIDE DRIVE MAYFIELD WEST

Drawing Title
SITE PLAN

Project No.
20269A

Revision
5

Drawing No.
DA01

REV.	DATE	DESCRIPTION	DRAWN
5	14.12.20	REVISED SITE LAYOUT	BB
4	10.12.20	REVISED SITE LAYOUT	BB
3	27.11.20	REVISED SITE LAYOUT	MC
2	24.11.20	AMENDED TRANSFORMER DESIGN	MC
1	24.11.20	ORIGINAL ISSUE	MC

20269A DAr5.pln Last saved on 14/12/2020 by Bernie

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Client
STEEL RIVER WEST PTY LTD

Project Status
DEVELOPMENT APPLICATION

Drawings scaled to an A3 sheet

Project Title
PROPOSED BATTERY STORAGE FACILITY

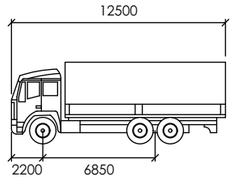
Project Address
RIVERSIDE DRIVE MAYFIELD WEST

Drawing Title
PERSPECTIVE VIEWS

Project No.
20269A

Revision
5

Drawing No.
DA02



12.5m RIGID TRUCK

mm

Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

RAIL CORRIDOR

RIVERSIDE DRIVE

Scale 1:400

5 0 5 10 15 20 25m

VEHICLE MOVEMENT PLAN 1

Scale 1:400

REV.	DATE	DESCRIPTION	DRAWN
5	14.12.20	REVISED SITE LAYOUT	BB
4	10.12.20	REVISED SITE LAYOUT	BB
3	27.11.20	REVISED SITE LAYOUT	MC
2	24.11.20	AMENDED TRANSFORMER DESIGN	MC
1	24.11.20	ORIGINAL ISSUE	MC

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Client
STEEL RIVER WEST PTY LTD

Project Status
DEVELOPMENT APPLICATION

Drawings scaled to an A3 sheet

Project Title
PROPOSED BATTERY STORAGE FACILITY

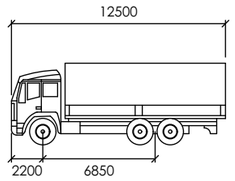
Project Address
RIVERSIDE DRIVE MAYFIELD WEST

Drawing Title
VEHICLE MOVEMENT PLAN

Project No.
20269A

Revision
5

Drawing No.
DA03



12.5m RIGID TRUCK

	mm
Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

RAIL CORRIDOR

RIVERSIDE DRIVE

VEHICLE MOVEMENT PLAN 3

Scale 1:400

Scale 1:400

5 0 5 10 15 20 25m

REV.	DATE	DESCRIPTION	DRAWN
5	14.12.20	REVISED SITE LAYOUT	BB
4	10.12.20	REVISED SITE LAYOUT	BB
3	27.11.20	REVISED SITE LAYOUT	MC
2	24.11.20	AMENDED TRANSFORMER DESIGN	MC
1	24.11.20	ORIGINAL ISSUE	MC

20269A DAr5.pln Last saved on 14/12/2020 by Bernie

STEEL RIVER BUSINESS PARK

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GCA Engineering Solutions
1 Hartley Drive (PO Box 3337),
Thornton NSW 2322
Ph 02 4964 1811 www.gca.net.au

Client
STEEL RIVER WEST PTY LTD

Project Status
DEVELOPMENT APPLICATION

Drawings scaled to an A3 sheet

Project Title
PROPOSED BATTERY STORAGE FACILITY

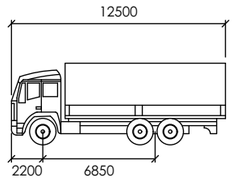
Project Address
RIVERSIDE DRIVE MAYFIELD WEST

Drawing Title
VEHICLE MOVEMENT PLAN

Project No.
20269A

Revision
5

Drawing No.
DA05



12.5m RIGID TRUCK

	mm
Width	: 2500
Track	: 2500
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

VEHICLE MOVEMENT PLAN 2

Scale 1:400

Scale 1:400

5 0 5 10 15 20 25m

REV.	DATE	DESCRIPTION	DRAWN
5	14.12.20	REVISED SITE LAYOUT	BB
4	10.12.20	REVISED SITE LAYOUT	BB
3	27.11.20	REVISED SITE LAYOUT	MC
2	24.11.20	AMENDED TRANSFORMER DESIGN	MC
1	24.11.20	ORIGINAL ISSUE	MC

20269A DAr5.pln Last saved on 14/12/2020 by Bernie

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Client
STEEL RIVER WEST PTY LTD

Project Status
DEVELOPMENT APPLICATION

Drawings scaled to an A3 sheet

Project Title
PROPOSED BATTERY STORAGE FACILITY

Project Address
RIVERSIDE DRIVE MAYFIELD WEST

Drawing Title
VEHICLE MOVEMENT PLAN

Project No.
20269A

Revision
5

Drawing No.
DA04

ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS THE RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION & LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

MAITLAND ROAD

PROPOSED LOT 1102
(BATTERY ENERGY
STORAGE FACILITY)

RIVERSIDE DRIVE

CHANNEL ROAD

INDICATIVE LOCATION OF 33kv UNDERGROUND CABLE/EASEMENT TO SERVICE SITE. INFRASTRUCTURE TO BE DELIVERED AS PART OF STAGE 11 SUBDIVISION WORKS

(A) EASEMENT FOR SEWER MAINS 8.5, 12 AND VARIABLE WIDTH (AA995559)
(B) EASEMENT FOR EFFLUENT PIPELINE 6 WIDE (DP270249) (DOC.3)
(C) EASEMENT FOR OVERHEAD SERVICES AND RELATED STRUCTURES 30 WIDE AND VARIABLE (DP1034764)
(D) EASEMENT FOR IAD DRAINAGE (2 WIDE AND VARIABLE)
(E) EASEMENT FOR ENVIRONMENTAL SERVICES (5 WIDE)
(F) RIGHT OF ACCESS VARIABLE WIDTH (DP070249) (DOC.1)
(G) EASEMENT FOR ELECTRICITY SUBSTAION (5.3 x 3.3 WIDE)
(H) EASEMENT FOR DRAINAGE OF WATER 2 WIDE (DP270249) (DOC.12)
(J) EASEMENT FOR ELECTRICITY AND OTHER PURPOSES (4.5 WIDE) RIGHT OF WAY, VARIOUS
(K) EASEMENT FOR ACCESS AND MAINTENANCE 20 WIDE AND VARIABLE (DP270249) (DOC.1)
(L) EASEMENT FOR ELECTRICITY AND OTHER PURPOSES (2.0 WIDE)
(M) EASEMENT FOR ACCESS AND MAINTENANCE VARIABLE WIDTH (DP270249) (DOC.1)
(T) RIGHT OF ACCESS VARIABLE WIDTH (DP270249) (DOC.13)
(P) EASEMENT FOR ENVIRONMENTAL SERVICES 5 WIDE (DP270249) (DOC.12)
(MM) EASEMENT FOR PIPELINE 2.895 WIDE (T14549)

NOTE:
ALL DIMENSIONS, AREAS, EASEMENTS & LEVELS ARE SUBJECT TO FINAL SURVEY

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

Amendment	Description	Drawn	App'd	Date
1	ISSUED TO ACCOMPANY DA	D.B	A.S	17.12.20

North

Scale
0 8 16 24 32m
1:400 (A1) 1:800 (A3)

Designed: A.M
Cad Reference: 20269C E01 r1
Scale: 1:400
A1 SHEET
Project Approval
IAN HILL (B.E)
Consulting Civil Engineer

Client

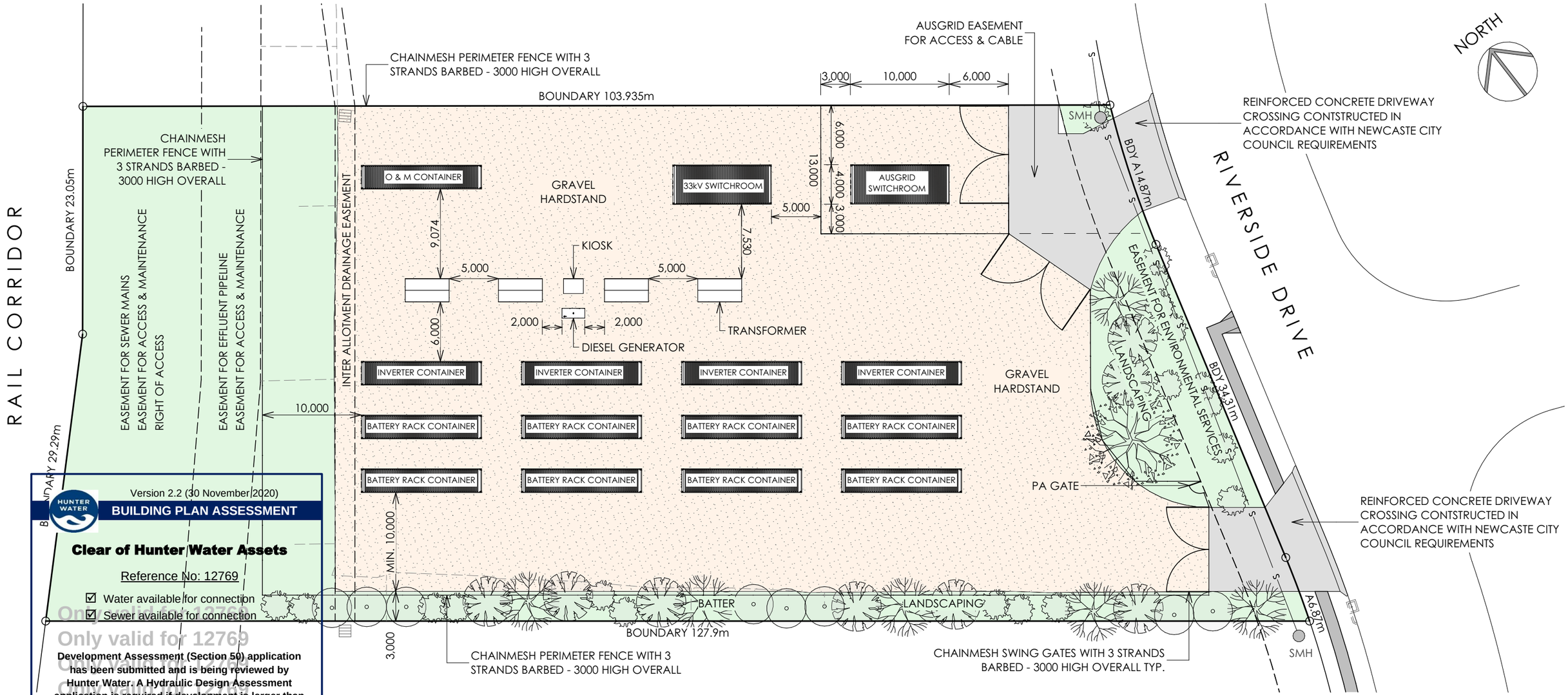
GCA ENGINEERING SOLUTIONS
A.B.N. 92 086 017 745
1 HARTLEY DRIVE, THORNTON NSW 2322
PO BOX 3337, THORNTON NSW 2322
PHONE: (02) 4964 1811

PROPOSED BATTERY ENERGY STORAGE FACILITY

RIVER SIDE DRIVE MAYFIELD WEST
PROPOSED LOT 1102
CONCEPT PLAN - LEAD-IN ELECTRICAL CONNECTION

Project No: 20269C
Drawing No: E01
Revision: 1

PLOT DATE: 18/12/2020 10:08:59 AM
CAD FILE: Q:\20\20269 Lot 1101, Riverside Drive, Mayfield (Battery Storage)\02_CAD\AutoCAD\Civil\20269C E01 r1.dwg



Version 2.2 (30 November 2020)

BUILDING PLAN ASSESSMENT

Clear of Hunter Water Assets

Reference No: 12769

☑ Water available for connection

☑ Sewer available for connection

Development Assessment (Section 50) application has been submitted and is being reviewed by Hunter Water. A Hydraulic Design Assessment application is required if development is larger than 2 units or commercial/industrial. Application for Services Connection will be required.

Date Processed: 18-December-2020
Applicant: GCA Engineering Solutions
Adam Shaw

SITE PLAN
~~**Property Location: 27D RIVERSIDE DR**~~
Scale 1:400 **MAYFIELD WEST**

PLEASE TAKE INTO CONSIDERATION

This is not a compliance certificate. This stamp indicates that Hunter Water has undertaken an initial assessment of the proposed development to identify possible impacts to our infrastructure. Conditions of Hunter Water easements apply. For information on Hunter Water's processes please refer to our 'Land Development Manual' on our website or contact us on 1300 657 657.

LEGEND

- SMH — SEWER MAN HOLE
- s — SEWER MAIN
- EXISTING KERB INLET PIT
- EXISTING STORMWATER PIT

Scale 1:400

5 0 5 10 15 20 25m

NOTES

FENCE WILL BE BUILT IN ACCORDANCE WITH:
- *T0057 NEG EP09 [INTRUDER RESISTANT FENCES FOR ZONE & SUBTRANSMISSION SUBSTATIONS]*; AND *ENA DOC-15* [NATIONAL GUIDELINE FOR PREVENTION OF UNAUTHORISED ACCESS TO ELECTRICITY INFRASTRUCTURE].

- *ALL SUBSTATION BUILDING AND FENCING LOCKS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF NEG EP07 NETWORK ACCESS AND SECURITY - LOCKS AND KEYS*."

NOTE
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- LOCATIONS OF SERVICES TO BE CONFIRMED.

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5	14.12.20	REVISED SITE LAYOUT	BB
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STEEL RIVER BUSINESS PARK

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Ph 02 4964 1811 www.gca.net.au

Client
STEEL RIVER WEST PTY LTD

Project Status
DEVELOPMENT APPLICATION

Drawings scaled to an A3 sheet

Project Title
PROPOSED BATTERY STORAGE FACILITY

Project Address
RIVERSIDE DRIVE MAYFIELD WEST

Drawing Title
SITE PLAN

Project No.
20269A

Revision
5

Drawing No.
DA01

Appendix D

LANDSCAPE PLANS (TERRAS LANDSCAPE ARCHITECTS)

landscape development application

EDIFY ENERGY PTY LTD & PRECINCT GROUP

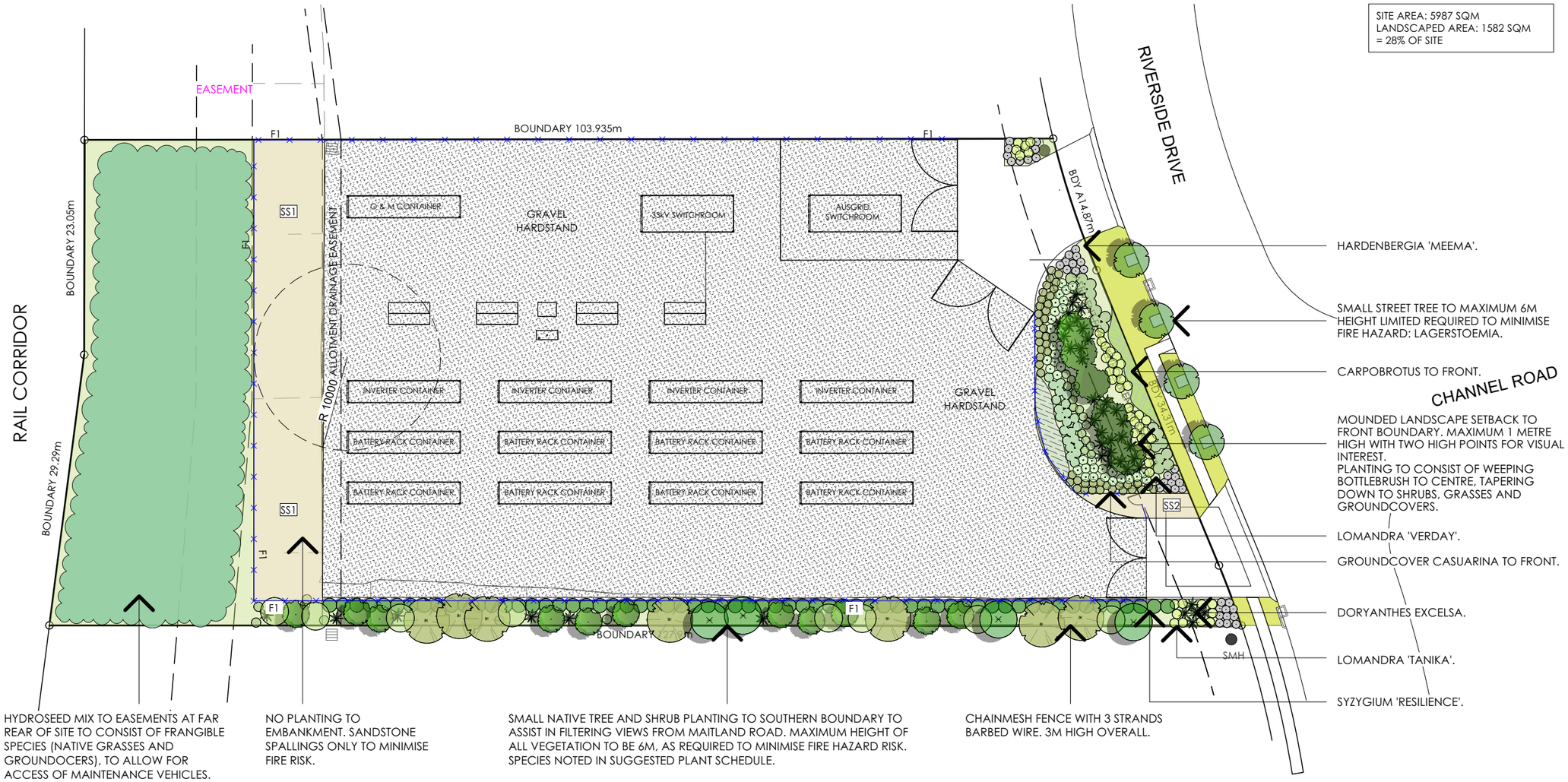
STEEL RIVER BATTERY STORAGE FACILITY

Lot 12 DP 280089, 27D RIVERSIDE DRIVE, MAYFIELD WEST.

terras
landscape architects

LANDSCAPE CONCEPT PLAN | L101

STEEL RIVER BATTERY STORAGE FACILITY



HYDROSEED MIX TO EASEMENTS AT FAR REAR OF SITE TO CONSIST OF FRANGIBLE SPECIES (NATIVE GRASSES AND GROUNDOCERS), TO ALLOW FOR ACCESS OF MAINTENANCE VEHICLES.

NO PLANTING TO EMBANKMENT. SANDSTONE SPALLINGS ONLY TO MINIMISE FIRE RISK.

SMALL NATIVE TREE AND SHRUB PLANTING TO SOUTHERN BOUNDARY TO ASSIST IN FILTERING VIEWS FROM MAITLAND ROAD. MAXIMUM HEIGHT OF ALL VEGETATION TO BE 6M, AS REQUIRED TO MINIMISE FIRE HAZARD RISK. SPECIES NOTED IN SUGGESTED PLANT SCHEDULE.

CHAINMESH FENCE WITH 3 STRANDS BARBED WIRE. 3M HIGH OVERALL.

SITE AREA: 5987 SQM
LANDSCAPED AREA: 1582 SQM
= 28% OF SITE

HARDENBERGIA 'MEEMA'.

SMALL STREET TREE TO MAXIMUM 6M HEIGHT LIMITED REQUIRED TO MINIMISE FIRE HAZARD: LAGERSTOEMIA.

CARPOBROTUS TO FRONT.

MOUNDED LANDSCAPE SETBACK TO FRONT BOUNDARY. MAXIMUM 1 METRE HIGH WITH TWO HIGH POINTS FOR VISUAL INTEREST.
PLANTING TO CONSIST OF WEEPING BOTTLEBRUSH TO CENTRE, TAPERING DOWN TO SHRUBS, GRASSES AND GROUNDCOVERS.

LOMANDRA 'VERDAY'.

GROUNDCOVER CASUARINA TO FRONT.

DORYANTHES EXCELSA.

LOMANDRA 'TANIKA'.

SYZYGIUM 'RESILIENCE'.

LEGEND

- SMALL STREET TREE: LAGERSTROEMIA INDICA.
- NEW SMALL TREES: AS SCHEDULED.
- SCREEN PLANTING: AS NOTED ON PLAN.
- ACCENT PLANTS: DORYANTHES.
- MASS PLANTING: AS NOTED ON PLAN.
- GROUNDCOVER PLANTING: AS NOTED ON PLAN.
- HYDROSEEDING TO EASEMENTS.
- NEW TURF
- F1 — CHAINMESH FENCE WITH 3 STRANDS BARBED WIRE. 3M HIGH TOTAL.
- SS1 — SANDSTONE SPALLINGS: 50-150MM DIAMETER
- SS2 — SANDSTONE MULCH TO PATH: 10-20MM DIAMETER

north

HYDROSEED MIX	KG/HA
CYNODON DACTYLON	3.0
DIANELLA LONGIFOLIA	0.5
IMPERATA CYLINDRICA	0.5
LOMANDRA CONFERTIFOLIA	0.5
LOMANDRA FILIFORMIS	0.5
LOMANDRA LONGIFOLIA	0.5
LOMANDRA MULTIFLORA	0.5
POA LABILLARDEIEREI	1.0
THEMEDA AUSTRALIS	1.0
GOODENIA ROTUNDIFOLIA	0.2
HARDENBERGIA VIOLACEA	0.2
HIBBERTIA ASPERA	0.1
KENNEDIA RUBICUNDA	0.1

REV	DATE	COMMENTS
D	16/12/20	FOR APPROVAL
C	26/11/20	FOR APPROVAL
B	19/11/20	CLIENT REVIEW
A	13/11/20	PRELIMINARY FOR REVIEW

PROJECT:
STEEL RIVER BATTERY STORAGE FACILITY

SITE:
Lot 12 DP 280089, 27D RIVERSIDE DRIVE, MAYFIELD WEST.

CLIENT:
EDIFY ENERGY PTY LTD & PRECINCT GROUP

13360.5-SRBSF-DA-REV D.vwx 16/12/20

DRAWN: KM/ GF | DATE: 13.11.2020 | SCALE: 1:500@A3

JOB NUMBER: 13360.5 | PHASE: DA | DWG No: L101 | REV: D

terras landscape architects
412 KING STREET NEWCASTLE NSW AUSTRALIA 2300
TERRAS.COM.AU PH: 49 294 926 FAX: 49 263 069

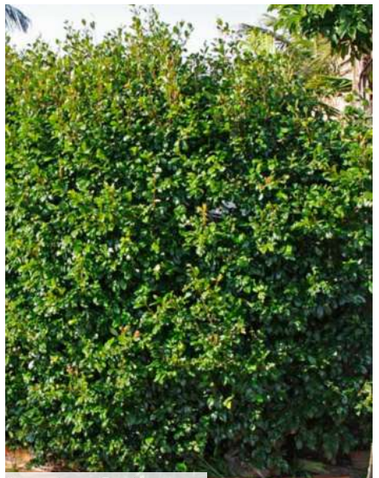
PLANT PALETTE | L102

STEEL RIVER BATTERY STORAGE FACILITY


Lagerstroemia 'Natchez'


Callistemon 'Dawson River Weeper'


Banksia integrifolia


Syzygium 'Resilience'


Casuarina 'Cousin It'


Doryanthes excelsa


Lomandra 'Tanika'


Westringia 'Zena'


Hardenbergia 'Meema'


Myoporum parvifolium


Carpobrotus glaucescens

PLANT SCHEDULE			
ID	**COMMON NAME**	**BOTANICAL NAME**	**POT SIZE**
Trees			
BI	Coastal Banksia	Banksia integrifolia	25 Litre
CA	Black Wattle	Callicoma serratifolia	25 Litre
CD	Weeping Bottlebrush	Callistemon 'Dawson River Weeper'	75 Litre
LN	Crepe Myrtle	Lagerstroemia 'Natchez'	100 Litre
Shrubs			
Ba	Wallum Banksia	Banksia aemulea	25 Litre
Bo	Breynia	Breynia oblongifolia	5 Litre
Cb	Better John	Callistemon 'Better John'	5 Litre
Cs	Bottlebrush	Callistemon salignus	25 litre
De	Gymea Lily	Doryanthes excelsa	45 Litre
Sp	Pinnacle	Syzygium 'Pinnacle'	25 Litre
Sr	Resilience	Syzygium 'Resilience'	5 Litre
Wz	Dwarf Coastal Rosemary	Westringia 'Zena'	5 Litre
Ground Covers			
Cg	Pigface	Carpobrotus glaucescens	2.5 Litre
Cc	Cousin It	Casuarina 'Cousin It'	2.5 Litre
Hm	Meema	Hardenbergia 'Meema'	2.5 Litre
Mp	Spreading Myoporum	Myoporum parvifolium 'Fine Leaf Form'	2.5 Litre
Wm	Groundcover Coastal Rosemary	Westringia 'Mundi'	2.5 Litre
Grasses			
Lt	Dwarf Mat Rush	Lomandra 'Tanika'	2.5 Litre
Lv	Verday	Lomandra 'Verday'	2.5 litre

REV	DATE	COMMENTS
D	16/12/20	FOR APPROVAL
C	26/11/20	FOR APPROVAL
B	19/11/20	CLIENT REVIEW
A	13/11/20	PRELIMINARY FOR REVIEW

PROJECT:
STEEL RIVER BATTERY STORAGE FACILITY

SITE:
Lot 12 DP 280089, 27D RIVERSIDE DRIVE, MAYFIELD WEST.

CLIENT:
EDIFY ENERGY PTY LTD & PRECINCT GROUP

13360.5-SRBSF-DA-REV D.vwx 16/12/20

DRAWN: KM/ GF
DATE: 13.11.2020
SCALE: @A3

JOB NUMBER: 13360.5
PHASE: DA
DWG No: L102
REV: D

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Appendix E

STORMWATER MANAGEMENT PLAN (GCA ENGINEERING SOLUTIONS)

PROPOSED BATTERY ENERGY STORAGE FACILITY

PROPOSED LOT 1102 RIVER SIDE DRIVE MAYFIELD WEST

CONCEPT CIVIL ENGINEERING FOR DA

PRECINCT CAPITAL PTY LTD

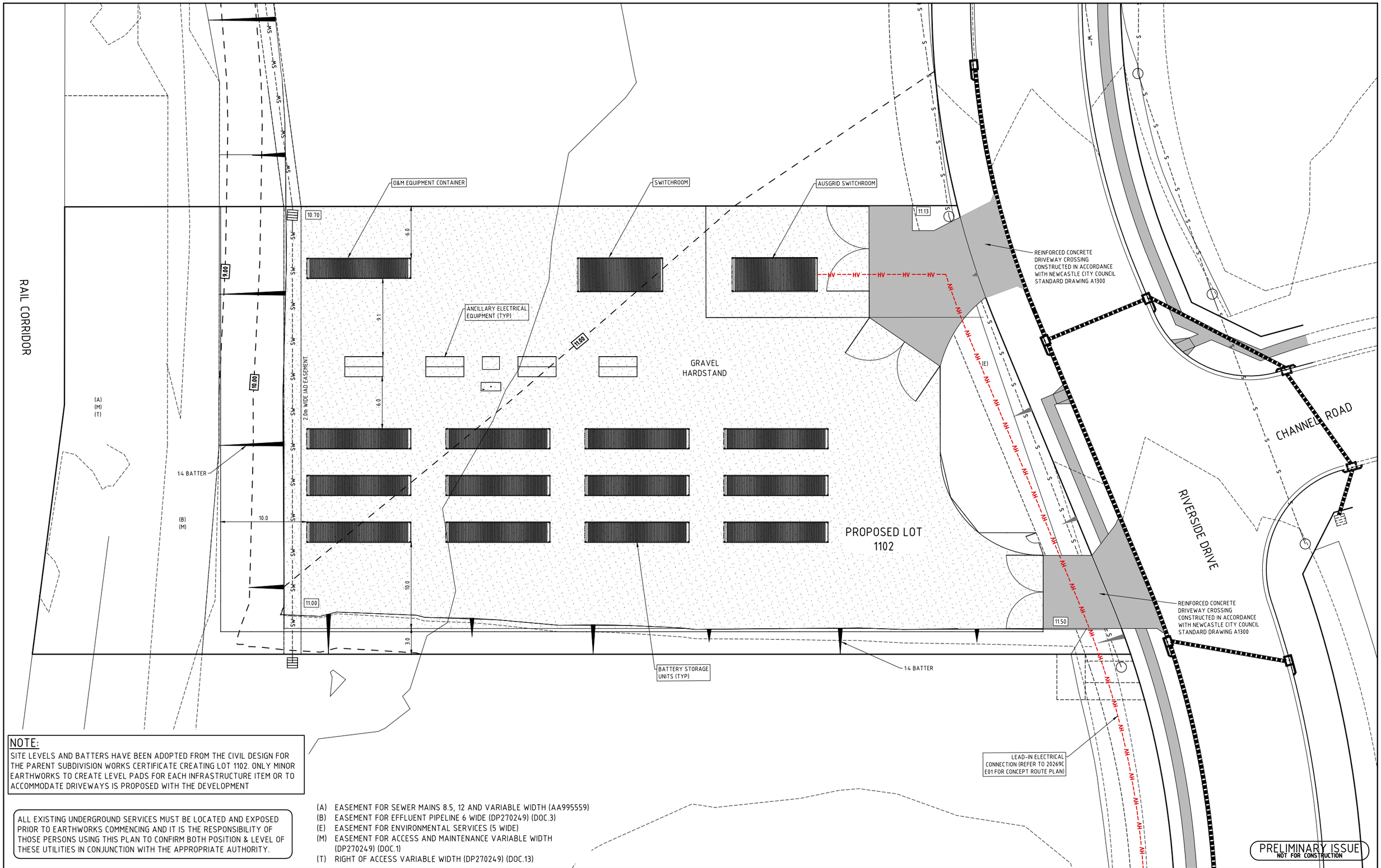
NEWCASTLE CITY COUNCIL

DRAWING SCHEDULE PROJECT No. 20269C

DWG No.	SHEET TITLE	REV
C00	COVER SHEET	1
C01	PLAN SHEET	1
C02	EROSION AND SEDIMENT CONTROL PLAN	1

GCA
ENGINEERING SOLUTIONS
A.B.N. 92 086 017 745
1 HARTLEY DRIVE, THORNTON NSW 2322
PO BOX 3337, THORNTON NSW 2322
PHONE: (02) 4964 1811

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION



NOTE:
SITE LEVELS AND BATTERS HAVE BEEN ADOPTED FROM THE CIVIL DESIGN FOR THE PARENT SUBDIVISION WORKS CERTIFICATE CREATING LOT 1102. ONLY MINOR EARTHWORKS TO CREATE LEVEL PADS FOR EACH INFRASTRUCTURE ITEM OR TO ACCOMMODATE DRIVEWAYS IS PROPOSED WITH THE DEVELOPMENT

ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS THE RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION & LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

(A) EASEMENT FOR SEWER MAINS 8.5, 12 AND VARIABLE WIDTH (AA995559)
(B) EASEMENT FOR EFFLUENT PIPELINE 6 WIDE (DP270249) (DOC.3)
(E) EASEMENT FOR ENVIRONMENTAL SERVICES (5 WIDE)
(M) EASEMENT FOR ACCESS AND MAINTENANCE VARIABLE WIDTH (DP270249) (DOC.1)
(T) RIGHT OF ACCESS VARIABLE WIDTH (DP270249) (DOC.13)

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

Amendment	Description	Drawn	App'd	Date
1	ORIGINAL ISSUE	D.B	A.S	17.12.20

North

Scale
0 4 8 12 16m
1:200 (A1) 1:400 (A3)

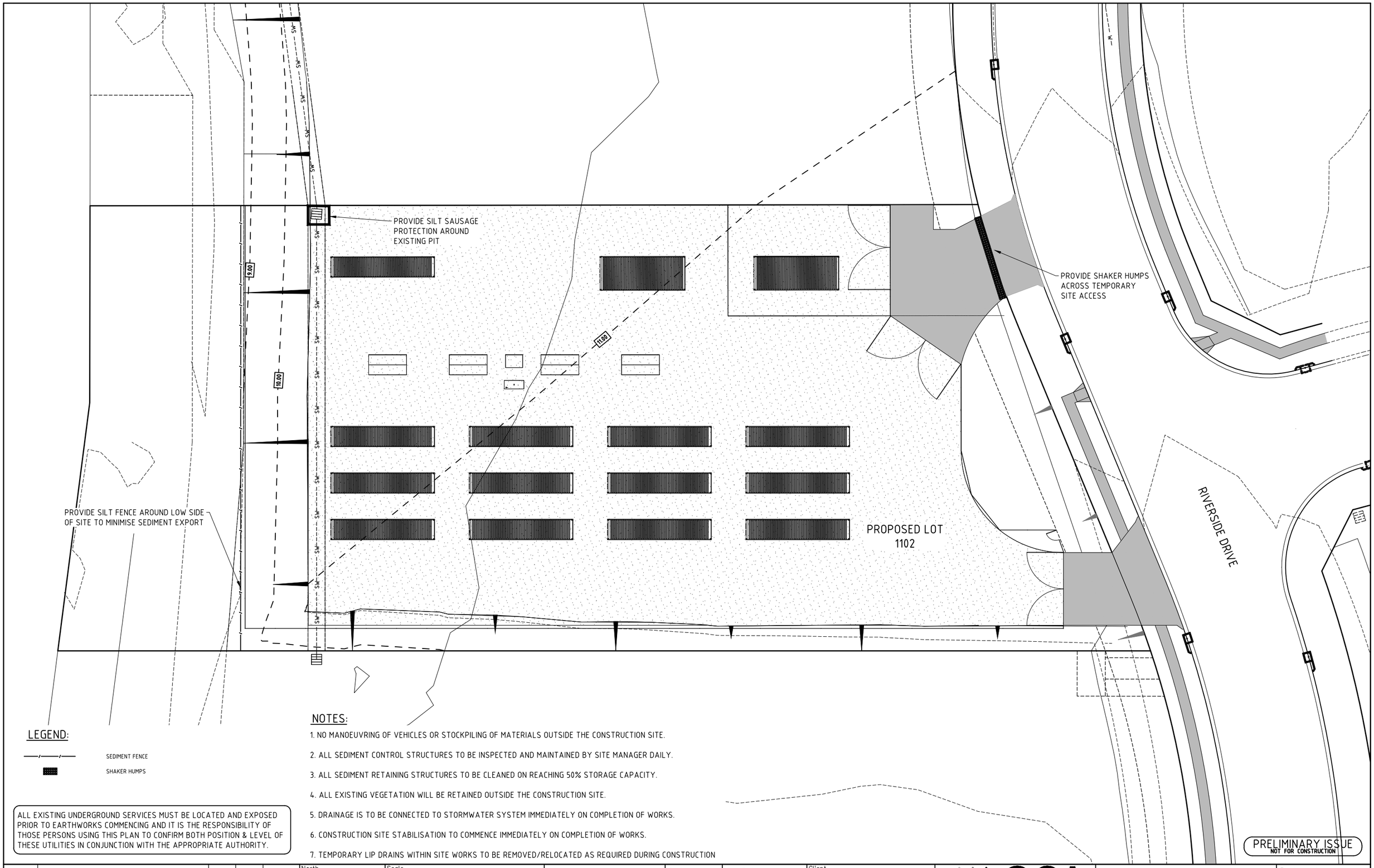
Designed: A.M
Cad Reference: 20269C C01 r1
Scale: 1:200
A1 SHEET
Project Approval: IAN HILL (B.E) Consulting Civil Engineer
Client:

GCA ENGINEERING SOLUTIONS
A.B.N. 92 086 017 745
1 HARTLEY DRIVE, THORNTON NSW 2322
PO BOX 3337, THORNTON NSW 2322
PHONE: (02) 4964 1811

PROPOSED BATTERY ENERGY STORAGE FACILITY
RIVER SIDE DRIVE MAYFIELD WEST
PROPOSED LOT 1102
PLAN SHEET

Project No: 20269C
Drawing No: C01
Revision: 1

PLOT DATE: 18/12/2020 10:46:08 AM
CAD FILE: Q:\20\20269 Lot 1101, Riverside Drive, Mayfield (Battery Storage)\02_CAD\AutoCAD\Civil\20269C C01 r1.dwg



LEGEND:

SEDIMENT FENCE

SHAKER HUMPS

ALL EXISTING UNDERGROUND SERVICES MUST BE LOCATED AND EXPOSED PRIOR TO EARTHWORKS COMMENCING AND IT IS THE RESPONSIBILITY OF THOSE PERSONS USING THIS PLAN TO CONFIRM BOTH POSITION & LEVEL OF THESE UTILITIES IN CONJUNCTION WITH THE APPROPRIATE AUTHORITY.

NOTES:

1. NO MANOEUVRING OF VEHICLES OR STOCKPILING OF MATERIALS OUTSIDE THE CONSTRUCTION SITE.
2. ALL SEDIMENT CONTROL STRUCTURES TO BE INSPECTED AND MAINTAINED BY SITE MANAGER DAILY.
3. ALL SEDIMENT RETAINING STRUCTURES TO BE CLEANED ON REACHING 50% STORAGE CAPACITY.
4. ALL EXISTING VEGETATION WILL BE RETAINED OUTSIDE THE CONSTRUCTION SITE.
5. DRAINAGE IS TO BE CONNECTED TO STORMWATER SYSTEM IMMEDIATELY ON COMPLETION OF WORKS.
6. CONSTRUCTION SITE STABILISATION TO COMMENCE IMMEDIATELY ON COMPLETION OF WORKS.
7. TEMPORARY LIP DRAINS WITHIN SITE WORKS TO BE REMOVED/RELOCATED AS REQUIRED DURING CONSTRUCTION

PRELIMINARY ISSUE
NOT FOR CONSTRUCTION

Amendment	Description	Drawn	App'd	Date
1	ORIGINAL ISSUE	D.B	A.S	17.12.20

North

Scale: 0 4 8 12 16m — 1:200 (A1) 1:400 (A3)

Designed	A.M
Cad Reference	20269C C02 r1
Scale	1:200
	A1 SHEET
Project Approval	IAN HILL (B.E) Consulting Civil Engineer

Client

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PHONE: (02) 4964 1811

PROPOSED BATTERY ENERGY STORAGE FACILITY

RIVER SIDE DRIVE MAYFIELD WEST

PROPOSED LOT 1102

EROSION AND SEDIMENT CONTROL PLAN

Project No	
20269	
Drawing No	Revision
C02	1

PLOT DATE: 18/12/2020 10:46:57 AM

CAD FILE: Q:\20\20269 Lot 1101, Riverside Drive, Mayfield (Battery Storage)\02_CAD\AutoCAD\Civil\20269C C02 r1.dwg

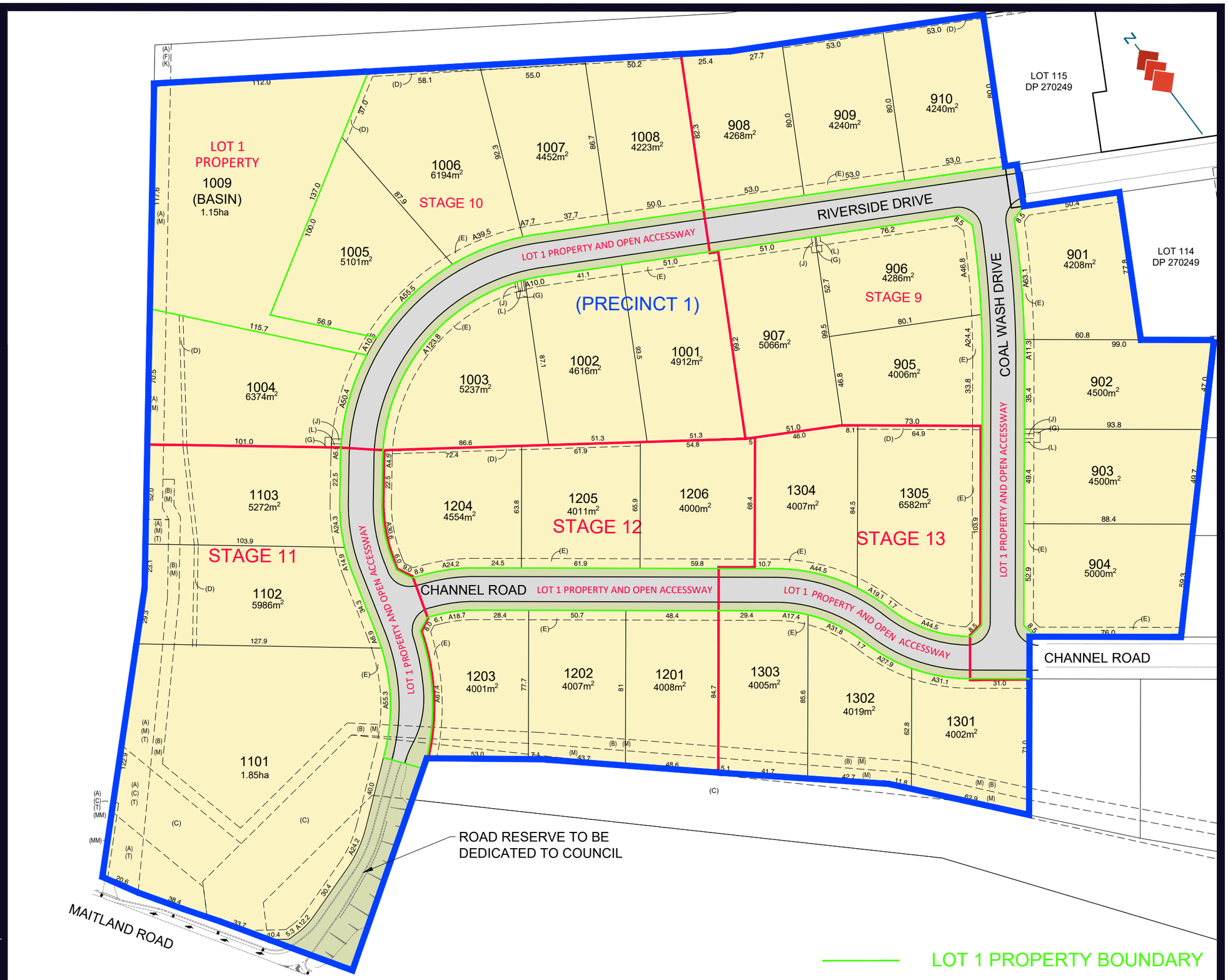
Appendix F

SUBDIVISION PLAN (PRECINCT GROUP)

STEEL RIVER BUSINESS PARK

PRECINCT SUBDIVISION PLAN

MAYFIELD WEST



(A) EASEMENT FOR SEWER MAINS 8.5, 12 AND VARIABLE WIDTH (AA995559)
(B) EASEMENT FOR EFFLUENT PIPELINE 6 WIDE (DP270249) (DOC.3)
(C) EASEMENT FOR OVERHEAD SERVICES AND RELATED STRUCTURES 30 WIDE AND VARIABLE (DP1034764)
(D) EASEMENT FOR IAD DRAINAGE (2 WIDE AND VARIABLE)
(E) EASEMENT FOR ENVIRONMENTAL SERVICES (5 WIDE)
(F) RIGHT OF ACCESS VARIABLE WIDTH (DP070249) (DOC.1)
(G) EASEMENT FOR ELECTRICITY SUBSTAION (5.3 x 3.3 WIDE)
(H) EASEMENT FOR DRAINAGE OF WATER 2 WIDE (DP270249) (DOC.12)
(J) EASEMENT FOR ELECTRICITY AND OTHER PURPOSES (4.5 WIDE) RIGHT OF WAY, VARIOUS
(K) EASEMENT FOR ACCESS AND MAINTENANCE 20 WIDE AND VARIABLE (DP270249) (DOC.1)
(L) EASEMENT FOR ELECTRICITY AND OTHER PURPOSES (2.0 WIDE)
(M) EASEMENT FOR ACCESS AND MAINTENANCE VARIABLE WIDTH (DP270249) (DOC.1)
(T) RIGHT OF ACCESS VARIABLE WIDTH (DP270249) (DOC.13)
(P) EASEMENT FOR ENVIRONMENTAL SERVICES 5 WIDE (DP270249) (DOC.12)
(MM) EASEMENT FOR PIPELINE 2.895 WIDE (T14549)

NOTE:
ALL DIMENSIONS, AREAS, EASEMENTS & LEVELS ARE SUBJECT TO FINAL SURVEY

Project No.	Dwg No.	Rev.
17007	LD02	9
Current as of:		
28 AUGUST 2019		

Appendix G

PRELIMMINARY HAZARD ASSESSMENT (ARUP)

Edify Energy

Steel River Battery Farm

Preliminary Hazard Analysis

Issue | 30 October 2020

Job number 278292-00

Arup Australia Pty Ltd ABN 76 625 912 665

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151 Clarence Street
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Australia
www.arup.com

ARUP

Document verification

ARUP

Job title		Steel River Battery Farm			**Job number** 278292-00
Document title		Preliminary Hazard Analysis			**File reference**
Document ref					
Revision	**Date**	**Filename**	20200928 Edify Steel River PHA.docx		
Draft 1	28 Sep 2020	**Description**	First draft		
			Prepared by	Checked by	Approved by
		Name	Michael D'Souza / Ivy Chew		
		Signature			
Draft 2	5 Oct 2020	**Filename**	20201001 Edify Steel River PHA.docx		
		Description			
			Prepared by	Checked by	Approved by
		Name	Michael D'Souza / Ivy Chew	Veronica Goldsmith / Ben Smith	Nigel Cann
		Signature			
Draft 3	30 Oct 2020	**Filename**	20201006 Edify Steel River PHA.docx		
		Description	Addressing client comments and inserting risk register		
			Prepared by	Checked by	Approved by
		Name	Ben Smith / Michael D'Souza	Ben Smith	Nigel Cann
		Signature			
Issue	30 Oct 2020	**Filename**	20201030 Edify Steel River PHA_issue.docx		
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document verification with document	✓

Contents

Tables

Figures

Appendices

Appendix A

HAZID Risk Register

Appendix B

Heat Radiation Calculations

Executive Summary

Background

Edify Energy Pty Ltd and Precinct Group are jointly developing a 28 MW advanced lithium ion battery energy storage facility known as the Steel River Battery, at the Steel River Industrial Park located in Mayfield, New South Wales.

The Project will connect to the local Ausgrid 33 kV electrical distribution network and will provide benefits to the local electricity network as well as network services to the wider New South Wales grid.

Project details are summarised in Table 1.

Table 1: Summary of project details

Project Detail	Description
Project Type	Stand-alone large scale battery storage connected to the National Electricity Market.
Electrical Connection	Ausgrid 33kV distribution network.
Battery Technology	Lithium ion battery system.
Battery Capacity	Up to 28MW
Battery Storage Duration	Up to 2 hours
Battery Configuration	Outdoor modular battery units or containerised battery system with ancillary balance of plant equipment.
Project Location	Proposed lots 1101 - 1102 Riverside Drive, Mayfield West. Part of future Stage 11 of Steel River Estate (Zoned IN1 General Industrial)

Methodology

This Preliminary Hazard Analysis (PHA) has been prepared in accordance with the relevant guidelines from NSW DPIE's *Multi-level Risk Assessment* [1] and Hazardous Industry Planning Advisory Papers (HIPAPs) No. 4 – *Risk Criteria for Land Use Safety Planning* [2] and No. 6 – *Hazard Analysis* [3].

During the analysis of the identified risks, reference was made to the relevant general principles as defined by HIPAP 4 [2] Section 2.4.1:

- The avoidance of all *avoidable* risks;
- The risk from a major hazard should be reduced wherever practicable, even where the likelihood of exposure is low; and
- The effects of significant risks should, wherever possible be contained within the site boundary.

Recommendations have been made against each of the identified risks to ensure that the residual risks will be reduced So Far as is Reasonably Practicable (SFAIRP).

Hazards and Consequences

The hazards assessed to be 'medium' risk or higher in the hazard identification study (HAZID), or where offsite consequences were anticipated have been carried forward for qualitative assessment. The following hazards have been assessed:

- Security breach leading to injury;
- Electrocution from an electrical facility;
- Injury to construction or operations personnel;
- Exposure to dangerous goods during a site emergency;
- Battery fire; and
- Battery explosion.

The two hazards that were identified as having the potential to cause offsite impacts, namely a battery fire and battery explosion, were carried forward for quantitative consequence analysis.

As the final battery technology has not yet been chosen for the site, these hazards were considered for both Megapack and containerised solutions.

For a fire in the Megapack, it was concluded that significant heat input is required to generate conditions that will result in a lithium ion cell thermal runaway.

For a fire in a container, in order to have a received radiant heat flux of less than 4.7 kW/m^2 at the site boundary, the required minimum separation distance between the:

- Front/end of the container and site boundary = 5.5 m; and
- Side container wall and site boundary = 5.25 m.

Similarly, in order to have a received radiant heat flux of less than 12.6 kW/m^2 on the adjacent containers, the required minimum separation distance between the:

- Front/end of the container and adjacent container = 3.25 m; and
- Side container wall and adjacent container = 2.0 m.

For an explosion of the Megapack, the testing performed for NFPA found that there was no pressure build-up or release, consistent with an overpressure event, occurred inside the Megapack enclosure or initiator pod.

For an explosion in the container, a vapour cloud explosion of vented gas was modelled. An overpressure of 7 kPa – the accepted minimum for injury or fatality – was found to extend to a distance of 24 m, and an overpressure of 35 kPa – corresponding to significant damage of structures – was found to extend to a distance of 7.5 m.

Recommendations

Arup makes the following recommendations to ensure that the residual risks for the identified hazards will be reduced SFAIRP:

- Separate containerised BESS 24 m from the site boundary unless the following are met:
    1. Containerised BESSs shall have a means to safely vent or prevent an explosion designed to NFPA 68, NFPA 69, or an international equivalent to reduce this risk SFAIRP. Where provided with such system,
    2. Containerised BESSs shall be separated from one another by not less than 3.25 m end to end and not less than 3 m side to side, and separated from the site boundary by not less than 10 m.
- Ensure the BESS manufacturer supplies the UL9540A fire test report for further refinement of separation distances.
- Ensure containerised BESSs have a fire suppression system, if they are to be entered for maintenance. Additionally:
    1. It is preferred for the fire suppression system to not rely on shutdown of the battery cooling system.

The fire suppression system design should also consider the explosion hazard.

1 Introduction

1.1 Site Description and Surrounding Land Use

The subject site has a property description of Lot 12 DP 280089 with a street address of 27D Riverside Drive, Mayfield West. The site is currently approved for further subdivision and is situated within approved Lot 1101 and Lot 1102, part of future Stage 11 Steel River Business Park. The subject site has a combined total area of approximately 2.44 ha. The site is currently vacant IN1 General Industrial zone land.

1.2 Operational Process

The proposed Battery Energy Storage System (BESS) is expected to operate in conjunction with the electrical grid to provide the following functions:

- Charging and discharging of energy from the electrical grid for shifting of energy to peak consumption periods when electricity is needed the most; and
- Participate in the electricity market to provide ancillary services which help contribute to the stability and functionality of the electrical grid.

The primary modes of operation of the BESS are:

- Charging of the battery from the external electrical grid; or
- Discharging of the battery to the external electrical grid.

It should be noted that during regular operations of the proposed facility, no dangerous goods will be consistently used.

Two battery solutions are currently being considered for the site:

- Modular cubical cabinets (similar to the Tesla Megapack system) that are installed in an array around an inverter pack as illustrated in Figure 1 and Figure 2; and
- Containerised modules (containerised system) that have been preassembled in modified shipping containers prior to transport to site as illustrated in Figure 3

Both proposed battery technologies will consist of lithium ion battery technology. The system is expected to be highly modular and based on individual smaller power blocks to achieve the required system size. Each battery pack is comprised of multiple smaller lithium ion cells which are fully enclosed and connected to form an integrated system. The BESS will be required to conform with the following safety standards:

- UL 1642: *Standard for Lithium Batteries*
- UL 9540: *Standard for Energy Storage Systems and Equipment*

Figure 1 Indicative array of multiple Tesla Megapacks in an array

Figure 2 Indicative single Tesla Megapack

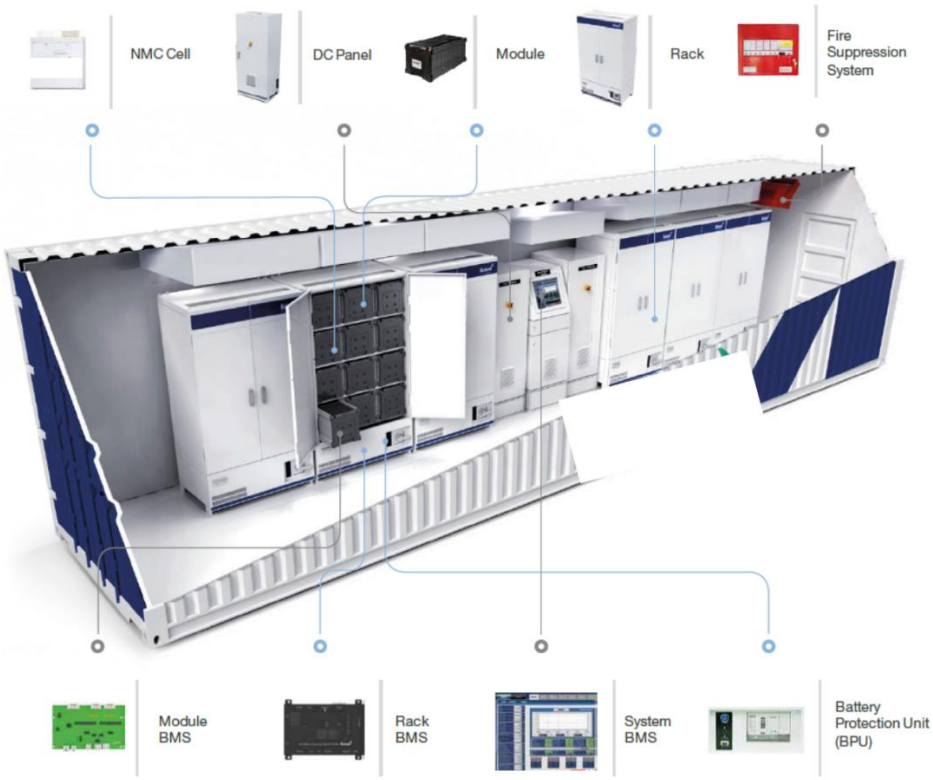

Figure 3 Indicative arrangement of containerised module

2 Applicability of SEPP 33

2.1 Dangerous Goods Used and Stored at the Facility

The list of dangerous goods to be used and stored at the facility has been based on the Darlington Point Solar Farm (DPSF) BESS dangerous goods storage. Table 22 below contains the estimated quantities of chemicals stored onsite.

Table 2: List of potentially hazardous goods used and stored at the facility

Item	UN No.	Dangerous Goods Class	Total Storage Onsite	Description
Lithium Ion Batteries	3481	9	~ 800 units	Installed as part of the battery units as solid material inside cells
Refrigerant (R 134a)	3159	2.2	~ 350 kg	Installed as part of the cooling system of the Megapack
Miscellaneous Minor Chemicals Store	N/A	2.2, 3, 5.1, 8	< 1 t	Onsite storage for maintenance
Ethylene Glycol solution	3082	N/A, not a dangerous good	~ 3 t	Installed as part of the cooling system of the Megapack
Transformer Oil	N/A, not a dangerous good		~ 45 t	Possibly in transformers

2.2 SEPP 33 Screening

It has been assumed that the goods stored onsite are stored in similar locations and so have been screened against SEPP 33 thresholds together, as per NSW Department of Planning, Industry and Environment's (DPIE's) *Applying SEPP 33* [4]. The screening can be found in Table 3 below.

Table 3: Screening against SEPP 33 thresholds

Dangerous Goods Class	Quantity	Threshold	Threshold Exceeded?
3	< 1 t	5 t	No
5.1	< 1 t	5 t	No
8 PGII	< 1 t	25 t	No

Note that Dangerous Goods Classes 2.2 and 9 are excluded from the risk screening. It should also be noted that no dangerous goods are expected to be transported (beyond the needs of minor maintenance) to or from the site on a regular basis and so no transportation screening has been undertaken.

As all the dangerous goods screened above do not exceed the SEPP 33 threshold, a PHA is not required for the development by SEPP 33. It should be noted that by taking a conservative approach to land use planning, a PHA has been prepared to address the potential risks that may arise from this development.

2.3 Relevant Guidance

This PHA has been prepared in accordance with the relevant guidelines from NSW DPIE's *Multi-level Risk Assessment* [1] and Hazardous Industry Planning Advisory Papers (HIPAPs) No. 4 – *Risk Criteria for Land Use Safety Planning* [2] and No. 6 – *Hazard Analysis* [3].

During the analysis of the identified risks, reference was made to the relevant general principles as defined by HIPAP 4 [2] Section 2.4.1:

- The avoidance of all *avoidable* risks;
- The risk from a major hazard should be reduced wherever practicable, even where the likelihood of exposure is low; and
- The effects of significant risks should, wherever possible be contained within the site boundary.

Recommendations have been made against each of the identified risks to ensure that the residual risks will be reduced So Far as is Reasonably Practicable (SFAIRP).

3 Hazard Identification

A hazard identification study (HAZID) was conducted for the site. This HAZID was conducted by personnel with relevant experience of grid scale BESS units.

The identified hazards and their qualitative likelihood and consequence scores can be found in Appendix A. The hazards assessed to be 'medium' risk or higher in the HAZID, or where offsite consequences were anticipated have been carried forward for qualitative assessment. The following hazards have been assessed:

- Security breach leading to injury;
- Electrocution from an electrical facility;
- Injury to construction or operations personnel;
- Exposure to dangerous goods during a site emergency;
- Release of firewater runoff;
- Battery fire; and
- Battery explosion.

These hazards have been discussed in more detail in Section 3.1 below.

3.1 Hazard Details

3.1.1 Security Breach

A security breach of the facility could credibly lead to theft of equipment or injury to personnel and individuals. This event is not considered likely to cause offsite impacts. Arup makes the following recommendations:

- Security fencing around the facility and separately around critical and hazardous assets should be installed;
- A CCTV security system should be installed; and
- Regular O&M inspections to monitor breaches should be undertaken.

As there is no potential for offsite impacts, the above recommendations are considered sufficient to mitigate the risk of this event.

3.1.2 Electrocution from Electrical Facility

Electrocution occurring in the BESS is a credible scenario that could lead to the injury or death of a maintenance worker. Arup makes the following recommendations:

- Electrical assets shall be installed in accordance with AS 3000: *Electrical Installations*; and
- Appropriately qualified maintenance personnel are to be used.

As there is no potential for offsite impacts, the above recommendations are considered sufficient to mitigate this risk.

3.1.3 Injury to Construction or Operations Personnel

During the construction and operation of the facility, there is a credible hazard associated with the injury of construction and operations personnel, respectively. This event is not considered likely to cause offsite impacts. Arup makes the following recommendations:

- The development of a Work, Health and Safety plan; and
- Detailed Safety in Design processes are to be carried out.

As there is no potential for offsite impacts, the above recommendations are considered sufficient to mitigate this risk.

3.1.4 Exposure to Dangerous Goods During Site Emergency

In the event of an emergency at the site, personnel may be exposed to dangerous goods and suffer injury. This event is not considered likely to cause offsite impacts. Arup makes the following recommendations:

- The development of a site-specific Emergency Response Plan;
- Appropriate signage and labelling to identify site-specific hazards are to be installed; and
- Emergency response workers are to be made aware of the response requirements.

As there is no potential for offsite impacts, the above recommendations are considered sufficient to mitigate this risk.

3.1.5 Release of Firewater Runoff

Following a fire event that requires extinguishing, the firewater used for extinguishment has the potential to be released into the environment without being controlled. This firewater is likely to be contaminated and will be required to be contained.

Broadly speaking, the contaminated firewater may be contained in one of two ways:

- Permanent containment system: the civil design of the site can be scoped such that it is possible to contain all runoff in a designated catchment area (e.g. a bund or some form of holding basin).
- Temporary containment: the site can be designed such that, in the event of a fire brigade response that may lead to contaminated runoff, drainage can be thoroughly sealed, and firewater contained on-site. In essence, this is a temporary bund.

The most appropriate approach is determined as a function of the choice of battery technology, the “acceptable loss” strategy (i.e. whether the response to a fire is to suppress and extinguish, or to allow the unit to burn while protecting adjacent units), the design and budget implications on the broader site development, and fire brigade input to all of the above. This is therefore a decision that is made as the project develops.

3.1.6 Battery Fire

As the final battery technology has not yet been chosen for the Site, this hazard has been considered for both Megapack and containerised solutions.

A fire could credibly form in a lithium ion battery system as a result of a thermal runaway in one or more cells or from an external source such as a fire at the facility. The potential for this to have offsite impacts means it has been carried forward for consequence analysis in Section 4.1.

3.1.7 Battery Explosion

If the containerised solution is chosen, flammable vapours may accumulate in the container. This could result in a confined vapour cloud explosion (VCE) occurring. The potential for this to have offsite impacts means it has been carried forward for consequence analysis in Section 4.2.

4 Consequence Analysis

The two hazards that were identified as having the potential to cause offsite impacts, namely a battery fire and battery explosion, have been carried forward for quantitative consequence analysis.

4.1 Battery Fire

As the final battery technology has not yet been chosen for the site, this hazard has been considered for both Megapack and containerised solutions.

4.1.1 Tesla Megapacks

Tests to assess the effects of direct flame impingement and thermal runaway on lithium ion battery systems have been carried out by the US National Fire Protection Association (NFPA) [5]. In the absence of local guidance, these tests – widely accepted as being industry best practice – have been used as the basis of assessing the potential impacts that a battery fire within Megapacks can have.

Two tests were undertaken, fire was applied from an external source and thermal runaway was induced with internal heaters in the centre of the Megapack module.

Applying fire from an external source was shown to induce the Megapack into thermal runaway and resulted in ignition of the electrolyte material. Flames were only observed outside the cubicle at the front door grill and the relief vent on top of the cabinet. Gas samples were taken from the vent throughout the test. Carbon monoxide and hydrogen fluoride were detected. No chlorine or methane was detected. No projectiles, explosions or bursts were observed during the test.

Inducing thermal runaway of the lithium ion cells resulted in only white smoke being observed. Gas samples were taken from the vent throughout the test. Carbon monoxide, hydrogen fluoride and methane were detected. No chlorine was detected. No projectiles, explosions or bursts were observed during the test.

From these tests, it can be concluded that significant heat input is required to generate conditions that will result in a lithium ion cell thermal runaway. Arup makes the following recommendations for a Megapack installation:

- Megapacks should be arranged with at least 2 m of separation from the front access door to prevent direct flame spread.
- Megapacks should be arranged with a clearance of at least 155 mm between the sides and back of each Megapack to prevent direct conduction occurring.

These recommendations are considered sufficient to mitigate the offsite impact of this event SFAIRP.

4.1.2 Containerised

A fire event in a battery container was modelled to assess the impact on its surroundings. The modelling assumed that the battery management system and

other safety features are unable to control thermal runaway, leading to a fire in the container. Additionally, it is assumed that the fire suppression system is not functional as a worst-case scenario.

It is understood from the Memo provided by Edify, the supplied battery container is a modified standard 40 ft shipping container - approx. 12.2 m (L) x 2.35 m (W) x 2.39 m (H). Figure 4 shows a typical modified shipping container of this type and Figure 5 shows the dimensions of the container. It will house battery cells and associated electrical infrastructure and be typically installed at ground level or slightly elevated on structure.

Figure 4 Typical 40 ft modified shipping container for battery energy storage (extracted from Edify Memo)

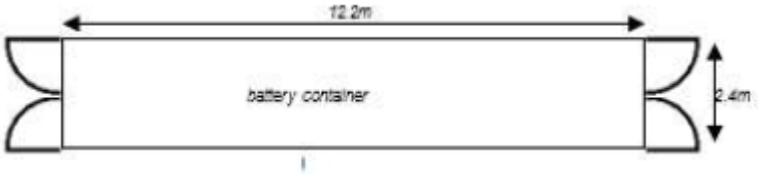

Figure 5 Containerised battery container layout illustrating the double-leaf door at both ends of the containers (extracted from Edify Memo)

Key Assumptions and Fire Scenarios

The basis of the modelling is radiative heat transfer using the Stefan-Boltzmann Law and view factor method. Further description of this methodology and all equations used are presented in Appendix B.

The worst credible fire scenario has been considered in which the double-leaf doors are left open at both ends of the container.

- The temperature of the open door is set at 840 °C (flame temperature). This is representative of an emitting heat flux of 84 kW/m² which is used for fire spread design between buildings such as offices (Approved Document B) (HMCLG, 2010). While the units do contain batteries, which would have combustible contents and some plastic materials, the overall structure of the container and insulation is to be non-combustible and the majority of racking within the space is constructed of non-combustible metal. This results in a comparable fuel load. 840 °C is also within the flame temperature range recommended for use for fires based on the Fire Engineering Design Guide.

While adiabatic flame temperature is based on the chemistry of a flame, within a compartment the overall compartment dynamics and air ratio influence the temperature of a flame.

- It is assumed that the open double-leaf door is the full height and width of the container (see Figure 5), i.e. 2.4 m (W) x 2.4 m (H). The radiating panel shall be 2.4 m x 2.4 m (at full door height and width) with 840 °C;
- The emissivity of the door opening is taken to be 0.9. This represents a conservative emissivity for a severe fire and a good radiator;
- The temperature of the perimeter container walls was set at 600 °C, which is generally the temperature at which flashover begins in a compartment as per the SFPE Handbook and CIBSE Guide E. This represents a severe fully developed fire throughout the container.
- It is assumed that the radiating panel shall be based on the full height and length of the container side wall with the dimension of 12.2 m (L) x 2.4 m (H) at 600 °C;
- The emissivity of the container side wall is taken to be 0.7. This represents the maximum steel emissivity that could be reached at high temperature (flashover temperature) based on research conducted by VTT [6];
- The heat flux from the emitting surface was assumed to be uniform; and
- No heat loss was assumed to intermediate media (i.e. to air or smoke).
- The basis of the fire modelling is to consider the worst-case conditions. It is a consequence-based assessment. In this context historical wind data does not affect the consequence assessment. Further as detailed above the fire modelling ignores that integrity and insulation rating of the containers, providing further conservativeness.

The fire scenario is represented pictorially in Figure 6.

Acceptance Criteria

According to HIPAP 4 [2], a radiation intensity of 4.7 kW/m^2 will cause pain and burn injuries to humans. At 12.6 kW/m^2, it is known that:

- The temperature of wood can rise to a point where it can be ignited by a naked flame after long exposure;
- Thin steel with insulation on the side away from the fire may reach a thermal stress level high enough to cause structural failure;
- There is a significant chance of fatality with extended exposure and a high chance of injury.

Therefore, sufficient separation distance must be provided such that:

- The heat radiation received at the site boundary is less than 4.7kW/m^2; and
- The heat radiation on the adjacent container is less than 12.6kW/m^2.

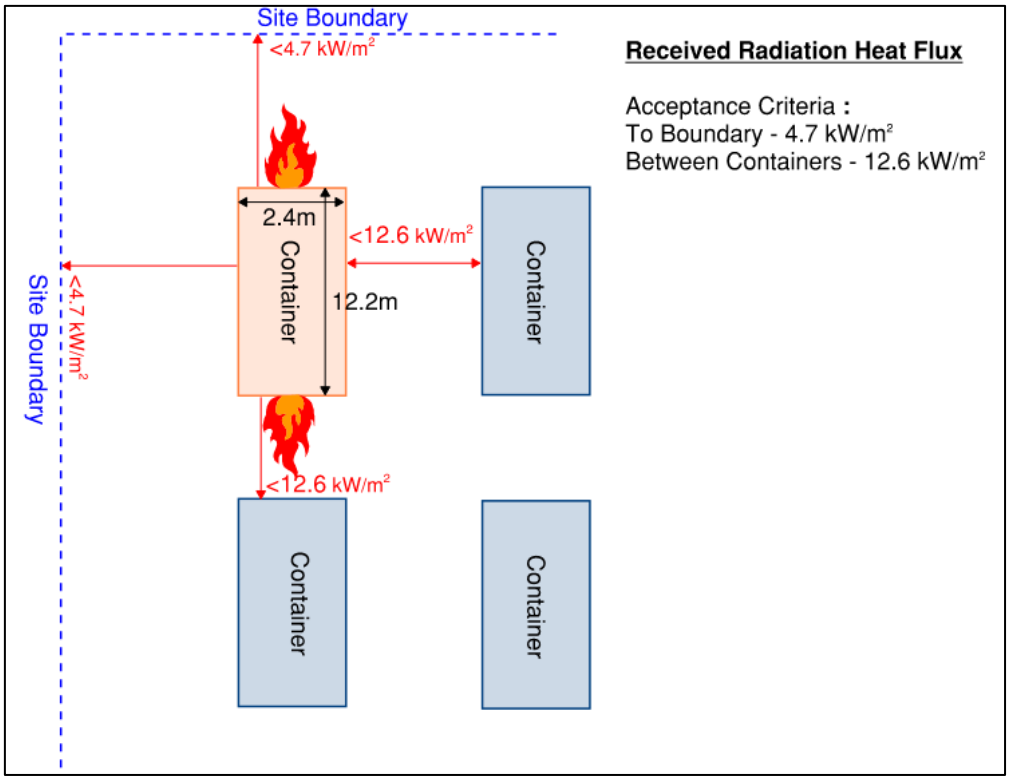

Figure 6 Pictorial representation of the fire modelling scenario.

Results

The results of the modelling are presented in Figure 7.

As shown in Figure 7, in order to have a received radiant heat flux of less than 4.7 kW/m^2 at the site boundary, the required minimum separation distance between the:

- Front/end of the container and site boundary = 5.5 m; and
- Side container wall and site boundary = 5.25 m.

Similarly, in order to have a received radiant heat flux of less than 12.6 kW/m^2 on the adjacent containers, the required minimum separation distance between the:

- Front/end of the container and adjacent container = 3.25 m; and
- Side container wall and adjacent container = 2.0 m.

This is represented pictorially in Figure 8. However, as a conservative measure, it is recommended that the separation distances are as follows:

- Between the long ends of the containers shall not be less than 3.25 m;
- Between the sides of the containers shall not be less than 3 m; and
- The distance from the site boundary shall not be less than 10m.

There is the potential for these values to be further refined upon review of the UL9540A fire test report that should be furnished by the BESS manufacturer.

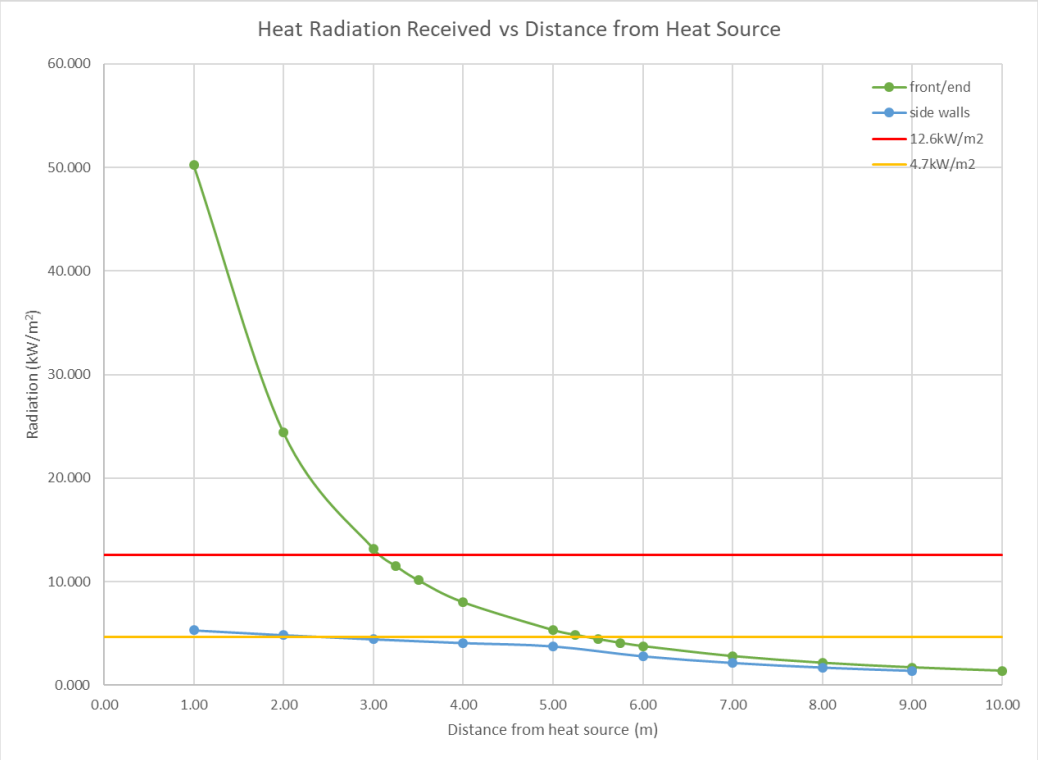

Figure 7 The results of the fire modelling, showing heat flux radiation plotted against the separation distance. The red line is set at 12.6 kW/m^{2}while the orange line is set at 4.7 kW/m^2.

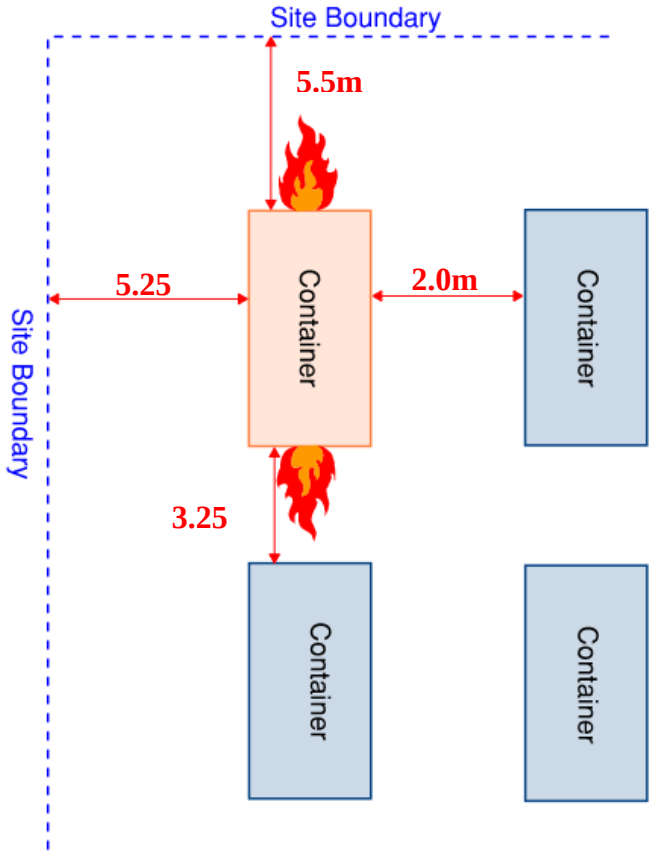

Figure 8 Pictorial representation of the fire modelling results.

Additionally, it is recommended that a containerised BESS, requiring entry for maintenance, have a fire suppression system. It is preferred for the fire suppression system to not rely on shutdown of the battery cooling system. The fire suppression system design should also consider the explosion hazard presented by offgassing, as discussed further in Section 4.2. These recommendations are considered sufficient to mitigate the offsite impact of this event SFAIRP.

4.2 Battery Explosion

As the final battery technology has not yet been chosen for the Site, this hazard has been considered for both Megapack and containerised solutions.

4.2.1 Megapacks

The Megapack design includes an engineered exhaust pathway in which each energy storage pod is connected to an exhaust manifold at the rear of the enclosure that directs gases out a vent at the top. The testing performed for NFPA found that there was no pressure build-up or release, consistent with an overpressure event, occurred inside the Megapack enclosure or initiator pod. The Megapack's exhaust manifold design reduces the risk of vapours being confined in the enclosure which would lead to an overpressure event.

4.2.2 Containerised

Due to the variety in containerised BESS design, a confined VCE was modelled for a vapour release scenario inside a battery container. Based on Arup's previous work, it is known that at high temperatures (100 °C or more), cells are designed to vent, to release internal gas pressure [7]. It is also known that for 20 ft containers, in a worst-case scenario, 400 L of hot gas will be released. This has been conservatively adjusted to be 800 L for the 40 ft containers being considered at the site. Teng et al. (2015) [8] give the compositions of gas generated by different electrolyte combinations at different charge levels. For 1:2 mixture of ethylene carbonate (EC) and diethyl carbonate (DEC), the composition of the released gas was derived from Teng et al.'s (2015) [8] testing and is shown in Table 4.

Table 4: Gas composition of a standard $LiPF_6$-EC-DEC electrolyte during a high temperature event

Material	Gas composition by mass (%)
Carbon Monoxide	34.8
Carbon Dioxide	0.2
Methane	0.3
Ethane	0.7
Ethylene	63.9

The scenario upon which the VCE model was based is an 800 L cloud of the released gas forming within the container. The indicative size of the container has been assumed to be 12.2 m (L) x 2.35 m (W) x 2.39 m (H), giving a volume of 68.5 m^3. Assuming that the batteries and other equipment inside the container take

up 50% of the available space, 34.25 m^3 was available for the gas mixture to accumulate Modelling was performed using DNV GL's modelling software *Phast v8.22*.

Using the ideal gas law $pV = nRT$, where $p = 101325\ Pa$, $V = 0.8\ m^3$, $R = 8.314\ m^3 PaK^{-1}mol^{-1}$, and $T = 373.15\ K$ gives 26.1 moles of the gas mixture and air. The molecular weight of the released gas has been calculated to be 28 g/mol which gives 732 g of fuel at 100 °C and 1 atm.

The Multi-Energy method was used to model the explosion behaviour. One of the parameters used in this method is the 'explosion strength', which is a number between 1 and 10, and is used to define the equation used in the calculations. Due to the highly confined nature of the scenario, an explosion strength of 7 was deemed most appropriate for the situation.

The inputs for the model are given in Table 5 below.

Table 5: Input parameters for the VCE model

Parameter	Value
Material	$LiPF_6$-EC-DEC mixture
Flammable mass in cloud (kg)	0.732
Volume of confined source (m^3)	34.25
Strength of explosion	7

The results are presented in Figure 9 and Table 6 below.

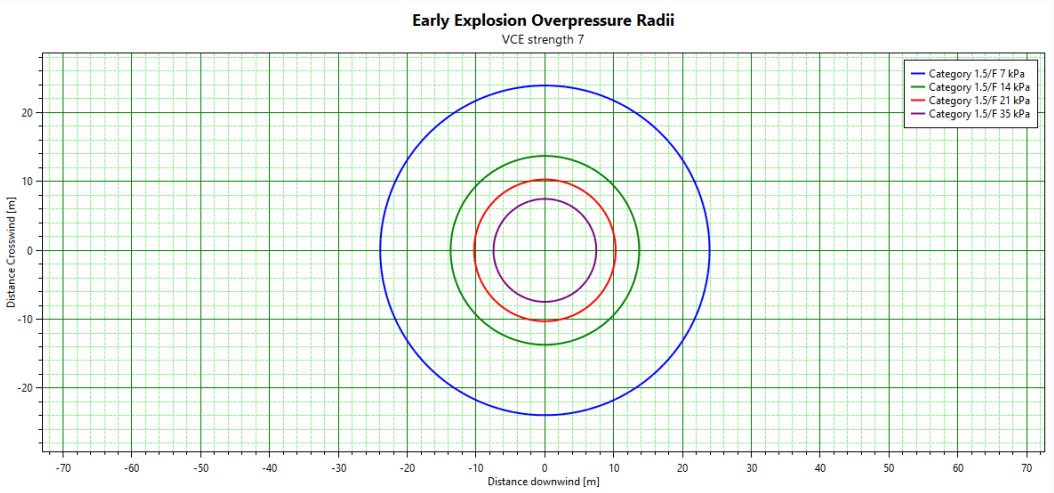

Figure 9 Overpressure contours for the VCE model

Table 6: Distances to overpressures of interest for VCE model

Overpressure (kPa)	Distance from blast centre (m)
7	24
14	14
21	10
35	7.5

HIPAP 4 [2] suggests that 7 kPa is an appropriate cut-off for risk criteria for offsite impacts. As such, it is recommended that a container without any explosion prevention or venting be at least 24 m from the site boundary to reduce the consequence of this risk. Alternatively, to reduce the likelihood and consequence of this event occurring, Arup makes the following recommendation:

- Procure a containerised BESS with explosion venting or an explosion prevention system designed to NFPA 68, NFPA 69, or an international equivalent.

The explosion venting or prevention system described above is considered sufficient mitigation to allow for the separation distances to the:

- Front/end of the container and adjacent container = 3.25 m
- Side container wall and adjacent container = 2.0 m

These recommendations are considered sufficient to mitigate the offsite impact of this event SFAIRP.

5 Findings and Recommendations

The two hazards that were identified as having the potential to cause offsite impacts, namely a battery fire and battery explosion, were carried forward for quantitative consequence analysis.

As the final battery technology has not yet been chosen for the site, these hazards were considered for both Megapack and containerised solutions.

For a fire in the Megapack, it was concluded that significant heat input is required to generate conditions that will result in a lithium ion cell thermal runaway.

For a fire in a container, in order to have a received radiant heat flux of less than 4.7 kW/m^2 at the site boundary, the required minimum separation distance between the:

- Front/end of the container and site boundary = 5.5 m; and
- Side container wall and site boundary = 5.25 m.

Similarly, in order to have a received radiant heat flux of less than 12.6 kW/m^2 on the adjacent containers, the required minimum separation distance between the:

- Front/end of the container and adjacent container = 3.25 m; and
- Side container wall and adjacent container = 2.0 m.

For an explosion of the Megapack, the testing performed for NFPA found that there was no pressure build-up or release, consistent with an overpressure event, occurred inside the Megapack enclosure or initiator pod.

For an explosion in the container, a vapour cloud explosion of vented gas was modelled. An overpressure of 7 kPa – the accepted minimum for injury or fatality – was found to extend to a distance of 24 m, and an overpressure of 35 kPa – corresponding to significant damage of structures – was found to extend to a distance of 7.5 m.

Arup makes the following recommendations to ensure that the residual risks for the identified hazards will be reduced SFAIRP:

- Separate containerised BESS 24 m from the site boundary unless the following are met:
    1. Containerised BESSs shall have a means to safely vent or prevent an explosion designed to NFPA 68, NFPA 69, or an international equivalent to reduce this risk SFAIRP. Where provided with such system,
    2. Containerised BESSs shall be separated from one another by not less than 3.25 m end to end and not less than 3 m side to side, and separated from the site boundary by not less than 10 m.
- Ensure the BESS manufacturer supplies the UL9540A fire test report for further refinement of separation distances.

- Ensure containerised BESSs have a fire suppression system, if they are to be entered for maintenance. Additionally:
    1. It is preferred for the fire suppression system to not rely on shutdown of the battery cooling system.

The fire suppression system design should also consider the explosion hazard.

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[6] T. P. a. L. Liedquist, *Steel Emissivity at High Temperature,* VTT Research Notes 2299, 2005.

[7] Arup, "Preliminary Hazards Assessment for Sapphire Solar Farm and Battery Installation," 2017.

[8] Xin Teng et al., "In Situ Analysis of Gas Generation in Lithium-Ion Batteries with Different Carbonate-Based Electrlytes," Beijing Key Laboratory of Environment Science and Engineering, School of Materials Science and Engineering, Beijing Institute of Technology, Beijing, 2015.

[9] National Transport Commission Australia, *Australian Code for the Transport of Dangerous Goods by Road & Rail, Edition 7.6,* 2018.

Appendix A

HAZID Risk Register

A1 Risk Register

Facility/Event	Cause/Comment	Possible Results/Consequences	Risk (considering current and proposed controls)			
			Existing Controls	Likelihood	Consequence	Risk
Lithium Ion Cell Leakage	Damage to cells caused by external event	Leakage of battery materials requiring clean-up	Lithium batteries do not contain free liquid electrolytes Individual cells are used which minimises extent of release	Rare	Minor	Low
Damage to batteries from vehicle collision	Light vehicle strike to batteries	Damage to battery cells Electrical risks	Use of perimeter fence around battery facility Use of internal access roads with appropriate turning circles Limit of speed limit within fenced facility Earthing system installed as per normal electrical facilities	Rare	Moderate	Low
Transformer Oil Leakage	Corrosion of tank base or leakage of oil tank	Leakage of transformer oil to environment	Use of fully bunded oil storage for transformers in accordance with AS1940 Regular tank inspections included in O&M contract inspection requirements	Unlikely	Minor	Low
Overhead Line Failure	Collapse or fall of overhead electricity line onto battery storage facility	Falling of overhead line near facility	Location of all equipment outside TransGrid easements for overhead lines Normal electricity industry practice for plant shutdown Adherence to AS7000 for overhead lines	Rare	Minor	Low
Security Breach	Security breach into battery storage facility for theft of components	Theft of equipment or risk to personnel	Installation of security fencing around entire facility and also battery facility separately Installation of CCTV security system to monitor key areas O&M inspections to monitor for security breaches	Unlikely	Moderate	Medium
Fire Spreading Internally from Battery Packs	Spread of fire across battery facility between battery packs	Localised fire causing damage by spreading to facility	Separation distances between battery packs in accordance with manufacturer recommendations Adherence to bushfire management plan Coordination with local fire authorities Use of thermal CCTV security cameras to identify fires remotely	Rare	Moderate	Low

Facility/Event	Cause/Comment	Possible Results/Consequences	Risk (considering current and proposed controls)			
			Existing Controls	Likelihood	Consequence	Risk
Coolant leakage causing eye irritation	Minor spray in eye if working on battery coolant system	Minor leakage of coolant (typical of normal engine coolant) during minor maintenance activities at site	Use of appropriately qualified maintenance personnel Use of portable eye wash (squeeze bottle) for work on battery cooling system	Possible	Minor	Low
Electrocution from electrical facility	Electrocution due to electrical fault	Electrical fault causing personnel injury	Normal electrical standards including AS3000 and installation of appropriate earthing system Use of appropriately qualified maintenance personnel	Rare	Major	Medium
Damage due to lightning strike	Lightning striking facility and causing damage	Lightning strike causing damage to facility or personnel	Completion of a lightning risk assessment in accordance with AS1768 Include lightning protection measures if deemed necessary	Unlikely	Minor	Low
Flooding of facility causing damage	High rainfall and flooding to site	Damage to electrical equipment Restricted access to site	Undertake a site-specific flooding/hydrology study to determine site flood risk and Q100 flood levels Install all electrical equipment to be above the Q100 flood level with some freeboard Ensure suitable site access and egress at different locations	Rare	Moderate	Low
Miscellaneous and Small Stores of Dangerous Goods Being Spilled	Improper handling or storage of dangerous goods	Injury to personnel Minot spill to environment	Use an appropriately rated dangerous goods cabinet for small stores in accordance with Australian Standards Use appropriate bunding for chemicals stored in IBCs Provide all MSDSs on site and only use appropriately qualified personnel for handling Comply with appropriate transport requirements according to the Australian Dangerous Goods Code.	Possible	Low	Low
Explosion of Battery Cells	Explosion of cells from physical impact causing damage to equipment and personnel	Damage to surrounding equipment and injury to personnel	Liaise with battery OEM for relevant clearance distances And understand failure mechanics for battery explosion if relevant Use of perimeter fence around battery facility Use of internal access roads with appropriate turning circles Limit of speed limit within fenced facility	Rare	Moderate	Low

Facility/Event	Cause/Comment	Possible Results/Consequences	Risk (considering current and proposed controls)			
			Existing Controls	Likelihood	Consequence	Risk
Construction risks	General miscellaneous construction risks	Injuries to construction personnel	Develop a WHS plan Conduct detailed Safety in Design processes during project execution	Unlikely	Moderate	Medium
O&M risks	General miscellaneous O&M risks	Injuries to operations personnel	Develop a WHS plan Conduct detailed Safety in Design processes during project execution	Unlikely	Moderate	Medium
High wind events and seismic events	High wind or seismic events causing structural damage to equipment or battery packs	Damage to equipment and injury to personnel	Design in accordance with AS1170 considering appropriate wind speed and seismic design requirements	Rare	Minor	Low
Transport and delivery (manual handling)	Personnel injury through manual handling of equipment during operations	Personnel injury through inappropriate handling or spillage of handled equipment	Ensure a traffic management plan is in place during construction Adhere to requirements of a WHS plan and the ADG code Ensure site specific handling equipment of a 'trolley' is used for handling of battery equipment, including portable facilities for handling where appropriate	Unlikely	Minor	Low
Exposure to dangerous goods during site emergency	Site emergency event causing personnel injury through exposure to dangerous materials during site emergency	Site emergency event causing personnel injury through exposure to dangerous materials during site emergency	Have a site-specific Emergency Response Plan (ERP) for the facility Installation of appropriate signage and labelling to identify site specific hazards for different areas Liaise with emergency response workers for site specific response requirements	Rare	Major	Medium
Offsite impacts	Fire in or explosion of BESS with impacts extending past the site boundary	Societal and individual injuries and/or fatalities	Appropriate separation distances from the site boundary Ensure the BESS has a fire suppression system Containerised BESSs should have explosion venting or explosion prevention system	Rare	Major	Medium

Appendix B

Heat Radiation Calculations

B1 Heat Radiation Calculations

A fire event in a battery container was modelled. In order to assess the worst credible case off-site risk, it was assumed that all fire prevention measures have failed and a container has caught fire. One fire configuration was considered in which double doors at both ends of the container are open.

The radiative heat flux emitted from the surface of the container was calculated using the Stefan-Boltzmann Law:

$$j^*_{emitter} = \varepsilon\sigma T^4$$

where j^* is the radiant emittance, ε is the emissivity of the container/smoke, σ is the Stefan-Boltzmann constant and T is the surface temperature. The heat flux received was calculated using the view factor method:

$$j^*_{receiver} = 4 \cdot \emptyset \cdot j^*_{emitter}$$

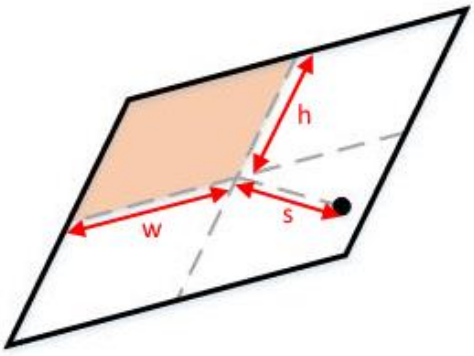
The view factor, $\emptyset$, is given by the equation

$$\emptyset = \frac{1}{2\pi}\left[\frac{a}{(1+a^2)^{1/2}}\tan^{-1}\frac{b}{(1+a^2)^{1/2}} + \frac{b}{(1+b^2)^{1/2}}\tan^{-1}\frac{a}{(1+b^2)^{1/2}}\right]$$

The parameters a and b are given by the following equations, where h is half the height of the surface, w is half the width of the surface and s is the perpendicular distance from the surface to the point of interest:

$$a = \frac{h}{s}\,; b = \frac{w}{s}$$

This is represented graphically as follows:



The radiative heat flux emitted was calculated using the Stefan-Boltzmann Law:

$$j^*_{emitter} = \varepsilon\sigma T^4$$

Appendix H

SITE MANAGEMENT PLAN & REMEDIATION CERTIFICATE B (RCA AUSTRALIA)

SITE MANAGEMENT PLAN

L0T 1102 RIVERSIDE DRIVE MAYFIELD WEST, NSW

Prepared for STEEL RIVER WEST PTY LTD

Prepared by RCA Australia

RCA ref 13191e-402/0

NOVEMBER 2020

RCA AUSTRALIA
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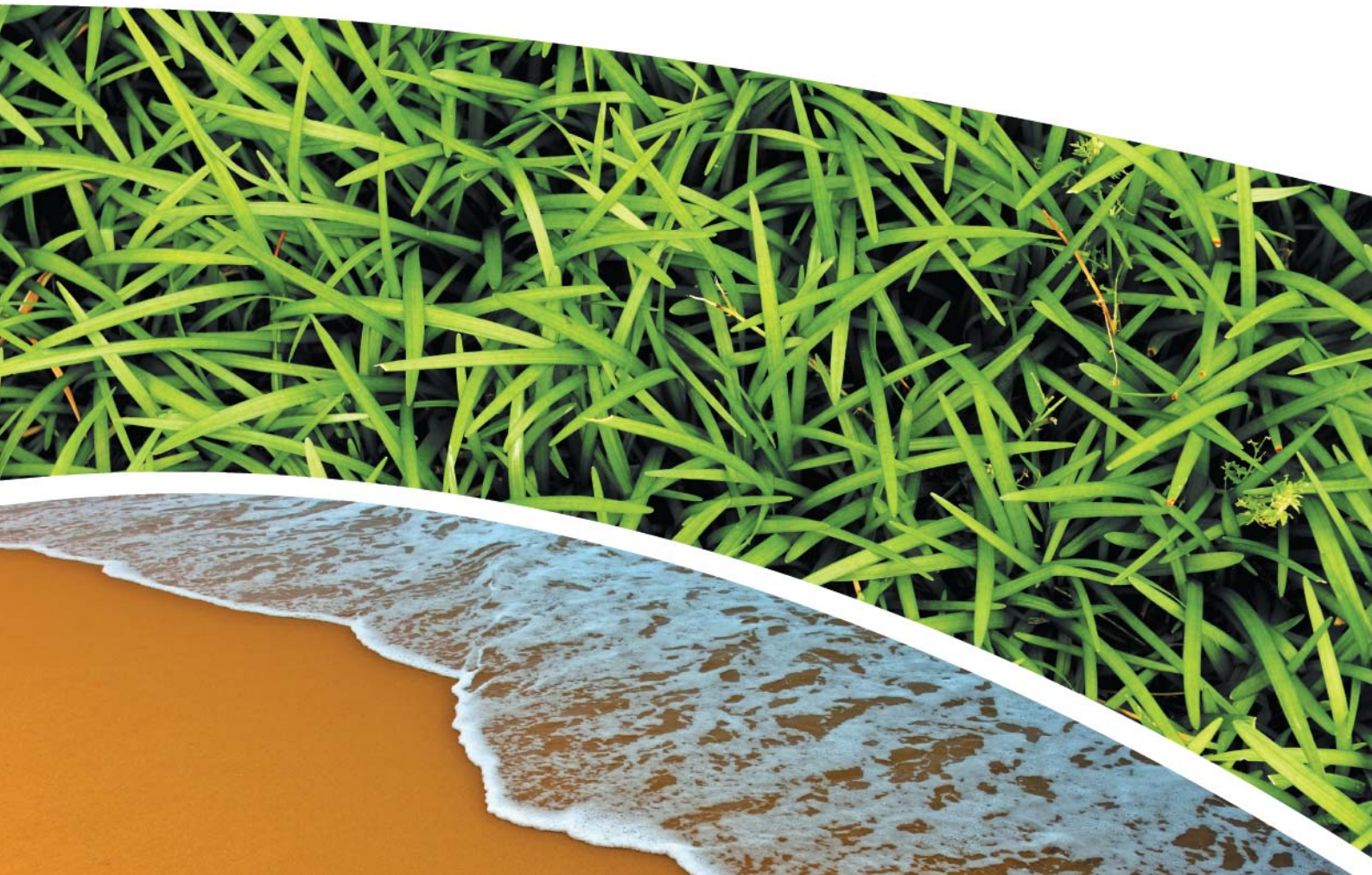

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Contents

RCA ref 13191e-401/0

27 November 2020

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Attention: Mr James Allison

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GEOTECHNICAL • ENVIRONMENTAL

- Geotechnical Engineering
- Engineering Geology
- Environmental Engineering
- Hydrogeology
- Construction Materials Testing
- Environmental Monitoring
- Sound & Vibration
- Occupational Hygiene

SITE MANAGEMENT PLAN
PROPOSED LOT 1102 RIVERSIDE DRIVE
STEEL RIVER INDUSTRIAL ESTATE, MAYFIELD WEST, NSW

1 INTRODUCTION

This Site Management Plan (SMP) applies to the proposed Lot 1102, Riverside Drive, Steel River Industrial Estate, Mayfield West NSW. Lot 1102 is a proposed Lot within the Lot 98 DP 270249 located in the north western corner of the Estate.

The site location within the Steel River Estate is shown on **Drawing 1**, **Appendix A**. At the time of writing the Lot has not yet been registered, however for the purpose of this SMP the site is identified as Lot 1102. It is noted that the final Lot number may be altered upon the completion of the subdivision.

The purpose of this SMP is to:

- Detail the management practices required during the construction works stage to protect:
  - The environment.
  - Human health.
  - The integrity of the Remediation Strategy.
- Describe the strategy for the long-term management of contaminated and potentially contaminated soils at the remaining site.

This SMP has been prepared at the request of Steel River West Pty Ltd.

1.1 WHY DOES THE SITE NEED A SMP?

The Steel River site was formerly used by BHP for the disposal of waste material, some of which includes polycyclic aromatic hydrocarbons (PAH) and tar resulting in significant soil

and groundwater contamination. This SMP is a statutory requirement of the development consent conditions from City of Newcastle and as part of the Steel River Project Site Development Guidelines, Section 1 (Ref [1]). The objective of the SMP is to ensure the proposed development does not compromise the remedial strategy during construction.

The Remedial Action Plan (RAP)/Environmental Impact Statement (EIS) (Ref [2]) for the area describes the remediation works proposed for the Steel River site. Remediation has been undertaken by capping, leaving contamination still remaining on site and preventing exposure by the placement of a layer of clean material. After completion of the remediation works, which were undertaken between 1998 and 2001, a validation report (Ref [3]) was prepared for the Steel River site.

The validation report (Ref [3]) concluded that remediation works for the site were successfully undertaken in accordance with, and to the specifications of, the remediation strategy for the subject site required by the RAP/EIS (Ref [2]). Lot 1102 is located within this validation area.

Based on the remediation strategy as detailed in the RAP/EIS (Ref [2]), Site Development Guidelines (Ref [1]) and other previous investigation across the Steel River site as a whole, the site's fill and underlying groundwater may contain unidentified contamination such as tar and other coke chemicals.

The development of the Steel River Industrial Estate site has been approved in principal by City of Newcastle, with a staged approval programme for specific works at the site. Relevant information to the site regarding this process is summarised below:

1.1.1 CERTIFICATE A

The Certificate A applies to the whole of the Steel River Industrial Estate site and verifies that the whole of the Steel River site (more than one specific Lot) has been remediated. Lot 1102 is included in the Certificate A prepared for BHP Limited by URS Australia dated February 2001 (Ref [4]). The Certificate A reports that:

- The site is confirmed to have been remediated in accordance with the specifications of the Steel River Project.
- More broadly, validation of remediation works on, and surrounding the site confirmed:
    - Locations of natural and fill materials.
    - Locations of known contaminated materials were covered by two (2) metres of capping.
    - Locations of contamination cells.
        - The Primary Containment Cell is within Lot 98 however is not within the boundary of Lot 1102.
    - Soil compaction.
    - CWR and other capping materials were suitable as capping.
    - Site surface levels.

1.1.2 CERTIFICATE B

A Certificate B describes the status of the remediated surface and specifies what is known about the subsurface conditions of an individual parcel or Lot. The Certificate B (Ref [5], **Appendix B**) for the land (Lot 98) which includes Lot 1102 was prepared by RCA Australia for Steel River West Pty Ltd. The certificate states that:

The subsurface conditions comprise a minimum 2m capping of coal washery reject or other clean material with the exception of the Primary Containment Cell area (which does not apply to the Lot 1102 site) for which capping comprises:

- A presumed depth of between 1.4-1.7m coal washery reject or other clean material.
- A high-density polyethylene (HDPE) liner.
- Protective geotextile fabrics.
- A drainage layer and associated drainage system.
- Overlying clean material (0.3-0.6m in thickness).

Material below the capping material includes slag, gravel, anthropogenic waste (wire, timber, brick, metal pieces), ash (fly and boiler) and tar overlying natural clays and estuarine sediments.

A number of stockpiles of material are present on Lot 98: these have been assessed (Ref [6], Ref [7])) in accordance with current guidelines (Ref [8]) and found to be suitable for use on site.

1.1.3 SITE MANAGEMENT PLAN

The SMP details the day-to-day requirements for construction work undertaken at the site. Specifically, the SMP requires the developer to detail soil movement, water management and workplace health and safety (WHS) controls required to ensure the protection of human health and the environment. The purpose of the SMP is to ensure the proposed construction works for the development will not compromise the Steel River Project – Construction Guidelines (Ref [1]), RAP/EIS (Ref [2]) and/or site specific remediation works (Ref [3]).

1.1.4 CERTIFICATE C

Certificate C assesses the suitability of the proposed development of each allotment based on specific engineering information and the known characteristics of the site. RCA understand that a Certificate C for the proposed development of Lot 1102 has not yet been prepared.

1.1.5 CERTIFICATE D

Certificate D is prepared at the completion of the development to document whether or not the works that were undertaken are as generally proposed and have not compromised the RAP/EIS and other site guidance documents. It details interactions with any contamination of the remedial surface and certifies that the remedial surface has been fully reinstated after the works.

1.2 WHEN DOES THE SMP APPLY?

The SMP applies during any intrusive works through the surface associated with the development/construction phase of Lot 1102 including, but not necessarily being limited to, the excavation of footings, installation of services, roads, carparks and landscaping.

It is noted that after the completion of construction an Owners Management Plan is required to ensure that long-term management practices maintain the integrity of the cap and appropriate management procedures are implemented for occasions when intrusive works are required.

1.3 RESPONSIBILITY

The controls listed in the SMP must be followed to ensure the protection of human health and the environment during the development/construction phase of the site.

Any intrusive works during the development/construction phase have the potential to impact on the integrity of the capping layer. The owner is responsible for ensuring all workers are aware of the potential issues of the site and adhere to the management controls as described in this SMP.

All contractors on site prepare a Workplace Health and Safety Plan (WHSP) and that all personnel have been briefed on any potential hazards including potential contamination. Workers will be required to follow procedures as outlined in the WHSP. Non-compliance with this SMP may result in increased exposure to contamination and an unacceptable risk to human health and/or the environment.

1.4 DISTRIBUTION

The owner and occupier of the site must hold a copy of this SMP on site at all times. All contractors that are engaged to undertake works below the capping layer must receive or review a copy prior to work commencing to enable determination of potential risks for the proposed works.

2 SITE SPECIFIC ISSUES

Lot 1102 is currently vacant land, however has been used for stockpiling materials from previous stages of the Steel River development. The site covers an area of approximately 6,000m^2.

2.1 TOPOGRAPHY AND SURFACE DRAINAGE

The site is located on the north western side of Riverside Drive. The site is flat and it is understood that site drainage is proposed to be towards existing stormwater infrastructure located adjacent to the existing rail line along the north western boundary as shown on **Drawing 1**, **Appendix A**. At the time of writing the site is generally bound by vacant land with proposed unfinished Riverside Driver located to the east and the existing rail line to the west. The site along with surrounding areas are within an area zoned 'IN1 – General Industrial' under the Newcastle Local Environmental Plan 2012 (Ref [9]).

The site has been used for the stockpiling of materials sourced during the Stage 9 construction works as detailed in the validation report (Ref [10]).

RCA conducted sampling of these stockpiles in January 2020 (Ref [7]) and concluded that the material was generally suitable for reuse on the Steel River site however noted that some augmentation of material may be required if material was to be used in areas of proposed landscaping due to concentrations of benzo(a)pyrene in excess of the ecological criterion It was recommended that the potential for isolated incidence of tar impact be taken into account when material is re-used and any further tar impact removed if identified during excavation. At the time of writing this SMP these stockpiles remain on the site.

The potential for flooding of the site is considered to be low based on the elevation above the Hunter River and the extensive low lying land on the opposite side of the River.

The Hunter River South Arm is located approximately 250m to the north east of the site and is considered the closest sensitive environment to the site. The closest sensitive use site is understood to be residents in Warabrook located approximately 250m to the south west of the site.

2.2 GEOLOGY AND HYDROGEOLOGY

No intrusive works were undertaken at the site specifically for this assessment. Based on the Steel River Project – Construction Guidelines (Ref [1]), shallow soils (approximately 0.6m) are likely to comprise re-contoured and compacted silty sand and gravel including slag material.

Groundwater is expected to be greater than 7.0m below the existing ground surface (Ref [11]) noting that groundwater levels are likely to fluctuate due to variations in tidal, climatic and site conditions. Groundwater flow is expected to be towards the north and Hunter River (South Arm).

3 PROPOSED LAND USE

The proposed works comprise the construction of twelve (12) above ground battery (rack) containers, one (1) 33kv switch room, one (1) operation and maintenance container and one (1) diesel generator and kiosk. All battery containers will be placed on concrete slab within the compacted gravel area of the site which comprises approximately 47% of the site area. Landscaped areas which comprise approximately 33% of the site area are proposed primarily within the western portion of the site however some landscaped areas will be present along the southern and eastern boundaries. The remainder of the site will form a concrete drive way/access road. Driveway access to the site will be from Riverside Drive with entrance/exit points at the north eastern and south eastern corners of the site.

Minor earthworks will be required to achieve site levelling and excavation of shallow trenches for buried cabling. The excavation works are not proposed to exceed depths of 2m below the current ground surface.

The site plan layout of the proposed development is included on **Drawing 1**, **Appendix A**.

4 OCCUPATIONAL HEALTH AND SAFETY

Any contractors engaged to undertake work on the site will be required to prepare a Workplace Health and Safety Plan (WHSP) due to the presence of potentially contaminated materials at the site. The WHSP should provide a general description of the proposed activity and consider whether that activity may encounter or otherwise impact potential contamination issues. Where there is a potential to encounter contamination issues, the WHSP must document measures to be implemented to reduce the risk to human health and the environment. An example of the hazard, likelihood and control measures is outlined in **Table 1**.

Table 1 *Chemical and Physical Hazards and Control Measure*

Hazard	Likelihood of hazard	Control Measure
Contact with potentially contaminated material	Excavations below the capping layer have the potential to excavate PAH and metal contaminated material. Contaminated material may not be identifiable by visual or olfactory means. Minimal potential to encounter free tar material and soil with elevated PAH concentrations within the current capping layer.	Wash areas are to be provided to allow workers to wash hands and face prior to taking meal breaks or leaving the site. Gloves are to be worn when handling soils.

All personnel involved in site works should attend a health and safety briefing/induction prior to work commencing on the site, with an overview of the project and potential concerns as described in **Table 2**, due to exposure to contamination. A record of attendees at this induction should be documented and attendees should sign an acknowledgment and understanding of the issues relating to potential for contamination at the site.

Table 2 *Issues Relating to Exposure to Contaminants*

Issue	Control Measure
Scheduled site activities and personnel responsibilities	All excavations undertaken on the site are to be carried out by personnel trained in the requirements of this Site Management Plan. It is the responsibility of the site supervisor to ensure that excavation works are carried out by appropriately trained personnel.
Site control procedures	Site control procedures are outlined in **Table 3.**
Warning symptoms from exposure to contaminants	Warning symptoms can include olfactory evidence of contamination prior to onset of dizziness, headache and nausea which can occur from the inhalation of PAH vapours. If PAH odours are detected personnel are to vacate the area immediately and allow vapours to dissipate. An assessment of the contamination must be undertaken by a suitably qualified consultant prior to restarting works.
Protective equipment usage	No protective equipment is considered necessary in additional to standard construction wear for works within the capping material. In the event of excavations below the capping material, gloves, long sleeve shirts and long pants are required. Strict implementation of hygienic principles of washing hands and face before eating and drinking are required. The use of tyvek suits and masks may be required depending on the activity and the level of exposure to the contaminated material. Depending on the proposed extent of excavation within contaminated material, as determined by the WHSP, a decontamination facility may be required. This would be provided immediately outside the work area and is to include cold running water and hospital grade detergent for the purpose of hand washing.
Phase Separated Hydrocarbons	While the likelihood of free phase contaminants being encountered is extremely low, work procedures should specify the immediate cessation of all work and consultation with an appropriately qualified contamination professional. A specified Excavation Management Plan (prepared by an appropriately qualified contamination professional) may be required.
Emergency response	Personnel affected by contaminated soils at the site are to be taken for evaluation to the nearest hospital. This is to be undertaken following the emergency response plan for the site.

The WHSP should also address any other hazards associated with working on the site, as per the requirements of the *Work Health Safety Act 2011 No 10* and associated regulations. This should include as a minimum, identification of all hazards, their likelihood of occurrence and control measures to be undertaken. A Job Safety Analysis (JSA) should be included for these risks identified.

The health and safety briefing should be provided to any new personnel as they arrive at the site. In addition, on site safety meetings should periodically review safety requirements and discuss modifications to the Health and Safety Plan.

5 SITE MANAGEMENT WORKS

Table 3 details environmental management provisions relating to the management of soil for the protection of groundwater and surface water. These provisions are to be included in works methodology where appropriate during the construction period. Documentation is required to be maintained for later certification.

All phases of the development/construction must be undertaken in accordance with The Steel River Construction Guidelines (Ref [1]) and any management plans relevant for the site[1]. These guidelines specify requirements for the handling of coal washery reject, handling of potentially contaminated material and disposal of any excess material. Handling procedures are detailed in the following sections.

Table 3 *Environmental Management Objectives and Control Measures*

Objective	Control Measure	Requirements
To maintain the integrity of the cap such that the remedial strategy isn't compromised.	Where capping material is removed as part of the construction, an equivalently low permeability material must be placed in its stead. The use of concrete/bitumen is suitable for this purpose.	Document areas from which capping is removed and what replacement material is used. Where replacement material does not comprise concrete/bitumen, the permeability of the material must be documented by the manufacturer's specifications as $1x10^{-7}$m/s.
To control the movement of soils at the site	All soil materials are to be tracked during excavation and movement on site. Records should include material description, depth and area located on a plan and final placement including depth and area located on a plan. Contaminated materials can be excavated and moved across the site providing the capping layer is suitably replaced in both areas and soils that were previously above the water table remain above the water table ie, soil excavated last should return to the base of the excavation where practicable. All potentially contaminated material excavated from beneath the capping layer is to be stockpiled on an impervious and bunded area to prevent surface water runoff. Any material impacted by tar or tar impacted products must be stockpiled separately. If excavated material is intended for re-use, differing material types should be segregated and stockpiled in order of excavation, and replaced into the excavation in the order they were removed.	Document material movement including material type, any visual or olfactory observations, location of placement. Health and safety plans for site work. Staff register which documents health and safety inductions.

[1] At time of writing RCA understand that a long term environmental management plan (Ref [11]) will apply to the subdivision area in which Lot 1102 is situated.

Objective	Control Measure	Requirements
To control erosion and potential sediment transport from the site by stormwater. To prevent surface run-off from becoming contaminated as a result of soil disturbance or contact with site contaminants.	Minimise disturbance of the site, and surface area disturbed by excavation activities at any one time. All reasonable steps are to be undertaken to prevent incursion of stormwater on to the site. Placement of straw bales/silt fence around any stormwater inlets and lower boundary of the site to prevent incursion of sediment into inlets or transport off site. Regular inspection and maintenance of erosion control structures. Erosion and sediment controls to be undertaken in accordance with the Soils and Construction Handbook 2004 (Ref [12]). In the event that excavations greater than 1000m^2 are required, earth bunds or diversion drains are to be constructed around the perimeter to prevent surface water ingress.	Inspection records of erosion control structures
To ensure that any contaminated materials encountered are appropriately managed including appropriate disposal	Contact an appropriately qualified contamination professional for advice regarding the disposal of any excess soil. Any excavated contaminated soil must be disposed of in accordance with the Remediation EIS (Ref [2]) and relevant waste legislation (Ref [13]).	Suitable documentation of any material removed from the site
To ensure any buried or stockpiled waste material is appropriately managed including appropriate disposal.	Whilst not anticipated, in the event that any excavated waste material or surface waste material are encountered during works, these must be removed and disposed of in accordance with the relevant waste guidelines (Ref [13]).	Suitable documentation of any waste material removed from the site. Must be removed to a licenced waste facility.
To minimise the extent of soil transport and erosion	Minimise vehicular movement on the exposed soils, trade vehicles to park on road. Trucks to be loaded and unloaded while parked on roads or impervious surface where possible. No soil or other construction material is to enter the stormwater drains. Street sweepers or other methods are to be used whenever necessary to ensure that this material is removed.	Establish a materials movement database
To minimise contamination of surface water by groundwater	If groundwater is encountered, work must cease. An appropriately qualified contamination professional must be consulted for advice on how to proceed. Sampling may be required.	Records regarding encounter with groundwater and clearance to proceed

Objective	Control Measure	Requirements
To minimise dust emissions and prevent exposure to site workers	Minimising the surface area disturbed by excavation, stockpiling and/or filling locations. Confining vehicle movements to paved roads or available hardstand areas, to the extent possible. Restricting the speed of vehicle movements and ensure all trucks with loads are covered. Use of water sprays to suppress dust during excavations. Watering of active work areas (including stockpiles) by water cart and/or sprinklers to suppress dust in dry conditions where necessary. Water spray equipment should be on site and available for use whenever dust generation is likely. Dust monitoring is to be undertaken at the site if dust is likely to be generated.	Dust minimisation plan. Documentation of all dust monitoring undertaken.
To reduce odour emissions from the site	Odour emissions at the site are not likely, however, in the event that emissions occur the following precautions should be adopted: Water sprays and odour retardant are to be applied surrounding the excavation should odours be excessive and impacting on neighbouring premises.	Record area of odour impact and mitigation measures adopted
To minimise waste generation and ensure the appropriate handling of waste on the site	The contractor should ensure that site operations minimise the generation of waste products through recycling and re-use. It is the contractor's responsibility to dispose of all waste products from the site appropriately.	Document of waste disposal
To minimise noise from machinery	All work at the site is to be undertaken in accordance with the development consent for the project. Ensure noise mitigating measures on construction equipment are in place and operating correctly.	Register of hours worked and complaints to be kept
To reduce the likelihood of site contamination from machinery maintenance and operation	Only minor machinery maintenance is to be undertaken at the site and is to be undertaken within a designated area. No surface staining should occur and a spill response plan is to be developed for use in the event of accidental spillage. All refuelling of machinery is to be undertaken in a designated area of the site by dedicated fuel supply vehicles. Care should be taken to ensure that no surface staining occurs. A spill response kit is to be available at the site, and vehicle operators and site personnel suitably trained in its use. All spills are to be suitably remediated and recorded in the incident register.	Develop a Spill Response Plan

All documentation as detailed in **Table 3** must be provided for the compilation of Certificate D at the completion of the project.

6 CORRECTIVE ACTION PROCEDURES

In the event of any unexpected situation the site supervisor should be contacted immediately. The site supervisor would then be responsible for implementing the necessary steps outlined in the WHSP and contacting the relevant services and statutory authorities. If, for any reason, the site supervisor is not available a person should be delegated with those responsibilities normally undertaken by the site supervisor.

In the event that a management strategy fails or there is an environmental incident or community complaint then the site manager will review the situation and consult with the relevant regulatory body/bodies if required.

Following an environmental incident or community complaint an investigation shall be carried out and the following recorded:

- Incident and identified consequences.
- Action taken.
- Measures taken to prevent the incident or complaint from recurring.
- Date and time of notification of incident or complaint to appropriate authorities if required.

As a result of the investigation this management plan will be amended if required.

Conditions that may be encountered are often uncertain. **Table 4** summarises conditions that can reasonably be expected, and how they may be resolved.

Table 4 *Contingency Planning, Potential Problems and Corrective Actions*

Anticipated Problem	Corrective Action
Excessive rain	Before rain arrives protect the site to the extent possible (such as sealing earthworks with a roller and fully implement or reinforce sediment and run-off control measures). Dispose of excess water on site in accordance through a suitably licensed waste contractor or as approved by appropriate regulatory authority.
Excessive dust	Use water sprays and/or cease dust-generating activities until control can be achieved. Change methodology or await change in weather conditions to avoid issue further.
Release of fuel/oil from equipment	Apply Spill Response Plan procedures. Stop leak, remove fuel/oil, make any repairs as required. Appropriately treat and/or dispose of effected soil.
Inflow of groundwater	Sample and treat/dispose of groundwater that accumulates in excavations if required. Disposal should be undertaken by a suitably licensed waste contractor or as approved by appropriate regulatory authority.
Excessively wet materials	Stockpile and dry on site any wet material. If material is suspected of being contaminated, stockpile in a sealed and bunded area on site.

Anticipated Problem	Corrective Action
Encounter drums or other previously unknown impacted objects and materials	Cease work in the area and delineate the extent of any impacted material/objects. Set aside impacted material/objects in sealed and bunded area. If object is a drum, contact disposal specialists. Do not open if drum is swollen. A suitably qualified expert should assess material appropriately.
Encounter oil or grease on water	Collect with oil absorbent cloth.
Excessive odours	Spray materials with odour suppressant and reduce working area of excavation.
Excessive spoil generated	Segregate on excavation and have material assessed by a suitably qualified person prior to determining suitable on site placement.

7 LIMITATIONS

This report has been prepared for Steel River West Pty Ltd in accordance with an agreement with RCA Australia (RCA). The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the sole use of Steel River West Pty Ltd and for Newcastle City Council in its assessment of the proposed development as detailed in this report. The report may not contain sufficient information for purposes of other uses or for parties other than Steel River West Pty Ltd and for Newcastle City Council in its assessment of the proposed development. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA Australia.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. Conditions can vary across any site that cannot be explicitly defined by investigation.

Environmental conditions including contaminant concentrations can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue.

Yours faithfully

RCA AUSTRALIA

Kirsty Nealon
Senior Environmental Scientist

Fiona Brooker
Environmental Services Manager

REFERENCES

[1] BHPB, *Steel River Site Construction Guidelines (Revision 1.0)*, November 2015.

[2] Woodward-Clyde, *Steel River Project – Remedial Action Plan Environmental Impact Statement*, May 1997.

[3] URS Australia Pty Ltd, *Remediation Validation, Steel River Site*, prepared for BHP Billiton by URS Australia, (URS ref: 34933-020), November 2004.

[4] URS Australia Pty Ltd, *Certificate A, BHP Limited – for the Area Encompassing: the Former Boral Compound and Access Road, Lots 13, 14 and 15 of Sector G, Parts of Sectors B, C, D, F, H, I, FT 23*, 5 February 2001.

[5] RCA Australia, *Certificate B, Lot 98, Steel River West*, March 2020.

[6] OHMS Environmental, *Characterisation of Stockpiles, Steel River – Stage 9 and 10, Lot 98 DP270249,* Report Number: J170520.

[7] RCA Australia, *Stockpile Material Assessment, Steel River Estate, Mayfield West,* RCA ref: 13191a-407/0

[8] NEPC, *National Environment Protection (Assessment of Site Contamination) Measure,* 1999 as amended 2013

[9] Newcastle City Council, *Newcastle Local Environment Plan 2012*, Land Zoning Map – Sheet LZN_004A, 16 September 2016.

[10] RCA Australia, *Validation Report – Stage 9 Subdivision Works, Steel River Mayfield West*, September 2019, RCA ref 13191a-404/1

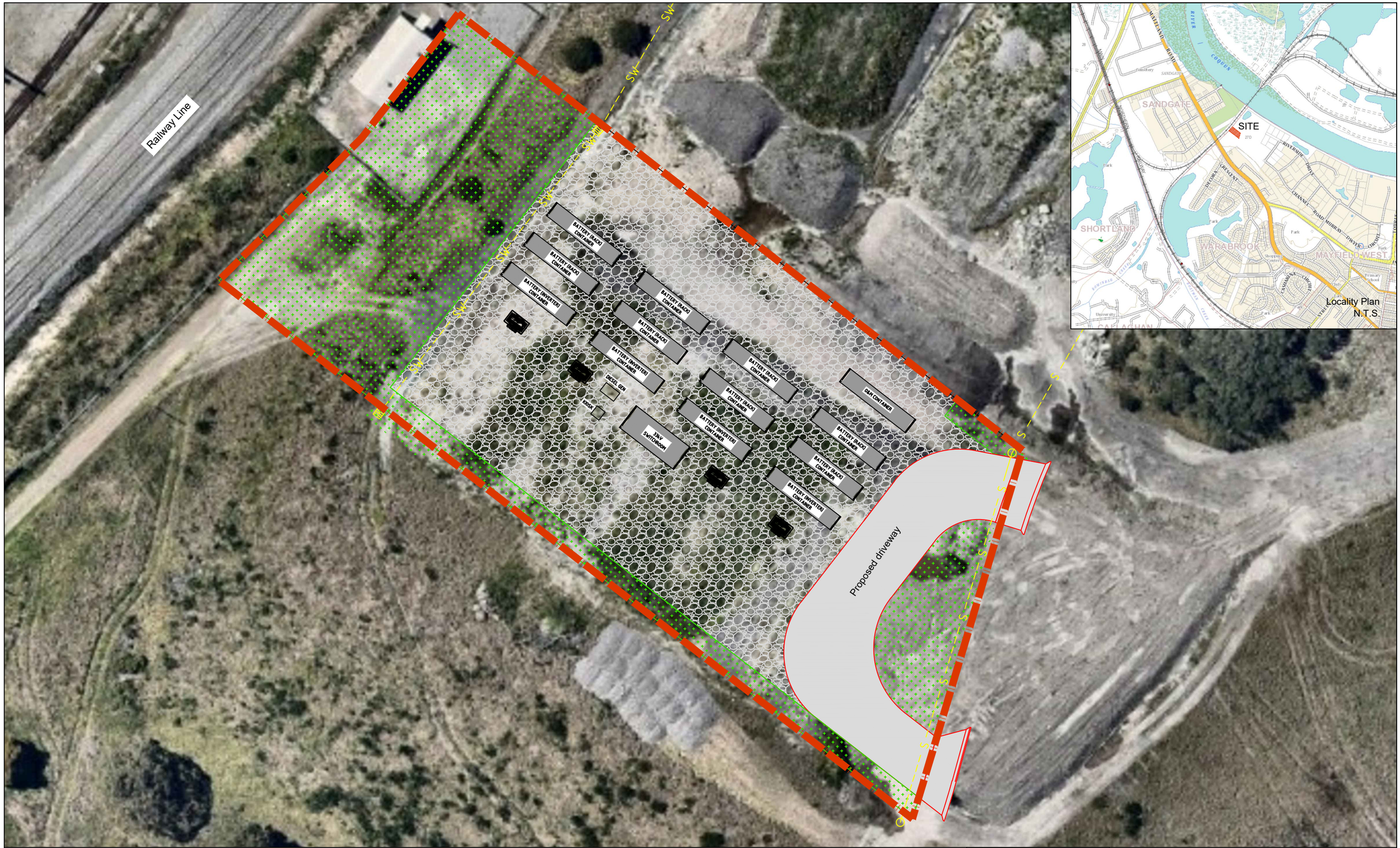
[11] RCA Australia, *Steel River Precinct Long-Term Environmental Management Plan and Road Opening Management Plan*, RCA ref: 13191a-405/2, January 2020

[12] Soils and Construction Handbook, 4th Edition, Landcom, 2004.

[13] NSW EPA, *Waste Classification Guidelines, Part 1; Classifying Waste*, November 2014.

Appendix A

Drawing



LEGEND

- Approximate site boundary
- Landscaped area
- Gravel area
- SW — Stormwater alignment
- S — Sewer alignment

NOTE: Aerial image taken from Nearmap, October 22 2019
(used in accordance with commercial licence)
Drawing adapted from drawing supplied by Steel River West Pty Ltd
(drawn by GCA Engineering Solutions, Project No. 20269, Dwg No. LD101, Rev. 2, dated 29.10.2020)

0 50 10 15 20 25
metres

N

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GEOTECHNICAL • ENVIRONMENTAL

SITE LOCALITY, LAYOUT PLAN, AND PROPOSED SITE DEVELOPMENT LOT 1102 STEEL RIVER RIVERSIDE DRIVE, MAYFIELD WEST

CLIENT	Steel River West Pty Ltd			RCA Ref	13191e-402/0
DRAWN BY	KN	SCALE	1:500 (A3)	DRAWING No 1	REV 0
APPROVED BY	FB	DATE	27/11/2020	OFFICE	NEWCASTLE

CDT-DWG-A3H-001/1

Appendix B

Certificate B

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

Geotechnical Engineering
Engineering Geology
Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Sound & Vibration
Occupational Hygiene

RCA ref 13191c-408/0

18 March 2020

Steel River West Pty Ltd
Level 1
2 Barrack Street
SYDNEY NSW 2000

Attention: The Directors

CERTIFICATE B – LOT 98, STEEL RIVER WEST

Remediation Validation Requirements for Certificate B*	Certification by RCA
Specific to a particular lot on site	Lot 98 DP 270249 This Certificate B replaces an Interim Certificate B issued in September 2009 for Lot 98 following the completion of a number of aspects at the site.
Description of the status of remedial surface on the lot and specifies what is known about the subsurface conditions on the site to aid in the environmental management procedures during development.	The subsurface conditions comprise minimum 2m capping of coal washery reject or other clean material with the exception of the Primary Containment Cell area (refer attached) for which capping comprises: • A presumed depth of between 1.4-1.7m coal washery reject or other clean material. • A high-density polyethylene (HDPE) liner. • Protective geotextile fabrics. • A drainage layer and associated drainage system. • Overlying clean material (0.3-0.6m in thickness) Material below the capping material includes slag, gravel, anthropogenic waste (wire, timber, brick, metal pieces), ash (fly and boiler) and tar overlying natural clays and estuarine sediments. A number of stockpiles of material are present on site: these have been assessed (Ref [1], Ref [2])) in accordance with current guidelines (Ref [3]) and found to be suitable for use on site.
States that the lot as remediated is suitable for certain types of development.	The Lot is suitable for commercial / industrial development subject to works being undertaken in accordance with the Steel River Construction Guidelines (Ref [4]), relevant management plan (Ref [5]), and Certificate C and Site Management Plan(s) that are yet to be prepared for the site.

* URS Remediation Validation Steel River Site 30 Nov 2004

Yours faithfully
RCA AUSTRALIA

Fiona Brooker
Manager of Environmental Services

REFERENCES

[1] OHMS Environmental, *Characterisation of Stockpiles, Steel River – Stage 9 and 10, Lot 98 DP DP270249*, Report Number: J170520.
[2] RCA Australia, *Stockpile Material Assessment, Steel River Estate, Mayfield West*, RCA ref: 13191a-407/0.
[3] NEPC, *National Environment Protection (Assessment of Site Contamination) Measure*, 1999 as amended 2013.
[4] URS updated by BHP Billiton Limited, *Steel River Site Construction Guidelines*, 24 November 2015.
[5] RCA Australia, Steel River Precinct Long-Term Environmental Management Plan and Road Opening Management Plan, RCA ref: 13191a-405/2, January 2020


1009
1006
1005
1007
1004
1008
1003
RIVERSIDE DRIVE
1002
1001
CHANNEL ROAD
80
81
82
91
LEGEND
Approximate Boundary
Primary Containment Cell
Potential Tertiary Containment Cell
Note that Lot numbers are as per current development approval for Stage 10, Lot 998 subdivision

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

Geotechnical Engineering
Engineering Geology
Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Sound & Vibration
Occupational Hygiene

RCA ref 13191c-408/0

18 March 2020

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SYDNEY NSW 2000

Attention: The Directors

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* URS Remediation Validation Steel River Site 30 Nov 2004

Yours faithfully
RCA AUSTRALIA

Fiona Brooker
Manager of Environmental Services

REFERENCES

[1] OHMS Environmental, *Characterisation of Stockpiles, Steel River – Stage 9 and 10, Lot 98 DP DP270249*, Report Number: J170520.
[2] RCA Australia, *Stockpile Material Assessment, Steel River Estate, Mayfield West*, RCA ref: 13191a-407/0.
[3] NEPC, *National Environment Protection (Assessment of Site Contamination) Measure*, 1999 as amended 2013.
[4] URS updated by BHP Billiton Limited, *Steel River Site Construction Guidelines*, 24 November 2015.
[5] RCA Australia, Steel River Precinct Long-Term Environmental Management Plan and Road Opening Management Plan, RCA ref: 13191a-405/2, January 2020


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CHANNEL ROAD
80
81
82
91
LEGEND
Approximate Boundary
Primary Containment Cell
Potential Tertiary Containment Cell
Note that Lot numbers are as per current development approval for Stage 10, Lot 998 subdivision

Appendix I

ACID SULFATE SOILS POTENTIAL LETTER (RCA AUSTRALIA)

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

Geotechnical Engineering
Engineering Geology
Environmental Engineering
Hydrogeology
Construction Materials Testing
Environmental Monitoring
Sound & Vibration
Occupational Hygiene

RCA ref 13191e-401/0

27 November 2020

Steel River West Pty Ltd
Suite 5, Level 5
66 Hunter Street
Sydney, NSW, 2000

Attention: The Directors

LETTER REGARDING ACID SULFATE SOIL POTENTIAL
PROPOSED LOT 1102 STEEL RIVER, MAYFIELD WEST NSW

The Directors,

This letter has been prepared to provide advice on the potential to encounter acid sulfate soil (ASS) during proposed development at Proposed Lot 1102 (within existing Lot 98 DP270249), Steel River, Mayfield West NSW.

Department of Natural Resources ASS Risk Maps published in 1997 show the site as being at the cusp of areas mapped as being disturbed terrain and no known occurrence of acid sulfate soils. The area mapped as being disturbed terrain is mapped as having a site surface being at 1-2m elevation at the time of survey.

It is noted that site capping remediation works were undertaken in 2004 (Ref [1]), with validation survey data showing the site at an elevation of 10m to 11m. This suggests a filling depth of approximately 9m across the site area.

A geotechnical investigation undertaken by RCA in December 2017 (Ref [2]) reported fill material to the limit of investigation, which was a minimum of 2m in depth from the existing surface. Test pit locations were primarily located on or adjacent to the Riverside Drive and Channel Road alignments. The material types encountered during the assessment of the test pit locations closest to the site (TP7 and TP8) consisted primarily of gravels with coal and siltstone rejects (including boulders up to 0.5-0.6m). These material types are not consistent with potential acid sulfate soils.

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When potential ASS (PASS) is exposed to an oxygenated environment, oxidation occurs, therefore PASS is generally restricted to depth close to or below the existing groundwater table. The groundwater table present on the site is located at depths greater than 7m from the existing surface (Ref [3]), indicating that PASS are unlikely to be encountered during the proposed development construction.

It is considered that ASS would not be encountered within the upper 2m of the site, and likely not until depths of up to 9m at the site. However, given the groundwater table is approximately 7m in depth, it is recommended that any excavations beyond 7m, or where a natural estuarine soil profile is encountered, assessment for potential ASS should be undertaken and, if required, an ASS management plan prepared for those excavations at depth.

Yours faithfully
RCA AUSTRALIA

Kirsty Nealon
Senior Environmental Scientist

REFERENCES

[1] URS Australia Pty Ltd, *Remediation Validation – Steel River Site*, 30 November 2004.

[2] RCA Australia, *Geotechnical Investigation – Steel River West*, January 2018 (RCA ref: 13303-201/1).

[3] RCA Australia, *Steel River Precinct Long-Term Environmental Management Plan and Road Opening Management Plan*, RCA ref: 13191a-405/2, January 2020

Appendix J

STATEMENT OF HERITAGE IMPACT (EIKOS ENVIRONMENT AND HERITAGE)

Statement of Heritage Impact

Proposed Battery Storage Facility: 'Steel River Battery'
27D Riverside Drive MAYFIELD WEST
Lot 12 DP 280089

Eikos Environment and Heritage
ABN 1960 770 8340
16 November 2020

Production
Statement of Heritage Impact – Proposed Battery Storage 27D Riverside Drive Mayfield West
prepared by Eikos Environment and Heritage ABN 1960 770 8340
web: www.eikos.com.au

Prepared on behalf of
Joint Venture between Precinct Group (Contact James Allison 0287904044 james@precinctgroup.com.au) and Edify Energy (Contact Patrick Dale 0487 177 136 Patrick.dale@edifyenergy.com).

Version: Final

Disclaimer: The recommendations outlined in this report have been provided in accordance with the *Newcastle Local Environment Plan* 2012 *(LEP), the Development Control Plan (DCP) 2012 and the principles and articles outlined in the Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance, 2013.* Eikos Environment and Heritage has exercised all due care and diligence in the compilation of this report. Eikos Environment and Heritage takes no responsibility for any damage or loss that may be experienced from the implementation of these measures.

Front Cover: Photo showing part of the site at 27D Riverside Drive, Mayfield West for the proposed Battery Storage Facility

CONTENTS

TABLE OF CONTENTS

1.0 INTRODUCTION

This Statement of Heritage Impact (SoHI) has been prepared to accompany an application for a proposed battery storage facility to be known as 'Steel River Battery'.

Located at 27D Riverside Drive Mayfield West (Lot 12 DP 28008900), the development will contain several storage facilities housing 28MW two hour duration advanced lithium ion batteries (Fig. 1). The site is situated within approved Lot 1102 as part of future Stage 11 within the Steel River Business Park (Fig. 3).

This SoHI will review the proposal and assess any potential heritage impacts on the Former Migrant Camp located nearby (Fig. 2). It will address the requirements of the Newcastle Local Environment Plan 2012 (LEP) and relevant heritage legislation by considering the effects of the proposal on this State nominated heritage item.

This SoHI is consistent with the Australia International Council on Monuments and Sites (ICOMOS) Charter for Conservation of Places of Cultural Significance (Burra Charter) and has been prepared to assist in the consideration of the proposed development using the methodology outlined in *Statements of Heritage Impact*, Heritage Office/ Department of Urban Affairs and Planning, 1996, and *Conservation Areas*, published by the Heritage Office and department of Urban Affairs & Planning, 1996.

1.1 AUTHORSHIP

The author of this document is Trevor Cameron, Director at Eikos Environment and Heritage. It remains the property of Eikos Environment and Heritage and must not be reproduced without the consent of the author, unless for client and consent authority use.

1.2 BACKGROUND AND DESIGN DOCUMENTATION

Eikos was engaged by Precinct Capital Pty Ltd in October 2020 to provide a Statement of Heritage Impact (SoHI) in regards to a development application for the above proposal.

Eikos conducted a site inspection at the site of the proposed Battery Storage Facility and the Former Migrant Camp on 22 October 2020. Results of the site inspection are outlined below.

A description of the proposal and extracts of the plans are provided in Section 2.0 and 3.0 below.

Figure 1 - Location of Site for proposed Battery Storage Facility (source ADW Johnson)

Figure 2 - Location of the Former Migrant Camp on the ridge to the south-east of the site (source: Sixmaps)

2.0 DESCRIPTION OF THE SITE

The site is currently zoned IN1 General Industrial and has an area of approximately 2.44ha incorporating Lot 1102. It is highly disturbed and modified site that has previously been used as a chitter dump. These piles are extensive and run across the Lots in a south to north direction. This land would have originally been part of the floodplain of the Hunter River. It is now covered with a variety of exotic weeds and grasses with some areas of native wattle.

The site is located between a railway line to the north west, Maitland Road to the south, future Lot 1103 to the north and by the future Riverside Drive to the east.

The Former Migrant Camp is located on a prominent ridge high above the subject site and is further visually separated by a remnant vegetation community including Spotted Gum and Ironbark along the slope on the south eastern boundary of the site (Figs 1 & 2). Given its elevated position and location of the remnant vegetation it is highly unlikely that the proposed development will impact on the heritage significance of the Former Migrant Camp site.

3.0 OVERVIEW OF PROPOSAL

The following is an extract of correspondence prepared by adw johnson and forwarded to Newcastle City Council on 1 September 2020. It provides a brief description of the proposal.

'Edify Energy Pty Ltd and Precinct Group are jointly developing a 28MW two hour duration advanced lithium ion battery energy storage facility known as the Steel River Battery, at the Steel River Industrial Park located in Mayfield, New South Wales.
The proposed development is currently only at the concept stage. The applicant is seeking Council's feedback and input prior to progressing with the preparation of a development application for the proposed development.
The Steel River Battery will comprise of a 28MW two-hour lithium ion battery energy storage facility located on part of approved Lot 1102 which is owned by Precinct Group at the Steel River Industrial Park.

The Project will connect to the local Ausgrid 33kV electrical distribution network and will provide benefits to the local electricity network as well as network services to the wider New South Wales grid. A summary of the main project details is provided in Table 1 below.

Concept Layout

As shown on the concept layout figure below, the Ausgrid electrical grid connection that will service the battery is located on the western portion of Approved Lot 1102 in Stage 11 as shown in ***Figure 2*** *below. It is proposed that the battery be positioned within the vicinity of Lots 1102 to ensure proximity to this connection point. The final location and layout of the battery facility is still under consideration and will be confirmed during the design process prior to lodgement' (adw johnson 2020)*

Table 1 – Summary or project details

Project Detail	Description
Project Type	Stand-alone large scale battery storage connected to the National Electricity Market.
Electrical Connection	Ausgrid 33kV distribution network.
Battery Technology	Lithium ion battery system.
Battery Capacity	Up to 28MW
Battery Storage Duration	2 hours
Battery Configuration	Outdoor modular battery units or containerised battery system with ancillary balance of plant equipment.
Project Location	Approved Lots 1101 and 1102 Riverside Drive, Mayfield West. Part of future Stage 11 of Steel River Business Park (Zoned IN1 General Industrial).

Note: In the Description section of Table 1 above ignore reference to Lot 1101. This project only incorporates Lot 1102 at this stage.

Figure 3 – Overall concept layout plan for proposed Battery Storage Facility (source: ADW Johnson) – note that this report only applies to Lot 1102

Figure 4 – Proposed Battery Storage Facility (Source: GCA)

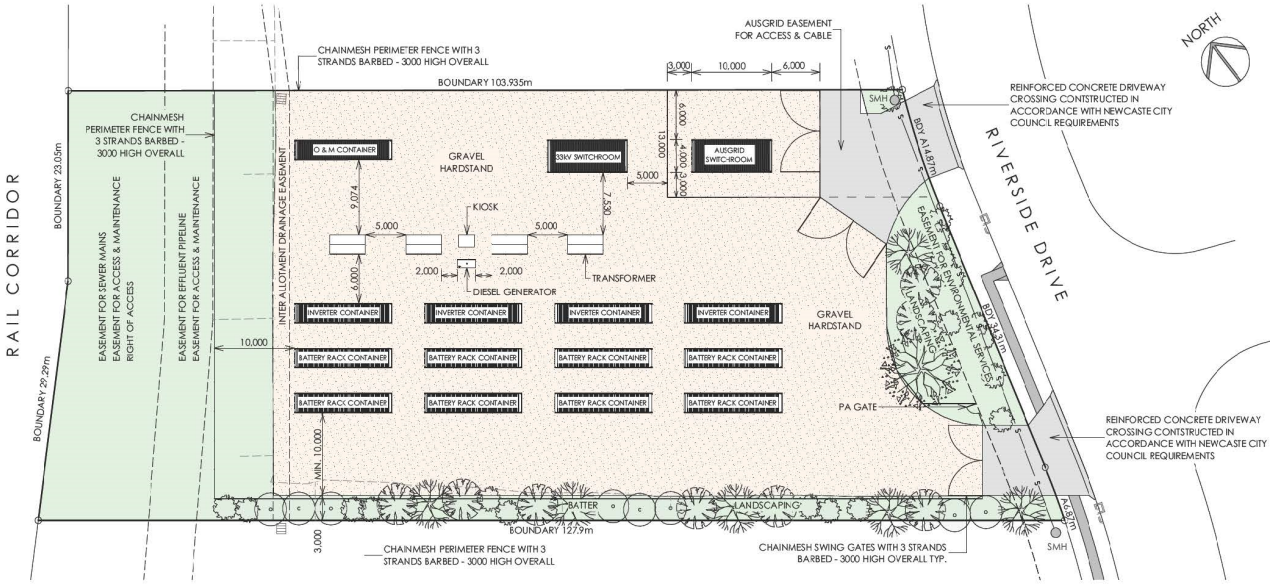


Figure 5 – Example of Edify Energy's Battery Pack and Container Storage system in Victoria (Source: Edify Energy)

Plate 1 – Overview of site looking south west toward Maitland Road showing the degraded site with transmission towers, Telstra tower and remnant vegetation in the background

Plate 2 – Photo showing chitter/rubble piles looking east toward Steel River Industrial area

Plate 3 – Photo looking south east from the site showing Former Migrant Camp buildings on the ridge line in the background

4.0 FORMER MIGRANT CAMP SITE

The history of the Former Migrant Camp is well documented and a summary derived from the State Heritage Inventory (SHI) database is included at Appendix 1 (Heritage NSW). A map from the Newcastle LEP outlining the item and other heritage items in the Mayfield area is at Appendix 2.

The following key points are derived from the attached historic summary:

- The Former Migrant Camp at Mayfield was under construction by June 1949. It was purpose built as accommodation to house men from the Baltic States to fulfill work obligations at the BHP Steelworks under federal government 'assisted passage schemes'
- Their families were either accommodated at Greta, the largest migrant accommodation in the Hunter Valley, or at other camps further afield
- There were approximately 30 camps in NSW and Mayfield is notable as one of the six sizeable purpose built camps in the State
- The closure of the Former Migrant Camp was announced in September 1972
- The nine timber accommodation huts that stood alongside the Quonset building were demolished around the time the hostel was closed
- Remaining physical sites that demonstrate migration history are rare with only a handful retaining fabric associated with their hostel function including Villawood/Westbridge in Sydney and Balgownie Hostel in Wollongong
- The physical fabric of the former Mayfield Hostel: the workshop, gate house and landscape elements including roadways, the wishing well, and plantings, makes an important contribution to the surviving fabric of post-war migration in NSW
- The Quonset hut on the site also has rarity value in its own right, with only a few of these structures surviving in NSW, including the hut adapted to form the Crest Theatre at Granville, and the two surviving Quonset huts at the former Balgownie Hostel site

The photos outlined below provide a visual representation of the deterioration of the main buildings between 2007 and October 2020 (Plates 1 – 6). The Quonset hut and former gatehouse building remain intact however the site remains open to ongoing acts of vandalism.

The photo at Plate 7 shows the main group of Former Migrant Camp buildings and suggested curtilage boundary (Heritage NSW 2007 SHI Database). Plate 8 shows the view looking north-west over the proposed development site from the vacant land to the west of the Former Migrant Camp buildings.

Plate 1: showing main group of buildings at the Former Migrant Camp. Small gate house in the foreground and view along the Quonset hut and pitched roofed addition. Photo taken in 2007 by Sarah Cameron (copyright NCC).

Plate 2: showing current condition of the main group of buildings at the Former Migrant Camp

Plate 3: Current view of the west elevation including the small gate house in the foreground

Plate 4: Similar view as above showing surviving European plantings at the site

Plate 5: View along the south elevation Quonset building photo taken in 2007 by Sarah Cameron (copyright NCC).

Plate 6: Current view of the east elevation – although vandalised the Quonset building remains intact

Plate 7: Aerial photo showing main group of Former Migrant Camp buildings and suggested curtilage boundary (Source: SHI Database Heritage NSW 2007)

Plate 8: View looking north-west over the proposed Steel River Battery site (between the flat land in the foreground and the railway line).

5.0 CULTURAL SIGNIFICANCE

5.1 FORMER MIGRANT CAMP STATEMENT OF SIGNIFICANCE

This Statement of Heritage Significance (SoS) for the Former Migrant Camp is derived from the State Heritage Inventory Database (Heritage NSW).

The Mayfield Migrant Hostel has historical and social significance for the State, and provides rare physical evidence of the arrival experience of post war migrants to NSW. The former Mayfield Migrant Hostel is of historical significance for the State of NSW for its association with the post-war migration program that radically altered the nature and composition of Australian society. The remaining site layout, buildings and landscape elements provide rare physical evidence of the first phase of the migration experience, accommodation in camps and the compulsory work obligation for men. The Migrant Hostel is of social significance for the State as a part of the network of camps which provided the first home for post-war migrants to Australia, and the place where they were introduced to Australian language, culture, food and people. As one of the few camps retaining significant original fabric, the camp may have the potential to preserve and evoke aspects of the experiences of migrants who came to other camps in the State, that have since been demolished. The former hostel is one of the few migrant hostel sites in the State which retains built and landscape elements articulate about the migration experience and its administration. With the remaining fabric of the Villawood, Scheyville and Balgownie hostels in particular, the surviving complex at Mayfield makes a significant and unique contribution to the story of post war migration in NSW.

Date significance updated: 24 September 2007

5.2 DESCRIPTION

The following description of the buildings and condition update is derived from the State Heritage Inventory Database on 25 September 2007. Note that since that time Telstra has left the site and it has become severely vandalised and the buildings are now in poor condition. The information outlined in the SHI database including the Table outlined below needs to be updated.

Builder/Maker:	Commonwealth of Australia
Construction years:	1948-1949
Physical description:	The buildings surviving on the site comprise: - The main workshop building, being a Quonset hut with a small gable roof extension to the west, the last part of which may have been a gatehouse - The caretakers cottage, immediately adjacent to Maitland Road at the main entrance gates, being a simple timber cottage typical of the 1950s. These buildings are situated to the north of the compact site beside the main entrance gates. The original access road runs up the southern side of the main

	workshop. Kerbing and associated improvements survive, as do garden beds and edging and plantings, in particular cyprus-style pines, planted during the operation of the hostel. A 'wishing well' is located amongst some mature trees on a grassed area overlooking Maitland Road. It is constructed of odd shaped concrete blocks, probably a recycled industrial material, complete with corrugated iron roof and timber pulley (currently detached), now planted with succulents. All of the features described are situated within the northern one third-one half of the site, to the north of the short internal roadway which bisects the site. The site runs lengthways along Maitland Road, slightly raised above road level. To the north-east of the site the land slopes away to the Hunter River, giving extended views of the river flats from the former hostel site.
Physical condition and/or Archaeological potential:	The buildings on the site appear to be in fair condition. However, the wishing well requires maintenance, its roof having blown off is currently lying beside the well. **Date condition updated:** 25 Sep 07
Modifications and dates:	The sleeping huts and kitchen/dining hut, and possibly other structures have been removed from the site.
Current use:	Telstra depot

5.3 ASSESSMENT OF CULTURAL SIGNIFICANCE

The following Assessment of Significance is derived from the State Heritage Inventory Database (Heritage NSW) compiled on 25 September 2007.

SHR Criteria a) [Historical significance]	The former Mayfield Migrant Hostel is of historical significance for the State of NSW for its association with the post-war migration program that radically altered the nature and composition of Australian society. The remaining site layout, buildings and landscape elements provide rare physical evidence of the first phase of the migration experience, accommodation in camps from several months to two years, and the compulsory work obligation for men. The austerity of the remaining buildings, and the nature of the site, perched on an isolated piece of land beyond the industrial part of Newcastle hugging the highway and looking out over the Hunter River flats, illustrate both the straitened circumstances of NSW as the State welcomed the new migrants amidst a severe post-war housing and materials shortage, and also evoke the indignity and loneliness of the migration experience. The wishing well and European plantings on the site provide rare physical evidence of the migrants' efforts to feel at home in their new country, and hopeful

	about their prospects in Australia.
SHR Criteria b) [Associative significance]	Within the limited research carried out for this review, the Hostel was not found to be of significance under this criterion.
SHR Criteria c) [Aesthetic significance]	Within the limited research carried out for this review, the Hostel was not found to be of significance under this criterion.
SHR Criteria d) [Social significance]	The Migrant Hostel is of social significance for the State as a part of the network of camps which provided the first home for post-war migrants to Australia, and the place where they were introduced to Australian language, culture, food and people. As one of the few camps retaining significant original fabric, the camp may have the potential to preserve and evoke aspects of the experiences of migrants who came to other camps in the State, that have since been demolished. The ongoing interest in the Hostel, and the wish of former residents to preserve their links with this part of their migration history is evidenced by the booklet, 'Memories of Mayfield, Mayfield Migrant Hostel 1949-1972', published 1997.
SHR Criteria e) [Research potential]	Within the limited research carried out for this review, the Hostel was not found to be of significance under this criterion.
SHR Criteria f) [Rarity]	The Mayfield Migrant Hostel provides rare physical evidence of the arrival experience of post war migrants to NSW. The former hostel is one of the few migrant hostel sites in the State which retains built and landscape elements articulate about the migration experience and its administration. With the remaining fabric of the Villawood, Scheyville and Balgownie hostels in particular, the surviving complex, comprising workshop, caretakers cottage, gate house, and landscape features makes a significant and unique contribution to the story of post war migration in NSW.
SHR Criteria g) [Representativeness]	Within the limited research carried out for this review, the Hostel was not found to be of significance under this criterion.
Integrity/Intactness:	The majority of the sleeping huts were removed when the camp closed. The remaining built elements include a large Quonset Hut, with pitched roof extension, caretaker's cottage and gate house. These elements have a high level of integrity as built structures. Their arrangement on the site around the main entrance and roadways provides evidence about the function of the camp. There are many landscape features remaining which are evidence of the former layout of roads and garden beds and the choice of trees is emblematic of the cultural mix in the camp (Pines from southern Europe).

6.0 HERITAGE CONTROLS

6.1 NEWCASTLE LEP 2012 – CLAUSE 5.10 HERITAGE CONSERVATION

The subject site is in the vicinity of a heritage item listed in Schedule 5 of the Newcastle LEP and is therefore subject to the objectives and controls at Part 5 Clause 5.10 of the Newcastle LEP as outlined below:

5.10 Heritage conservation

Note—

Heritage items (if any) are listed and described in Schedule 5. Heritage conservation areas (if any) are shown on the Heritage Map as well as being described in Schedule 5.

(1) **Objectives** The objectives of this clause are as follows—

(a) to conserve the environmental heritage of the City of Newcastle,
(b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,
(c) to conserve archaeological sites,
(d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

(2) **Requirement for consent** Development consent is required for any of the following—

(a) demolishing or moving any of the following or altering the exterior of any of the following (including, in the case of a building, making changes to its detail, fabric, finish or appearance)—
  (i) a heritage item,
  (ii) an Aboriginal object,
  (iii) a building, work, relic or tree within a heritage conservation area,
(b) altering a heritage item that is a building by making structural changes to its interior or by making changes to anything inside the item that is specified in Schedule 5 in relation to the item,
(c) disturbing or excavating an archaeological site while knowing, or having reasonable cause to suspect, that the disturbance or excavation will or is likely to result in a relic being discovered, exposed, moved, damaged or destroyed,
(d) disturbing or excavating an Aboriginal place of heritage significance,
(e) erecting a building on land—
  (i) on which a heritage item is located or that is within a heritage conservation area, or
  (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance,
(f) subdividing land—
  (i) on which a heritage item is located or that is within a heritage conservation area, or
  (ii) on which an Aboriginal object is located or that is within an Aboriginal place of heritage significance.

(3) **When consent not required** However, development consent under this clause is not required if—

(a) the applicant has notified the consent authority of the proposed development and the consent authority has advised the applicant in writing before any work is carried out that it is satisfied that the proposed development—
  (i) is of a minor nature or is for the maintenance of the heritage item, Aboriginal object, Aboriginal place of heritage significance or archaeological site or a building, work, relic, tree or place within the heritage conservation area, and
  (ii) would not adversely affect the heritage significance of the heritage item, Aboriginal object, Aboriginal place, archaeological site or heritage conservation area, or
(b) the development is in a cemetery or burial ground and the proposed development—
  (i) is the creation of a new grave or monument, or excavation or disturbance of land for the purpose of conserving or repairing monuments or grave markers, and
  (ii) would not cause disturbance to human remains, relics, Aboriginal objects in the form of grave goods, or to an Aboriginal place of heritage significance, or
(c) the development is limited to the removal of a tree or other vegetation that the Council is satisfied is a risk to human life or property, or
(d) the development is exempt development.

(4) **Effect of proposed development on heritage significance** The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).

(5) **Heritage assessment** The consent authority may, before granting consent to any development—

(a) on land on which a heritage item is located, or
(b) on land that is within a heritage conservation area, or
(c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.

(6) **Heritage conservation management plans** The consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.

(7) **Archaeological sites** The consent authority must, before granting consent under this clause to the carrying out of development on an archaeological site (other than land listed on the State Heritage Register or to which an interim heritage order under the *Heritage Act 1977* applies)—
(a) notify the Heritage Council of its intention to grant consent, and
(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.
(8) **Aboriginal places of heritage significance** The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance—

(a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and
(b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.

(9) Demolition of nominated State heritage items The consent authority must, before granting consent under this clause for the demolition of a nominated State heritage item—
(a) notify the Heritage Council about the application, and
(b) take into consideration any response received from the Heritage Council within 28 days after the notice is sent.

(10) Conservation incentives The consent authority may grant consent to development for any purpose of a building that is a heritage item or of the land on which such a building is erected, or for any purpose on an Aboriginal place of heritage significance, even though development for that purpose would otherwise not be allowed by this Plan, if the consent authority is satisfied that—
(a) the conservation of the heritage item or Aboriginal place of heritage significance is facilitated by the granting of consent, and
(b) the proposed development is in accordance with a heritage management document that has been approved by the consent authority, and
(c) the consent to the proposed development would require that all necessary conservation work identified in the heritage management document is carried out, and
(d) the proposed development would not adversely affect the heritage significance of the heritage item, including its setting, or the heritage significance of the Aboriginal place of heritage significance, and
(e) the proposed development would not have any significant adverse effect on the amenity of the surrounding area.

7.0 HERITAGE IMPACT ASSESSMENT

The proposed development must meet the relevant objectives and consent requirements outlined in the Newcastle LEP including:

(4) Effect of proposed development on heritage significance
The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6); and

(5) Heritage assessment
The consent authority may, before granting consent to any development—

(a) on land on which a heritage item is located, or
(b) on land that is within a heritage conservation area, or
(c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.

The heritage impact assessment outlined below considers the effect of the proposed development on the heritage significance of the Former Migrant Camp (State nominated heritage item I291) and the extent to which the development would affect the heritage significance of the item.

To what extent does the proposal impact adjacent heritage items?
It is highly unlikely that the proposed development will have any significant impact on the adjacent Former Migrant Camp site. This site is located on top of a high ridge that runs parallel to Maitland Road with the main buildings and curtilage located on the opposite side of the Lot to the proposed development. Conversely, the proposed development site is located on low lying land below the ridge. In addition, there is a remnant native vegetation community on the western boundary of the site that provides a visual barrier between the proposed development site and the Former Migrant Camp site. It is recommended that this remnant vegetation be retained.

To what extent does the proposal impact the heritage conservation area?
Not Applicable – the proposed development is not in or adjacent to a Heritage Conservation Area.

To what extent does the proposal impact any significant fabric or heritage values of the subject site?
Not Applicable – as outlined in this SoHI, the proposed development will be located on land well below the ridge line and curtilage of the Former Migrant Camp site and not have any significant impact on either the aesthetic outlook or heritage values of the site.

8.0 RECOMMENDATIONS

This Statement of Heritage Impact has assessed the potential impact arising from the proposed battery storage facility development known as 'Steel River Battery' on the Former Migrant Camp at Mayfield.

Eikos concludes that there is adequate separation both in elevation and distance between the location of the proposed development and the curtilage of the Former Migrant Camp to ensure that the heritage significance of the site is not adversely impacted.

In addition, the remnant native vegetation community including mature Spotted Gum and Ironbark on the south eastern boundary of the development site provides a visual buffer to the Former Migrant Camp and should be retained.

The current poor condition of the site and in particular the ongoing damage to the State nominated group of buildings is a concern. Eikos recommends that Council conduct an urgent review of the site and consider implementing security measures and a conservation management plan to protect the remaining significant structures and landscape features at the site.

9.0 REFERENCES

City of Newcastle (2012), *Newcastle Development Control Plan*.

City of Newcastle (2012), *Newcastle Local Environment Plan*.

Department of Urban Affairs and Planning (1996) *Statements of Heritage Impact and Conservation Areas*, published by the Heritage Office Department of Urban Affairs & Planning

ICOMOS (2013) *The Burra Charter: The Australian ICOMOS Charter for Places of Cultural Significance* - Australia ICOMOS Faculty of Arts and Education Deakin University, Burwood, Victoria

Edify Energy (2020) *Steel River Battery – Project Introduction: City of Newcastle Pre-Lodgement Meeting*

adw johnson (2020) Correspondence and Description of Proposal *Pre Development Application – Request for Meetiing Proposed Battery Storage at 27D Riverside Drive, Mayfield West (Lot 12 DP 280089)*

Heritage NSW State Heritage Inventory (SHI) Database accessed 12/10/20 – *Migrant Camp (Former)* Database number 2171574 Local Government Area: Newcastle

APPENDIX 1 – Historical Notes: Former Migrant Camp (Source: Heritage NSW)

Historical Notes:

Mayfield Migrant Hostel is part of Australia's post war migration story. The site was originally part of Platt's estate, granted in 1821. Platt's house was built about where the Murray Dwyer Orphanage stood, and the hostel site appears to have been left undeveloped. After Platts death the land was sold to the AA Company c.1836, though again the hostel site appears to have been undeveloped. The company started to sell off parts of the land in 1913. Then, in 1920, 107 acres including the hostel site were acquired by the Commonwealth for War Services Homes. There is no evidence that this use was ever implemented by the government. The site was then selected by the government when they were looking to build a hostel for migrants who were to work at the BHP steelworks in the 1940s.

For 150 years following European settlement, government policies ensured that the majority of Australia's immigrants were of European origin and preferably British. After World War Two, however, feeling vulnerable after the near invasion by Japan, Australia looked to the rest of Europe desperate to 'populate or perish'. In 1945 Arthur Calwell was appointed the first Federal Government Immigration Minister and set about putting policies in place that would attract over 70,000 migrants a year. Migrants from Britain alone could not meet this number, and in 1947 the Australian Government reluctantly agreed to accept 'Displaced Persons', or refugees, from the war in Europe. Over the next five years nearly 171,000 migrants - mainly from Poland, Yugoslavia and the Baltic States - arrived. When this source of migrants was exhausted, the Government signed formal agreements to sponsor migrants from a number of European countries including Germany, Italy, Greece and Malta.

Between 1945 and 1975, Australia's population almost doubled. Almost three million migrants arrived, half from Britain and half from other European countries. However it was not until the election of Gough Whitlam's Federal Government in 1972 that the 'White Australia' policy was finally abandoned. The Immigration Minister, Al Grassby, declared in 1973 that 'every relic of past ethnic or racial discrimination' was to be abandoned and migrants welcomed from all countries. By the 1996 Census, the Australian population had reached 18 million including 5.6 million people who had immigrated from over 150 countries. (Migration Heritage Centre website; National Archives of Australia website)

Under these 'assisted passage' schemes, migrants were given temporary accommodation in exchange for their agreement to provide two years labour on government projects such as the Snowy Mountains Scheme. Almost 40 accommodation centres were established in New South Wales, often in old army barracks. Families were separated with husbands living in barracks close to their work and women and children staying behind in the migrant accommodation. (Migration Heritage Centre website; National Archives of Australia website) There were approximately thirty migrant camps in NSW, and Mayfield is notable as one of the six sizeable purpose built camps in the State. The Mayfield Migrant Hostel was

purpose built as accommodation for men who were to fulfill their work obligation at the adjacent BHP steelworks. Their families were accommodated at Greta, the largest migrant accommodation facility in the Hunter Valley, or at other camps further afield. The Mayfield Hostel was under construction by June 1949, and was originally intended to house men from the Baltic States. (Ecotecture, 2000)

The trade unions did not welcome the migrants, as they provided a new pool of non-unionised labour that had the potential to be used to erode the union's achievements during the period of Post War social and economic reform. The men accommodated at Mayfield were promised employment at BHP whether they spoke any English or not, and often found their first period of employment there both tedious and somewhat terrifying. Although their accommodation was provided as part of an agreement that the men would work in Australian industries important in post-war economic reconstruction, the accommodation still came at a cost at least in some periods. In the late 1960s, men at Mayfield payed $11.60 per week for accommodation and meals, including a cut lunch to take to the steel works, and paid for their families to stay at other camps. Later in the 1960s, families were also accommodated at Mayfield. (Memories of Mayfield, 1997, n/p) The Mayfield hostel manager, Mr B.W. Rawlinson, himself a migrant, described the hostels in 1966 as 'stepping stones from boat to abode', saying that they provided 'temporary accommodation for migrants for whom housing was not immediately available. More than this, they helped with the inevitable heartburn of transplantation'. He felt that Australia's migration and settling-in service was excellent. (Ecotecture, 2000) The experiences of the migrants themselves at the Mayfield hostel were often mixed, their time at the hostel being associated with separation from their families; with being transferred repeatedly between camps; and with the hard work of getting used to Australian culture mores, language, and not least, food. As Graham Brooks and Associates pointed out in their study of the former Villawood/Westbridge migrant hostel:

"For many of the early residents, who arrived before 1969, the hostel represented the indignity of migration. Many European residents had been dislocated by war, and had left comfortable homes, careers or professional employment in their flight to refugee camps. To arrive in Australia and live in a corrugated iron hut without plumbing or a kitchen, was a terrible blow, especially for women. For men the hostel was not the greatest blow, but the lack of skilled employment and recognition of qualifications. These great disappointments and the feeling of having to begin one’s life over again, speak a new language, and eat different foods, contributed to the intensity of the hostel experience for everyone. In very many cases, the articulation of value was expressed as an emotional attachment to a place where a very intense and important period of one's life had been spent." (Graham Brooks and Associates, 2001, p. 58)

The wishing well, probably constructed by Fred Tanschuk and Stefan Kowt using bricks from the BHP dump, and still remaining on the site, was no doubt an effort to enhance the optimism of residents about their futures in Australia. (Memories of Mayfield, 1997, n/p) In 1966 the hostel had the capacity to accommodate 500 people, but there were only 270 in residence. Ninety per cent of the men residing there worked at the adjacent steelworks. (Ecotecture, 2000)

Post-war immigration changed the face of Newcastle adding a diversity to the mix of cultures living in Newcastle and the region. The suburbs of Hamilton and Mayfield, very close the hostel, came to be settled by Italians and many of these had come from the Abruzzi area prior to the war. Italians and other Europeans have had a lasting historical, social and economic impact on Newcastle in areas like

Beaumont Street, which is still populated by Italian businesses and cafes. Bruce Hatherly, who was officer of the Commonwealth Bank's migrant information service in the Memories of Mayfield registered his appreciation of the diversification of the Australian cuisine and social and cultural life brought about by migrants to Newcastle. (Memories of Mayfield, 1997, n/p)

The closure of the hostel was announced in September 1972, in line with the new policy of migrant accommodation in apartments and houses as part of the general community. By this time there were only a few residents remaining. The nine timber accommodation huts, that stood in ranks to either side of the long metal igloo/kitchen building, were demolished at this time. The site was taken over by the PMG as a line yard c.1976, and since then continued in this role under Telecom/Telstra and now the NDC. (Ecotecture, 2000) The kitchen/dining hut appears to have been removed since 2000.

Migration is a highly important theme in the history of NSW, and post-war migration radically altered the nature and composition of Australian society. Yet, the comparative analysis provided by Graham Brooks and Associates, in their assessment of the Villawood/Westbridge Migrant Hostel, indicates that physical evidence of this early part of the migrant experience is rare, especially evidence of 'that moment of arrival and the first stages of the transition to becoming Australian':

'Physical sites which demonstrate migration history are rare. Most sites which are nominated for conservation as migrant heritage sites demonstrate settlement, rather than the act of migration. Many migrant heritage sites are illustrations of migration success. The oral history of the hostel residents, illustrates that migration was a fraught and difficult process. The fact that so many migrants had to live for years in a government hostel, in itself indicates the difficult beginnings of so many of Australia's migrants.' (Graham Brooks and Associates, 2001, p. 61)

In this sense any and all physical evidence which demonstrates the accommodation of migrants in hostels on their arrival, and while they fulfilled their work obligation, has a level of rarity value.

Of the thirty hostels which have been identified in NSW, only a handful are known to retain physical fabric associated with their hostel function, especially fabric associated with the late 1940s-1950s phase of migration. It would appear that no hostel established in the late 1940s-1950s survives in its entirety. A number of nissen huts and post-war fibro buildings survive at the Villawood/Westbridge hostel, amongst the brick and tile motel-style buildings which accommodated migrants on the site from the 1960s, and more recent buildings associated with the migrant detention function. The majority of the buildings associated with the late 1940s-1950s phase were demolished during the 1960s to make way for the new style of accommodation. Other examples include: Balgownie Hostel (Fairy Meadow, Wollongong) at which three huts, one Nissen and two Quonset, survive but have been relocated on the site to avoid further flood damage; Parkes Hostel, which retains a house and administration building only; Greta Hostel where all buildings have been demolished and only footings, roads and kerbs remain. The Scheyville Hostel, established in 1910 as a training farm and hostel for English child migrants, and then used as a general migrant hostel 1949-1964, retains a number of Nissen huts and other accommodation buildings, and mess and kitchen building, making it one of the more complete examples along with Villawood.

The former Mayfield Hostel, then, is one of a small group of migrant hostels which retain part of their physical fabric. The physical fabric of the former Mayfield Hostel: the workshop, gate house, caretakers

cottage, and landscape elements including roadways, the wishing well, and plantings, makes an important contribution to the surviving fabric of post-war migration in NSW. Specifically, the Mayfield Hostel is an example of a medium sized facility, purpose built as a migrant hostel immediately following the war (pre-1950), which remained in use through several decades but closed down without redeveloping the site to reflect the new standards of the 1970s. It is located in a regional centre and was initially intended to house working men away from their families. Many other sites demonstrating similar characteristics have been lost. For example, the Adamstown Hostel, also housing men working at the Newcastle steel works has been completely demolished, as has the Karingal Hostel at Wollongong, which housed men working at the local steel works. The purpose built Unanderra and Berkeley Hostels at Wollongong have been demolished, and the hostels at Cabramatta and East Hills were redeveloped in the 1970s and are thought to have lost their earlier buildings. Although the sleeping huts and kitchen/dining hut at Mayfield no longer remain, the remaining buildings and landscape elements form a cohesive group on the northern part of the site, which is articulate about the atmosphere of the hostel and how it functioned. The austerity of the remaining buildings, and the nature of the site, perched on an isolated piece of land beyond the industrial part of Newcastle hugging the highway and looking out over the Hunter River flats, illustrate both the straitened circumstances of NSW as the State welcomed the new migrants amidst a severe post-war housing and materials shortage, and also evoke the indignity and loneliness of the migration experience. The wishing well and European plantings on the site provide rare physical evidence of the migrants' efforts to feel at home in their new country, and hopeful about their prospects in Australia.

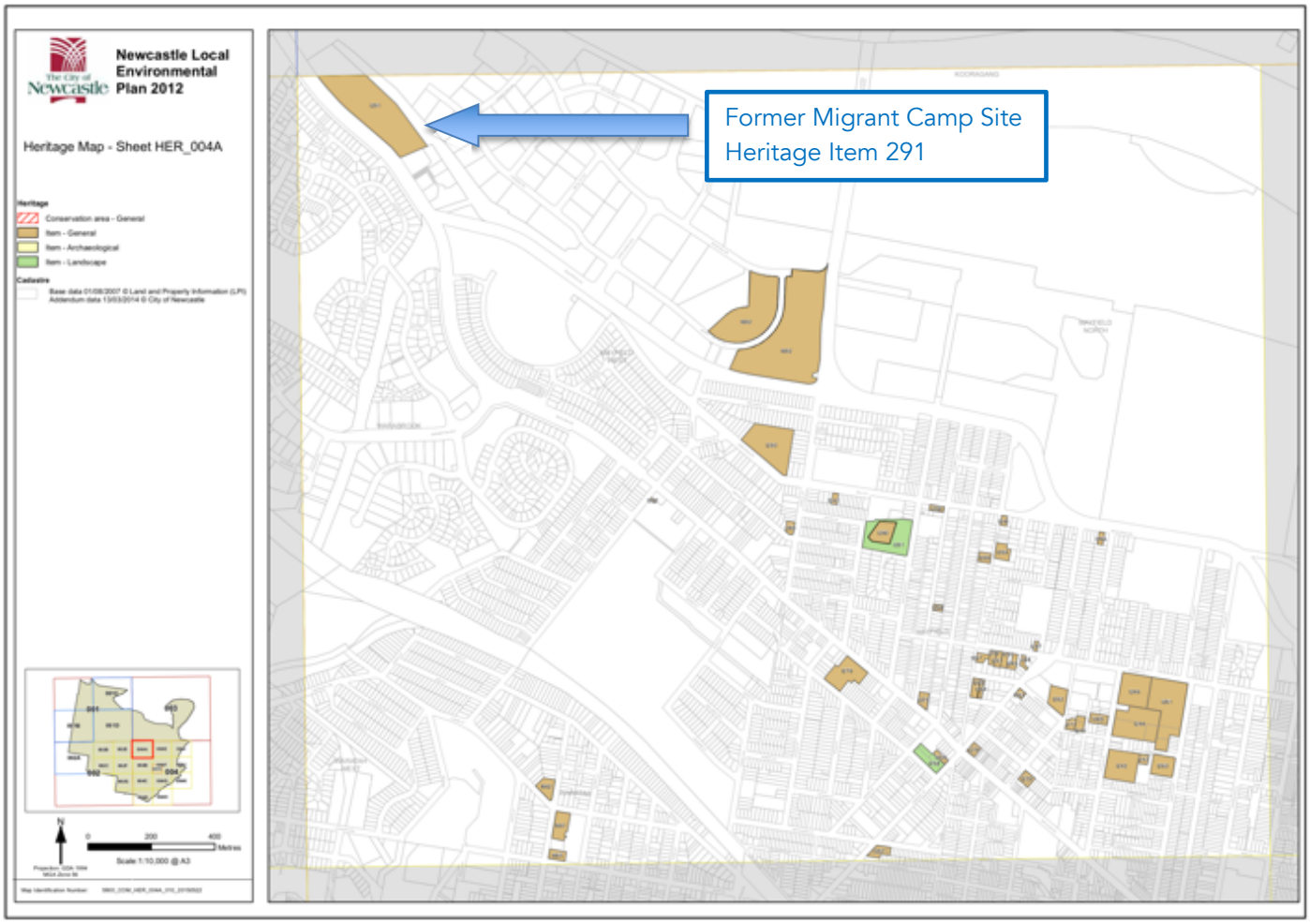
The Quonset hut on the site also has rarity value in its own right, with only a few of these structures surviving in NSW, including the hut adapted to form the Crest Theatre at Granville, and the two surviving Quonset huts at the former Balgownie Hostel site.

Historic Themes

Australian theme (abbrev)	NSW theme	Local theme
2. People – peopling the continent	Migration - Activities and processes associated with the resettling of people from one place to another (international, interstate, intrastate) and the impacts of such movements	(none)-
4. Settlement - Building settlements, towns and cities	Accommodation - Activities associated with the provision of accommodation, and particular types of accommodation – does not include architectural styles – use the theme of Creative Endeavour for such activities.	(none)-
5. Working - Working	Labour - Activities associated with work practises and organised and unorganised labour	(none)-
8. Culture - Developing cultural institutions and ways of life	Domestic life - Activities associated with creating, maintaining, living in and working around houses and institutions.	(none)-

Source: SHI Database Heritage NSW

APPENDIX 2 –Map of Heritage Items in the Mayfield Area



Source: Newcastle City Council LEP 2012

Appendix K

ACOUSTIC ASSESSMENT (SPECTRUM ACOUSTICS)

Doc. No: 202064-9064

Noise Impact Assessment
Proposed Battery Storage Facility
Steel River, Mayfield West, NSW

Prepared for:

Steel River West Pty Ltd
c/- ADW Johnson
7/225 Hillsborough Road
Warners Bay NSW 2282

Author:

.....
Neil Pennington
B.Sc., B. Math.(Hons), MAIP, MAAS, MASA
Principal / Director

November 2020

TABLE OF CONTENTS

1.0 INTRODUCTION

1.1 The Proposal

Spectrum Acoustics Pty Limited (Spectrum) has been engaged by ADW Johnson on behalf of Precinct Capital Pty Ltd and Edify Energy Steel River West Pty Ltd (the Proponents) to conduct a noise impact assessment for a proposed battery storage facility in the Steel River industrial estate Mayfield West, NSW. The proposal is to construct and operate a 28MW two-hour duration advanced lithium ion battery energy storage facility to be known as the Steel River Battery.

The project Traffic Noise Impact assessment advises there will be approximately 90 truck movements will occur throughout the approximately three-month construction phase. During the delivery of the battery cells and racks, approximately 20 of the truck movements will occur in the space of a couple of days, during the peak of construction. It is understood that truck movements would occur during normal daytime hours of 7am – 6pm Monday to Friday and 8am to 1pm on Saturdays. The project site and nearest residential receiver are shown in **Figure 1**. The proposed site layout is shown in **Figure 2**.

2.0 DESCRIPTION OF TERMS

Table 1 contains the definitions of commonly used acoustical terms and is presented as an aid to understanding this report.

TABLE 1
DEFINITION OF ACOUSTICAL TERMS

Term	Description
dB(A)	The quantitative measure of sound heard by the human ear, measured by the A-Scale Weighting Network of a sound level meter expressed in decibels (dB).
SPL	Sound Pressure Level. The incremental variation of sound pressure above and below atmospheric pressure and expressed in decibels. The human ear responds to pressure fluctuations, resulting in sound being heard.
Lw	Sound Power Level radiated by a noise source per unit time re 1pW.
Leq	Equivalent Continuous Noise Level - taking into account the fluctuations of noise over time. The time-varying level is computed to give an equivalent dB(A) level that is equal to the energy content and time period.
L1	Average Peak Noise Level - the level exceeded for 1% of the monitoring period.
L10	Average Maximum Noise Level - the level exceeded for 10% of the monitoring period.
L90	Average Minimum Noise Level - the level exceeded for 90% of the monitoring period and recognised as the Background Noise Level. In this instance, the L90 percentile level is representative of the noise level generated by the surrounds of the residential area.

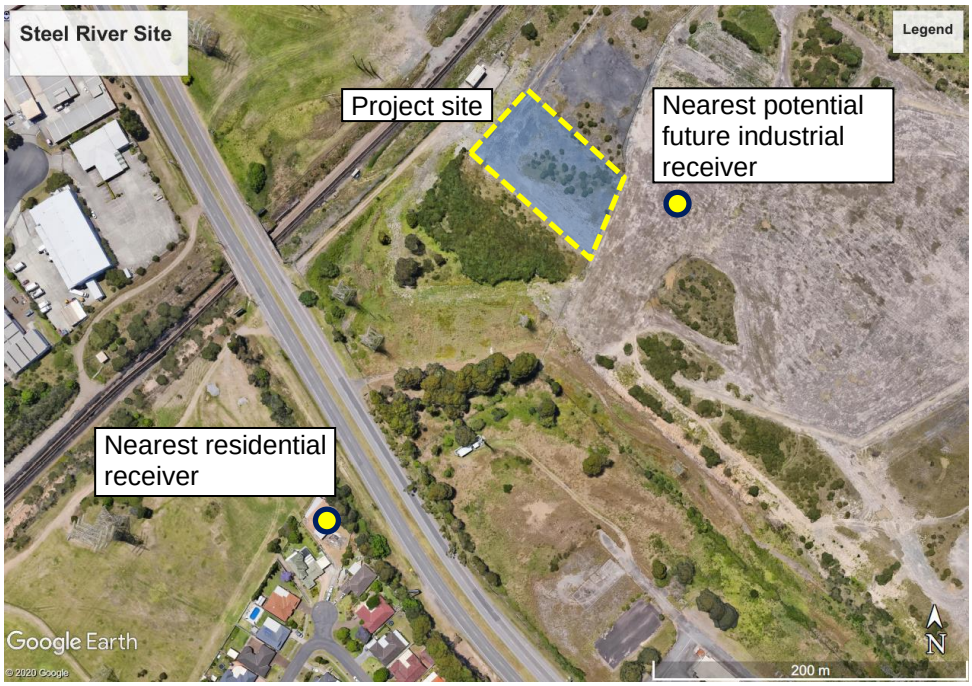


Figure 1. Project site and residential receiver.

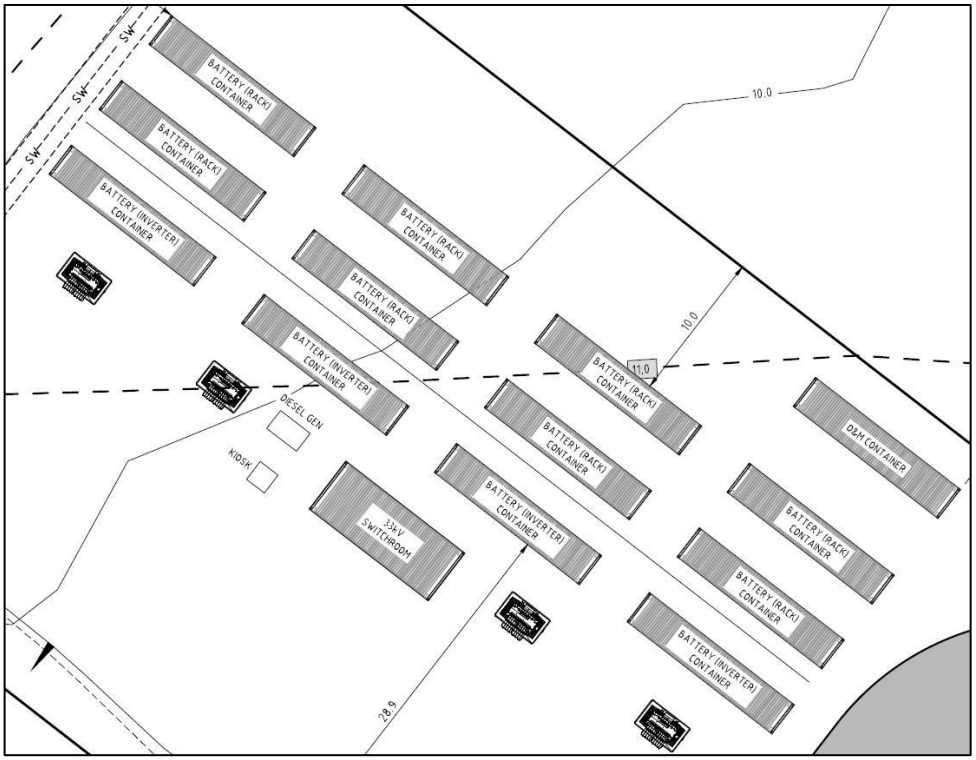


Figure 2. Project site layout.

3.0 NOISE CRITERIA

3.1 Operational Noise

Section 3.13.07 of the Newcastle LEP 2012 requires that noise emissions from within the Steel River site must comply with noise emission criteria as contained in Part d, Section 8.4.2 of the Steel River Strategic Impact Assessment Study (SIAS, 1998) as follows:

Zone	Day-Time dB(A)	Night-Time dB(A)
2(a) 1 Residential on a main road or near an industrial area	L_{A10} = 48	L_{A10} = 30 L_{A1} = 55
2(a) Residential	L_{A10} = 42	L_{A10} = 30 L_{A1} = 49
4(b) General Industrial	L_{A10} = 65	L_{A10} = 65
5(a) Special Uses (Church, School)	L_{A10} = 48	NA
5(b), (c) and (e) (Railway, Road)	L_{A10} = 65	L_{A10} = 65
6(a) Open Space and Recreation	L_{A10} = 50	L_{A10} = 40 L_{A1} = 50
3(d) Commercial	L_{A10} = 50	L_{A10} = 40 L_{A1} = 50

The assessed residential receiver is in Zone 2(a) 1 as shown in Figure 1. There are Zone 2(a) receivers at greater distance from the site but these will be fully shielded by the intervening Zone 2(a) 1 receivers and noise levels will be negligible. The most stringent night time criterion will be adopted in this assessment and this applies at all residential receivers. Compliance with a criterion at the nearest, most potentially impacted receiver implies compliance at all receivers, Noise criteria at general industrial receivers is 65 dB(A),L10 at any time.

3.2 Construction Noise

There are no construction noise criteria nominated in the SIAS but in current methodology applied by the EPA in the Interim Construction Noise Guideline, construction noise is typically limited to 5 dB greater than operational noise criteria. Based on the operational noise criteria in the SIAS table above, daytime construction noise criteria have been adopted as follows:

Residential receiver: 53 dB(A),L10
Industrial receiver: 70 dB(A),L10

3.3 Vehicle Noise

In NSW, noise from vehicle movements associated with an industrial source is assessed in terms of the INP if the vehicles are not on a public road. If the vehicles are on a public road, the NSW *Road Noise Policy* (RNP) applies. Noise from the proposal must, therefore, be assessed against the project specific noise goals of the INP and also the criteria in the RNP.

The RNP recommends various criteria based on the functional categories of roads applied by the Roads and Traffic Authority (RTA). The RTA differentiates roads based on a number of factors including traffic volume, heavy vehicle use, through or local traffic, vehicle speeds and applicable traffic management options. Vehicles accessing the site will do so via Industrial Drive.

Table 2 below shows the noise criteria relevant to traffic on various road types extracted from Table 1 of the RNP. For the assessment of traffic noise, the day time period is from 7am to 10pm, whilst night is from 10pm to 7am.

TABLE 2
ROAD TRAFFIC NOISE CRITERIA

Situation	Recommended Criteria	
	Day (7am to 10pm)	Night* (10pm to 7am)
3. Existing residences affected by additional traffic on existing arterial roads generated by land use developments	Leq (1hr) 60 (external)	Leq (1hr) 55 (external)

* Heavy vehicle movements would only occur during daytime hours so the night criterion is not applicable.

Application notes accompanying the RNP also state that "…for existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level as a result of the development should be limited to 2 dB above that of the noise level without the development. This limit applies wherever the noise level without the development is within 2 dB of, or exceeds, the relevant day or night noise assessment criterion."

The site adjoins Industrial Drive which is the major heavy vehicle thoroughfare in Newcastle. The project would generate only small numbers of vehicle movements. The proponent has advised that at the peak of the construction phase there could be up to 20 heavy vehicles visit the site in a period of a few days. This is insignificant compared to the existing traffic volume and the 2 dB maximum allowable increase in traffic noise corresponds to a 50% increase in the total traffic volume and further assessment of traffic noise is not warranted.

4.0 ASSESSMENT METHODOLOGY

4.1 Source sound power levels

Confidential sound power test results proprietary to a modular system supplier were provided to inform the noise impact assessment and are suggested as indicative across a range of battery enclosure types supplied by other tier 1 vendors in the market. Under conditions that would occur for well over 95% of the time, mainly being temperatures less than 40^0C, the sound power level of a typical cabinet unit, indicated in Figure 2 as a battery rack, is 84 dB(A). The sound power level was established using acoustic intensity measurements on top of the unit where fans discharge air (and noise) vertically. A correction of -5 dB has been applied for calculation of propagation in a horizontal plant to the assessed residential receiver. There would be twelve of these units.

There are two options proposed for the battery units: modular cubical cabinets and containerised modules. The data provided are for the modular units. There are no measurements for the containerised option, but it can be reasonably assumed that these would be quieter by an unknown amount. This assessment considers the modular units as a worst case for noise emissions.

The other significant noise sources are four transformers shown in Figure 2. These would be of the oil distribution type and data provided by the Proponent for another of their sites suggests a sound power level of 81 dB(A).

Construction activities would not involve major earthworks, pile driving, extensive multi-level concrete pouring or any of the know major sources of construction noise. At most, there would be civil works to provide service connections and delivery of equipment and materials to site and manoeuvring of this equipment with a crane. As such, the assessment of construction noise considers a small excavator and a Franna crane or similar both working at a location nominally near the centre of the proposal footprint. Both of these plant items have a sound power level in the order of 90 dB(A).

4.2 Noise calculation

Sound pressure levels at the nearest receiver were calculated based on the layout of machinery as shown in Figure 2 and the following factors:

- Hemispherical distance loss
- Shielding effects from other plant items
- Directivity from vertical discharge to horizontal propagation
- Atmospheric absorption for nominal 70% relative humidity, and
- Ground effects for packed earth and intervening stand of trees.

These factors are accounted for in our in-house spreadsheets based on reputable acoustics textbooks.

5.0 RESULTS AND DISCUSSION

5.1 Construction Noise

Considering the combined construction sound power level of 93 dB(A) as discussed in Section 4.1 and distances of approximately 50m and 250m to the nearest industrial and residential receivers respectively, the calculated sound pressure levels are:

Industrial receiver: 64 dB(A) (Criterion 70 dB(A))
Residential receiver: 47 dB

These predicted levels are at least 5 dB below the adopted construction noise criteria. As such, construction noise will not be significant enough to require the preparation of a Construction Noise Management Plan (CNMP).

5.2 Operational Noise

The calculated cumulative noise level at receiver R1 from all noise sources indicated in Figure 2 is 25 dB(A),Leq. Assuming constant operation for a 15-minute assessment period, this will equal the LA10 level. The predicted level is well below the SIAS criteria of 48 dB(A) (day) and 30 dB(A) (night). Being considered as a constant noise source implies no exceedance of the 55 dB(A),L1 sleep disturbance criterion.

5.3 Traffic Noise

It was found in Section 3.3 that traffic related noise had insignificant potential for adverse noise impacts and the relevant noise criteria would be easily achieved.

6.0 SUMMARY

A noise impact assessment of a proposed battery storage facility in the Steel River industrial estate Mayfield West, NSW has been conducted.

The study has found no exceedance of daytime off-site traffic noise criteria, construction or operational noise criteria at any industrial or residential receiver.

Based on these findings, it is recommended that the project may proceed without the need for targeted noise monitoring.

Appendix L

PRE-DA MEETING MINUTES (CITY OF NEWCASTLE)

PRE-DEVELOPMENT APPLICATION

18 September 2020

Steel River West Pty Ltd
Level 1, 2 Barrack Street
SYDNEY NSW 2000

Reply by Email : james@precinctgroup.com.au

Dear Mr Allison

Pre-Development Application No:	PR2020/00046
Land:	Lot 12 DP 280089
Property Address:	27D Riverside Drive Mayfield West
Proposed Development:	Proposed Battery Storage.

A. Introduction

I refer to the Pre-Development Application online meeting held on 18 September 2020 with City of Newcastle ('CN') officers in respect of the above development.

The following preliminary planning advice and information is provided to assist in the preparation of a development application. The advice consists of:

- Responses to the key issues nominated on the application form, as well as other matters that are considered to warrant further detail, consideration or amendments prior to the submission of a development application, and

- Statutory matters that will be considered during the assessment of a development application, including the category of development according to the *Environmental Planning and Assessment Act 1979*, ('EP&A Act 1979') options for integrated development, applicable planning controls, submission requirements and methods of determination that apply to the proposal.

The comments and views expressed in this letter are based on the plans and information submitted for preliminary assessment and any information gathered at the above meeting.

The views expressed may vary once detailed plans and information are submitted and formally assessed in the development application process, or as a result of issues contained in submissions by interested parties.

B. Key Issues

In response to the key issues stated on the application form and discussed at the meeting, the following advice is provided:

Overall Feedback on the Proposal

The main purpose of a Pre-DA is to assist with advice in regard to specific questions/issues arising from a proposal and, as such, it is difficult to provide a response to this 'key issue' per se beyond the advice broadly contained in this letter. It is noted that the details for the proposal are somewhat preliminary and this letter provides the best advice possible at this stage.

Confirmation on the list of required specialist input

The proposal is unique with no similar type of application being previously submitted to the CN.

The preliminary nature of the information provided with a Pre-DA application can make it difficult to provide a list of all reports required. The details below are provided as a guide but is not exhaustive:

- DA checklists for Commercial, Industrial and/or Mixed Use development .
- Statement of Environmental Effects
- Heritage Impact Statement
- CPTED – Crime Prevention Through Environmental Design
- Architectural Plans
- Stormwater Management Plan & Retaining Wall Plans
- Land Contamination report. (Please note noting 'Steel River' has a specific contamination certificate scheme associated with the existing remediation strategy.
- Acoustic report and associated noise entitlements. (Please note that 'Steel River' has a specific controls under the environmental envelope provisions of the Strategic Impact Assessment Study'.
- Landscape Concept Plans
- Subdivision Plans (i.e. details of the allotment with the subdivision, is allotment registered)
- Survey plans
- Subdivision details/works (works proposed as part of the application, current lot details, proposed lot details).
- Turning Diagrams for vehicular access
- Driveway long section and transitions
- Arborist report if trees being removed as part of the proposal.
- Waste Management Plan
- Preliminary Hazard Assessment (PHA – SEPP 33)
- Fire/Explosion Safety report (what controls/guidelines does the site meet in terms of fire safety – fire separation distances, applicable Australian Standard).
- Cost Report (S7.12 contributions)
- Capital Investment Value Report

C. Other Issues

In addition to the key issues discussed above, the following matters are considered to warrant further detail, consideration or amendment prior to the submission of a development application:

Heritage conservation

The subject site is located within the vicinity of a heritage item under the NLEP 2012 being the former migrant camp at 609 Maitland Road Mayfield West (State Listed I291).

A heritage impact statement will be required to be submitted with any development application outlining the impact of the development on the heritage significance of the item and/or any known Aboriginal object and/or archaeological site and/or heritage conservation area. It is expected this statement does not need to be exhaustive as the separation distances are reasonable but it is a matter which needs to eb addressed.

Flooding

The site may subject to flooding. It was not clear from the submitted documentation where the proposed northern boundary of the subject site is relative to the available flood information. Further detailed information would be required to clarify. For more detail on the acceptable floor levels and other construction requirements a Flood Information Certificate should be obtained from CN. The development is to comply with the relevant requirements of Section 4.01- Flood Management of the Newcastle Development Control Plan 2012. For further information regarding flooding in the Newcastle local government area, refer to 'Newcastle City-Wide Floodplain Risk Management Study and Plan' (June 2012). A copy of this document can be downloaded from CN's website

Waste Management

Proper consideration in the early design stages should be given to construction and on-going waste management for the proposed development. It is recommended you consult with CN's Waste Management Services in this regard. Please contact Waste and Commercial Collections Manager, David Thomas on 49746046.

A detailed Waste Management Plan is to be submitted with the development application which demonstrates how the collection service will be undertaken. The plan is to include details of frequency and the maximum size vehicle. Such collection will need to be achieved without unreasonable impacts on the amenity of the area and/or the traffic environment in the locality of the site.

Fire Safety

The development application is to address the fire and explosion risk of the development and is to include details of:

- appropriate fire and explosion safety measures/systems,
- standard and separations necessary for this type of proposal
- any relevant Australian Standards
- cooling systems and associated compressors
- any required safety/separation buffers be achieved solely within the bounds of the proposal's final allotment boundaries

It is recommended, prior to the submission of the development application, advice be sought from the NSW Fire & Rescue and NSW SafeWork in relation to the proposal. It is understood that battery fires can be especially difficult and dangerous to control and can pose serious dangers to fire fighters due to a combination of fumes, electricity hazards and chemicals associated with the batteries.

Based on the submitted details it appears consideration is being given to these issues and any application submitted would need to demonstrate why the proposal was acceptable.

Power Lines

It is recommended advice be sought from Ausgrid/Transgrid in terms of any requirements or issues that they may have regarding the proposal.

Visual Impacts/Appearance

The site has the potential to be relatively prominent towards the Maitland Road elevation and concern is raised regarding the visual appearance and impacts of the development. Considering that the site appearance may be somewhat unique visually, it is recommended that visual screening be incorporated around the site, especially to Maitland Road, to minimise the appearance of the development. Preference would be to landscaping in this respect, although of combination of methods might be acceptable considering the possible fire risks and the presents of high voltage power lines. Overall, any application would need to be address the visual appearance impacts of the proposal.

Strategic Impact Assessment Study (SIAS - NDCP 2012)

Any application submitted would need to address the SIAS via the provisions of the Newcastle DCP 2012. The SIAS contains the comprehensive design and environmental controls for the Steel River estate and these requirements would need to be addressed in any application (e.g. 20% landscaping, setbacks etc etc).

CPTED – Crime Prevention Through Environmental Design

The nature and type of facility proposed can be a target for various forms of ‘anti-social behaviour’ which needs to be addressed via the CPTED principles. In a future application you would need to demonstrate how these aspects are addressed especially considering that the site may often be physically unattended.

Easements

The subject site is affected by a significant number of easements. It will need to be demonstrated in the development application that the proposal can be sited without conflicting with requirements of these easements.

Subdivision

The development is proposed on lots that form part of a subdivision that has development consent but is yet to be legally created by the registration of the plan of subdivision. The development application is to acknowledge the current situation and indicate the expected timeline for registration.

The assessment of such an application would involve consideration of the likely risks arising from the timing of the application relative to the subdivision status of the land, including the

suitability of the site where the associated access, drainage, earthworks and infrastructure works have not been completed.

Conflicts can also arise between the required works within an approved subdivision and the pre-registration development application, especially where the approval of the required subdivision works has not been finalised . This can be further complicated by multiple developments proceeding on a pre-registration basis as it is not in the public interest to have multiple parties responsible for completion of the same infrastructure (e.g. roads and drainage).

In this respect, consideration would only be given to one 'proposed' allotment within an approved subdivision proceeding on a pre-registration lodgement effectively being allowed as the sole use of the 'parent site' per se. It is noted that an approval on this basis has already been granted for the site. Therefore, any additional development applications, including the application for this development, would only be considered on a deferred commencement basis.

Any lodgement of development application on the proposed lots prior to registration is likely to contribute to delays and complications in the processing and assessment of the proposal.

If the above issues are not resolved support for the development may not be given and it would be recommended that the application be withdrawn.

D. Category of Development

The categorization of the development according to the *Environmental Planning and Assessment Act 1979* (EP&A Act) will determine the process of assessment. The proposed development is considered to be:

Local Development

A development is considered to be local development if a local environmental plan (LEP) or State environmental planning policy (SEPP) states that development consent is required before the development can take place.

Nominated Integrated Development

The proposal is not expected to be integrated development (not being State significant development, threatened species development or Class 1 aquaculture development) that requires an approval (within the meaning of section 4.45 of the Act) under:

(i) a provision of the *Protection of the Environment Operations Act 1997* specified in section 4.46 (1) of the Act – Environmental Protection Licence (EPL)

Clause 17 of the Schedule 1 of the *Protection of the Environment Operations Act 1997* may apply where the capacity of the proposal exceeds more than 30 megawatts, not currently the case. If the proposal was ultimately to exceed this 30 megawatts threshold, it is recommended you seek the advice of the NSW EPA regarding any need for an EPL.

Designated Development

Designated development refers to certain types of developments that have potential for greater impacts due to scale and volumes involved and /or being located in or near sensitive

developments. Schedule 3 of the *Environmental Planning and Assessment Regulation 2000* lists the classes of designated development.

Similar to the EPL aspect above Clause 18 of the Schedule 3 of the *Environmental Planning and Assessment Regulations 2000* may apply where the capacity of the proposal exceeds more than 30 megawatts, not currently the case. If the proposal was ultimately to exceed this 30 megawatts threshold, the proposal may become designated development and require the submission of an Environmental Impact Study with any development application proposed.

E. State Environmental Planning Policies

The following State environmental planning policies (SEPP) apply to the development:

State Environmental Planning Policy No 33—Hazardous and Offensive Development

This policy aims to provide a consistent approach to the assessment of applications for 'hazardous and offensive' industries across the state. It outlines matters that must be considered in the assessment of applications for developments effected by the policy.

The submitted details indicated that a preliminary hazard analysis is being prepared on a voluntary basis to ensure that any concerns regarding risk are fully addressed.

State Environmental Planning Policy No. 55 - Remediation of Land

This policy applies to the proposed development and contains planning controls for the remediation of contaminated land.

Clause 7 provides that prior to granting consent to the carrying out of any development on land the consent authority is required to give consideration as to whether the land is contaminated and, if the land is contaminated, whether the land is suitable for the purpose of the development or whether remediation is required.

The subject site is part of the Steel River Estate and, as such, needs to address remediation certification scheme already applicable to the site.

State Environmental Planning Policy (Infrastructure) 2007

This policy facilitates the effective delivery of infrastructure across the State. The development is subject to the following requirements of the policy:

<u>Permissibility</u>
The proposed development is permissible within the IN1 – General Industry zone with consent under the provisions of Clause 33 and 34 of the iSEPP as an *electricity generating works.*

<u>Development adjacent to a rail corridor</u>

The site is located immediately adjacent to a rail corridor. Clause 85 applies to development on land that is in or immediately adjacent to a rail corridor, if the development:

(a) is likely to have an adverse effect on rail safety, or
(b) involves the placing of a metal finish on a structure and the rail corridor concerned is used by electric trains, or
(c) involves the use of a crane in air space above any rail corridor.
(d) is located within 5 metres of an exposed overhead electricity power line that is used for the purpose of railways or rail infrastructure facilities.

Note: Land is adjacent to a rail corridor for the purpose of this clause even if it is separated from the rail corridor by a road or road related area within the meaning of the *Road Transport Act 2013*.

Before determining a development application for development to which this clause applies, the consent authority must give written notice to the chief executive of the rail authority for the rail corridor and take into consideration any response received and any guidelines issued by the Secretary of the Department of Planning, Industry and Environment.

It is not clear from the submitted information the likely separation of the proposal from the rail line to the north west and, as such, it is possible that these provisions would apply to the proposal. It is recommended that further investigations of this aspect be undertaken early in the development of the project as there may be significant and/or unique requirements arising based on the nature of the current proposal.

Excavation in, above, below or adjacent to rail corridors

The development involves the penetration of ground of at least 2m below ground level (existing) on the ground:

(a) within, below or above a rail corridor, or
(b) within 25m (measured horizontally) of a rail corridor, or
(b1) within 25m (measured horizontally) of the ground directly below a rail corridor, or
(c) within 25m (measured horizontally) of the ground directly above an underground rail corridor.

Before determining a development application for development to which this clause applies, the consent authority must give written notice to the chief executive of the rail authority for the rail corridor and take into consideration any response received and any guidelines issued by the Secretary of the Department of Planning, Industry and Environment.

The consent authority may grant consent to development to which this clause applies without the concurrence of the rail authority concerned if:

(a) the rail corridor is owned by or vested in ARTC or is the subject of an ARTC arrangement, or
(b) in any other case, 21 days have passed since the consent authority gave notice under subclause (2) (a) and the rail authority has not granted or refused to grant concurrence

Similar to above, it is not clear from the submitted information the likely separation of the proposal from the rail line to the north west and, as such, it is possible that these provisions would apply to the proposal. It is recommended that further investigations of this aspect be undertaken early in the development of the project as there may be significant and/or unique requirements arising based on the nature of the current proposal.

Development impacted by an electricity tower, electricity easement, substation, power line

Clause 45 of the policy requires the consent authority to give written notice to the electricity supply authority and invite comments about potential safety risks when applications for the following development are received:

'(a) the penetration of ground within 2m of an underground electricity power line or an electricity distribution pole or within 10m of any part of an electricity tower

(b) development carried out:
(i) within or immediately adjacent to an easement for electricity purposes (whether or not the electricity infrastructure exists), or
(ii) immediately adjacent to an electricity substation, or
(iii) within 5m of an exposed overhead electricity power line,

(c) installation of a swimming pool any part of which is:
(i) within 30m of a structure supporting an overhead electricity transmission line, measured horizontally from the top of the pool to the bottom of the structure at ground level, or
(ii) within 5m of an overhead electricity power line, measured vertically upwards from the top of the pool,

(d) development involving or requiring the placement of power lines underground, unless an agreement with respect to the placement underground of power lines is in force between the electricity supply authority and the council for the land concerned.'

Similar to above, it is not clear from the submitted information the likely separation of the proposal from the rail line to the north west and, as such, it is possible that these provisions would apply to the proposal. It is recommended that further investigations of this aspect be undertaken early in the development of the project as there may be significant and/or unique requirements arising based on the nature of the current proposal.

It is recommended that you liaise with Ausgrid (low voltage)/ Transgrid (high voltage) regarding any requirements your application may be subject to.

State Environmental Planning Policy (State and Regional Development) 2011

This policy identifies development for each of the following categories:
- State significant development
- State significant infrastructure and critical State significant infrastructure
- Regionally significant development

The proposed development is categorised under Schedule 7, Clause 5 - Private infrastructure and community facilities over $5 million, as an *electricity generating works* and the submitted details correctly indicates that the application would need to be determined by the Hunter Central Coast Regional Planning Panel.

State Environmental Planning Policy (Coastal Management) 2018

The aim of this policy is to promote and integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the *Coastal Management Act 2016.* The policy is supported by mapping of the following coastal management areas that comprise the coastal zone:
- Coastal wetlands and littoral rainforests area
- Coastal vulnerability area
- Coastal environmental area
- Coast use area

These maps are available on the NSW Planning Portal at www.planningportal.nsw.gov.au.

The site is located in a coastal environment area.

Part 2 of the Policy indicates the development controls applicable to development on land in each of the above areas, as well as development in the coastal zone generally. Clause 15 of Part 2 requires that development consent must not be granted to development on land within the coastal zone unless the consent authority is satisfied that the proposed development is not likely to '*cause increased risk of coastal hazards on that land or other land.'*

F. Newcastle Local Environmental Plan 2012

The site is located on land in Zone IN1 General Industrial and the proposed development is considered an *electricity generating works* and is prohibited within the zone under the provisions of the Newcastle Local Environmental Plan 2012 (NLEP 2012).

The proposal relies on the provisions of State Environment Planning Policy (Infrastructure) 2007 to be permissible, as discussed above.

The following clauses in NLEP 2012 are relevant to the proposed development:

Clause 4.3 - Height of buildings

There is no height standard within this zone.

Clause 4.4 - Maximum floor space ratio

There is no FSR standard within this zone.

Clause 5.10 – Heritage conservation

Refer to above comments.

Clause 6.1 – Acid Sulfate soils
The proposed development is affected by acid sulfate soils and will be subject to an assessment against clause 6.1 of the LEP. CN's records indicate that the land contains Class 5. The following table summarises when an Acid Sulphate Soils Management Plan is required to be submitted with the development application.

Class of soil	Works to which this clause applies
5	Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 metres Australian Height Datum and by which the watertable is likely to be lowered below 1 metre Australian Height Datum on adjacent Class 1, 2, 3 or 4 land.

Development consent is not required under this clause to carry out any works if:

(a) the works involve the disturbance of less than 1 tonne of soil, such as occurs in carrying out agriculture, the construction or maintenance of drains, extractive industries, dredging, the construction of artificial water bodies (including canals, dams and detention basins), foundations or flood mitigation works, or
(b) the works are not likely to lower the water table.

Clause 6.2 – Earthworks

The proposal may include earthworks that require consent. When considering a development application that involves earthworks, the consent authority must consider the following matters:

(a) 'the likely disruption of, or any detrimental effect on, existing drainage patterns and soil stability in the locality of the development,
(b) the effect of the proposed development on the likely future use or redevelopment of the land,
(c) the quality of the fill or the soil to be excavated, or both,
(d) the effect of the development on the existing and likely amenity of adjoining properties,
(e) the source of any fill material and the destination of any excavated material,
(f) the likelihood of disturbing relics,
(g) the proximity to and potential for adverse impacts on any watercourse, drinking water catchment or environmentally sensitive area.
any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.'

Any development application submitted should address the above matters.

G. Newcastle Development Control Plan 2012 and Technical Manuals

The proposal must consider all relevant sections of DCP 2012 and the technical manuals as listed below:

Section 1.00 - Introduction

Section 2.00 - How to use this DCP

Section 3.00 - Landuse Specific Provisions

Section 3.13 Industrial Development – *Note specifically the Steel River provisions under the SIAS.*

Section 4.00 - Risk Minimisation Provisions

Section 4.01 Flood Management

Section 4.04 Safety and Security

Section 5.00- Environmental Protection Provisions

Section 5.01 Soil Management

Section 5.02 Land Contamination

Section 5.05 Heritage Items

Section 7.00 - Development Provisions

Section 7.02 Landscaping Open Space and Visual Amenity

Section 7.03 Traffic, Parking and Access

Section 7.05 Energy Efficiency

Section 7.06 Stormwater

Section 7.07 Water Efficiency

Section 7.08 Waste Management

Section- 9.00 Glossary

Technical Manuals and Additional Information

Contaminated Land Management Technical Manual

Landscape Technical Manual

Stormwater and Water Efficiency Development Technical Manual

Waste Management Technical Manual

Strategic Impact Assessment Study - Steel River Estate

H. Infrastructure Contributions and Planning Agreements

The proposed development would attract a local infrastructure contribution to City of Newcastle. Sections 7.11 and 7.12 of the *Environmental Planning and Assessment Act 1979* enables a consent authority to levy contributions as means of finding local infrastructure required as result of the proposed development.

The contributions are imposed by way of a condition of development consent or Complying Development Certificate, and can be satisfied by:

- paying a monetary contribution
- dedication of land free of cost
- works-in-kind for a public benefit or
- all of the above as determined by the consent authority

There are two types of local contributions:

- Section 7.11 contribution where there is a demonstrated link between the development and the infrastructure that the contribution is funding. The contribution rate is charged for residential accommodation.
- Section 7.12 levies where there does not need to be a demonstrated link between the development and the infrastructure funded from the contribution. Here, the contribution rate is charged as a percentage of the estimated cost of the development.

Section 7.12 Newcastle Local Infrastructure Contributions Plan 2019

The Section 7.12 Newcastle Local Infrastructure Contributions Plan 2019 (August 2019) applies to all land in the Newcastle local government area. Where this Plan applies no Section 7.11 contribution will apply.

Part A – Newcastle Local government Area (excluding Part B and Part C

Part A of the Plan collects contributions development which has an estimated cost of over $100,000**.** It applies to the entire Newcastle local government area excluding the land included in the Newcastle City Centre (Part B) and Honeysuckle (Part C) areas. The Section 7.12 contributions levy for land in Part A is as follows:

Proposed cost of the development	**Maximum % of the levy**
Up to $100,000	Nil
$100,001 - $200,000	0.5%
More than $200,000	1.0%

The application must be accompanied by a Cost Summary Report setting out an estimate of the proposed cost of carrying out the development. The report is to be prepared in accordance with the requirements of the s7.12 Plan. Sample Cost Summary reports are available on City of Newcastle's website.

I. Advisory Matters

Hunter Water Act 1991

Plans will be required to be stamped by Hunter Water prior to submission to CN. It will be necessary to complete a Building Plan Assessment Application and pay the associated fee. Hunter Water are located at 36 Honeysuckle Drive, Newcastle or can be contacted on 1300 657657. For more information regarding this process and to download an application form go the Building and Development portal of the Hunter Water website at www.hunterwater.com.au

J. Submission Requirements

Copies of the relevant checklists and the appropriate application can be downloaded from CN's website. The relevant form and checklist are listed below.

Forms

Development application form

Development and Construction Certificate Application and Appointment of a Principal Certifying Authority form

Checklist

DA checklist - Commercial/Industrial mixed use

K. Roads Act 1993

Section 138

City of Newcastle (Council) is the approval body for Riverside Drive. An approval is required under Section 138 of the *Roads Act 1993* 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,
(f) otherwise than with the consent of the appropriate roads authority.

Any development application submitted to CN will include a preliminary assessment of the matters listed above and if the development is approved, conditions will be included requiring a separate 138 application to be submitted with design details for the work. Where the works will involve traffic regulation a separate report to CN will be required and, consequently any application should be submitted in a timely manner, to prevent delays.

L. Community Participation Plan

CN's Community Participation Plan 2019 replaces Section 8.00 of the Newcastle DCP 2012 and details how and when CN will engage with the community across the planning functions it performs under the *Environmental Planning and Assessment Act 1979*. Planning functions include plan making, public notification and making decisions on proposed development.

It is recommended that consultation with adjoining property owners and occupiers and other potential affected properties be undertaken prior to submission of a development application. Major development proposals should be discussed with the affected community in a formal manner before design finalisation and the lodgement of a development application.

This process will ultimately improve communication, increase understanding of the proposal and reduce process delays that can be experienced in the development application process.

M. Consent Authority

The proposed development application will be determined by the Hunter and Central Coast Regional Planning Panel. The Panel is the consent authority for 'regionally significant development' which includes:

- General development with a capital investment value (CIV) over $30 million.
- Council related development with a CIV over $5 million. Crown development with a CIV over $5 million.
- Private infrastructure and community facilities with a CIV over $5 million.
- Eco-tourist facilities with a CIV over $5 million.
- Designated development for the purposes of extractive industries, waste facilities and marinas.
- Certain coastal subdivisions within the coastal zone.
- Development with a CIV between $10 million and $30 million, which are referred to the panel by the applicant after 120 days.

The Panel is also the consent authority for Crown development applications (with a CIV under $5 million) referred to the Panel by the applicant or CN after 70 days from lodgement as undetermined, including where recommended conditions are in dispute.

N. Conclusion

A preliminary assessment of your proposal has identified several specific matters that are considered to warrant further detail, consideration or amendments prior to the submission of a development application.

All efforts are made to identify issues of relevance and likely concern with the preliminary proposal. However, the comments and views in this letter are based on the plans and information submitted for preliminary assessment and discussion with the pre-development application.

You are advised that:

- the views expressed may vary once detailed plans and information are submitted and assessed in the development application process, or as a result of issues contained in submissions by interested parties;
- amending one aspect of the proposal can result in changes which can create, different set of impacts from the original plans; and
- the comments do not bind CN Officers, the elected Council members, or other bodies beyond CN, in any way whatsoever.

For further enquiries please contact me on 4974 2768 or by email at djaeger@ncc.nsw.gov.au

Yours faithfully

Damian Jaeger
SENIOR DEVELOPMENT OFFICER

Appendix M

QUANTITY SURVEYING REPORT (DENARY QUANTITY SURVEYING)

DENARY
QUANTITY SURVEYING

PO Box 818
HAMILTON NSW 2303
P: 02 4952 1087
M: 0423605647
E: info@denary.net.au
W: denary.net.au

01 December 2020

den.713

Patrick Dale
Edify Energy
Level 3, 201 Charlotte Street
BRISBANE QLD 4000
Patrick.Dale@edifyenergy.com

RE: Steel River Battery Plant

Please find attached the **Capital Investment Value Estimate** for the above mentioned property.

The Capital Investment Value Estimate total is **$28,617,891 exclusive of GST, land, financial costs and staging**.

The estimate was based on the information provided by Edify Energy and detailed in the estimate. Please note that any Structural elements that have not been advised have been based on Denary's assumption of what will be required. Therefore it is recommended that this estimate be used for feasibility purposes only.

If you have any queries regarding the Capital Investment Value estimate please contact the undersigned.

Best Regards

Ryan Thomson
Principal
Denary

PROJECT INFORMATION

PROJECT DESCRIPTION	Battery Storage Facility
PROJECT ADDRESS	Lot 1102 Riverside Drive MAYFIELD WEST NSW 2304
VERSION DESCRIPTION	Capital Investment Value Estimate
RATES CURRENT AT	December 2020
TOTAL (GST EXCLUSIVE)	**$28,617,891**

ESTIMATE INFORMATION

Below is a list of information used to prepare the Capital Investment Value Estimate.

- Site plan prepared by CGA Engineering Solutions – LD101 dated 9th November 2020;
- Discussions over the phone & emails.

SCHEDULE OF EXCLUSIONS

- Land & Legal Costs
- Holding Costs & Interest Charges
- Authority Fees & Charges
- Unknown Conditions
- Finance Costs
- Leasing & Marketing Costs
- Removal of Unknown Hazardous Materials & Contaminated Soils
- Delay Costs
- Staging Costs
- Escalation
- Goods & Services Tax (GST)

CAPITAL INVESTMENT VALUE ESTIMATE

Trade Summary

DENARY QUANTITY SURVEYING

Project: Commercial
Building: STEEL RIVER BATTERY PLANT
Details: CAPITAL INVESTMENT VALUE REPORT

Description	Quantity	Unit	Rate	SubTotal	Total
TRADE ELEMENTS					
SITE PREPARATION				20,259	20,259
COMMERCIAL CIVIL WORKS				511,891	511,891
BATTERY UNITS				26,250,903	26,250,903
SWITCHING STATION				1,650,000	1,650,000
SITE ACCESS INFRASTRUCTURE				104,794	104,794
SUB TOTAL					**28,537,848**
PROFESSIONAL FEES				80,043	80,043
CAPITAL INVESTMENT VALUE					**28,617,891**
PROFESSIONAL FEES - % OF CAPITAL INVESTMENT VALUE					0.0028
AREAS (m2)					
SITE					5,952
COMMERCIAL CIVIL AREA					3,317
DRIVEWAY & CAR PARKING					735
COST PER SQUARE METRE					
SITE PREPARATION				3	3.40
COMMERCIAL CIVIL WORKS				154	154.31
SITE ACCESS INFRASTRUCTURE				143	142.56

Preparing a Site Waste Minimisation and Management Plan (SWMMP)

The City of Newcastle

Office Use - No.....

This form

This form can be used as a Site Waste Minimisation and Management Plan (SWMMP) and must accompany your development application for:

- erection or alteration of a building or structure
- major demolition works
- carrying out subdivision earthworks, clearing of land or similar

Completing this form will:

1. Assist you in identifying the type of waste that will be generated and in advise Council how you intend to reuse, recycle or dispose of the waste.
2. Facilitate waste management and reduction by identifying onsite sorting and storage of waste products pending reuse or collection.

The information provided on this form, together with your development plans, is designed to enable your development to be assessed against the relevant objectives and controls within Section 7.08 Waste Management of Newcastle DCP 2012 and the Waste Management Technical Manual.

Part A: Waste Minimisation and Management Plan details

1. Development for which this SWMMP has been prepared:

Describe the proposed development this SWMMP is for.

A ☒ Erection or alteration of a building or structure
B ☐ Demolition
C ☐ Subdivision works
D ☐ Site clearing, etc
E ☐ Other .....

If a building, what will it be used for?

Battery Storage Facility

.....

2. Location of development

Describe the property which the development application relates.

Unit No..... House No. 27D... Street Riverside Drive
Locality Mayfield West
Lot(s) 12 ..... Section .....
Deposited Plan(s) 280089 ..... Strata Plan .....
Other Approved Lot 1102

These details should represent the DA property description.

Part B:	Construction waste, reuse, recycling and disposal details
3. Will your development generate any construction waste?	Will your proposal involve demolition, vegetation removal or other site clearing works or other activity which will generate the need for reuse & recycling or disposal of waste during the developments construction? No ☐proceed to 5 in Part C. Yes ☒please provide details in accordance with 4 below:

Type of material onsite			**Reuse & recycling methods:**	***Disposal methods:***
List type of general waste material eg. timber off-cuts, vegetation tiles concrete bricks etc.	Estimated Quantities		Specify reuse or recycling methods or contractor eg. crushed and reused, reused as flooring, mulched etc.	Specify contractor and landfill site (If known). e.g. Smith to any town tip, Alkene Asbestos to A place Steptoe & Son to Tip etc.
	Vol (m^3)	**Wt (kg)**		
Excavated Material			Reuse for fill on-site where appropriate	Off-site disposal in accordance with Validation Certificate
Concrete				Off-site disposal at an appropriately licensed facility
Metal				Off-site disposal at an appropriately licensed facility
Timber				Off-site disposal at an appropriately licensed facility
General Waste				Off-site disposal at an appropriately licensed facility

Please attach additional sheets if more space is required.

Part C:	Ongoing waste management details (after construction)
4. Will your development generate any waste as a result of its proposed use?	Will your development generate any ongoing waste as a result of its proposed use such as food waste, glass, paper, metal off-cuts etc? No ☐ proceed to 9 in Part E. Yes ☒ please provide details in accordance with 6 below:

Expected waste		**Proposed onsite storage and treatment facilities: (refer to DCP Section 7.08)**	**Destination:**
Detail the types of operating waste expected to be generated by the development eg. food waste, glass, paper, metal off-cuts etc.	**Vol./ week L or m^3**	Eg. Waste cupboard waste storage & recycling area, garbage chute, onsite composting compaction equipment.	Eg. Recycling, disposal or contractor.
Battery Components		No on-site storage - removed from site immediately once taken from cubicle	Defective/end of life batteries returned to manufacturer for recycling
Timber Pallets			Returned to manufacturer for re-use
Unused Chemicals		No storage on-site - removed immediately by maintenance contractors	Disposed/recycled at appropriately licensed facility
Packaging Waste (Plastic/cardboard)		No storage required - removed immediately by maintenance contractors	Disposed of at appropriately Licensed waste facility

Please attach additional sheets if more space is required.

5. Ongoing management commitments (multi-unit, commercial & industrial buildings only) Provide details of ongoing waste management commitments onsite (eg. lease conditions, caretaker/site manager).	Management Commitments The site will be operated by contractors. All Waste material generated during site maintenance and servicing will be removed from the site by the relevant contractors at the time the waste is generated. **Please attach additional sheets if more space is required.**

Part D:	Estimates (if you answered yes at either 3 or 5 above)
6. Estimated quantities If you answered yes to either 3 or 5 above please provide details of how you arrived at your estimated quantities.	Please indicate the method used for predicting your development's anticipated levels of waste: ☒ Best guess ☐ Calculated assessment ☐ Industry data ☐ Waste Planning Guide for Development Applications Other .....

Part E:	Checklist	
7.	Have you indicated the location of Waste Management facilities on your development plans?	Yes ☐ N/A
8.	Where necessary, have you provided acceptable administrative arrangements for ongoing waste management?	Yes ☒ Not relevant ☐
9.	Is easy access to the recycling area, room or facilities for occupants and collection services provided?	Yes ☐ Not relevant ☒
10.	Is a sufficiently sized waste collection area provided?	Yes ☐ Not relevant ☒
11.	Is an unobstructed vehicular access and manoeuvring area provided for waste collection for commercial/ industrial and multi-unit development?	Yes ☒ Not relevant ☐
12.	Do the development plans for construction/demolition show details of onsite storage space or waste container for the recycling and disposal of construction waste?	Yes ☐ To be provided at CC stage

Part F: Signatures

13. Applicants declaration

I declare this development achieves the waste objectives set out in the DCP. The details on this form are the provisions and intentions for minimising and managing waste related to this project. All records demonstrating lawful disposal of waste will be retained and kept readily accessible for inspection by regulatory authorities such as council, DECC or WorkCover NSW.

I declare that all the information given is true and correct. I also understand that:

- if incomplete, the application may be delayed or rejected.
- further information may be requested within 14 days of lodgement.

Name: BRUCE WARREN BAUDINET

Signature: Director

Date: 22.12.20

STEEL RIVER WEST P/L / Edify Energy Pty Ltd

22.12.2020 (Ben Warne)

How to lodge your SWMMP

Include this plan with the documents required for the submission of your Development Application and address to:

The General Manager

City of Newcastle

Mail: PO Box 489, Newcastle 2300

Courier or personal delivery:

Ground Floor,
282 King Street, Newcastle

How to contact us:

Phone: (02) 4974 2000

Fax: (02) 4974 2222

E-mail: mail@ncc.nsw.gov.au

Web: www.newcastle.nsw.gov.au

Coming in to see us?

Our Customer Enquiry Centre is located on the ground floor of the City of Newcastle Administration Building, 282 King Street, Newcastle, opposite Civic Park.

We are open for business from 8.30am to 5.00pm, Monday to Friday.

If you wish to discuss your SWMMP with one of our professional officers, it is essential that you arrange an appointment.

Appendix N

WASTE MANAGEMENT PLAN

Appendix O

STEEL RIVER STRATEGIC IMPACT ASSESSMENT CHECKLIST

SECTION 8.9 – DEVELOPMENT GUIDELINES AND OBJECTIVES		
SECTION 8.9.1	**CONTROL**	**COMMENTS**
ii. Site Layout	Loading, storage and external work areas should be located generally to the rear of allotments. Buildings, fencing and landscape treatment should be used to screen visually obtrusive activities. Components of the buildings which incorporate offices, caretaker dwellings, show rooms and customer services areas which are generally of a high architectural design standard, should be located towards the front of the allotment to present an attractive facade to the street frontage.	Given the nature of the proposed use, no formal loading or storage areas are required once the facility is operational. As shown on the plans provided the majority of the site and access driveway will be screened by landscaping.
iii. Site Coverage	The combined building and external hard paved surfaces (including access, car parking, storage, work, turning areas), should not exceed 80% of the site. Not less than 20% of the site area should be landscaped. This area should not contain car parking, vehicular access, turning, loading, storage and work areas. Landscaping should include tree planting, mulched planting areas, grass and pedestrian/cycle pathways. As a minimum requirement, mulch planting beds containing trees, shrubs and groundcovers should occupy 5% of the total site area. The total ground floor area of all buildings on an allotment generally should not exceed 70% of the area of the allotment. The ground floor area of all buildings is measured using the exterior face of all walls, with canopies, verandahs and other overhanging components that are an integral part of the architectural design being excluded from the measurement.	The proposed battery containers will be placed on concrete slab within the compacted gravel area of the site which comprises approximately 47% of the site, with the landscape areas comprising approximately 28%.
iv. Setbacks	A minimum front building setback of 10m should be provided from all internal roads indicated on the master plan Figure 7 in this SIAS.	The proposed development exceeds the minimum front, side and rear building setbacks.

	However, this may be reduced to a 5m setback for 40% of the site width, provided that all site access and landscape treatments set out in these guidelines can be achieved and provided that the building design contributes to the enhancement of the streetscape. Front or side building setbacks should be increased where allotments about future secondary roads or on corner allotments. A minimum development setback (including external work, storage and car parking areas) of 5m shall apply to all external site boundaries of the Steel River site. This setback shall be heavily landscaped with screen planting, except where landscaping may reduce surveillance of public areas by adjacent development. A minimum development setback from side and rear property boundaries of 6m shall be provided to buildings and external work and storage areas.	The proposed setbacks have been established in accordance with the recommendations of the Preliminary Hazard Assessment provided as part of the Development Application.
v. Building Form	Blank unarticulated walls should be avoided. · The functions of the building may be reflected in the articulation of the building envelope. Creative roof designs are encouraged. · There should be a smooth and preferably a seamless transition of the building appearance from the front of building functions to the rear of building functions. Building mass can also be articulated through use of sunshades, terraces, balconies, canopies, columns and other elements that provide depth.	Given the nature of the proposal, building form is not relevant to this proposal. The proposed Battery Storage Facility has been designed to be as sympathetic to its general surrounds and is considered to be suitably located within the Steel River Estate.
vi. Building Height	Buildings fronting main roads should be greater than 6.5m in height. Generally, buildings should be 1-2 storey constructions to a maximum height of 12m above finished ground level immediately below that point.	The proposed Battery Storage Facility and associated infrastructure will not exceed the 6.5m height limit. Visually the project will present from street level as a modern, low scale development, enabling the

	Variations to permit buildings with more storeys or a height of greater than 12m, may be allowed where it can be demonstrated that no harm will be caused to the amenity of the surrounding locality. Development that is greater than 12m should generally be well set back from the front facade of the building. Building service appendages, such as lift motor room, air conditioning equipment, and exhausts, should generally not project beyond the same height limitations. It is preferred that any protruding services/ equipment should either be concealed from view behind parapet walls or be housed within the building envelope entirely. Rooftop radio, television and microwave antennas/towers must be approved by the Estate Management Company.	surrounding landscaping to further add to the quality of the Steel River Business Park.
viii. Floor Space Ratio	The maximum floor space ratio for any allotment should not exceed 1.5:1. The floor space ratio is the total area of all buildings on an allotment divided by the total area of the allotment. The total floor area of all buildings is measured to the exterior face of all walls with balconies and decking being excluded.	The total area of the proposed Battery Storage Facilities and associated infrastructure will not exceed the floor space ratio therefore complies with the SIAS guideline and therefore complies.
ix. Storage and Work Ares	All storage, work areas and garbage receptacles should be located at the rear of allotments and screened from public streets and residential areas by the use of buildings, screen fences or landscaping. All storage and work areas should be contained wholly within the confines of the allotment. The temporary storage of materials or carrying out of external work within the public road reserve is not permitted. Consideration may be given to shared storage and work areas with adjoining developments where clear	No storage or work areas are proposed. An operation and maintenance container is proposed to be provided at the rear of the site. Once operational no materials will be stored throughout the site. Maintenance work will be undertaken on the individual batteries as needed, however these areas are largely screened from Riverside Drive by the use of screen fences and landscaping.

	site planning and efficient land use benefits can be demonstrated without impacting adversely on public amenity.	
xiii. Landscape Development	Landscape plans must accompany each submission by individual allotment developers/designers and be prepared by a qualified landscape architect. Landscape development in accordance with an approved plan must be installed before building occupancy. A minimum width of 5m of landscaping should be provided along all road frontages. Where possible, mounds shall be provided in order to screen visitor car parking at the fronts of buildings. Alternatively, where mounds are not possible due to space limitations, the parking shall be screened through the use of evergreen trees and/or appropriate shrub planting, screen walls or through an adjustment in the grade of parking area relative to the adjacent road subject to security, safety and surveillance requirements. Emphasis should be placed on the use of trees, ground covers and shrubs at allotment entries in preference to grassing, to maintain a visual continuity in the streetscape. Emphasis shall be placed on the use of flowering native shrub species and native trees to produce a consistent character. The use of local native species is preferred as they provide habitat for native fauna and generally have a lower water demand that exotic species. Trees to be planted within landscaped areas fronting public roads or which are visible from public areas should be semi-mature specimens not less than 2 metres in height when installed. Shrubs and groundcovers should be advanced specimens consistent with	The landscape plan has been prepared by Terras Landscape Architects, who are qualified landscaped architects. Landscaping works will be completed as part of establishment of the facility. A minimum landscape width of 5m is provided along the road frontage. The landscape plan includes a mix of trees and groundcovers, particularly within the south, east and west setbacks. Appropriate pot sizes have been nominated on the landscape concept plan.

	the size and quality of plants supplied in nursery containers not less than 200mm in size. All areas not built upon or paved should be planted with trees, shrubs or grass. All shrub planting beds should be mulched with a gravel or bark mulch. Uninterrupted areas of gravel or bark mulch and bare soil are prohibited. All landscaped areas should be irrigated with an automatic pop-up sprinkler irrigation system. Undeveloped areas which are not immediately required for development need not be irrigated or fully landscaped. These areas must, however, be seeded with a drought-resistant grass mix in accordance with a Soil Erosion Control Plan to prevent weed regrowth and wind and water erosion. · Particular attention should be paid to the landscaping of external storage and work areas. Where on-site buildings and fences are insufficient to provide adequate screening, vegetation buffer strips of at least 5m in width should be provided along adjacent boundaries. Vegetation screening and shade trees should be provided for all car parking areas (refer Section 3.1 and 3.2 for guideline).	Undeveloped areas will be treated to stabilise ground conditions and prevent runoff. As shown on the plans provided, the site will primarily consist of gravel hardstand area and landscaping.
xv. Fencing and Screening	Proposed fences and walls shall be approved by the Estate Management Company prior to construction. The design of installations such as water towers, storage tanks, processing equipment, cooling towers, communication dishes, vents and other structural equipment should be compatible with the building architecture or screened from adjacent properties, roads and pedestrian paths by using fences and/or walls.	Security fencing will be provided with landscape screening buffers. Such fencing will be to a height of 3m. The proposed fencing arrangement is appropriate and consistent with the SIAS guidelines.

	Fencing is generally to be limited to low height structures unless it can be adequately demonstrated that security fencing is essential for the operation of the development. Screen fences and walls should be at least equal to the size of the materials or equipment which require screening. Screen fencing to external work and storage areas should be masonry or pre-coloured, double sided metal cladding, having a minimum height of 2.0m. The materials and colours of fences and walls should be compatible to the building architecture. Security fencing such as chainmesh is not permitted in areas visible from internal roads, pedestrian paths or public areas. Black colour chainmesh (including posts and all fixings) fencing only is permitted alongside and rear property boundaries in combination with landscape screening buffers. The maximum height of this fence is to be 2.0m. No articles, materials, machinery, equipment, vehicles, plant, wastes or animals should be stored or kept in the open or exposed to view from adjacent roads or pedestrian paths. Articles or goods to be stored other than in an enclosed building should be enclosed with either a screen fence or wall. Vehicles should be stored in specifically designated areas only. If vehicles are to be stored for more than 48 hours, they should be stored in an area screened from adjacent properties, roads and pedestrian paths.	Security fencing is required for a development of this nature and will be constructed in accordance with: T0057 NEG EP09 [INTRUDER RESISTANT FENCES FOR ZONE & SUBTRANSMISSION SUBSTATIONS]; AND ENA DOC-15 [NATIONAL GUIDELINE FOR PREVENTION OF UNAUTHORISED ACCESS TO ELECTRICITY INFRASTRUCTURE]. ALL SUBSTATION BUILDING AND FENCING LOCKS SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF NEG EP07 NETWORK ACCESS AND SECURITY - LOCKS AND KEYS. While chainmesh swing gates are proposed, landscaping will be provided either side of the access driveway. The security fencing and gates are being appropriately provided in accordance with the relevant Australian Standards for electrical infrastructure as noted on the development plans provided.
SECTION 8.9.3	**CONTROL**	**COMMENTS**
8.9.3 – Parking and Unloading Areas	The aisle and parking stall dimensions shall be in accordance with current Newcastle City Council requirements.	No formal or dedicated parking facilities are proposed or required to be provided throughout the site, as the maintenance vehicles will park around the site as needed to

	Parking is restricted to paved, designated parking spaces only, each owner or lessee shall be responsible for the compliance of their respective employees and visitors. Visitor drop off zones and parking should be provided near visitors entrances. All day employee parking should be separated from visitor parking and entrance traffic. The parking of trucks should not be permitted within building setback areas. Landscape islands should be provided within parking areas adjacent to boundary areas at a maximum interval of seven parking stalls and at the end of each run of stalls. These islands should have a minimum width equal to that of one parking stall. · Within internal parking areas, landscape islands should be provided at the ends of all rows of parking. The parking islands should be provided at maximum interval of every 20 parking spaces. Minimum width of an island should be equal to two car parking spaces. A continuous vertical concrete kerb not less than 150mm in height should be provided around all parking islands and the perimeter of car parking areas to prevent vehicular intrusion. Allowance should be made for wheelchair/pram/cycle ramps as necessary.	service the batteries.
8.9.4 – Geotechnical Requirements	Development on the Steel River site shall demonstrate that it is able to comply with the following geotechnical requirements: i. **Geotechnical Inspection** - Prior to the development of individual lots it is a requirement that a site - specific geotechnical inspection be undertaken to identify requirements for foundations to suit the proposed	A Site Management Plan and Remediation Certificate B has been prepared by RCA and is provided within **Appendix H.** The certificate confirms: "*The Lot is suitable for commercial / industrial development subject to works being undertaken in accordance with the Steel River Construction*

	buildings and pavements and the expected ground settlement within the lot. ii. **Foundations** - Foundations for buildings and ground floors will depend on a number of factors such as loadings, acceptable tolerances in floor levels, and the profile of the subsurface materials. Foundation types will therefore range from high level pad or strip footings to deep piled foundations. iii. **Impact on River Bank** - Generally it is preferable to locate buildings 20m away from the existing bank beside the river to avoid additional loadings on the bank. Therefore, it is a requirement that an additional geotechnical analysis is carried out in order to design building foundations which will not impact on the bank	*Guidelines (Ref [4]), relevant management plan (Ref [5]), and Certificate C and Site Management Plan(s) that are yet to be prepared for the site*". As required by Certificate B a Site Management Plan has been prepared for the proposed works associated with the Battery Storage Facility on approved Lot 1102.

Appendix P

AHIMS SEARCH RESULTS

AHIMS Web Services (AWS)
Search Result

Purchase Order/Reference : Battery storage 2

Client Service ID : 555605

ADW Johnson Pty Ltd

7/335 Hillsborough Road
Warners Bay New South Wales 2282

Attention: Alex Salani

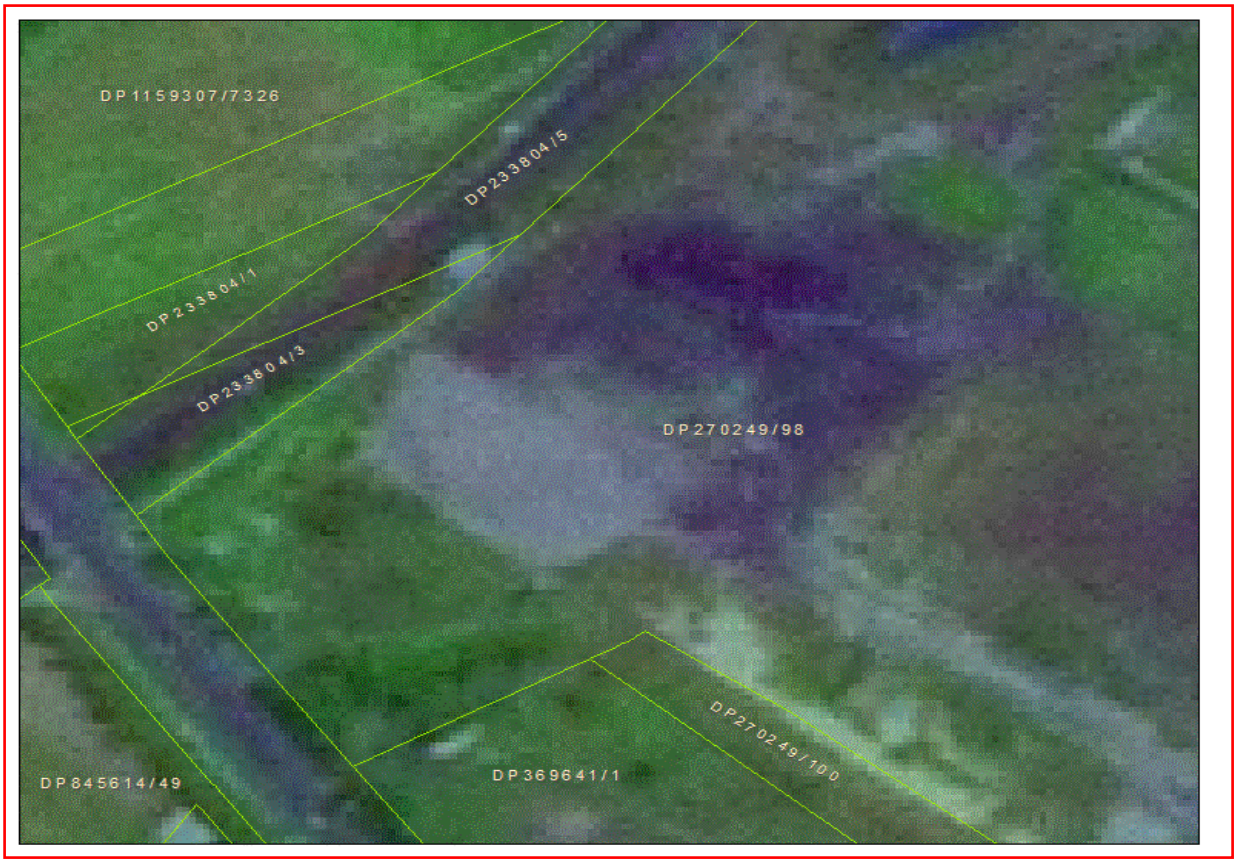
Email: alexs@adwjohnson.com.au

Date: 07 December 2020

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lat, Long From : -32.8774, 151.7135 - Lat, Long To : -32.8747, 151.7178 with a Buffer of 0 meters, conducted by Alex Salani on 07 December 2020.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of the Office of the Environment and Heritage AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (http://www.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Office of Environment and Heritage's Aboriginal Heritage Information Unit upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Office of Environment and Heritage and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date .Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

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