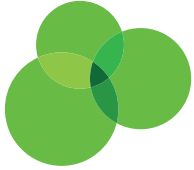


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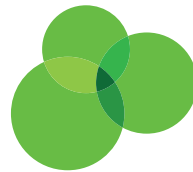


planning proposal

Bogan Gate Explosives Reserve

PARKES SHIRE COUNCIL

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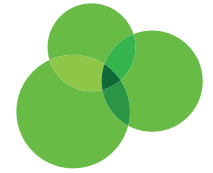
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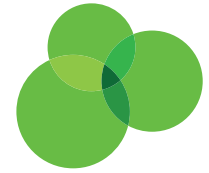
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EXECUTIVE SUMMARY



Currajong has been engaged by Solar Mining Services to prepare a Planning Proposal to permit heavy industries on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate.

Solar Mining Services lease buildings from Lexa Enterprises Pty Ltd towards the central portion of Lot 2 DP 1064474 for the operation of an Ammonium Nitrate Emulsion Facility. Also leasing space on Lot 2 DP 1064474 is Johnex Pty Ltd for explosives manufacturing and storage, Howards and Sons for fireworks storage. Lexa Enterprises also has several other agreements with other parties for use of buildings located at the former army camp complex for non-explosives purposes.

The Solar Mining Services Ammonium Nitrate Emulsion Facility is fully operational in accordance with Development Consent No. DA2020/0073 granted by Parkes Shire Council on 18 November 2020 and a Manufacture Explosives Licence No. XMNF200034 issued by WorkSafe NSW on 19 January 2023.

This Planning Proposal has been prepared to facilitate the processing of a new Development Application that has been prepared by Currajong for an increase in annual production of Ammonium Nitrate Emulsion at the Solar Mining Services facility from 960 tonnes per annum to 20,000 tonnes per annum.

On 18 April 2024 Solar Mining Services and Parkes Shire Council staff met to agree on the process for the finalisation of the Development Application for the proposed alterations and additions to the Solar Mining Services Ammonium Nitrate Emulsion Facility. At this meeting it was agreed that Currajong would prepare a Planning Proposal to permit heavy industries on Lot 2 DP 1064474 under the Parkes Local Environmental Plan 2012.

The Planning Proposal seeks to amend the Parkes Local Environmental Plan 2012 by inserting Item 3 in Schedule 1 Additional Permitted Uses, as follows:

(3) Development for the purposes of heavy industries is permitted on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate with development consent.

The subject land has been used for heavy industry type activities since WWII when the Australian Defence Forces established the Bogan Gate Explosives Reserve and Army Camp. Since the sale of Lot 2 DP 1064474 in 2004, the site has been used Johnex Pty Ltd for explosives manufacturing and Howards and Sons for fireworks storage. More recently, Solar Mining Services has established an Ammonium Nitrate Emulsion facility at the site.

The Planning Proposal is not seeking to permit new land-uses onto the subject land. Instead, the proposal is aimed at formalising the location of existing heavy industries located on Lot 2 DP 1064474.

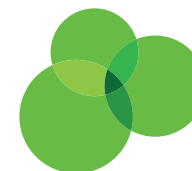
The need for the Planning Proposal is a result of the finalisation of a Development Application for an increase in annual production of Ammonium Nitrate Emulsion at the Solar Mining Services facility from 960 tonnes per annum to 20,000 tonnes per annum. To provide greater certainty of the permissibility of the proposed development beyond that proven under existing use rights, Parkes Shire Council has requested Solar Mining Services to submit a Planning Proposal to Council for changes to the Parkes Local Environmental Plan 2012.

A summary of the primary assessment findings of the Planning Proposal is as follows:

- + Heavy industries are already established on Lot 2 DP 1064474 in the form of the Johnex Pty Ltd explosives manufacturing and storage facility, Howards and Sons fireworks storage sheds and the Solar Mining Services Ammonium Nitrate Emulsion Facility. Safe separation distances and other safety, operational and environmental controls are in force at the site, as administered by WorkSafe NSW. An Environment Protection Licence is also administered over part of the site in relation to Johnex operations.
- + The continued use of the land for heavy industries is not inconsistent with the Central West and Orana Regional Plan 2041 or the Parkes Shire Local Strategic Planning Statement 2020 or any applicable State Environmental Planning Policies or Ministerial Directions.
- + Necessary infrastructure and services are already connected to the site.
- + Site constraints and opportunities are well understood and regulated on Lot 2 DP 1064474, as per development consent conditions, environment protection licence conditions and explosives licences in force at the site.
- + The likely environmental, social and economic impacts of the proposal are acceptable, and positive in the majority.
- + The Planning Proposal is not determined to be of significance to State and Federal governments.

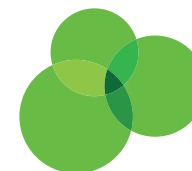
The Planning Proposal is presented for assessment by Parkes Shire Council in a form that is consistent with the recommendations of the NSW Department of Planning, Housing and Infrastructure Local Environmental Plan Making Guidelines. It provides the necessary reporting basis for Parkes Shire Council to progress an amendment to the Parkes Local Environmental Plan 2012.

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01

PROJECT INTRODUCTION

1.1 Project Overview

Currajong has been engaged by Solar Mining Services Pty Ltd (SMS) to prepare a Planning Proposal relating to the Bogan Gate Explosives Reserve (BGER) operating on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate.

The Planning Proposal seeks to amend the Parkes Local Environmental Plan (LEP) 2012 by inserting Item 3 in Schedule 1 Additional Permitted Uses, as follows:

- (3) Development for the purposes of heavy industries is permitted on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate with development consent.

The Planning Proposal has been prepared in accordance with the NSW Planning, Housing and Infrastructure (DPHI) Local Environmental Plan Guideline, dated August 2023.

The Planning Proposal aims to rationalise the location of existing heavy industries located at the BGER, which includes Johnex Pty Ltd (for explosives manufacturing and storage), Howards and Sons (fireworks storage) and SMS for Ammonium Nitrate Emulsion (ANE) manufacturing and storage. These businesses are some of the largest employers in the Bogan Gate district and provide vital explosives and explosive precursor products to the mining, quarrying and civil engineering sectors in NSW.

The proposed changes to the Parkes LEP 2012 will provide greater certainty of the permissibility of proposed new development at the BGER beyond that proven under existing use rights. It will also provide existing businesses operating on Lot 2 DP 1064474 with greater confidence on the long term-viability of the BGER for their business operations and future development plans. It will also provide surrounding landholders and residents at Bogan Gate with more information about existing operations being conducted at the site.

1.2 Project Background

Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate was first used as an explosive storage and testing facility by the Australian Military during WWII and subsequently acquired by the Commonwealth of Australia for defence purposes on 9 June 1960.

A Masterplan and Masterplan User Requirement Report was prepared by the Australian Military Forces in August 1962. The Masterplan User Requirement Report stated the explosives reserve was designed to store and process between 12,000 and 22,000 tons of explosives, with a range of activities described as ‘inspection, repair, modification, maintenance and destruction of ammunition stocks as directed by AHQ.’

The explosives reserve continued to be owned by the Commonwealth until 8 April 2004 when Lots 2 and 4 DP 1064474 were transferred to Timber Creek Holdings Pty Ltd. At this time the improvements on the subject land included the old Bogan Gate Army Camp (comprising of communal army barracks, free-standing dwellings, depot and storage sheds, mess hall and other administration / community style facilities) as well as multiple explosives storage sheds with earthen mounds, roads and drainage infrastructure.

From 2004 onwards, explosives storage and manufacturing was conducted from the existing buildings located on Lots 2 and 4 DP 1064474, including leases to Nowra Brickworks NSW Pty Ltd, Yallawadgera (T/A Bogan Gate Explosives Reserve), Johnex Explosives Pty Ltd and Howards and Sons Pty Ltd and more recently SMS.

On 9 February 2022 Timber Creek Pty Ltd transferred Lot 2 DP 1064474 to the current owner, Lexa Enterprises Pty Ltd. Lexa Enterprises Pty Ltd rents exclusively to the BGER who have granted various leases for existing land-use activities on the site,

including a lease to Johnex for explosives manufacturing and storage operations, Howards and Sons for explosives storage and more recently a lease to SMS for an ANE facility.

The SMS ANE Facility is established on Lot 2 DP 1064474 in accordance with Development Consent No. DA2020/0073 granted on 18 November 2022. A Manufacture Explosives Licence No. XMNF200034 has also been granted by SafeWork NSW on 19 January 2023. The Pro Cert Group issued an Occupation Certificate for the SMS ANE Facility, dated 7 December 2022. The facility is fully functional and has commenced manufacturing and storage of limited supplies of ANE.

In August 2023, SMS submitted Pre-DA documentation to Parkes Shire Council seeking feedback in relation to a draft Environmental Impact Statement (EIS) proposing an increase in production of ANE at their SMS ANE Facility up to 20,000 tonnes per annum. In this documentation was written advice generated from Maddison Marcus dated 1 November 2022 that established the use of Lot 2 DP 1064474 for explosives manufacturing and storage was a lawful existing use under Section 109(1) of the Environmental Planning and Assessment Act (EP&A Act) 1979.

On 18 April 2024, SMS and Parkes Shire Council staff met to agree on the process for the finalisation of the Development Application for the proposed alterations and additions to the SMS ANE Facility. At this meeting it was agreed that Currajong would prepare a Planning Proposal to permit heavy industries on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate under the Parkes LEP 2012.

1.3 Structure and Form

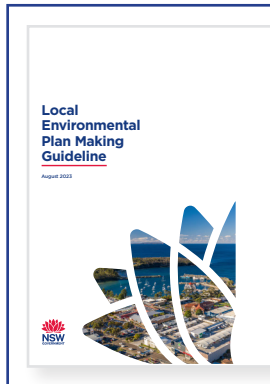
The Planning Proposal has been prepared in accordance with the NSW DPHI Local Environmental Plan Guideline, dated August 2023.

Section 2 of the DPHI Local Environmental Plan Guideline includes detailed guidance on what content needs to be included in a Planning Proposal.

Table 1 includes a checklist of all of the information required by the DPHI Local Environmental Plan Guideline and a reference on where the information can be found within this Planning Proposal. The Guideline requires that the Planning Proposal must be prepared to a high standard and complying generally with the requirements detailed in Table 1.

Table 1 - Format of the document

Section No	Section Heading	Description
Section 1	Project Introduction	Section 1 includes introductory information relating to the project, including a project overview and relevant background information.
Section 2	The Existing Environment	Section 2 includes a detailed description of the project, including location, land title and land-use descriptions as well as an assessment of the existing environmental conditions applying to the land.
Section 3	Existing Planning Framework	Section 3 includes a description of the existing planning framework applying to the subject land including provisions under the Parkes LEP 2012.
Section 4	Description of the Proposal	Section 4 includes a detailed description of the existing heavy industries operating at the BGER. This section also describes the scope of the proposed changes to the Parkes LEP 2012.
Section 5	Strategic Alignment	Section 5 includes detailed information describing how the proposed development aligns with the strategic planning framework applying to the subject land.
Section 6	Planning Proposal - Part 1	Section 6 addresses the Part 1 matters for consideration under the DPHI Local Environmental Plan Guideline.
Section 7	Planning Proposal - Part 2	Section 7 addresses the Part 2 matters for consideration under the DPHI Local Environmental Plan Guideline.
Section 8	Planning Proposal - Part 3	Section 8 addresses the Part 3 matters for consideration under the DPHI Local Environmental Plan Guideline.
Section 9	Planning Proposal - Part 4	Section 9 addresses the Part 4 matters for consideration under the DPHI Local Environmental Plan Guideline.
Section 10	Planning Proposal - Part 5	Section 10 addresses the Part 5 matters for consideration under the DPHI Local Environmental Plan Guideline.
Section 11	Planning Proposal - Part 6	Section 10 addresses the Part 6 matters for consideration under the DPHI Local Environmental Plan Guideline.



1.4 Supporting Documentation

The Planning Proposal is supported by a number of specialist reports, studies and design details that have been developed to support the DA for proposed alterations and additions to the SMS ANE Facility. These documents have been included as Appendices to the Planning Proposal as a means of demonstrating that existing heavy industries already operate at the BGER and the site is capable of accommodating heavy industry operations. A description of these documents is included as follows:

Appendix A

Bogan Gate Masterplan and User Requirement Report

A Masterplan was prepared by the Australian Military Forces in August 1962. A Masterplan User Requirement Report was also prepared which stated the explosives reserve was designed to store and process between 12,000 and 22,000 tons of explosives, with a range of activities described as 'inspection, repair, modification, maintenance and destruction of ammunition stocks as directed by AHQ.'

Appendix B

Parkes Shire Council Existing Use Rights Letter

Parkes Shire Council provided a letter on 23 May 2013 that advised it was satisfied that the existing use of the BGER on Lot 2 DP 1064474 is an existing use pursuant to the EP&A Act 1979.

Appendix C

SMS Statement of Environmental Effects

A Statement of Environmental Effects for the original SMS ANE Facility was approved by Parkes Shire Council in accordance with Development Consent No. DA2020/0073 on dated 18 November 2020, along with an SMS Design Brief and other DA documentation.

Appendix D

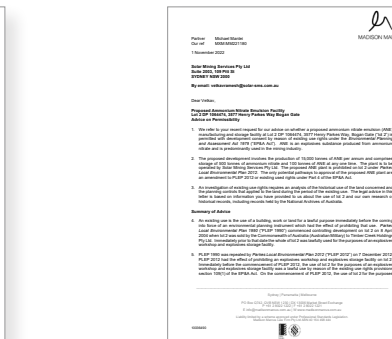
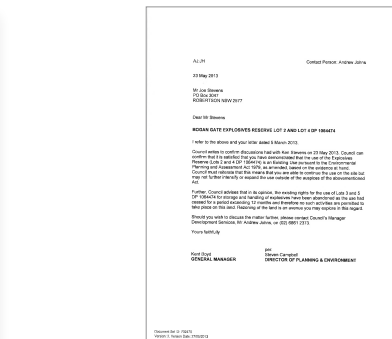
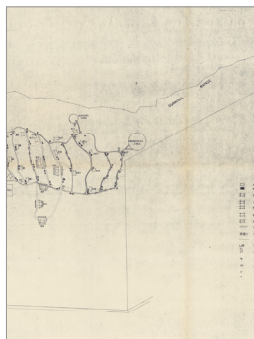
Development Consent No. DA2020/0073

DA2020/0073 for the SMS ANE Facility was approved by Parkes Shire Council on dated 18 November 2020 for the manufacturing of 960 tonnes of ANE and associated storage of ANE and other chemicals.

Appendix E

Madison Marcus Existing Use Rights Letter

Environmental Law Specialists Madison Marcus provided a letter to SMS dated 1 November 2022 that advised of their research / investigation of the BGER and that, in their opinion, the site has existing use rights as defined under the EP&A Act 1979 and the proposed alterations and additions to the SMS ANE Facility is permitted with development consent under Part 4 of the Act.



Appendix F

Environmental Assessment Requirements (EAR 1753), issued by the NSW DPE, dated 24 January 2023

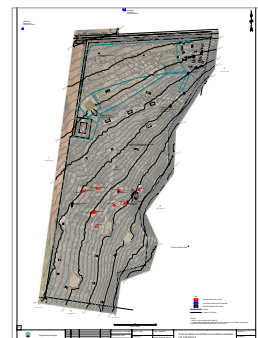
On 24 January 2023 DPHI provided their Environmental Assessment Requirements (EAR 1753) for proposed alterations and additions to the SMS ANE Facility on Lot 2 DP 1064474. The SEARs are included in the Planning Proposal as they provide an indication of the scope of investigations required for new developments at the BGER.



Appendix G

Arndell Surveying Detail Survey

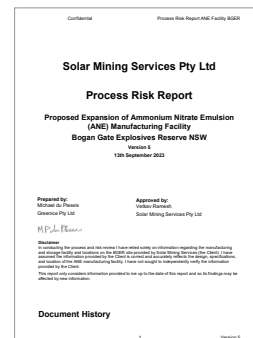
A Site Detail and Contour Survey has been completed by Arndell Surveyors, dated 15 August 2023 that shows the location of existing features of the natural and built environment at the BGER.



Appendix H

Greenice Process and Risk Report

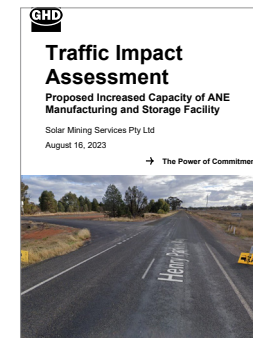
A process and risk at the SMS ANE Facility has been prepared by Greenice Pty Ltd, dated 13 September 2023. The report has been included in the Planning Proposal as it provides an indication of the suitability of the BGER for heavy industry operations, including proposed alterations and additions to the SMS ANE Facility.



Appendix I

GHD Traffic Impact Assessment

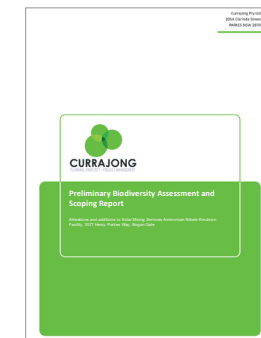
A TIA prepared by GHD on 16 August 2023 for the proposed alterations and additions to the SMS ANE Facility has been included in the Planning Proposal to provide details on traffic conditions at the BGER and the suitability of the site for continued heavy industry land-use. The TIA findings have been noted by TfNSW and Parkes Shire Council as part of Pre-DA consultation.



Appendix J

Currajong Preliminary Biodiversity Assessment and Scoping Report 24 February 2023

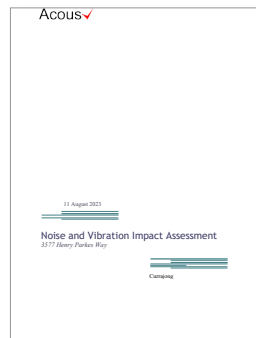
The PBASR prepared by Curraong has been included in the Planning Proposal to describe flora and fauna conditions at the BGER and the suitability of the site for continued heavy industry land-use.



Appendix K

Acoustick Noise and Vibration Impact Assessment, prepared by Acoustik, dated 10 August 2023

A Noise and Vibration assessment prepared by Acoustik, dated 10 August 2023 has been included in the Planning Proposal showing noise conditions in and around the BGER and the buffer distances provided between existing heavy industries and nearby sensitive land-use. Technical findings of assessment work demonstrates compliance with the relevant noise criteria established under the Protection of the Environment Operations Act 1997.



Appendix L

SMS Bushfire Management Plan, prepared by SMS, dated 4 April 2023

The SMS Bushfire Management Plan, dated 4 April 2023 is included in the Planning Proposal to show existing conditions and potential hazard areas at the SMS ANE Facility and wider BGER. NSW RFS and other emergency responders have reviewed the plan and are generally accepting of emergency response procedures in the plan.



Appendix M

Envirowest Preliminary Contamination Investigation

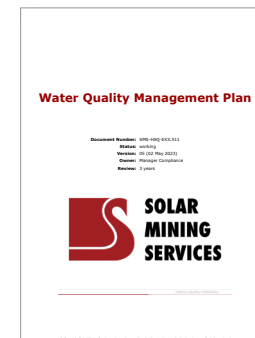
A Preliminary Contamination Investigation was carried out by Envirowest, dated 4 February 2021 that identified no evidence of contamination at the SMS ANE Facility. Whilst not an exhaustive study of the whole of the BGER that report provides information about past use and the recommendations for alterations and additions to existing heavy industry operations at the BGER, with the site generally being regarded as suitable for continued heavy industry use.



Appendix N

Water Quality Management Plan, prepared by SMS, dated 2 May 2023

The SMS Water Quality Management Plan dated 2 May 2023 has been included to provide extra detail on stormwater management at the BGER, which is considered to be robust and suitable for heavy industry operations.



THE EXISTING ENVIRONMENT

2.1 Location and Title

The land which is the subject of this Planning Proposal is comprised of Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate.

The site is located approximately 500m east of Bogan Gate and approximately 35km west of Parkes.

The total area of Lot 2 DP 1064474 is calculated to be approximately 227 hectares.

Figure 1 shows the site and its location within the Parkes Local Government Area.

Figure 1 - Site Location Map



2.2 Land-use

Lot 2 DP 1064474 was used by the Australian Military as an explosive storage and testing facility during WWII. The site was formerly acquired by the Commonwealth of Australia for defence purposes on 9 June 1960. A Masterplan and Masterplan User Requirement Report was prepared by the Australian Military Forces in August 1962.

The explosives reserve continued to be owned by the Commonwealth until 8 April 2004 when Lots 2 and 4 DP 1064474 were transferred to Timber Creek Holdings Pty Ltd. At this time the improvements on the subject land included the old Bogan Gate Army Camp (comprising of communal army barracks, free-standing dwellings, depot and storage sheds, mess hall and other administration / community style facilities) as well as multiple explosives storage sheds with earthen mounds, roads and drainage infrastructure.

From 2004 onwards, explosives storage and manufacturing was conducted from the existing buildings located on Lot 2 DP 1064474. Current land-uses on the site are as follows:

- + Johnex - has a manufacturing and storage plant located on the central part Lot 2 DP 1064474. The Johnex facility is involved in the manufacture and storage of ANFO, packaged explosives, ANE and other high explosives and initiating systems.
- + Howards and Sons - uses explosives storage buildings located towards the southern part of Lot 2 DP 1064474, with fireworks stored in several sheds.
- + SMS ANE Facility - a relatively new facility constructed in accordance with DA2020/0073 located towards the centre of Lot 2 DP 1064474.
- + Rental Accommodation - several dwellings and sheds associated with the old Bogan Gate Army Camp are leased to private parties.

Figure 2 shows the land-use activities currently being undertaken on Lot 2 DP 1064474.

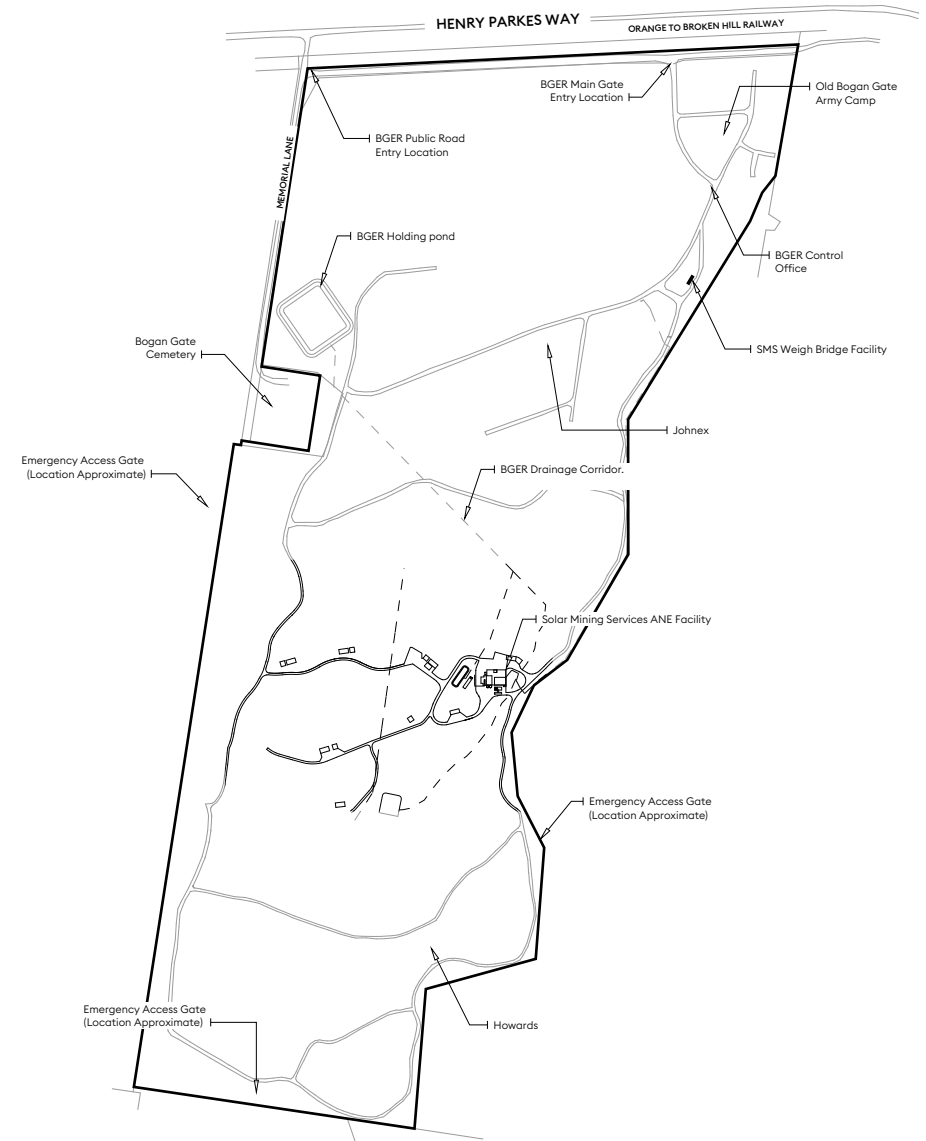


Figure 2 - Land-use Activities Map

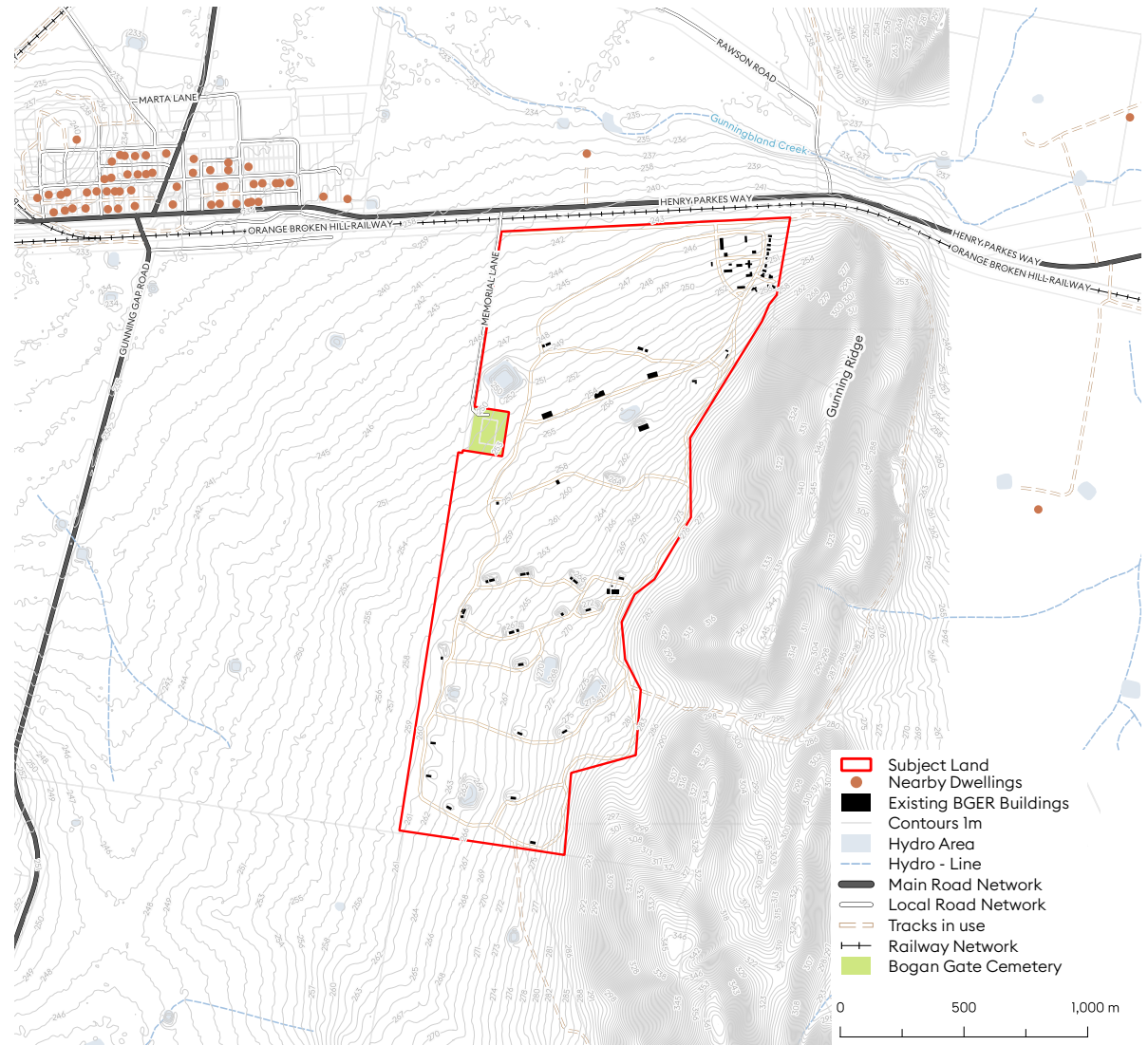
2.3 Surrounding Land-use

An analysis of the surrounding environment has been completed and the following observations are made:

- + Lot 2 DP 1064474 site is located on the eastern edge of Bogan Gate.
- + The site has frontage to the Henry Parkes Way and Memorial Lane.
- + The Bogan Gate Cemetery is located on the western boundary of Lot 2 DP 1064474.
- + The land surrounding Lot 2 DP 1064474 is zoned RUI Primary Production and used for broad-acre agriculture purposes, with ancillary isolated dwellings. Vegetation on farms has been modified and consists mostly of vegetation corridors and isolated paddock trees with a grassy / weedy / cropped ground-cover. The nearest dwelling is located approximately 250m north of Lot 2 DP 1064474 on the northern side of the Henry Parkes Way.
- + Other notable land-use activities in the area includes the Gunning Ridge to the east, which holds the largest remnant of native vegetation in the locality.

Figure 3 shows the land-use pattern within the surrounding area.

Figure 3 - Land-use Map



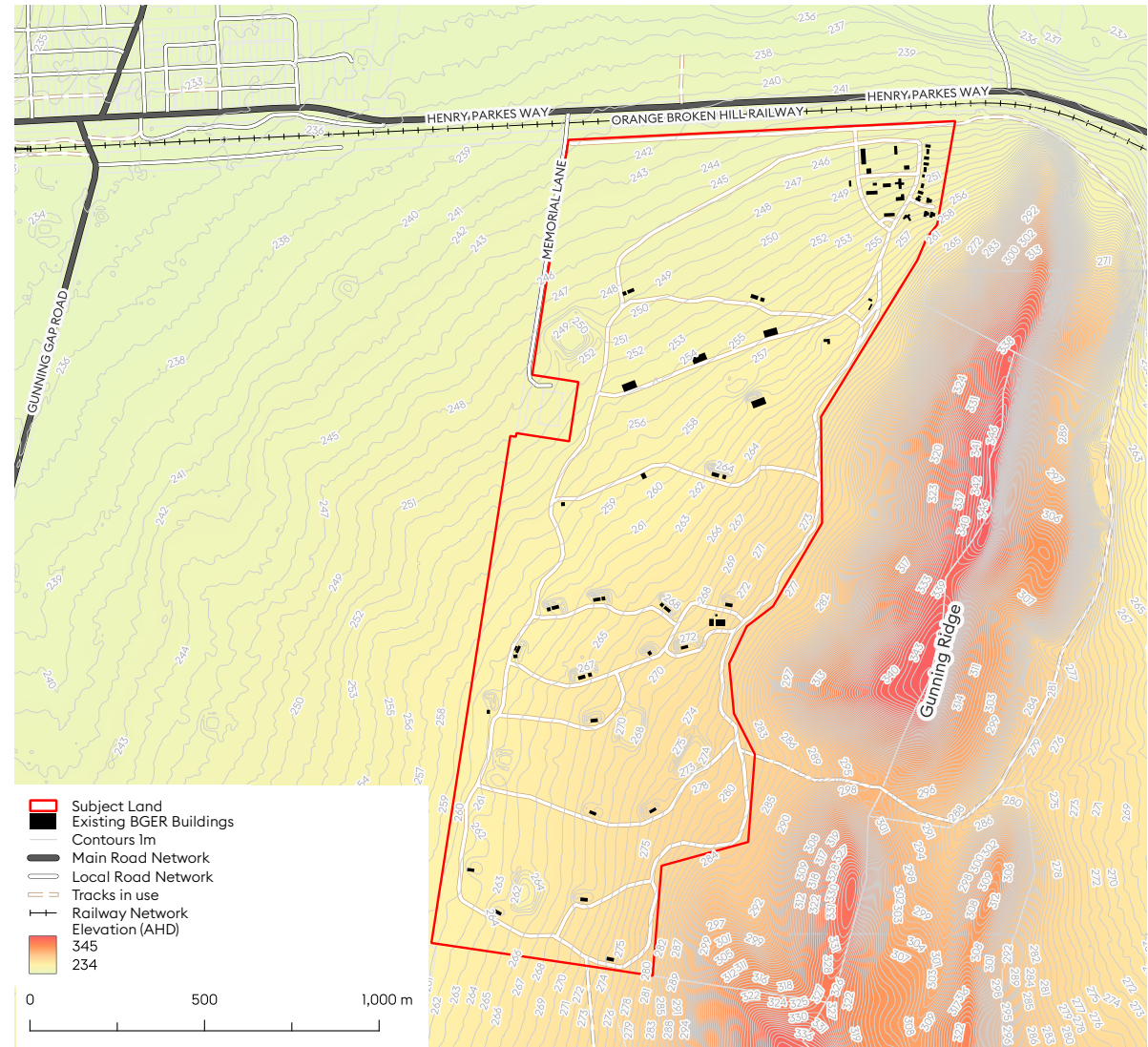
2.4 Topography, Slope and Landform

Lot 2 DP 1064474 is located on the lower slope of the western side of the Gunning Ridge which has an elevation of RL 360, some 120 metres higher than the surrounding landscape around Bogan Gate.

The site forms part of the Jemalong Range and Slopes, with prominent strike ridges of upper Devonian quartz sandstone, with general elevation between 250m to 400m above sea level. Elevated areas have prominent asymmetry with steeper eastern faces of stepped cliffs and narrow benches. Lower colluvial slopes of coalescing alluvial fans on small streams. Thin very stony soils on ridges with abundant currawang (*Acacia doratoxylon*), red stringybark (*Eucalyptus macrorhyncha*), red ironbark (*Eucalyptus sideroxylon*), Dwyer's red gum (*Eucalyptus dwyeri*) and black cypress pine (*Callitris endlicheri*).

The site generally has a gentle slope to the west, as shown in Figure 4.

Figure 4 - Topography and Landform Map



2.5 Water Resources

The subject land is not mapped in the Parkes LEP 2012 as containing vulnerable groundwater resources or being flood affected.

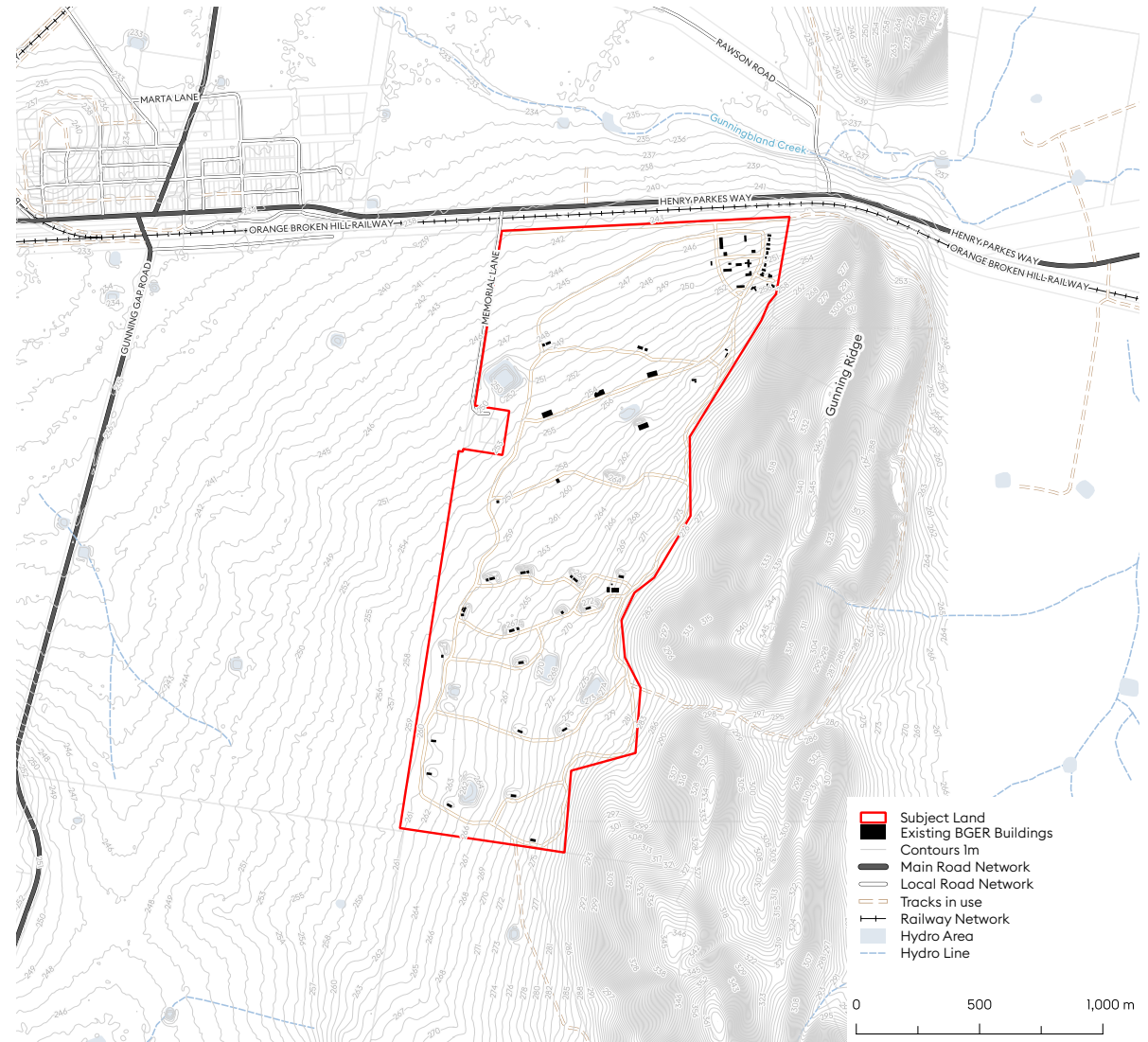
The nearest natural water body is the Gunningbland Creek located approximately 1km north of the BGER. There are no permanent water courses on the land or high value riparian areas / wetlands observed to be located on the land.

A robust system of stormwater management devices is established at the BGER, including road table drains, contour banks, swales and catch dams.

The likelihood of a flood inundating the BGER is low. Water quality impacts are also assessed to be low.

Figure 5 shows the topography and general water course features of the BGER and surrounding land.

Figure 5 - Water Resources and Features Map



2.6 Biodiversity

The site is largely influenced by historic settlement in and around Bogan Gate and the BGER.

The BGER comprises a number of fixed buildings, roads and drainage improvements. Areas that are cleared of built improvements are generally sown down to exotic grasses, with patches of native and regrowth vegetation generally along the perimeter of the site and along drainage corridors.

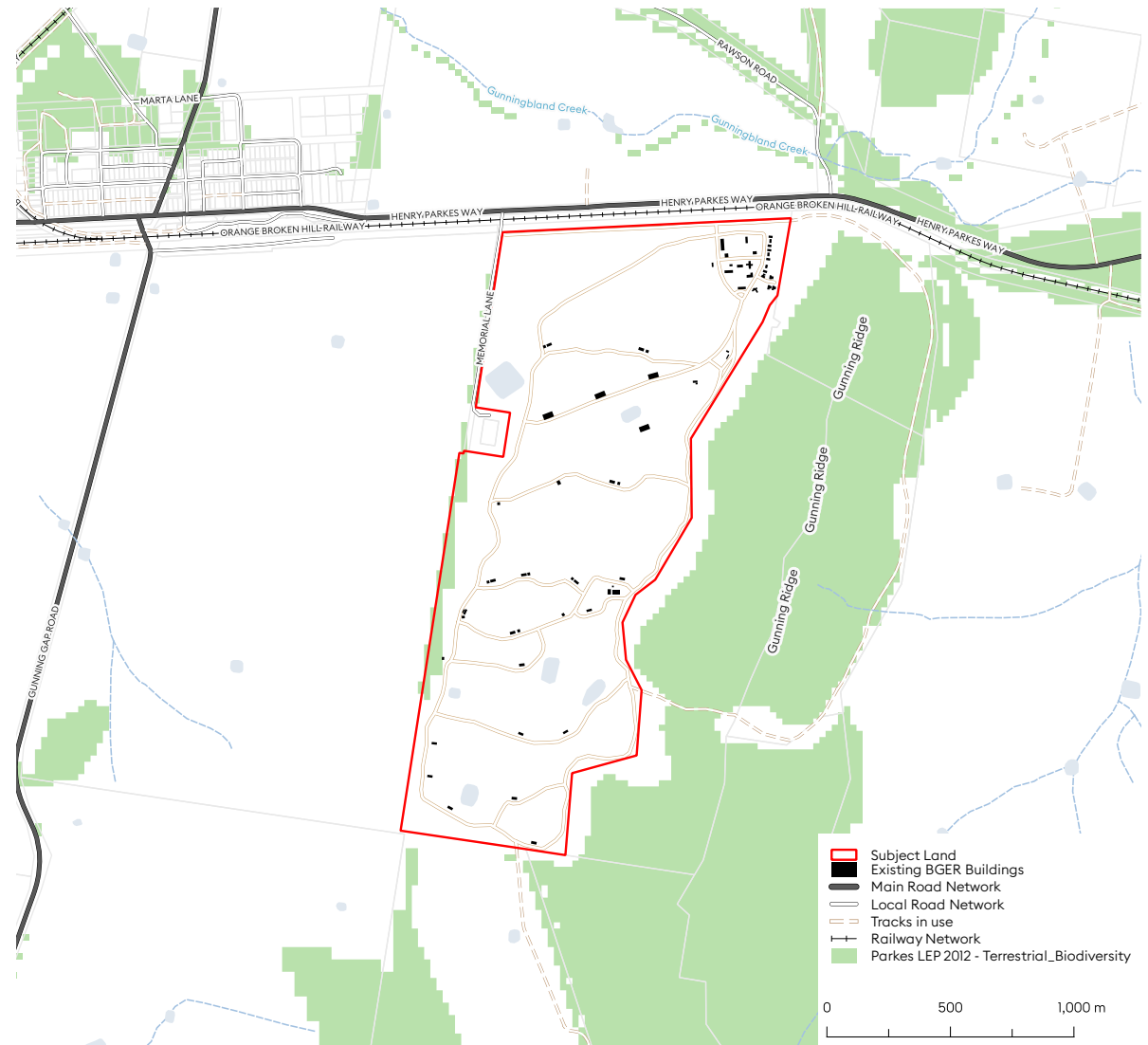
A review of the Parkes LEP 2012 Terrestrial Biodiversity Map confirms a small section of the western perimeter of the site is mapped as biodiversity. This remnant vegetation comprises Inland Grey Box Woodland and Red Ironbark (*Eucalyptus sideroxylon*) with White Cypress Pine (*Callitris columellaris*) and Black Cypress Pine (*Callitris endlicheri*) and a grassy / weedy understorey). The habitat value on Lot 2 DP1064474 is assessed as low.

The Gunning Ridge to the east of Lot 2 DP1064474 comprises a large remnant of native vegetation, which is mapped as Terrestrial Biodiversity on Parkes LEP 2012 mapping.

No clearing of native vegetation as defined under Local Land Services Act 2013 (LLS Act 2013) is proposed under this Planning Proposal and there are no significant impacts on threatened species or habitats.

Figure 6 shows the location of native vegetation in and around the subject land.

Figure 6 - Biodiversity Resources Map



2.7 Heritage

The site is largely influenced by historic settlement in and around Bogan Gate and the BGER.

European Heritage

A review of Schedule 5 of the Parkes LEP 2012 confirms the subject land is not listed as a heritage item. There are no listed heritage items within Bogan Gate or within a close proximity to the BGER.

Built heritage aspects associated with the Australian Military use during and post WWII have been considered. The whole site (collectively) is considered to have historical significance. No building / structure on Lot 2 DP 1064474 has been identified as being particularly rare or having significant heritage values.

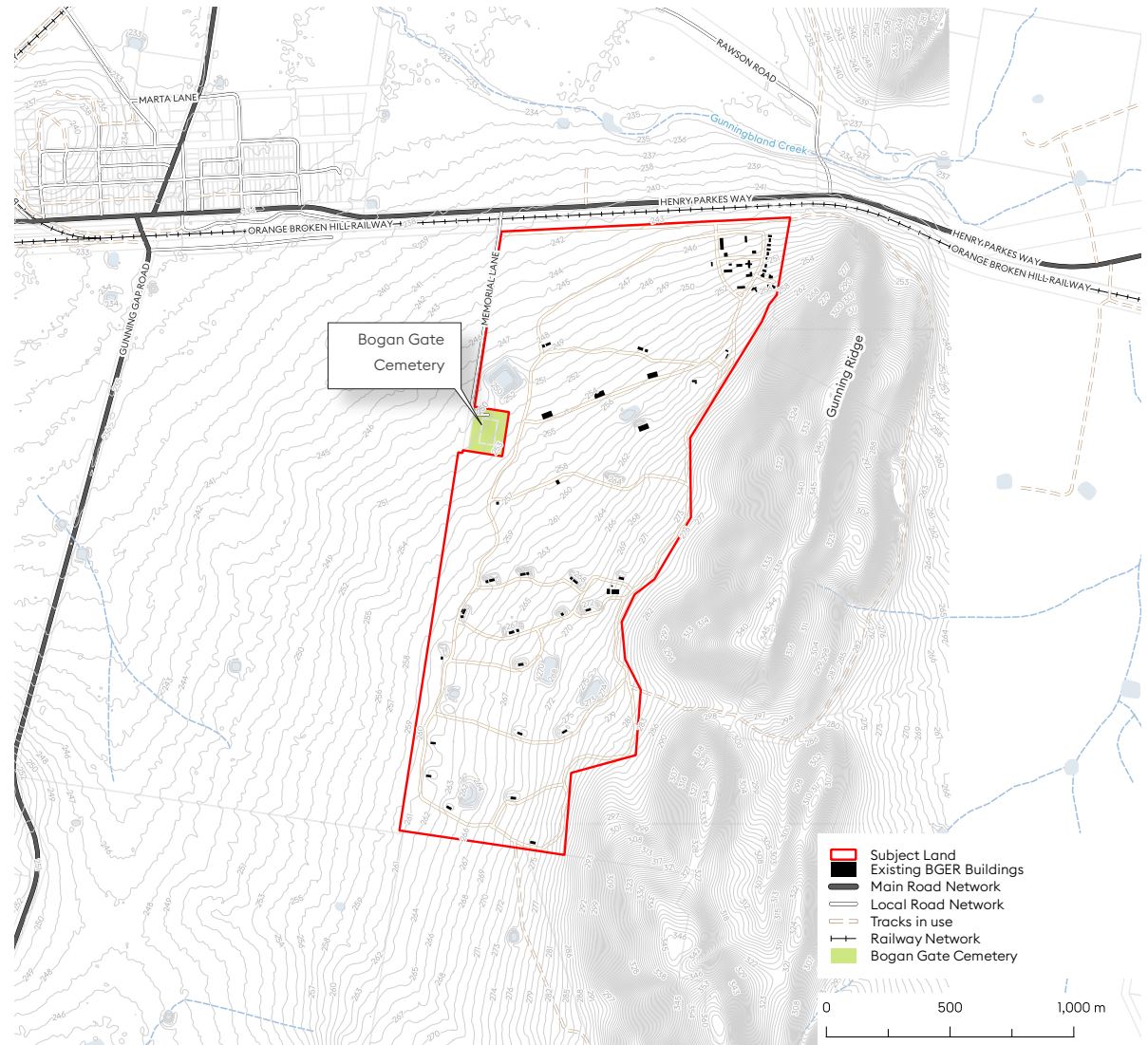
The Bogan Gate Cemetery to the west of the site is identified to be the only site with potential local heritage significance. The continued uses at the BGER are not incompatible with the heritage significance of the Bogan Gate Cemetery.

Aboriginal Heritage

A search of the Aboriginal Heritage Management System (AHIMS) has been completed to determine whether there are any known items, places or relics of Aboriginal cultural heritage significance located on the site, or within 200m of Lot 2 DP 1064474. The results did not identify any Aboriginal sites or places within the search area.

Figure 7 shows the BGER and adjoining Bogan Gate Cemetery, and confirms there are no properties listed under Schedule 5 of the Parkes LEP 2012.

Figure 7 - Heritage Map



2.8 Access, Transport and Traffic

Vehicular access to the BGER is already provided via internal roads that connect to Memorial Lane and then onto the Henry Parkes Way.

The Orange to Broken Hill Railway is located on the southern side of the Henry Parkes Way, including a level crossing of Memorial Lane with signage.

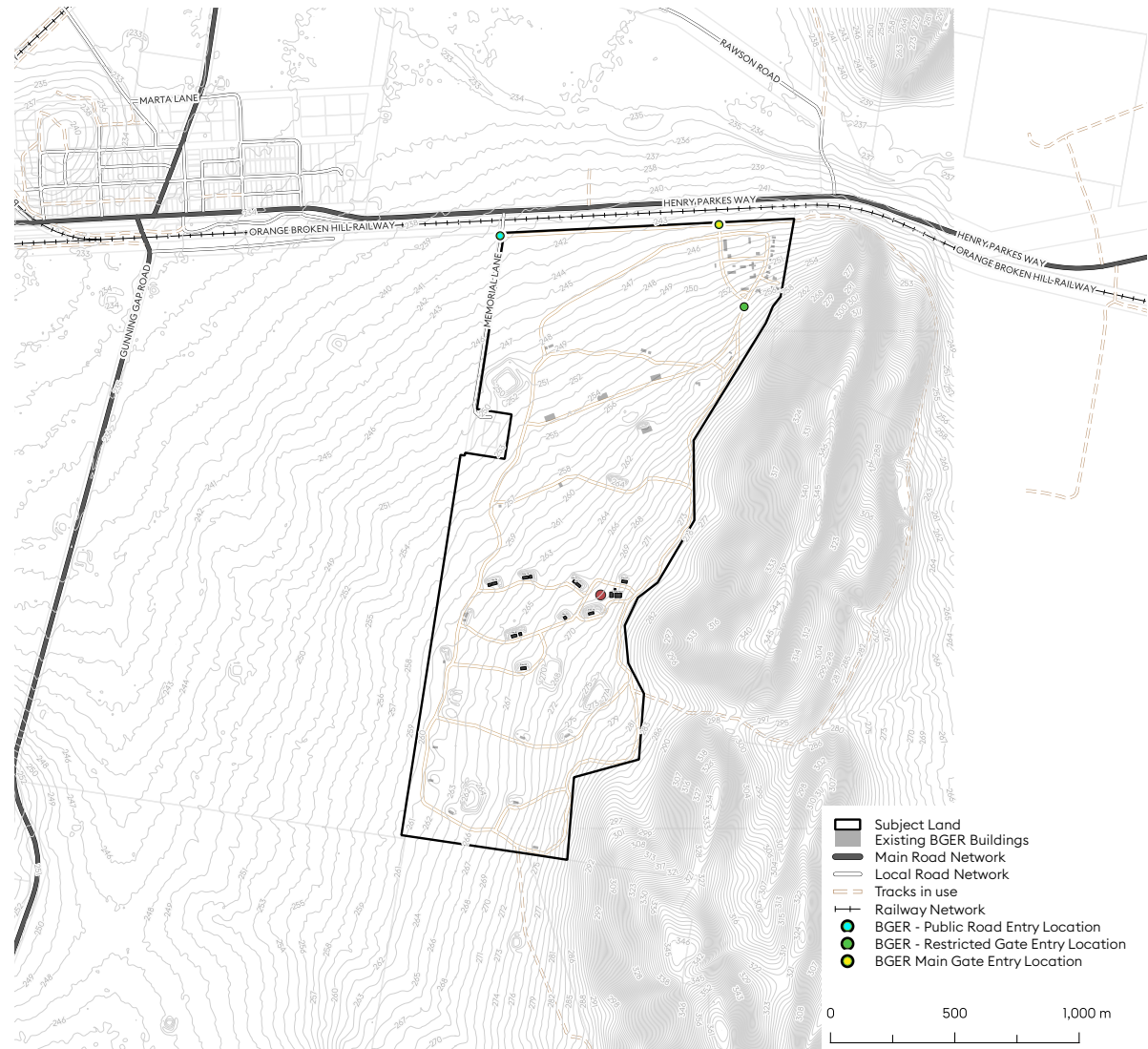
Access to the BGER would continue via Memorial Lane and then onto the Henry Parkes Way. Review of the geometry of the existing intersection of Memorial Lane and the Henry Parkes Way has been undertaken by GHD to determine whether the design vehicles accessing the BGER can be accommodated at the intersection. Swept path analysis confirms that left in and out auxiliary lanes will be required at the intersection to accommodate an A-Double tanker.

A review of the road crash history of the local area does not highlight any specific locations with a significant cluster of crashes that may suggest an inherent safety issue with the intersection of the Henry Parkes Way and Memorial Lane. There have been no crashes on the Henry Parkes Way within 350m of the intersection with Memorial Lane and Henry Parkes Way. There was one crash in 2018 resulting in serious injury at the intersection of Rawson Road and Henry Parkes Way (approximately 1.3km east of the intersection of Memorial Lane and Henry Parkes Way).

There are currently no public transport facilities (bus stops etc) or pedestrian footpaths or cycleways connecting immediately to the subject land.

A map showing the existing road and railway network is included in Figure 8.

Figure 8 - Roads Map



2.9 Environmental Hazards

Bushfire

The BGER has established emergency procedures and an emergency response plan that must be complied with by Johnex, Howards and SMS. Land along the eastern boundary of Lot 2 DP 1064474 is identified as Bushfire Prone Land. Regular consultation with NSW RFS, Fire and Rescue NSW and other emergency responders is undertaken by the landowner and individual leaseholders at the BGER. SMS has developed a Bushfire Management Plan, dated 4 April 2023 that complies with Chapter 8 of the RFS Guideline, Planning for Bushfire Protection 2019.

Flooding

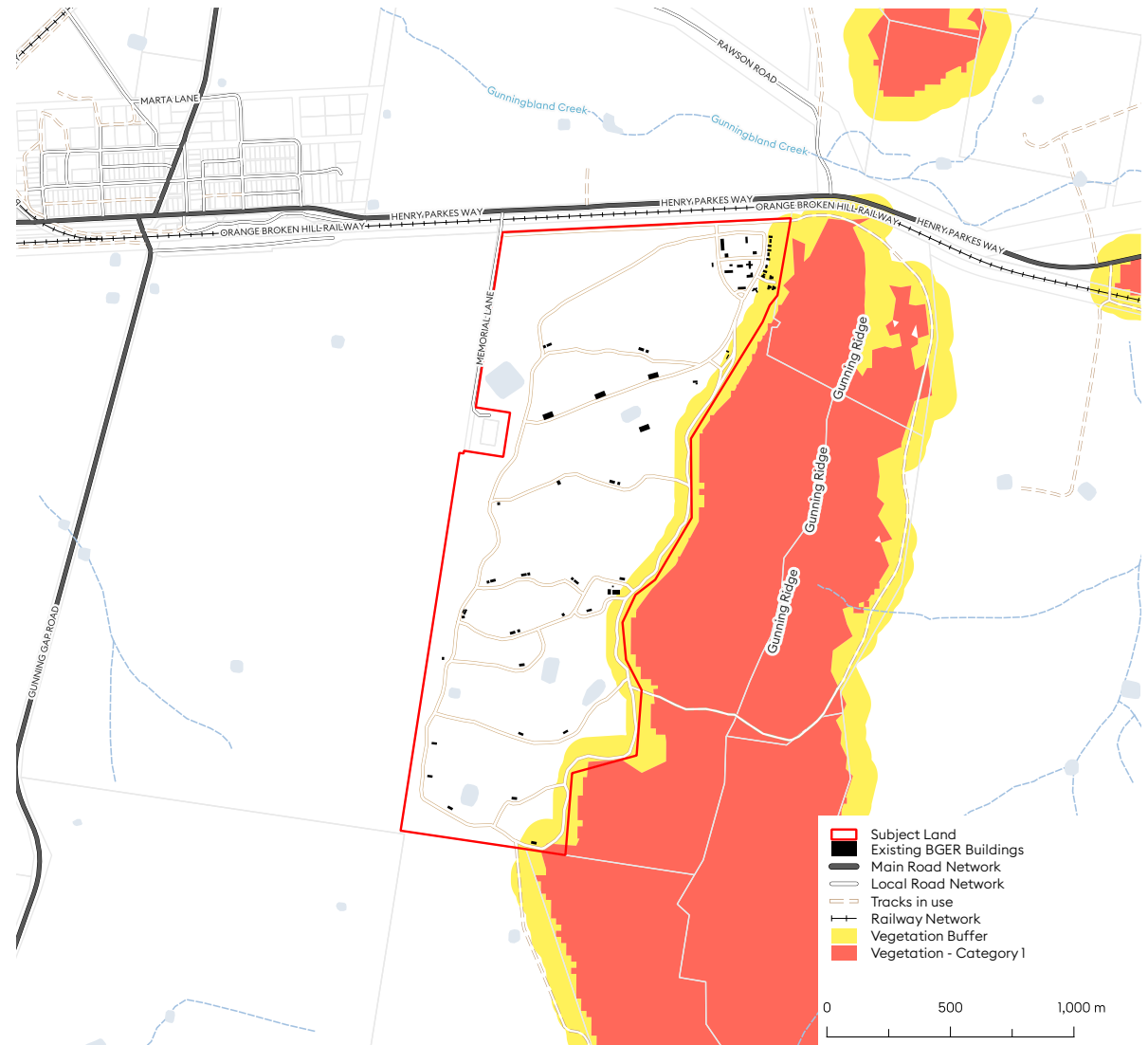
The subject land is not mapped in the Parkes LEP 2012 as being impacted by flooding. The nearest natural water body is the Gunningbland Creek located approximately 1km north of the BGER. A robust system of stormwater management is already established at the BGER, including road table drains, contour banks, swales and catch dams.

Contamination

The subject land does not feature in any database pertaining to the management / regulation of contaminated land. A preliminary contamination investigation was undertaken on part of Lot 2 DP 1064474 by Enviowest, dated 4 February 2021. The Enviowest investigations revealed no evidence of contamination. No physical evidence of contamination is visible from inspection of the site. The site is considered suitable for heavy industry land-use as proposed in the Planning Proposal.

Figure 9 shows the current bushfire prone areas to the east of the BGER, with no other hazards identified in any known database.

Figure 9 - Environmental Hazards Map



2.10 Operational Hazards

The Work Health and Safety Act (WHS) 2011 and WHS Regulation 2017 provides the framework for the management and handling of hazardous substances and dangerous goods in NSW.

Chapter 9 of the WHS Regulation 2017 prescribes the provisions for major hazard facilities, with Table 15.1 of Schedule 15 detailing the threshold quantities where chemical industry operations are deemed to be major hazard facilities.

The Johnex operations at the BGER are deemed to comprise a major hazards facility under the WHS Regulation 2017. As such, the Johnex site operations by an Explosives Licence administered by WorksSafe NSW under the WHS Act 2011 and an Environment Protection Licence administered by the NSW Environment Protection Authority (EPA) under the POEO Act 1997.

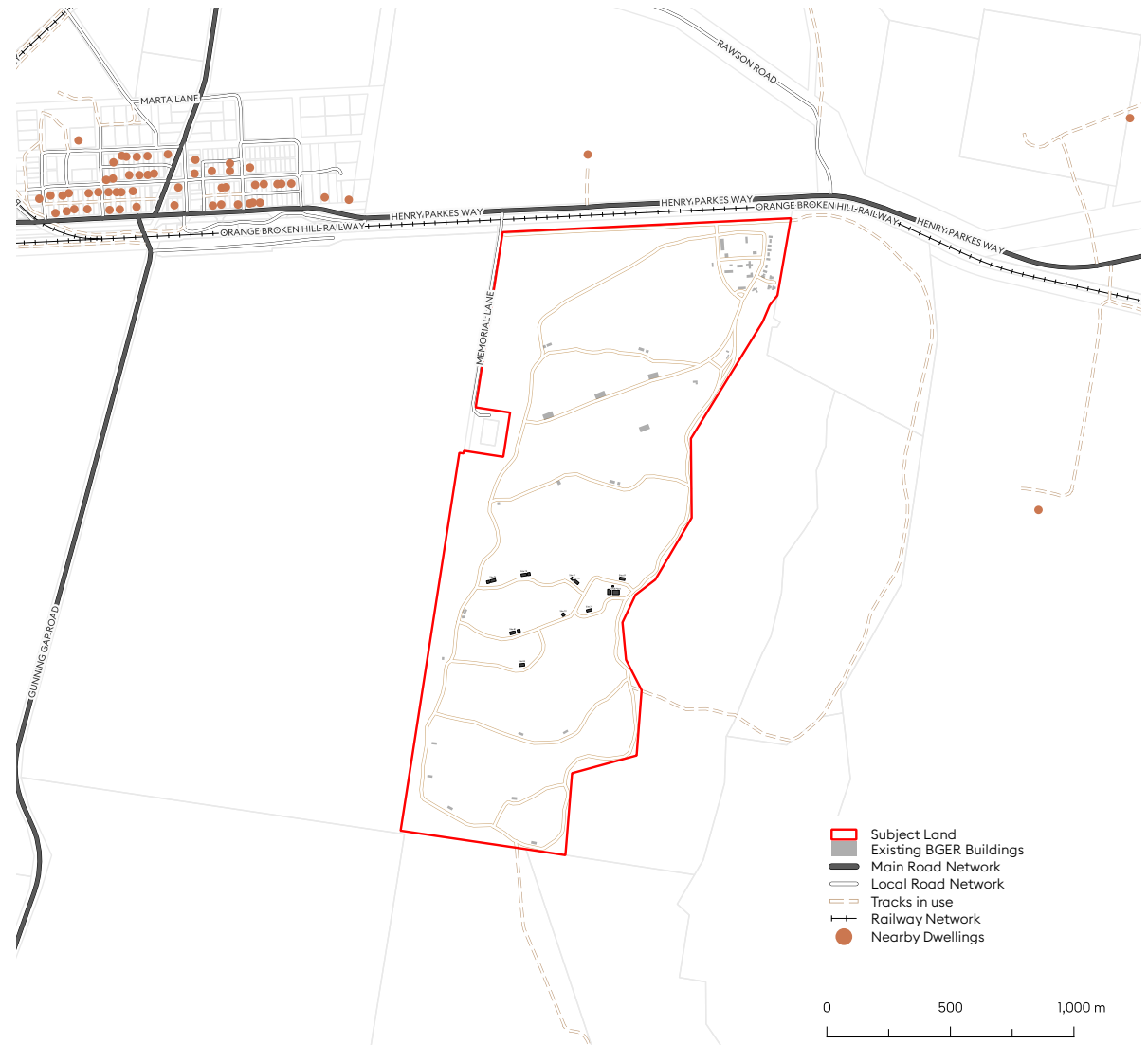
Howards and Sons and SMS operations involve manufacturing / storage of chemicals well below the threshold triggers listed in Table 15.1 of the WHS Regulation 2017 and the POEO Act 1997.

The BGER has established emergency procedures and an emergency response plan that must be complied with by Johnex, Howards and SMS.

Any new development(s) at the site are subject to rigorous risk assessment, such as the Process and Risk Report prepared by Greenice, dated 13 September 2023 for proposed SMS ANE Facility Alterations and Additions.

Figure 10 shows the BGER and nearby sensitive land-uses.

Figure 10 - Operational Hazards Map



2.11 Infrastructure and Services

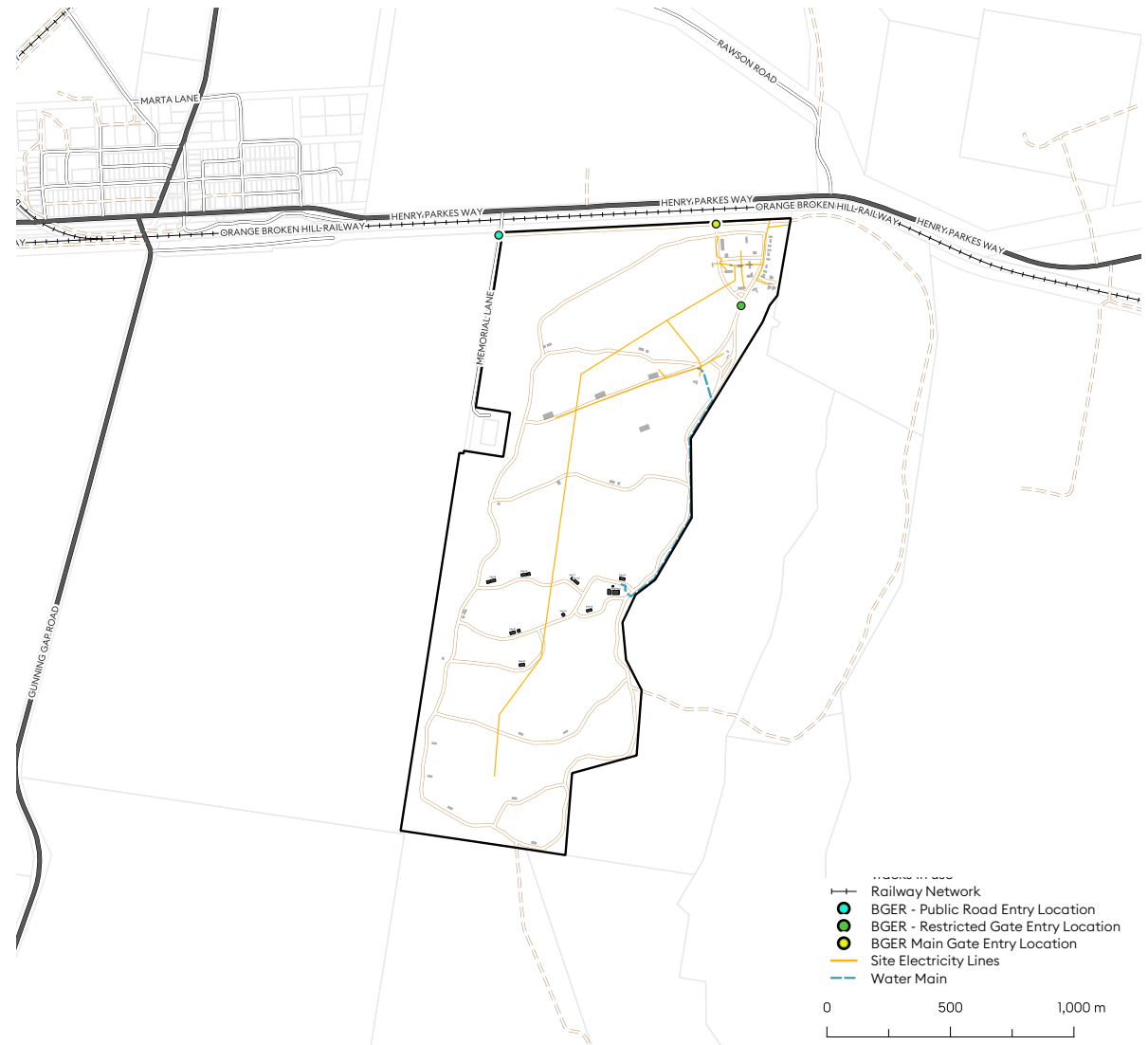
The BGER has an existing connection to the reticulated water supply system servicing Bogan Gate as well as existing road connections, electricity supply and telecommunications. Waste and wastewater management is generally managed at individual premises via on-site wastewater management systems.

No upgrades to utilities is required as part of the Planning Proposal.

To provide for safe movement of long vehicles onto the Henry Parkes Way, the intersection of Memorial Lane and Henry Parkes Way is proposed to be upgraded to provide auxiliary left turn lanes to accommodate the design vehicle for left-in and left-out truck movements only.

Figure 11 shows the location of existing infrastructure available at the BGER.

Figure 11 - Infrastructure and Servicing Map



EXISTING PLANNING FRAMEWORK

3.1 Parkes Local Environmental Plan 2012

The Parkes LEP 2012 is the principal environmental planning instrument applying to the subject land.

The Parkes LEP 2012 provides the statutory framework for planning, development and building within the Parkes Shire through zoning controls, development standards and other planning provisions.

The BGER is currently zoned RU1 Primary Production under the Parkes LEP 2012. Heavy Industries are currently not permitted on land zoned RU1 Primary Production under the Parkes LEP 2012.

Schedule 1 of the Parkes LEP 2012 provides for the inclusion of additional permitted uses on certain prescribed land, notwithstanding Land Use Table prohibitions.

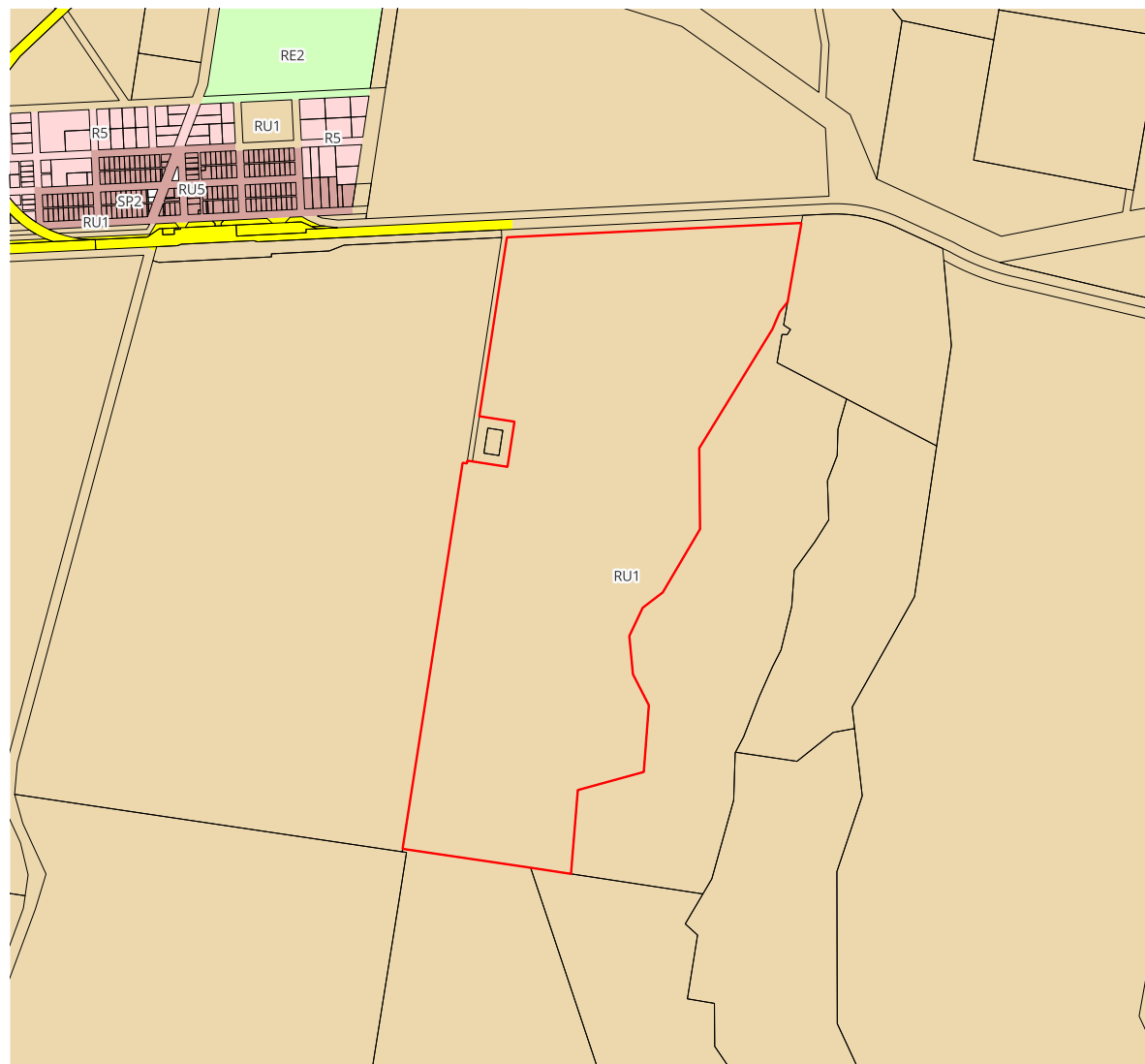
It is proposed to include a new additional permitted use in Schedule 1 of the Parkes LEP 2012 to permit heavy industries on Lot 2 DP 1064474 with development consent.

Figure 12 shows the existing zoning framework applying to the subject land under the Parkes LEP 2012.

LEGEND - LAND USE ZONES

E1 E1 Local Centre	RE1 Public Recreation
E3 E3 Productivity Support	RE2 Private Recreation
C1 C1 National Parks and Nature Reserves	RU1 Primary Production
C2 C2 Environmental Conservation	RU3 Forestry
C3 C3 Environmental Management	RU4 Primary Production Small Lots
E4 E4 General Industrial	RU5 Village
R1 R1 General Residential	SP2 Infrastructure
R2 R2 Low Density Residential	SP3 Tourist
R5 R5 Large Lot Residential	W2 Recreational Waterways

Figure 12 - Parkes LEP 2012 Existing Zoning Map



3.1 Parkes Shire Development Control Plan 2021

The Parkes Shire Development Control Plan (DCP) 2021 applies to the whole of the Parkes Shire and provides detailed planning and design guidelines to support the Parkes LEP 2012.

The Parkes DCP 2021 provides development controls relating to residential, commercial, industrial and associated infrastructure development. There are also a number of site-specific chapters to be considered in the assessment of development applications lodged with Council for particular development types and at particular locations.

The following parts of the Parkes DCP 2021 contain provisions which are likely to be relevant to any future development of the subject land.

- + Part A - Introduction
- + Part D - Rural Development
- + Part F - Industrial Development

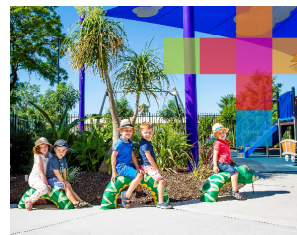


3.2 Parkes Section 94A Contributions 2016

The Parkes Section 94A (now Section 7.12) Contributions Plan 2016 provides the framework for the provision of public infrastructure as a result of new development in the Parkes Shire.

The payment of a Section 7.12 Contribution Levee would likely be a requirement of any future development of the BGER to which this Planning Proposal relates.

According to the plan, the contributions received will be used towards the maintenance and improved of open space and community facilities.



Parkes Shire
Section 94A
Contributions Plan 2016



DESCRIPTION OF THE PROPOSAL

4.1 Description of the Development Proposal

SMS have engaged Currajong to prepare a DA for proposed alterations and additions to the SMS ANE Facility. The principal objective of this development proposal is to increase the processing capacity of the SMS ANE Facility beyond its approved 960 tonnes of ANE per annum to up to 20,000 tonnes of ANE per annum. Other objectives for the development proposal are to:

- + Provide for the growing demand for ANE from the mining, quarrying and civil construction sectors in NSW from the SMS ANE Facility at the BGER.
- + Provide ANE to NSW customers by road, thereby avoiding excessive storage and transport.
- + Minimise to the greatest extent possible, impacts to the local environment, Bogan Gate community and other stakeholders in the Parkes Shire.
- + Ensure the operation of the SMS ANE Facility at the BGER is safe, reliable and cost effective, contributing to the delivery of mining and civil projects and the economy of the region.

The proposed manufacturing increases can be undertaken within the existing manufacturing plant, served by five (5) outlying chemical storage sheds that will feed the plant with the raw materials required to make ANE. Three (3) of these sheds are proposed new sheds to be constructed for AN storage. Two (2) new horizontal tanks are also required for ANE storage as well as two additional water storage tanks. Existing internal roads are to be used to link the SMS ANE Facility at the BGER to Memorial Lane and the Henry Parkes Way.

It is intended the DA would be lodged with Parkes Shire Council on or around the same time as the Planning Proposal.

The main aspects of the proposed alterations and additions to the SMS ANE Facility are shown in Figure 2.

4.2 Description of the Planning Proposal

The Planning Proposal seeks to amend the Parkes LEP 2012 by inserting Item 3 in Schedule 1 Additional Permitted Uses, as follows:

(3) Development for the purposes of heavy industries is permitted on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate with development consent.

Heavy industries are already established on Lot 2 DP 1064474 in the form of the Johnex Pty Ltd Explosives Facility, Howards and Sons fireworks storage operations and the Solar Mining Services Ammonium Nitrate Emulsion Facility.

The heavy industry land-uses established at the BGER are shown in Figure 2.

05

STRATEGIC ALIGNMENT

The existing landform and building configurations at the BGER are ideally suited for the manufacture and storage of explosives and other precursor products such as ANE.

The existing BGER has been designed to ensure maximum protection and separation from surrounding land-uses in the unlikely event of fire or explosion at the facility.

The Planning Proposal to formalise existing use of the land for heavy industries is considered to be an appropriate response, given there are three operational heavy industry businesses at the site and demand for products remains consistently high.

In particular, the BGER has the following advantages:

- + The site has a history of explosives storage and manufacturing.
- + The site is suitably separated from sensitive land-uses and infrastructure.
- + Manufacturing and storage operations can be continued through utilisation of existing buildings, plant, infrastructure and safety / security systems already established at the site.
- + All potential environmental and amenity impacts associated with the proposal are able to be suitably mitigated within the site, as demonstrated in previous approvals and licences granted over the site for existing heavy industry uses.
- + The proximity to robust transport networks, delivering connectivity to nearby mines and quarries, with potential for dispatch of products to interstate destinations via the main road and railways network.
- + The employment-generating opportunities for Bogan Gate and the wider Parkes Shire, with over 20 FTE jobs being generated from heavy industry activities at the BGER.

- + The proposal aligning with the strategic vision for the Parkes Shire and the Central West and Orana Region by supporting mining, quarrying and civil construction industries, which are important industry sectors for the economy.
- + The strengths of the BGER to provide smart, efficient and reliable explosives manufacturing and storage solutions to NSW customers.

If the Planning Proposal did not proceed, there would be less certainty about whether new heavy industry development proposals would be able to proceed under existing zoning. This uncertainty could influence the appetite of the landowner / leaseholders to maintain facilities at the BGER to the high standards required. It could also lead to less investment and employment at Bogan Gate and the wider Parkes Shire in this particular industry sector. Additionally, the BGER's contribution to the economy would be limited to current processing limits, which are estimated to not meet current and future demands in NSW.

The Planning Proposal is justified on the basis that it is a long-standing precinct of heavy industry development that generally complies with all safety separation distances required, has good connections to main roads and rail networks, and will create long-term employment opportunities in the region.

PLANNING PROPOSAL PART 1

Plan Making Guidance - Part 1

The NSW DPHI Local Environmental Plan Making Guidelines require Part 1 of the Planning Proposal to:

- + Provide a clear and concise description of the Planning Proposal and be written in plain English, so it is easily understood by the community.
- + Provide a description of the objectives and intended outcomes of the planning proposal so that they are specific enough to reflect the objective of the proposal yet flexible enough to allow for alternatives.

6.1 Objectives and Intended Outcomes

Section 3.33(2)(a) of the EP&A Act 1979 requires a Planning Proposal to include a statement of the objectives or intended outcomes of the proposed amendments.

Objective

To amend the Parkes LEP 2012 to permit heavy industries at the existing BGER on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate with development consent.

Intended Outcomes

- + Rationalise the existing heavy industry uses currently being carried out on Lot 2 DP 1064474.
- + Ensure the existing and future use of Lot 2 DP 1064474 delivers an equitable balance between heavy industry production and storage, transport and public safety and amenity.
- + Provide opportunity for alterations and additions to existing heavy industries, subject to all consent conditions, approvals and licences being granted.

07

PLANNING PROPOSAL PART 2

Plan Making Guidance - Part 2

The NSW DPHI Local Environmental Plan Making Guidelines require Part 2 of the Planning Proposal to:

- + Provide a detailed statement of how the objectives or intended outcomes will be achieved by amending the LEP.
- + Provide an explanation of provisions, clearly stated and containing enough information on the proposal to assist legal drafting of the LEP.
- + Provide information relating to the proposed zones and / or development standards if known at this stage in the Planning Proposal.

7.1 Explanation of Provisions

Section 3.33(2)(b) of the EP&A Act 1979 requires the Planning Proposal to include an explanation of the provisions that are to be included in the proposed amending instrument.

Intended Provisions

The Planning Proposal seeks to amend the Parkes LEP 2012 by inserting Item 3 in Schedule 1 Additional Permitted Uses, as follows:

- (3) Development for the purposes of heavy industries is permitted on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate with development consent.

No other changes to the Parkes LEP 2012 are proposed.

PLANNING PROPOSAL PART 3

Plan Making Guidance - Part 3

The NSW DPHI Local Environmental Plan Making Guidelines require Part 3 of the Planning Proposal to:

- + Provide a detailed assessment of the proposal's strategic and site-specific merit to determine whether the Planning Proposal should be supported.
- + Integrate findings from supporting studies and investigations.
- + Provide justification for the proposed amendments to the LEP.
- + Consider the interaction between these findings and whether the proposal will align with the strategic planning framework.
- + Consider whether the proposal will have any environmental, social or economic impacts.

The assessment criteria for strategic merit includes:

- + Whether the proposal gives affect to the relevant Regional Plan.
- + Whether the proposal demonstrates consistency with the relevant LSPS or endorsed Strategy.
- + Whether the proposal responds to a change in circumstances that has not been recognised by the existing planning framework.

The LEP should include site-specific merit assessment of:

- + The natural environment on the site and other affected land.
- + Existing, approved and likely future uses of the land.
- + Services and infrastructure requirements of the proposal.

8.1 Need for the Planning Proposal

8.1.1 Is the Planning Proposal a result of any strategic study or report?

The need for the Planning Proposal is not a direct result of any strategic study or report prepared by Parkes Shire Council. The land is already largely zoned for Primary Production purposes and heavy industry activities and infrastructure are already established at the site. It intended to formalise existing heavy industry uses on Lot 2 DP 1064474 to reflect long-standing existing business activities being carried out at the BGER, including existing explosives manufacturing and storage operations currently being carried out by Johnex, Howards and Sons and SMS.

The need for the Planning Proposal is a result of the findings of engagement and consultation with Parkes Shire Council regarding the requirements for future development of the land. Justification for the Planning Proposal has been provided generally throughout this report, however the following key reasons underpin the proposed changes to the Parkes LEP 2012:

- + The use of the BGER for explosives manufacturing and storage is long-established.
- + The BGER has been generally designed to ensure maximum protection and separation from other land-uses in the unlikely event of fire or explosion at the facility.
- + The BGER is already zoned RUI Primary Production, however the Parkes LEP 2012 does not permit heavy industries requiring separation from other development due to the nature of the processes involved. The Standard LEP Instrument makes provision for the inclusion of heavy industries in the RUI Primary Production zone, with nearby LEPs administered by Forbes and Narromine Councils permitting heavy industries in their RUI Primary Production zones.
- + Heavy industries are already established on Lot 2 DP 1064474 in the form of the Johnex Pty Ltd Explosives Facility, Howards and Sons fireworks storage operations and the SMS ANE Facility.
- + Positive outcomes are expected to result in terms of greater certainty for businesses established at the BGER and for the mining, quarrying and civil construction industries that are reliant on products delivered from the BGER for their operations.

8.1.2 Is the Planning Proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

The most efficient and effective means of achieving the objectives and intended outcomes of the Planning Proposal is to include heavy industries as an additional permitted use on Lot 2 DP1064474 in the Parkes LEP 2012.

Consultation has been ongoing with Parkes Shire Council where they have advised the processing of a Planning Proposal to permit heavy industries on Lot 2 DP1064474 is the best means of achieving the intended outcomes for SMS, the BGER and wider Bogan Gate district.

The following alternatives have been considered in consultation with Parkes Shire Council, but do not provide an appropriate pathway to formalise existing uses being conducted at the BGER as described in this Planning Proposal:

- + Continued reliance on existing use rights provisions to permit new development and alterations and additions to existing development at the BGER.
- + Change of zoning from RUI Primary Production to E4 General Industrial.

8.2 Relationship to the strategic planning framework

8.2.1 Will the planning proposal give effect to the objectives and actions of the applicable regional plan?

The Central West and Orana Regional Plan 2041 establishes a strategic framework, vision and direction for land use, addressing future needs for housing, jobs, infrastructure, a healthy environment, access to green spaces and connected communities. It leverages the region's central location and builds on its strengths to provide smart, efficient and reliable connections that bring residents and visitors closer to jobs, centres, education and the natural environment.

The Central West and Orana Regional Plan 2041 is structured around 23 objectives, which belong to the following themes:

- + Region-shaping investment.
- + A sustainable and resilient place.
- + People, centres, housing and communities.
- + Prosperity, productivity and innovation.

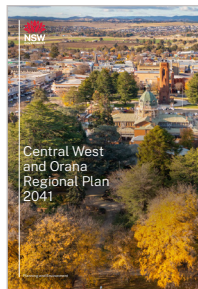
The following objectives are particularly relevant in the context of the Planning Proposal:

- + Objective 1 - Deliver the Parkes Special Activation Precinct and share its benefits across the region.
- + Objective 3 - Sustainably manage extractive resource land and grow the critical minerals sector.
- + Objective 4 - Leverage inter-regional transport connections.
- + Objective 7 - Plan for resilient places and communities.
- + Objective 12 - Sustain a network of healthy and prosperous centres.
- + Objective 18 - Leverage existing industries and employment areas and support new and innovative economic enterprises.
- + Objective 19 - Protect agricultural production values and promote agricultural innovation, sustainability and value-add opportunities the existing and future road, rail and air transport networks and infrastructure.

Table 2 includes a brief assessment of the Planning Proposal against the relevant objectives and priorities in the Regional Plan.

Table 2 - Planning Proposal Assessment - Regional Plan

Objective	Preliminary Assessment
1	Implementation of the changes in the Planning Proposal will allow for continued operation of existing heavy industries established at the BGER. Planning and development of the site for heavy industry type industries has been long-running, with a Masterplan and Masterplan User Requirement Report first being prepared by the Australian Military Forces in August 1962. The BGER is well suited to the manufacture and storage of explosives and other explosive precursor products such as ANE, as the site consists of natural undulating landforms as well as constructed formations that are well protected and separated from nearby sensitive land-users and infrastructure. Existing operations are regulated by a number of government agencies, including WorkSafe NSW, EPA, NSW Fire and Rescue, NSW Rural Fire Service and Parkes Shire Council. The site is ideally located in close proximity to main roads and railways and the Parkes Special Activation Precinct. The industries at the BGER provide important products for the mining, quarrying and civil engineering as well as fireworks events. The Planning Proposal is of a scale that is of local planning significance. Notwithstanding, the proposal is demonstrated to provide vital services to larger scale mining, industry and tourism sectors, which align with the relevant key objectives of the Regional Plan.
3	
4	
7	
12	
18	
19	



8.2.2 Is the planning proposal consistent with a council LSPS that has been endorsed by the Planning Secretary or another endorsed local strategy or strategic plan?

The Parkes Shire Local Strategic Planning Statement (LSPS) 2020 contains planning priorities and actions for a 20-year vision for the Parkes Shire outlining how growth and change will be managed into the future. The planning themes / priorities include:

- + Connecting the Central West to the World.
- + Supporting Our Needs.
- + Preserving What's Important.
- + Accommodating Residential Growth and Development.
- + Growing the Economy.

Table 3 includes an assessment of the Planning themes / priorities in the LSPS that are considered to be of particular relevance to the Planning Proposal.

Table 3 - Planning Proposal Assessment - Parkes LSPS

Direction	Preliminary Assessment
Connecting the Central West to the World	The existing heavy industries established at the BGER provide important products to the mining, quarrying and civil engineering sectors in the Parkes Shire. The employment generated at the BGER is of vital support to the Bogan Gate community and wider Parkes Shire. The existing landform and building configurations at the BGER are ideally suited for the manufacture and storage of explosives and other precursor products such as ANE, as the site consists of natural undulating landforms as well as constructed formations that are well protected and separated from nearby sensitive land-users and infrastructure. The existing businesses operating at the BGER have been designed to ensure maximum protection and separation from other land-uses in the unlikely event of fire or explosion at the facility. Existing / future development would be able to avoid environmentally sensitivity areas, such as native vegetation, drainage contours and bushfire prone land. The changes proposed to the Parkes LEP 2012 are generally considered to be of significance only to the site and immediate surrounds, and do not create any inconsistencies with the planning priorities and actions contained in the Parkes LSPS 2020.
Supporting Our Needs	
Growing the Economy	



8.2.3 Is the planning proposal consistent with any other applicable State or regional studies or strategies?

The following strategies / studies have been considered in the preparation of the Planning Proposal:

- + Future Transport Strategy 2056.
- + Net Zero Plan.
- + State Infrastructure Strategy, a 20 year Economic Vision for Regional NSW.
- + Central West and Orana Regional Plan 2041.
- + NSW State Planning Policy (Resilience and Hazards) 2021.
- + NSW RFS Guideline: Planning for Bush Fire Protection, 2019.
- + NSW DPIE Major Projects. Key Guidance. Hazards and Risks, including various guidelines such as the Hazardous Industry Risk Assessment Guidelines, 2011.

8.2.4 Is the planning proposal consistent with applicable State Environmental Planning Policies?

Table 4 shows a list of the State Environmental Planning Policies that have applicability to land within the Parkes LGA.

Table 4 includes an assessment on whether there are provisions within the each SEPP that need to be considered in relation to the Planning Proposal.

Where it is identified that further assessment is required, this work is presented in the following pages.

Table 4 - Preliminary SEPP Assessment

Name of SEPP	Applicability	Further Assessment Warranted?
SEPP (Biodiversity and Conservation) 2021	Applicable	Yes
SEPP (Sustainable Buildings) 2022	Not applicable	No
SEPP (Exempt and Complying Development Codes) 2008	Not applicable	No
SEPP (Housing) 2021	Not applicable	No
SEPP (Industry and Employment) 2021	Not applicable	Yes
SEPP (Planning Systems) 2021	Applicable	Yes
SEPP (Primary Production) 2021	Not applicable	No
SEPP (Precincts - Central River City) 2021	Not applicable	No
SEPP (Precincts - Eastern Harbour City) 2021	Not applicable	No
SEPP (Precincts - Western Parkland City) 2021	Not applicable	No
SEPP (Precincts - Regional) 2021	Not applicable	No
SEPP (Resilience and Hazards) 2021	Applicable	Yes
SEPP (Resources and Energy) 2021	Not applicable	No
SEPP (Transport and Infrastructure) 2021	Applicable	Yes

SEPP (Biodiversity and Conservation) 2021

The Biodiversity and Conservation SEPP 2021 aims to protect the biodiversity values of trees and other vegetation in non-rural areas of the State and preserve the amenity of non-rural areas of the State through the preservation of trees and other vegetation. Provisions protecting bushland, trees, heritage items, waterways, wetlands and koalas are also included in the SEPP.

The site is largely influenced by historic settlement in and around Bogan Gate and the Bogan Gate Army Camp and explosives reserve. The BGER comprises a large number of fixed buildings, roads and drainage improvements within a cleared area sown down to exotic grasses, surrounded by patches of native and regrowth vegetation. As a result, the site is predominately cleared of native vegetation, with native vegetation generally limited along the perimeter of the site. Habitat value on Lot 2 DP 1064474 is generally assessed as low.

The SEPP is applicable to the assessment of the Planning Proposal as it has potential to facilitate a land-use / development outcome that could result in the clearing of native vegetation, should native vegetation exist over the site to the extent that clearing would trigger the Biodiversity Offset Scheme Threshold (BOST) established under the Biodiversity Conservation Act 2016.

No clearing of native vegetation as defined under Local Land Services Act 2013 and at levels triggering the BOS is required as part of the Planning Proposal. A Currajong PBASR dated 24 February 2023 has been undertaken to assess biodiversity impacts under Section 1.7 of the EP&A Act 1979 (which takes into consideration Part 7 of the BC Act 2016) reveals no significant affects on threatened species or their habitats.

A small section of the western perimeter of the site is mapped as biodiversity under the Terrestrial Biodiversity Map in the Parkes LEP 2012. This area comprises Inland Grey Box Woodland and Red Ironbark (*Eucalyptus sideroxylon*) with White Cypress Pine (*Callitris columellaris*) and Black Cypress Pine (*Callitris endlicheri*) and a grassy / weedy under storey).

Having regard to the above, the Planning Proposal does not create any inconsistencies with the provisions contained in this SEPP.

SEPP (Planning Systems) 2021

The Planning Systems SEPP 2021 provides the framework to determine whether a proposed development is:

- + State Significant Development.
- + State Significant Infrastructure.
- + Regionally Significant Development.

The Johnex operations at the BGER are deemed to comprise a major hazards facility under the WHS Regulation 2017 which would be a trigger for new development potentially being considered as State significant development. The Johnex site is also covered by an EPL administered by EPA under the POEO 1997.

Howards and SMS operations involve manufacturing / storage of chemicals well below the threshold triggers listed in Table 15.1 of the WHS Regulation 2017 and the POEO Act 1997.

The SMS DA for proposed alterations and additions does not propose to exceed the limits of AN storage as per Table 15.1 of Schedule 15 of the WHS Regulation 2017, and is therefore not trigger State Significant Development. The proposal is also not Designated Development of a kind that makes it Regionally Significant Development. Accordingly, the proposed SMS ANE Facility alterations and additions is Local Development, as defined under the Planning Systems SEPP 2021.

The site is considered suitable for existing / proposed heavy industry land-use as outlined in the Planning Proposal. As such, the Planning Proposal does not create any inconsistencies with the provisions contained in this SEPP.

SEPP (Resilience and Hazards) 2021

The subject land does not feature in any of the databases maintained by the Office of Environment and Heritage or EPA pertaining to the management / regulation of contaminated sites.

A preliminary contamination investigation has been undertaken on the site where SMS is established by Envirowest, dated 4 February 2021, which revealed no evidence of contamination.

The Johnex operations at the BGER are deemed to comprise a major hazards facility under the WHS Regulation 2017, with Johnex facility operations being controlled under an EPL administered by the EPA under the POEO Act 1997.

Howards and SMS operations involve manufacturing / storage of chemicals well below the threshold triggers listed in Table 15.1 of the WHS Regulation 2017 and the POEO Act 1997.

As such, the Planning Proposal does not create any inconsistencies with the provisions contained in this SEPP.

SEPP (Transport and Infrastructure) 2021

The Transport and Infrastructure SEPP 2021 aims to facilitate the effective delivery of infrastructure across NSW by providing a consistent planning framework for infrastructure provision, and identifying where a more detailed assessment or consultation response may be required for specific types of infrastructure development.

Existing heavy industries at the BGER (combined) would not qualify as traffic generating development as per Schedule 3 of the Transport and Infrastructure SEPP 2021. Access to the BGER will continue via Memorial Lane and then onto the Henry Parkes Way, which is a classified road.

Consultation has been initiated with TfNSW about the proposed alterations and additions to the SMS ANE Facility and the proposed upgrades to the intersection of Henry Parkes Way and Memorial Lane. Preliminary feedback from TfNSW and Parkes Shire Council has not indicated any objections to proposed road upgrades under controlled conditions.

Having regard to the above, the Planning Proposal does not create any inconsistencies with the provisions contained in this SEPP.

8.2.5 Is the planning proposal consistent with applicable Ministerial Directions (section 9.1 Directions)?

An assessment of the Planning Proposal against each Section 9.1 Ministerial Direction is included as follows:

Focus Area 1 - Planning Systems

Direction 1.1 - Implementation of Regional Plans

The Direction applies to the Planning Proposal as it relates to land to which the Central West and Orana Regional Plan 2041 applies. The Direction requires the Planning Proposal to be consistent with the requirements of the Central West and Orana Regional Plan 2041. An assessment against the Regional Plan is included in this Planning Proposal. No inconsistencies have been identified. The Planning Proposal is assessed to be consistent with Ministerial Direction 1.1.

Direction 1.2 - Development of Aboriginal Land Council Land

The Direction does not apply to the Planning Proposal as it does not relate to any land that is shown on the Land Application Map of Chapter 3 of the State Environmental Planning Policy (Planning Systems) 2021.

Direction 1.3 - Approval and Referral Requirements

The Direction generally requires the Planning Proposal not to include provisions requiring concurrence, consultation or referral of a DA to a Minister of a public authority without prior approval. The Planning Proposal seeks only to make changes to Schedule 1 of the Parkes LEP 2012 dealing with additional permitted use. The changes proposed to the Parkes LEP 2012 will not alter existing consultation or concurrence obligations prescribed in legislation for new development. The Planning Proposal is assessed to be consistent with Ministerial Direction 1.3.

Direction 1.4 - Site Specific Provisions

The Direction applies when a Planning Proposal will allow a particular development to be carried out. Direction 1.4(1) applies because the Planning Proposal involves an additional permitted use on Lot 2 DP 1064474 with consent. Direction 1.4(2) requires that a Planning Proposal must contain or refer to drawings that

show details of the proposed development. In this particular Planning Proposal, plans have been shown of general site conditions and surrounds. No changes to mapping in the Parkes LEP 2012 is required. The Planning Proposal is assessed to be consistent with Ministerial Direction 1.4.

Focus Area 2 - Planning Systems - Place Based

Ministerial Directions 1.5 to 1.22 are not applicable to the subject land. Further consideration is not considered to be necessary.

Focus Area 2 - Design and Place

This Focus Area was blank when the Directions were made.

Focus Area 3 - Biodiversity and Conservation

Direction 3.1 - Conservation Zones

Direction 3.1(1) requires that a Planning Proposal must include provisions that facilitate the protection and conservation of environmentally sensitive areas. Direction 3.1(2) requires that the Planning Proposal must not reduce the conservation standards that apply to the land. The Planning Proposal does not propose any changes of zoning or development on land that is identified as an environmentally sensitive area. The Planning Proposal is consistent with the terms of Ministerial Direction 3.1.

Direction 3.2 - Heritage Conservation

Direction 3.2(1) requires that a Planning Proposal must contain provisions that facilitate the conservation of any environmental heritage items identified in a study of the environmental heritage of the area, Aboriginal objects or places protected under the National Parks and Wildlife Act 1974 or identified by an Aboriginal heritage survey prepared by or on behalf an Aboriginal Land Council, Aboriginal body or public authority.

The planning proposal is assessed to be consistent with this Ministerial Direction for the following reasons:

- + The Planning Proposal does not impact on any known items of Aboriginal cultural heritage significance.
- + The subject land is not mapped in the Parkes LEP 2012 as a heritage item.
- + Built heritage aspects associated with the Australian Military use during and post WWII have been considered, with no building / structure being identified as particularly rare or having significant heritage values.
- + The Bogan Gate Cemetery to the west of the site is identified to be the only site with potential local heritage significance. The continued uses at the BGER are not incompatible with the heritage significance of the Bogan Gate Cemetery.
- + The suitability of the land for heavy industry land-use has already been established by the existing buildings and improvements at the BGER.
- + The Planning Proposal does not change, alter or reduce any of the existing provisions in Parkes LEP 2012 which facilitate the protection and conservation of heritage areas.

Clause 5.10 would continue to apply to any future development on the land, and provides an appropriate regulatory framework for the assessment of heritage issues and matters as part of a DA to Parkes Shire Council.

Direction 3.3 - Sydney Drinking Water Catchments

The Direction does not apply to the Planning Proposal as it does not affect land in any of the Local Government Areas located within the Sydney Drinking Water Catchment.

Direction 3.4 - Application of C2 and C3 zones and Environmental Overlays in Far North Coast LEPs.

The Direction does not apply to the Planning Proposal as it does not affect land on the New South Wales Far North Coast.

Direction 3.5 - Recreation Vehicle Areas

Direction 3.5(1) requires that a Planning Proposal must not enable land to be developed for the purposes of a recreation vehicle area where:

- + The land is within a conservation zone.
- + Where the land comprises a beach or a dune adjacent to or adjoining a beach.
- + Where the land is not within an area or zone referred to in paragraphs (a) or (b) unless the relevant planning authority has taken into consideration the provisions of the guidelines entitled Guidelines for Selection, Establishment and Maintenance of Recreation Vehicle Areas, Soil Conservation Service of NSW, September, 1985.
- + The provisions of the guidelines entitled Recreation Vehicles Act 1983, Guidelines for Selection, Design, and Operation of Recreation Vehicle Areas, State Pollution Control Commission, September 1985.

The Planning Proposal is assessed to be consistent with this Ministerial Direction for the following reasons:

- + The proposal does not involve land within a C3 Environmental Management zone.
- + The proposal is to allow the land to be developed for primary production and heavy industry land-uses only.

Direction 3.6 - Strategic Conservation Planning

This Direction does not apply to the Planning Proposal as it does not relate to land that is identified as 'avoided land' or a 'strategic conservation area' under State Environmental Planning Policy (Biodiversity and Conservation) 2021.

Direction 3.7 - Public Bushland

This Direction does not apply to the Planning Proposal as it does not relate to land in a prescribed LGA.

Direction 3.8 - Willandra Lakes Region

This Direction does not apply to the Planning Proposal as it does not relate to land identified as the Willandra Lakes World Heritage Property.

Direction 3.9 - Sydney Harbour Foreshores and Waterways area

This Direction does not apply to the Planning Proposal as it does not relate to land within the Foreshores and Waterways Area.

Direction 3.10 - Water Catchment Protection

This Direction does not apply to the Planning Proposal as it does not relate to land within a regulated catchment.

Focus Area 4 - Resilience and Hazards**Direction 4.1 - Flooding**

Direction 4.1 requires that a Planning Proposal must include provisions that give effect to and are consistent with:

- + The NSW Flood Prone Land Policy.
- + The principles of the Floodplain Development Manual 2005.
- + The Considering flooding in land use planning guideline 2021.
- + Any adopted flood study and/or floodplain risk management plan prepared in accordance with the principles of the Floodplain Development Manual 2005 and adopted by the relevant council.

The Planning Proposal is assessed to be consistent with the requirements of Direction 4.1 for the following reasons:

- + The subject land is not located within the Flood Planning Area defined by the Parkes LEP 2012.
- + The Planning Proposal does not seek to enable hazardous industries or hazardous storage establishments on flood affected land.
- + Robust stormwater drainage structures are established at the BGER, with no recorded issues related to stormwater flooding or the like.

- + No flood related issues are assessed to apply to the safe occupation / efficient evacuation of the BGER.
- + The proposal is unlikely to result in a significantly increased requirement for government spending on emergency management services, and flood mitigation and emergency response measures, including road infrastructure, flood mitigation infrastructure and utilities.

Direction 4.2 - Coastal Management

The Direction does not apply to the Planning Proposal as it does not affect land within the coastal zone, as defined under the Coastal Management Act 2016.

Direction 4.3 - Planning for Bushfire Protection

The Direction applies to the Planning Proposal as parts of the BGER are mapped as bushfire prone land. The BGER has an emergency response plan dealing with bushfires. Individual businesses operating at the BGER also have their own plans and procedures dealing with fire, such as the SMS Bushfire Management Plan, dated 4 April wo23 which deals with the management of fires and emergency evacuation procedures, asset protection zones between buildings and potential bushfire fuel sources. NSW RFS and NSW Fire and Rescue conduct regular inspections at the BGER to ensure adequate fire protection systems are in place at the site.

Direction 4.4 - Remediation of contaminated land

The Direction applies to the Planning Proposal as it relates to land, a part of which is known to contain an area of potential land contamination.

Direction 4.4(1) requires that a Planning Proposal authority must not include in a particular zone (within the meaning of the local environmental plan) any land to which this direction applies if the inclusion of the land in that zone would permit a change of use of the land, unless:

- + The Planning Proposal Authority has considered whether the land is contaminated, and

- + If the land is contaminated, the planning proposal authority is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for all the purposes for which land in the zone concerned is permitted to be used, and
- + If the land requires remediation to be made suitable for any purpose for which land in that zone is permitted to be used, the planning proposal authority is satisfied that the land will be so remediated before the land is used for that purpose.

Direction 4.4(2) requires, before including any land to which this direction applies in a particular zone, the Planning Proposal Authority is to obtain and have regard to a report specifying the findings of a preliminary investigation of the land carried out in accordance with the contaminated land planning guidelines.

The subject land does not feature in any database pertaining to the management / regulation of contaminated land. A preliminary contamination investigation was undertaken on part of the BGER by Envirowest, dated 4 February 2021, which revealed no evidence of contamination. No physical evidence of contamination is visible from inspection of the site.

The site is considered suitable for heavy industry land-use as proposed in the Planning Proposal. As such, the Planning Proposal does not create any inconsistencies with the provisions contained in this SEPP.

Direction 4.5 - Acid Sulphate Soils

The Direction does not apply to the Planning Proposal as it does not affect land having a probability of containing acid sulfate soils.

Direction 4.6 - Mine Subsidence and Unstable Land

The Direction does not apply to the Planning Proposal as it does not affect land that is within a declared mine subsidence district.

Focus Area 5 - Transport and Infrastructure

Direction 5.1 - Transport and Infrastructure

Direction 5.1(1) requires that a Planning Proposal must locate zones for urban purposes and include provisions that give effect to and are consistent with the aims, objectives and principles of:

- + Improving Transport Choice – Guidelines for planning and development (DUAP 2001).
- + The Right Place for Business and Services – Planning Policy (DUAP 2001).

The Planning Proposal does not create, alter and remove a zoning provision relating to urban land. The development scenario that is to be facilitated by this Planning Proposal is not be expected to compromise the safety or function of the surrounding road network.

Direction 5.2 - Reserving land for public purposes

Direction 5.2(1) requires that a Planning Proposal must not create, alter or reduce existing zonings or reservations of land for public purposes without the approval of the relevant public authority and the Planning Secretary (or an officer of the Department nominated by the Secretary).

The Planning Proposal is consistent with Direction 5.2(1) as it does not seek any changes to alter the extent of public land.

Direction 5.3 - Development Near Regulated Airports and Defence Airfields

The Direction does not apply to the Planning Proposal as it does not create, alter or remove a zone or provision relating to land near a regulated airport.

Direction 5.4 - Shooting Ranges

The Direction does not apply to the Planning Proposal as it does not create, alter or remove a zone or provision relating to land adjacent to and / or adjoining an existing shooting range.

Focus Area 6 - Housing

Direction 6.1 - Residential Zones

The Direction does not apply as the Planning Proposal as it does not involve residential development.

Direction 6.2 - Caravan Parks and Manufactured Home Estates

The Planning Proposal does not seek to identify suitable zones, locations and provisions for caravan parks or manufactured home estates. The permissibility of these land-use types in any existing zone under the Parkes LEP 2012 will not be changed as a result of this Planning Proposal. The Planning Proposal is not inconsistent with the requirements of the Direction.

Focus Area 7 - Industry and Employment

Direction 7.1 - Business and Industrial Zones

The Direction does not apply to the Planning Proposal as it does not affect land within an existing or proposed business or industrial zone.

Direction 7.2 - Reduction in non-hosted short-term rental accommodation period

The Direction does not apply to the Planning Proposal as it does not affect land within the Byron LGA.

Direction 7.3 - Commercial and Retail Development along the Pacific Highway, North Coast

The Direction does not apply to the Planning Proposal as it does not affect land within those council areas on the North Coast that the Pacific Highway traverses.

Direction 9.4 - Farmland of State and Regional Significance on the NSW Far North Coast

This Direction does not apply to the Planning Proposal as it does not affect land within a Far North Coast LGA.

Focus Area 8 - Resources and Energy**Direction 8.1 - Mining, Petroleum Production and Extractive Industries**

The Direction does not apply to the Planning Proposal as it does not have the effect of:

- + Prohibiting the mining of coal or other minerals, production of petroleum, or winning or obtaining of extractive materials.
- + Restricting the potential development of resources of coal, other minerals, petroleum or extractive materials which are of State or regional significance by permitting a land use that is likely to be incompatible with such development.

Focus Area 9 - Primary Production**Direction 9.1 - Primary Production**

The Direction does not apply to the Planning Proposal as it does not rezone land from a rural zone to a residential, business, industrial, village or tourist zone.

Direction 9.2 - Rural Lands

The Planning Proposal affects land within an existing or proposed rural or conservation zone. It does not propose changes to the existing minimum lot size on land within a rural or conservation zone.

Direction 9.3 - Oyster Aquaculture

This Direction does not apply to the Planning Proposal as it does not affect land within a 'Priority Oyster Aquaculture Area'.

8.3 Environmental, Social and Economic Impact

8.3.1 Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected because of the proposal?

The historic agricultural, explosive storage and manufacturing, army camp and heavy industry uses on the property have resulted in a landscape that is highly disturbed and largely cleared of native vegetation, with the predominate landform cover being buildings, hardstands, roads and pasture grass.

A review of the Terrestrial Biodiversity Map in the Parkes Local Environmental Plan 2012 confirms a small section of the western perimeter of the site is mapped as biodiversity. Figure 6 shows the location of native vegetation in and around the subject land.

Site inspection confirms remnant vegetation comprising Inland Grey Box Woodland and Red Ironbark (*Eucalyptus sideroxylon*) with White Cypress Pine (*Callitris columellaris*) and Black Cypress Pine (*Callitris endlicheri*) and a grassy / weedy under storey). The habitat value of these isolated pockets of vegetation on Lot 2 DP 1064474 is assessed as low.

No clearing of native vegetation as defined under Local Land Services Act 2013 at levels triggering the BOST is required as part of the Planning Proposal.

A Currajong PBASR dated 24 February 2023 has been undertaken to assess biodiversity impacts under Section 1.7 of the EP&A Act 1979 (which takes into consideration Part 7 of the BC Act 2016) reveals no significant affects on threatened species or their habitats.

8.3.2 Are there any other likely environmental effects of the planning proposal and how are they proposed to be managed?

Operational Safety

The BGER has established its own emergency procedures that must be complied with by all leasees at the site, including Johnex, Howards and SMS.

There are three existing businesses operating at the BGER that are also regulated by WorkSafe NSW to store / manufacture produce explosives and other precursor explosive products at the site.

To obtain a WorkSafe licence, certain risk assessments must be undertaken demonstrating compliance with the WHS Regulation 2017 and other relevant standards and guidelines.

The Johnex operations at the BGER are deemed to comprise a major hazards facility under the WHS Regulation 2017. The Johnex site is also covered by an EPL administered by the EPA under the POEO Act 1997.

Howards and SMS operations involve manufacturing / storage of chemicals well below the threshold triggers listed in Table 15.1 of the WHS Regulation 2017 and the POEO Act 1997.

Figure 10 shows the buffers established at the BGER from nearby sensitive land-uses.

Bushfire

The BGER has established emergency procedures and an emergency response plan that must be complied with by Johnex, Howards and SMS. Land along the eastern boundary of Lot 2 DP 1064474 is identified as Bushfire Prone Land. Consultation with the NSW Rural Fire Service (RFS) and NSW Fire and Rescue NSW has been undertaken. For example, the SMS Bushfire Management Plan, dated 4 April 2023 has been reviewed by NSW RFS to ensure compliance with Chapter 8 of the RFS Guideline, Planning for Bushfire Protection 2019.

Flooding

The subject land is not mapped in the Parkes LEP 2012 as being impacted by flooding. The nearest natural water body is the Gunningbland Creek located approximately 1km north of the SMS ANE Facility. A robust system of stormwater management is established at the BGER, including road table drains, contour banks, swales and catch dams.

Contamination

The subject land does not feature in any of the databases maintained by the Office of Environment and Heritage pertaining to the management / regulation of contaminated sites. A preliminary contamination investigation has been undertaken on the site where SMS is established by Envirowest, dated 4 February 2021, which revealed no evidence of contamination. The site is considered suitable for heavy industry land-use as proposed in the Planning Proposal.

8.3.3 Has the planning proposal adequately addressed any social and economic effects

Social Impact Assessment

An assessment of potential impacts of the Planning Proposal and the resultant SMS proposed alterations and additions has been undertaken with regards to scoping methodology outlined in the DPHI Social Impact Assessment Guideline 2017 (SIA Guideline). Table 5 provides an assessment of the Planning Proposal against the criteria in the SIA Guideline.

Table 5 - SIA Guideline - Social Impact Assessment

Matters	Key links to social impacts	Risk of impact without mitigation	Nature of Impact	Explanation
Amenity				
Acoustic	Way of life	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts
Visual	Surroundings	Likely	Negative	The Planning Proposal is unlikely to generate impacts
Odour	Surroundings	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts
Micro climate	Surroundings	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts
Access				
Access to property	Way of life	N/A	Nil	The Planning Proposal is unlikely to generate impacts
Utilities and public transport	Access to infrastructure, services and facilities	Unlikely	Negative	Existing connections to reticulated water supply, electricity supply and telecommunications are established
Road and rail	Personal and property rights	Likely	Negative	Roads are connected to the BGER via Memorial Lane and then onto the Henry Parkes Way. A TIA has been developed outlining proposed road upgrades
Built Environment				
Public domain	Community	Likely	Nil	The Planning Proposal does not alter land zoned for public purposes
Public infrastructure	Access to infrastructure, services and facilities	Unlikely	Negative	The BGER is located close to Bogan Gate and Parkes, where public infrastructure and services are available for workers at the site
Other built assets	Surroundings; Personal and property rights	Unlikely	Nil	The Planning Proposal is unlikely to generate impacts
Heritage				
Natural	Way of life	Unlikely	Nil	The Planning Proposal is unlikely to generate impacts
Cultural	Community	Unlikely	Nil	The Planning Proposal is unlikely to generate impacts

Table 5 - SIA Guideline - Social Impact Assessment

Matters	Key links to social impacts	Risk of impact without mitigation	Nature of Impact	Explanation
Aboriginal culture	Culture	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts
Built	Surroundings	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts
Community				
Health	Health and wellbeing	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts
Safety	Surroundings	Likely	Negative	Existing operations at the BGER are already regulated under the WHS Act 2011 and the POEO Act 1997. New development(s) are also required to address the relevant matters for consideration under the EP&A Act 1979. The Planning Proposal has addressed identified safety risks related to environmental / operational hazards
Services and facilities	Way of life, Access to infrastructure, services and facilities	Unlikely	Nil	The BGER is located close to Bogan Gate and Parkes, where public infrastructure and services are available for workers at the site
Cohesion	Way of life; Community; Culture	Likely	Positive	Existing operations at the BGER are already regulated under the WHS Act 2011 and the POEO Act 1997. New development(s) are also required to address the relevant matters for consideration under the EP&A Act 1979. The Planning Proposal has addressed identified safety risks related to environmental / operational hazards. The BGER is associated with a number of businesses that employ staff that live in the local area. Continued use of the site for heavy industries will maintain jobs and lead to positive economic impacts
Housing	Way of life, Personal and property rights	Unlikely	Negative	Existing operations at the BGER are already regulated under the WHS Act 2011 and the POEO Act 1997. New development(s) are also required to address the relevant matters for consideration under the EP&A Act 1979. The Planning Proposal has addressed identified safety risks related to environmental / operational hazards
Economic				

Matters	Key links to social impacts	Risk of impact without mitigation	Nature of Impact	Explanation
Natural resource area	Way of life	Unlikely	Negative	Existing operations at the BGER are already regulated under the WHS Act 2011 and the POEO Act 1997. New development(s) are also required to address the relevant matters for consideration under the EP&A Act 1979. The Planning Proposal has addressed identified safety risks related to environmental / operational hazards. The BGER is associated with a number of businesses that employ staff that live in the local area. Continued use of the site for heavy industries will maintain jobs and lead to positive economic impacts
Livelihood	Surroundings	Unlikely	Negative	Existing operations at the BGER are already regulated under the WHS Act 2011 and the POEO Act 1997. New development(s) are also required to address the relevant matters for consideration under the EP&A Act 1979. The Planning Proposal has addressed identified safety risks related to environmental / operational hazards
Opportunity cost	Personal and property rights	Unlikely	Negative	Existing operations at the BGER are already regulated under the WHS Act 2011 and the POEO Act 1997. New development(s) are also required to address the relevant matters for consideration under the EP&A Act 1979. The Planning Proposal has addressed identified safety risks related to environmental / operational hazards
Air				
Air emissions.	Surroundings	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts
Biodiversity				
Native vegetation and fauna	Surroundings	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts
Land				
Land capability, topography	Surroundings	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts
Water				
Quality, availability, hydrological flows	Surroundings	Unlikely	Negative	The Planning Proposal is unlikely to generate impacts

Having regard to the findings of the Social Impact Assessment presented in Table 5, it is generally concluded that the proposed changes to Parkes LEP 2012 are unlikely to be adverse. Only positive changes are expected for the following reasons:

- + The site has a history of explosives storage and manufacturing and is suitably separated from sensitive land-uses and infrastructure.
- + Manufacturing and storage operations can be continued through utilisation of existing buildings, plant, infrastructure and safety / security systems already established at the site.
- + All potential environmental and amenity impacts associated with the proposal are able to be suitably mitigated within the site, as demonstrated in previous approvals and licences granted over the site for existing heavy industry uses.
- + The proximity to robust transport networks, means that products can be distributed efficiently and safely to customers via main roads and rail networks.
- + The ongoing employment-generating opportunities for Bogan Gate and the wider Parkes Shire, with over 20 FTE jobs currently being generated from heavy industry activities at the BGER.
- + The proposal aligning with the strategic vision for the Parkes Shire and Central West and Orana Region by supporting mining, quarrying and civil construction industries and tourism through fireworks events, which contribute strongly to the NSW economy.
- + The strengths of the BGER to provide smart, efficient and reliable explosives manufacturing and storage solutions to NSW customers.

Economic Impact Assessment

Due to the nature and scale of the Planning Proposal, a detailed Economic Impact Assessment has not been requested by Parkes Shire Council to be prepared for the Planning Proposal.

The Planning Proposal is not seeking changes to the Parkes LEP 2012 which are likely to create adverse economic consequences.

The BGER provides important products for the mining, quarrying and civil engineering sectors and employs over 20 FTE.

There would be significant economic impacts should the Planning Proposal not proceed, including:

- + There would be less certainty about whether new heavy industry development proposals would be able to proceed under existing zoning.
- + There could be less appetite of the landowner / leaseholders to maintain facilities at the BGER to the high standards required.
- + There could be less investment and employment at Bogan Gate and the wider Parkes Shire in this particular industry sector.
- + The BGER's contribution to the economy could be limited to current processing limits, which are estimated to not meet current and future demands in NSW.

The Planning Proposal is justified on the basis that it is a long-standing precinct of heavy industry development that generally complies with all safety separation distances required, has good connections to main roads and rail networks, and will create long-term employment opportunities in the region.

8.4 Infrastructure (Local, State and Commonwealth)

8.4.1 Is there adequate public infrastructure for the Planning Proposal?

The Planning Proposal seeks to amend the Parkes LEP 2012 by permitting heavy industries on Lot 2 DP 1064474. The Planning Proposal is to formalise existing heavy industries being carried out on the subject land.

Existing services and infrastructure are available at the site, including bitumen sealed roads, reticulated water supply electricity supply and telecommunications.

The Planning Proposal does not create an increased demand for public infrastructure and services.

8.5 State and Commonwealth Interests

8.5.1 What are the views of state and Federal public authorities and government agencies consulted in order to inform the Gateway determination

State Government Interests

The specific changes that are requested to the Parkes LEP 2012 are likely to have interest to NSW DPHI, Department of Primary Industries (DPI), WorkSafe NSW, the EPA, NSW RFS, NSW Fire and Rescue, TfNSW and NSW Police Force. Preliminary consultation has been carried out with all these agencies as part of the preparation of the DA for alterations and additions to the SMS ANE Facility as well as Parkes Shire Council.

Federal Government Interests

The Planning Proposal is unlikely to be of any particular interest to the Federal Government.

PLANNING PROPOSAL PART 4

Plan Making Guidance - Part 4

The NSW DPHI Local Environmental Plan Making Guidelines provides the following guidance:

- + Mapping must be consistent with the Department's Standard Technical Requirements for Spatial Datasets and Maps, using the same format, symbology, labeling and appropriate scale.
- + All existing and proposed mapping submitted to the Department as part of a Planning Proposal should be accompanied by GIS data. All LEP mapping should commence as early as possible in GIS, particularly with complex planning proposals or Principal LEPs.
- + Mapping may include the subject site and immediate surrounds, current zoning, current development standards and any alternative zones if a change is proposed.
- + Other relevant maps or figures may include maps illustrating changes of development standards, extent of heritage conservation areas, location of specific heritage items, extent of native vegetation, extent of environmental conservation areas and areas to which a local provision will apply.
- + Additional material such as aerial photographs clearly identifying the subject site should also be included where appropriate.

9.1 Project Mapping

The Planning Proposal has been prepared to include a number of different plans and visuals that aim to assist Parkes Shire Council's understanding of the scope of the changes that are requested to the Parkes LEP 2012.

These plans show the location of the subject land, existing environmental conditions and connections to roads and infrastructure as well as the location of land-uses / businesses at the BGER.

Given the Planning Proposal involves changes to Schedule 1 of the Parkes LEP 2012, no mapping changes to the Parkes LEP 2012 are required.

PLANNING PROPOSAL PART 5

Plan Making Guidance - Part 5

The NSW DPHI Local Environmental Plan Making Guidelines provides that Part 5 of the Planning should describe:

- + Consultation and outcomes undertaken with council, state agencies or authorities during the pre-lodgement stage.
- + Any community consultation undertaken, or consultation with other key stakeholders
- + The extent of consultation having regard for the public exhibition requirements in Section 1 of the guideline.
- + The required public exhibition period based on the different planning proposal categories.
- + Community consultation will be considered at the Gateway stage, with the Gateway determination confirming the requirements.
- + The Gateway determination may also specify additional information or studies to be finalised before any consultation commences, often to make sure that everyone can make an informed opinion. In some cases, the Gateway determination may require the PPA to submit studies to the Department for review prior to public exhibition.

10.1 Consultation - Pre-lodgement Stage

Consultation has been undertaken with NSW DPHI, Department of Primary Industries (DPI), WorkSafe NSW, the EPA, NSW RFS, NSW Fire and Rescue, TfNSW and NSW Police Force. Preliminary consultation has been carried out with all these agencies as part of the preparation of the DA for alterations and additions to the SMS ANE Facility as well as Parkes Shire Council.

Engagement with adjoining landowners has been undertaken to ensure all neighbours are aware of the proposed alterations and additions to the SMS ANE Facility as well as Parkes Shire Council.

Feedback has been considered, as necessary, during the preparation of the Planning Proposal.

10.2 Community Consultation

Parkes Community Participation Plan 2022

In accordance with the Parkes Community Participation Plan 2022, the Planning Proposal will require public exhibition for a minimum of 28 days, or any other period as might be specified in a Gateway Determination issued by DPHI.

Parkes Shire Council has advised it would organise all tasks involved in the public exhibition of the Planning Proposal.

PLANNING PROPOSAL PART 6

Plan Making Guidance - Part 6

The NSW DPHI Local Environmental Plan Making Guidelines provides that Part 6 of the Planning Proposal should describe the project timeline as a tool for the Planning Proposal Authority, DPHI and the Parliamentary Counsel's Office to monitor the project through the LEP making process and manage resources accordingly.

As a minimum, the project timeline should describe:

- + Anticipated commencement date (of Gateway determination).
- + Anticipated time frame to finalise the infrastructure studies/plan.
- + Anticipated time frame for completion of any additional technical studies, not completed prior to Gateway.
- + Time frame for public agency consultation.
- + Anticipated dates of public exhibition and, if required, a public hearing.
- + Time frame for submissions to be considered.
- + Time frame for the consideration of a proposal after the exhibition.
- + Date the plan will be made (where council is the LPMA) or date of submission to the Department to finalise the LEP.
- + Date of notification.

11.1 Project Timeline

The Planning Proposal is deemed to fall into the Standard Planning Proposal Category.

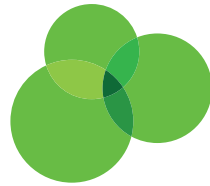
An anticipated timeline has been developed for the project and is based on the maximum time frame recommendations provided in the NSW DPHI Local Environmental Plan Making Guidelines for a standard category Planning Proposal.

The timeline is shown in Figure 13.

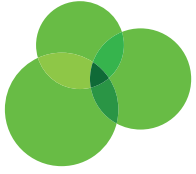
It may be the Planning Proposal is process quicker than the timeline shown.

Figure 13 - Project Timeline

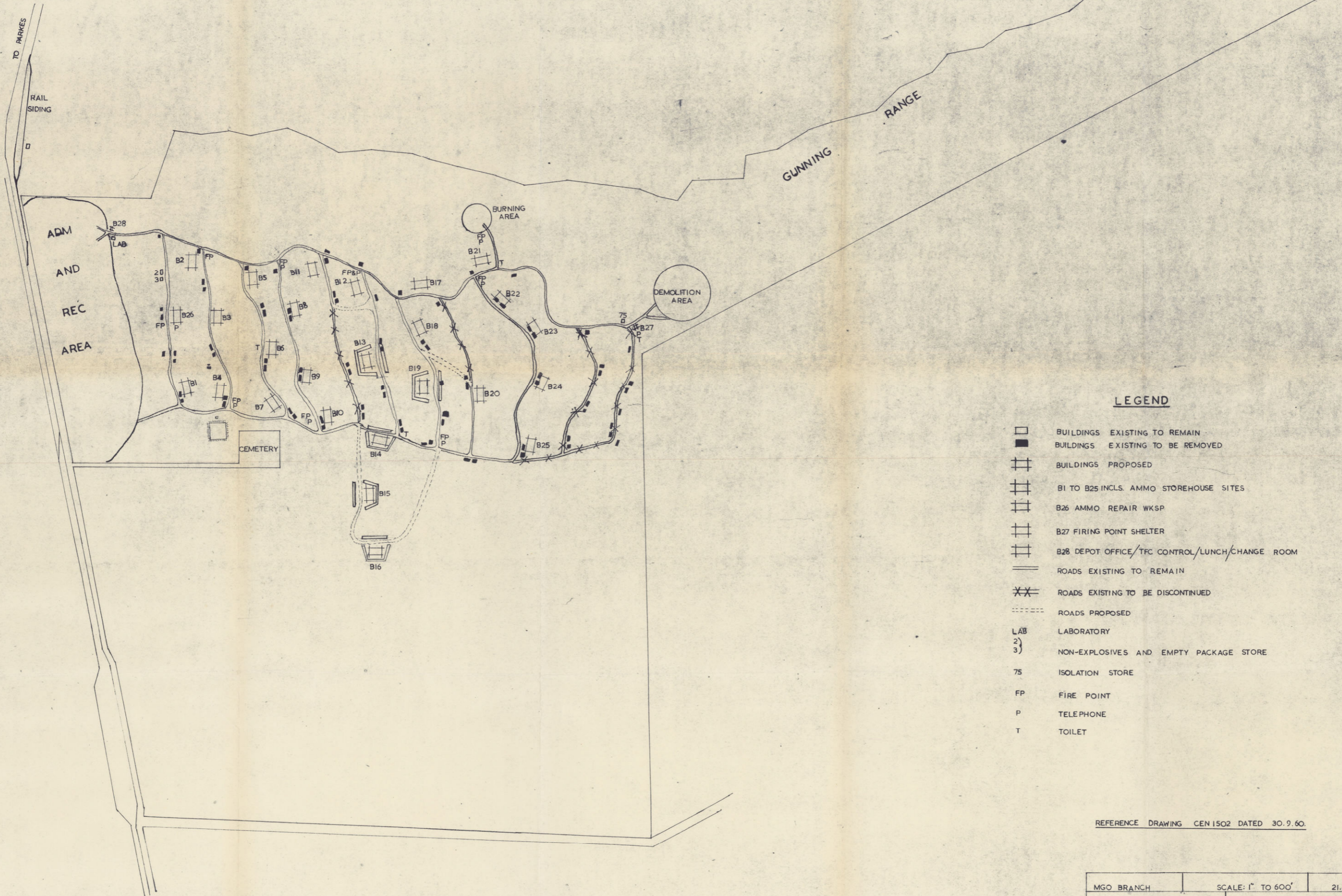
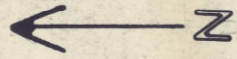




CURRAJONG
PLANNING, PROPERTY + PROJECT MANAGEMENT



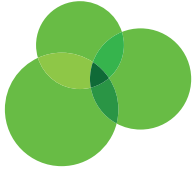
Appendix A. BGER Masterplan



LEGEND

- BUILDINGS EXISTING TO REMAIN
- BUILDINGS EXISTING TO BE REMOVED
- BUILDINGS PROPOSED
- B1 TO B25 INCL. AMMO STOREHOUSE SITES
- B26 AMMO REPAIR WKSP
- B27 FIRING POINT SHELTER
- B28 DEPOT OFFICE/TFC CONTROL/LUNCH/CHANGE ROOM
- ROADS EXISTING TO REMAIN
- ROADS EXISTING TO BE DISCONTINUED
- ROADS PROPOSED
- LAB
- NON-EXPLOSIVES AND EMPTY PACKAGE STORE
- ISOLATION STORE
- FIRE POINT
- TELEPHONE
- TOILET

REFERENCE DRAWING CEN 1502 DATED 30.9.60.



Appendix B. Parkes Shire Council Existing Use Rights Letter

AJ:JH

Contact Person: Andrew Johns

23 May 2013

Mr Joe Stevens
PO Box 3047
ROBERTSON NSW 2577

Dear Mr Stevens

BOGAN GATE EXPLOSIVES RESERVE LOT 2 AND LOT 4 DP 1064474

I refer to the above and your letter dated 5 March 2013.

Council writes to confirm discussions had with Ken Stevens on 23 May 2013. Council can confirm that it is satisfied that you have demonstrated that the use of the Explosives Reserve (Lots 2 and 4 DP 1064474) is an Existing Use pursuant to the Environmental Planning and Assessment Act 1979, as amended, based on the evidence at hand. Council must reiterate that this means that you are able to continue the use on the site but may not further intensify or expand the use outside of the auspices of the abovementioned Act.

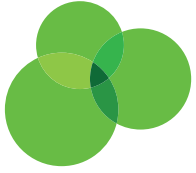
Further, Council advises that in its opinion, the existing rights for the use of Lots 3 and 5 DP 1064474 for storage and handling of explosives have been abandoned as the use had ceased for a period exceeding 12 months and therefore no such activities are permitted to take place on this land. Rezoning of the land is an avenue you may explore in this regard.

Should you wish to discuss the matter further, please contact Council's Manager Development Services, Mr Andrew Johns, on (02) 6861 2373.

Yours faithfully

Kent Boyd
GENERAL MANAGER

per:
Steven Campbell
DIRECTOR OF PLANNING & ENVIRONMENT



Appendix C. SMS Statement of Environmental Effects

Statement of Environmental Effects

Proposed Development of a site at the Bogan Gate Explosive Reserve

Land Description

The development is proposed to be constructed on Lot2 DP 1064474 3577 Henry Parkes Way Bogan Gate NSW.

Description of Proposal

The erection of a demountable shed on a concrete slab to provide cover for equipment required to manufacture a chemical UN 3375 otherwise known as an emulsion precursor use in the manufacture of explosives in a safe work environment for employees. An additional consideration is to ensure we can capture any spills and ensure we contain all materials with zero discharge. The shed roof will also serve as a water capture to optimise water use via two 50,000 litre water tanks

As an industrial process the following data is provided.

Type of business.

Manufacture of chemical UN3375

Number of staff.

4 people

Expected number of customers or clients.

We expect only 3 to 4 clients within NSW

Hours and days of operation.

Plant hours are Monday to Friday 7am till 4pm.

Operating hours will be within these times, but production days are anticipated as only being required once or twice a week based upon expectations of client's requirements.

Plant, machinery, production processes.

All plant and equipment is under the regulations of the NSW Safework regulations pertaining to explosive and chemical precursors

Type and quantity of goods handled such as raw materials, finished products, waste products.

- Raw Materials consist of nitrates, water, emulsifiers, mineral oils and other non-dangerous goods. Based upon expected business it is anticipated at 80 tonnes (2 vehicle movements) per month
- Finished product is UN3375 emulsion. Anticipated at 80 tonnes (2 vehicle movements) per month
- There are no waste materials discharge from the site. All spills and waste are consumed. From time to time there could be non-dangerous goods packaging that will require disposal but infrequently. Such wastes will be disposed of at an approved local site at the commercial fees

Arrangements for transport, loading and unloading of goods (give details of frequency of truck movements and size of vehicles).

- All raw materials and finished goods will be moved to and from site by licensed dangerous goods carriers.
- On site all goods are either handled by forklifts or by pumps operated by trained SMS employees

Hazardous materials and processes.**Noise control measures.**

The facility is 1.8 kilometre from the nearest on-site office.
All equipment rated below 85 dB at 1 metre distance

Dust control measures.

No dust is created and any dust entering the building is cleaned up daily as part of the start up and close down procedures

Complaints management.

We foresee no complaints arising from our activities as we are not in visual range nor do we produce and odours or releases that others may have a concern. We have a product complaint system which can be utilised if any complaint is every received. That procedures is essential within 24 hours we acknowledge a complaint has been made and where required we report the complaint to any regulator as required by our license to operate or is considered best practice. Within 7 days we will report back to the complaint originator with the results of our investigation.

Servicing arrangements.

We operate our own diesel generator units and do our own maintenance. We draw water from both the SMS captured roof water and from the BGER system.

Site Location and Analysis

The site is designated an explosive reserve and we operate under the site rules as approved by NSW Safework

Present use of the site.

Explosive Reserve

Previous uses of the site (if known).

RAAF BASE

Present uses of adjoining land.

Rural

Whether the present or any previous use is a potentially contaminating activity

For current operation no contaminating activities

For RAAF base none known

A statement as to whether or not you are aware that the site is contaminated land.

None known

Whether there has been any testing or assessment of the site for land contamination.

None known

Compliance with Planning Controls

Impact on threatened species.

None known

Integrated approval requirements.

NSW Safework

NSW Major Hazard Facility

NSW EPA

Concurrence, referral or comment from other government agencies.

NSW Safework
NSW EPA
NSW Major Hazard Facility

SEPP 33 Compliance.

In compliance (refer supporting documentation)

Parkes Local Environmental Plan 2012.

Have read and in compliance

Parkes Shire Development Control Plan 2013.

Have read and in compliance

Servicing and Infrastructure Requirements

Sewerage.

Via lease of existing facilities on site

Water Supply.

Via site pipe supply supplemented by water capture in 100,000 litre storage tanks

Stormwater.

We capture all stormwater falling on the building area and reuse
Existing site stormwater handles all other stormwater areas

Electricity supply.

We generate ourselves from diesel powered Generator

Telecommunications.

Via mobile network

Access and Traffic Requirements

Vehicle access to a public road.

Via turnoff to BGER onto Henry Parkes Way.

Proposed parking arrangements

Parking provided for 6 vehicles.

Site Management

Perimeter fencing to restrict public access to the construction site.

BGER has a fencing around the entire site in accordance with AS2187 and approved by NSW Safework

Access points for construction.

Via main gates with an authorised NSW Security Clearance holder at all times accompanying the constructor.

Dust control methods.

Roads within our leased area are existing gravel roads and if required dust measures are controlled via water cart if required

Assessment of Likely Impacts of the Proposal

Impacts on the natural environment (consider any impacts on creeks and waterways, existing native vegetation, native fauna, potential for soil erosion, sedimentation, landslip).

None anticipated

Impacts on the built environment (consider any impacts on heritage items, the character and amenity of the area, neighbouring views, privacy, overshadowing, drainage).

None anticipated

The likely social and economic impacts in the locality.

Local employment and increased economic activity

Site Suitability

Compatibility with land zoning.

BGER was created for the proposed development use.

Ecologically Sustainable Design

Conserve energy - passive design and energy management systems.

We have optimised power requirements as per our process requirements

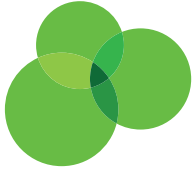
Conserve water - water conservation, reuse and the use of water efficient facilities and equipment.

We have optimised water requirements as per our process requirements

Photographs

Photographs of similar explosive facilities are available on our website at

<https://solargroup.com/industrial-explosives/#home>



Appendix D. Development Consent No. DA2020/0073



NOTICE OF DETERMINATION OF A DEVELOPMENT APPLICATION

*issued under the Environmental Planning and Assessment Act, 1979
Section 4.18 (1) (a)*

Issued to:

Applicant Details:

Solar Mining Services Pty Ltd
Suite 2003, 109 Pitt Street
SYDNEY NSW 2000

Development Consent No:

DA2020/0073

Description of Development:

General Industry

Subject Land:

Lot 2 DP 1064474

Property Address:

3577 Henry Parkes Way, Bogan Gate

Date of Determination:

18 November 2020

Consent to Lapse on:

18 November 2025

Determination:

Consent granted subject to conditions described below:

Conditions:

Conditions imposed by Parkes Shire Council

Approved Plans and Documentation

1. The development shall be carried out in accordance with:
 - i. The approved stamped plan(s), prepared by Solar Mining Services, Sheet SMS/AUS/BG/01-01 (Revision No. 36) and Sheet SMS/AUS/BG/01-02 (Revision No. 33) dated 24 July 2020
 - ii. The approved stamped plan(s), prepared by Now Buildings, Drawing No. AP20344, dated 28 June 2020
 - iii. The approved stamped Emergency Management Plan, Document no. SMS-HSQ-E00.X02, dated 30 July 2020.
 - iv. The approved stamped Plant Design Brief, Document No. SMS-ENG-000.G01, dated 28 July 2020.

The approved stamped Statement of Environmental Effects, prepared by Solar Mining Services.

Prior to Issue of the Construction Certificate

2. The Applicant is to obtain a Construction Certificate from either Council or an Accredited Certifying Authority, certifying that the proposed works are in accordance with the Building Code of Australia and applicable Council Development and Engineering Standards prior to any building and or subdivision works commencing.

Note 1: No building, engineering or excavation work is to be carried out in relation to this development until the necessary construction certificates have been obtained.



Note 2: It is the responsibility of the Applicant to ensure that the development complies with the Building Code of Australia and applicable Development and engineering standards in the case of building work and the applicable Council Engineering Standards in the case of subdivision works. This may entail alterations to the proposal so that it complies with these standards.

3. Pursuant to Section 94A of the Environmental Planning and Assessment Act 1979, the monetary contribution set out in the following table is to be paid to Parkes Shire Council prior to the issue of a Construction Certificate. The contribution is current as at the date of this consent and is levied in accordance with the Parkes Shire Section 94A Contributions Plan 2016, in force from 5 August 2016, which may be viewed during office hours at Council's Customer Service Centre, 2 Cecile Street, Parkes, or on Council's website www.parkes.nsw.gov.au. The contribution payable will be calculated in accordance with the contributions plan current at the time of payment, and will be adjusted at the time of payment in accordance with the Consumer Price Index (CPI) (All Groups Index for Sydney) published by the Australian Bureau of Statistic (ABS). Contribution amounts will be adjusted by Council each quarter.

Contribution Type	Proposed Cost of Development 1	Levy %	Total Contribution	Contribution Rate remains current until
Section 94A Contribution	\$750,000.00	1% above \$200,000.00	\$5,500.00	Next CPI Quarterly Adjustment

Note: As shown on the Development Application / Complying Development Certificate Application Form.

4. The Applicant must obtain all relevant approvals to carry out sewerage work, stormwater drainage work and water supply work from Council prior to commencing works and comply with any conditions of that permit. All work must be carried out by a licensed plumber and drainer and to the requirements of the Plumbing Code of Australia and Australian Standard AS3500 Plumbing and Drainage.
5. The Applicant must submit to Council, at least two (2) days prior to the commencement of any works, the attached 'Notice of Commencement of Building or Subdivision Works and Appointment of Principal Certifying Authority'.
6. Prior to the issue of a commencement of work, a detailed soil and sedimentation plan prepared a suitability qualified person must be submitted to and approved by Council. The soil and sedimentation plan must be in accordance with the latest publication of Managing Urban Stormwater – Soils and Construction produced by Landcom. Erosion and sedimentation controls must be in place prior to the commencement of site works and maintained throughout construction activities until the site is landscaped and/or suitably revegetated.
7. The premises is to be connected to Parkes Shire Council's reticulated water supply system by lodging a 'Water and/or Sewer Connection Application Form' and payment of relevant fees to Council and making arrangements with Council for connection of a suitably sized water meter. All works must be completed prior to construction commencing.
8. Prior to the commencement of work, a Site Investigation Report shall be prepared by a suitably qualified person in accordance with the Office of Environment and Heritage Guidelines for Consultants Reporting on Contaminated Sites and submitted to Council for approval. The Site Investigation Report must outline:
- The extent and degree of contamination or other hazards that may be present in the soil profile (if any) at the site of the telecommunications facility,



- The risk to work health and safety and / or the environment as a result of construction works uncovering areas of contamination or other hazardous material,
- Any actions required to remediate the site prior to construction works commencing on the site,
- Any other matter required by the guidelines.

Any remediation works required by the report must be carried out prior to the commencement of work and supported by a validation report in accordance with guidelines prepared by the NSW Environmental Protection Authority.

During Works

9. Excavation work or building work involving the use of electric or pneumatic tools or other noisy operations shall be carried out only between 7.00am and 6.00pm on weekdays and 8.00 am and 1.00 pm on Saturdays. No work on Sundays or Public Holidays is permitted.
10. All loading, unloading and storage of goods, equipment, tools and building materials, or the carrying out of building operations related to the development proposal shall be carried out within the confines of the property. No loading, unloading and storage of goods, equipment, tools and building materials, or the carrying out of building operations related to the development proposal shall be carried out on the nature strip, footpath or public roadway system.
11. Building and construction materials, plant, equipment and the like must not be stored, or construction work carried out on the road reserve, footpath or roadway, unless associated with a separate approval under the Road Act 1993.
12. All building rubbish and debris, including that which can be windblown, shall be contained on site in a suitable container for disposal at an approved Waste Landfill Depot. The container shall be erected on the building site prior to work commencing and shall be maintained for the term of the construction to the completion of the development.
13. Any damage caused to footpaths, roadways, utility installations and the like by reason of demolition or construction operations shall be made good and repaired to a standard equivalent to that existing prior to commencement of works. The full cost of restoration/repairs of property or services damaged during works shall be met by the Applicant.
14. Cutting and filling on the site shall be undertaken in accordance with the approved stamped plans and be battered at a maximum slope of one vertical to two horizontal (IV:2H) and revegetated or suitably retained by a retaining structure, designed and constructed to the appropriate engineering standards.

Note: A retaining wall or structure that does not comply with State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 will require prior consent from Council.

Note: Cutting and filling on the site and the erection of retaining walls may require the approval and certification of a suitably qualified structural/geotechnical engineer.
15. Should any contaminated, scheduled, hazardous or asbestos material be discovered before or during construction works, the applicant and contractor shall ensure the appropriate regulatory authority (eg Office of Environment and Heritage (OEH), WorkCover Authority, Council, Fire and Rescue NSW etc) is notified, and that such material is contained, encapsulated, sealed, handled or otherwise disposed of to the requirements of such Authority.



16. The development is to proceed with caution. If any Aboriginal objects are found, works should stop and the NSW Office of Environment and Heritage must be contacted. In the event that an Aboriginal relic is uncovered, work must cease immediately and the NSW Office of Environment and Heritage must be contacted.
17. Throughout the course of building operations on the land, toilet facilities are to be provided, at or in the vicinity of the work site on which work involved in the erection or demolition of a building is being carried out. Toilet facilities are to be provided at a rate of one toilet for every 20 persons or part of 20 persons employed at the site.
18. All plumbing and drainage work must be carried out by a licensed plumber and drainer in accordance with Australian Standard AS/NZS3500 Plumbing and Drainage, the Plumbing Code of Australia and the following requirements:
 - (a) All roofed and hardstand stormwater shall be drained in accordance with the stamped approved plan;
 - (b) Stormwater disposal drains shall be connected to all roof downpipes within fourteen (14) days of installation of the roof covering to discharge water to an approved legal discharge point.
19. A minimum 20,000 litre water supply shall be provided on the site in accordance with 'Planning for Bush Fire Protection 2006' and the following:
 - Aboveground tanks shall be constructed of non-combustible material. A 65mm metal storz fitting and ball or gate valve shall be installed in any tank.
 - The gate or ball valve, pipes and tank penetration shall be adequate for full 50mm inner diameter water flow through the Storz fitting and shall be metal rather than plastic.
 - A standard Static Water Supply (SWS) marker shall be obtained from the District NSW Rural Fire Service as part of the Static Water Supply Program once the tank water supply has been installed. The marker once issued is to be:
 - (a) fixed in a suitable location so as to be highly visible;
 - (b) positioned adjacent to most appropriate access for the static water supply;
 - (c) fixed facing the roadway on a gatepost, fence or dedicated post, at the right hand side of the entranceway to the Static Water Supply;
 - (d) fixed no less than 600mm from the ground surface to the base of the sign and not higher than 1200mm from the ground surface to the base of the sign; and,
 - (e) fixed with suitable screws or nails.

Any additional rainwater storage for fire fighting purposes identified in accordance with Condition No. 27 is required to be provided above and beyond the prescribed 20,000 litres.

Prior to issue of an Occupation Certificate

20. Prior to the occupation or use of the premises, an Occupation Certificate must be obtained from the Principal Certifying Authority for the development.
21. A Fire Safety Certificate shall be furnished to the Principal Certifying Authority for all the Essential Fire or Other Safety Measures forming part of this approval prior to the issue of any Occupation Certificate. A copy of the Fire Safety certificate must be submitted to Council by the PCA with the Occupation Certificate. An electronic copy of the Final Fire Safety Certificate (together with a copy of the current Fire Safety Schedule) shall also be forwarded to the Fire Commissioner via the following dedicated email address: afss@fire.nsw.gov.

22. Prior to the issue of an Occupation Certificate, a Fire Management and Emergency Contingency Plan (FMEC) shall be prepared by a suitably qualified person to investigate the measures required for emergency firefighting purposes at operational phase for the building and any associated storage areas. The FMEC shall determine the design of the reticulated water supply main and water storages to service the development, in light of all measures proposed to manage an emergency fire situation on the site. The FMEC shall also detail all other potential emergency scenarios that could likely occur at the facility and include the contingency plans to address these situations. The FMEC must be prepared in consultation with the NSW Fire Brigade.
23. Prior to the issue of an Occupation Certificate, a detailed Waste Management Plan (WMP) shall be prepared for the operational phase of the development. The WMP must identify the types of waste that will be generated from the development and outline the final management methods, strategies and commitments in relation to the re-use, recycling and disposal of waste.

Operational Conditions

24. An Annual Fire Safety Statement shall be furnished to the Principal Certifying Authority for all the Essential Fire or Other Safety Measures forming part of this approval within twelve (12) months after the Fire Safety Certificate was issued. A copy of the Annual Fire Safety Statement must be submitted to Council. An electronic copy of the Annual Fire Safety Statement shall also be forwarded to the Fire Commissioner via the following dedicated email address: afss@fire.nsw.gov.
25. The maximum delivery, loading or transport vehicle entering the site is not to be greater than 17.5 metres in length.
26. All vehicles must enter and exit the site in a forward direction. There shall be no reversing of vehicles onto the public roadway system. All vehicles must be parked legally, and no vehicles are permitted to be parked over the public footpath.
27. Adequate facilities shall be provided in a screened location within the premises for the separate storage of recyclable, non-recyclable and special waste material. Arrangements shall be made for the regular removal and disposal of those waste materials. The garbage and bin storage area shall be positioned in a location that is impervious to moisture, and capable of being easily cleaned.
28. All loading and unloading of delivery vehicles, is to take place off-street and must not inhibit the free flow of vehicles accessing the site or other premises in the area. Loading facilities, internal docks or goods handling areas are to be maintained free of obstruction for the sole use of delivery vehicles.
29. Any external lights shall be operated and maintained in accordance with the Australian Standard AS4282 - Control of the Obtrusive Effects of Outdoor Lighting so as not to cause a nuisance or adverse impact on the amenity of residents of the surrounding area or to motorists on nearby roads.
30. There must be no interference with the amenity of the area by reason of the emission of any offensive noise, vibration, smell, fumes, smoke, vapour, steam, soot, ash or dust, or otherwise as a result of the development as defined in the Protection of the Environment Operations Act 1997.

31. The type and volume of chemical's stored onsite must be in accordance with the approved stamped Plant Design Brief, Document No. SMS-ENG-000.G01, dated 28 July 2020. Any variation to the type and volume of chemical's stored onsite is to be subject to the prior consent of Council. Chemicals stored in bulk form, or work areas where spillages are likely to occur, shall be bunded in accordance with the *NSW Office of Environment and Heritage Protection Manual – “Storing and Handling Liquids: Environmental Protection”*.
32. Any chemical, hazardous, toxic materials or contaminated parts must be handled and stored in accordance with the Occupational Health and Safety Regulation 2001 and NSW Safework requirements and all tanks, drums and containers of toxic and hazardous materials or contaminated parts shall be stored in a bunded area. The bund walls and floors shall be constructed of impervious materials and shall be of sufficient size to contain 110% of the volume of the largest tank plus the volume displaced by any additional tanks within the bunded area.

Prescribed conditions under the Environmental Planning and Assessment Regulation 2000

33. A development consent for development that involves any building work must be issued subject to the following conditions:
- that the work must be carried out in accordance with the requirements of the *Building Code of Australia*, in force on the date of the application.
 - in the case of residential building work for which the *Home Building Act 1989* requires there to be a contract of insurance in force in accordance with Part 6 of that Act, that such a contract of insurance must be entered into and be in force before any building work authorised to be carried out by the certificate commences.

Note: This condition does not limit any other conditions to which a complying development certificate may be subject, as referred to in section 85A (6) (a) of the Act.

Note: This condition does not apply:

- to the extent to which an exemption is in force under clause 187 or 188, subject to the terms of any condition or requirement referred to in clause 187 (6) or 188 (4) of the Environmental Planning and Assessment Regulation 2000, or
- to the erection of a temporary building, other than a temporary structure that is used as an entertainment venue.

Note: In this condition, a reference to the *Building Code of Australia* is a reference to that Code as in force on the date the application for the relevant complying development certificate is made.

34. A sign must be erected in a prominent position on any site on which building work, subdivision work or demolition work is being carried out:
- showing the name, address and telephone number of the principal certifier for the work, and
 - showing the name of the principal contractor (if any) for any building work and a telephone number on which that person may be contacted outside working hours, and
 - stating that unauthorised entry to the site is prohibited.

Any such sign is to be maintained while the building work, subdivision work or demolition work is being carried out, but must be removed when the work has been completed.

Note: This condition does not apply in relation to building work, subdivision work or demolition work that is carried out inside an existing building, that does not affect the external walls of the building.

Note: This condition does not apply in relation to Crown building work that is certified, in accordance with section 109R of the Act, to comply with the technical provisions of the State's building laws.



Note: This condition applies to a complying development certificate issued before 1 July 2004 only if the building work, subdivision work or demolition work involved had not been commenced by that date.

Note: Principal certifiers and principal contractors must also ensure that signs required by this clause are erected and maintained (see clause 227A which currently imposes a maximum penalty of \$1,100).

35. Residential building work within the meaning of the *Home Building Act 1989* must not be carried out unless the principal certifier for the development to which the work relates (not being the council) has given the council written notice of the following information:
- (a) in the case of work for which a principal contractor is required to be appointed:
 - (i) the name and licence number of the principal contractor, and
 - (ii) the name of the insurer by which the work is insured under Part 6 of that Act,
 - (b) in the case of work to be done by an owner-builder:
 - (i) the name of the owner-builder, and
 - (ii) if the owner-builder is required to hold an owner-builder permit under that Act, the number of the owner-builder permit.

Note: If arrangements for doing the residential building work are changed while the work is in progress so that the information notified under the above condition becomes out of date, further work must not be carried out unless the principal certifier for the development to which the work relates (not being the council) has given the council written notice of the updated information.

Note: The above condition does not apply in relation to Crown building work that is certified, in accordance with section 109R of the Act, to comply with the technical provisions of the State's building laws.

36. Where development involves an excavation that extends below the level of the base of the footings of a building on adjoining land, the person having the benefit of the certificate must at the person's own expense:
- (a) protect and support the adjoining premises from possible damage from the excavation, and
 - (b) where necessary, underpin the adjoining premises to prevent any such damage.

Note: This condition does not apply if the person having the benefit of the complying development certificate owns the adjoining land or the owner of the adjoining land has given consent in writing to that condition not applying.





Reasons for Conditions:

Development Application No: DA2020/0073 was assessed using current procedures developed by the Parkes Shire Council and other resource information. This includes:

- the requirements of Section 4.15 of the *Environmental Planning and Assessment Act 1979* which states:

Section 4.15 Matters for consideration – general

In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the development the subject of the development application:

- (a) *the provisions of:*
 - (i) *any environmental planning instrument, and*
 - (ii) *any draft environmental planning instrument that is or has been placed on public exhibition and details of which have been notified to the consent authority, and*
 - (iii) *any development control plan, and*
 - (iv) *any matters prescribed by the regulations that apply to the land to which the development application relates*
 - (b) *the likely impacts of that development, including environmental impacts on both the natural and built environments and social and economic impacts in the locality,*
 - (c) *the suitability of the site for the development,*
 - (d) *any submissions made in accordance with this Act or the regulations,*
 - (e) *the public interest.*
- the requirements of the Parkes Local Environmental Plan 2012.
 - the requirements of the Parkes Shire Council Development Control Plan 2013.
 - field inspection and liaison between officers of the Parkes Shire Council.
-





Other Approvals:

**Local Government Act,
1993 approvals granted
under Section 4.12:** N/A

**Approval bodies who have
Given General Terms of
Approval in relation to
the Development:** N/A

**Applicants right to make
an application for review
against the determination:** Pursuant to Section 8.3 of the Environmental Planning and Assessment Act 1979, an applicant may request Council to review a determination within six months after the date of determination.

Applicants Right of Appeal: Pursuant to Section 8.7 of the Environmental Planning and Assessment Act 1979, an applicant who is dissatisfied with Council's determination may appeal to the Land and Environment Court within six months after the date of determination.

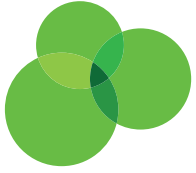
Signed: On behalf of the consent authority:

Signature:

Name: Brendan Hayes
DIRECTOR PLANNING AND ENVIRONMENT

Date: 18 November 2020





Appendix E. Madison Marcus Existing Use Rights Letter

Partner Michael Mantei
Our ref MXM:MM221180

1 November 2022

Solar Mining Services Pty Ltd
Suite 2003, 109 Pitt St
SYDNEY NSW 2000

By email: vetkavramesh@solar-sms.com.au

Dear Vetkav,

Proposed Ammonium Nitrate Emulsion Facility
Lot 2 DP 1064474, 3577 Henry Parkes Way Bogan Gate
Advice on Permissibility

1. We refer to your recent request for our advice on whether a proposed ammonium nitrate emulsion (ANE) manufacturing and storage facility at Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate ("lot 2") is permitted with development consent by reason of existing use rights under the *Environmental Planning and Assessment Act 1979* ("EP&A Act"). ANE is an explosives substance produced from ammonium nitrate and is predominantly used in the mining industry.
2. The proposed development involves the production of 15,000 tonnes of ANE per annum and comprises storage of 500 tonnes of ammonium nitrate and 100 tonnes of ANE at any one time. The plant is to be operated by Solar Mining Services Pty Ltd. The proposed ANE plant is prohibited on lot 2 under *Parkes Local Environmental Plan 2012*. The only potential pathways to approval of the proposed ANE plant are an amendment to PLEP 2012 or existing used rights under Part 4 of the EP&A Act.
3. An investigation of existing use rights requires an analysis of the historical use of the land concerned and the planning controls that applied to the land during the period of the existing use. The legal advice in this letter is based on information you have provided to us about the use of lot 2 and our own research of historical records, including records held by the National Archives of Australia.

Summary of Advice

4. An existing use is the use of a building, work or land for a lawful purpose immediately before the coming into force of an environmental planning instrument which had the effect of prohibiting that use. *Parkes Local Environmental Plan 1990* ("PLEP 1990") commenced controlling development on lot 2 on 8 April 2004 when lot 2 was sold by the Commonwealth of Australia (Australian Military) to Timber Creek Holdings Pty Ltd. Immediately prior to that date the whole of lot 2 was lawfully used for the purposes of an explosives workshop and explosives storage facility.
5. PLEP 1990 was repealed by *Parkes Local Environmental Plan 2012* ("PLEP 2012") on 7 December 2012. PLEP 2012 had the effect of prohibiting an explosives workshop and explosives storage facility on lot 2. Immediately before the commencement of PLEP 2012, the use of lot 2 for the purposes of an explosives workshop and explosives storage facility was a lawful use by reason of the existing use rights provisions section 109(1) of the EP&A Act. On the commencement of PLEP 2012, the use of lot 2 for the purposes

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of an explosives workshop and explosives storage facility was an existing use as defined in (as it then was) section 106(a) of the EP&A Act.

6. Lot 2 has been continuously used for the purposes of an explosives workshop and storage facility since the commencement of PLEP 2012 on 7 December 2012. The whole of Lot 2 currently enjoys existing use rights under section 4.66(1) of the EP&A Act for the purposes of an explosives workshop and storage facility.
7. The proposed ANE plant, being a plant designed for the manufacture and storage of explosives, is permitted with development consent under section 164 of the *Environmental Planning and Assessment Regulation 2021*.

History of Lot 2

8. Lot 2 was originally part of a larger parcel of land used for explosive storage and testing area known locally as the Bogan Gate Explosives Reserve ("BGER"). The BGER was established by the Australian Military in 1942 for the purposes of storage of ammunitions used in WWII.¹ The BGER was compulsorily acquired by the Commonwealth of Australia for defence purposes on 9 June 1960.²
9. A masterplan prepared by the Australian Military Forces in August 1962 indicates that BGER land comprising 2,033 acres. The "Masterplan User Requirement" report was prepared in 1962 for the purpose of upgrading and expanding the BGER. The report included a site plan showing the layout of the BGER. The Report and Masterplan are attached to this advice as **Annexure A**.
10. The range of activities to be carried out at the upgraded BGER were described in the User Requirement Report as "inspection, repair, modification, maintenance and destruction of ammunition stocks as directed by AHQ". The User Requirement Report states that the BGER was designed to store and process between 12,000 and 22,000 tons of explosives. The User Requirement Report described the construction of numerous buildings including an administration "HQ" building, a transport compound comprising an office, workshop and storeroom, refuelling facility, toilets, a number of explosives storehouses, an explosives workshop and laboratory, carpenters store and numerous explosives shelters. The Masterplan showed the location of these buildings on the land.
11. The proposal outlined in the User Requirements Report and Masterplan was implemented in the years following 1962. A comparison of the property boundaries on the 1962 Masterplan and the current boundaries of lot 2 indicates that the masterplan included the whole of present day lot 2, and a "burning area" that occupied a small portion of present day lot 158 DP 750177 and lot 4 DP 1064474 to the east of lot 2.
12. Historical information about use of the adjoining Crown land to the east of lot 2 (now described as lot 158 DP 750177) indicates that this land was also used for the purpose of explosives manufacturing and testing. The land was leased to a company called Dupont and later Dyno Nobel. Information provided to me indicates that the area described as the "burning area" on the 1962 Masterplan was also used by Dupont Nobel.
13. There is limited information about the history of lot 2 between 1962 and 2004. Much of this information is no doubt classified, the land being owned by the Commonwealth and used for military purposes. We assume for the purposes of this advice that the BGER was used for the purposes of the storage and processing of explosives by the Australian military between 1962 and 2004.
14. The BGER continued to be owned by the Commonwealth until 8 April 2004 when lot 2 was transferred to Timber Creek Holdings Pty Ltd ("Timber Creek"). Timber Creek transferred lot 2 to the current owner, Lexa Enterprises Pty Ltd, on 9 February 2022.

¹ Documents obtained from National Archives of Australia, series no. MP742/1, control 305/24/133; title: Storage of Ammunition at Bogan gate NSW – 2 base ammunition depot

² Commonwealth of Australia Gazette No. 39, 9 June 1960.

15. In 2005 Timber Creek leased a portion of lot 2 to Johnex Explosives for the purpose of manufacture of explosives and another portion to Howards and Sons Pyrotechnics for the purpose of manufacture and store fireworks. Existing facilities on lot 2 including explosives manufacturing plant facilities, explosives storages, site offices, storage buildings and residences. We are instructed that Johnex and Howards and Sons have continuously used the site for manufacturing and storing explosives and fireworks from 2005 to the present day. The separate areas of lot 2 used by Johnex and Howards and Sons are shown on the aerial photograph below:



(Source: maps.six.gov.au; overlay taken from site plan prepared for DA2020/0073)

16. On 23 May 2013 Parkes Shire Council wrote to a representative of Timber Creek advising that “Council can confirm that it is satisfied that you have demonstrated that the use of the explosives reserve (lots 2 and 4 DP 1064474) is an existing use pursuant to the Environmental Planning and Assessment Act 1979, as amended, based on the evidence at hand.” We are instructed that the Council no longer holds the evidence on which the letter was based.

17. On 18 November 2020 SMS obtained development consent to conduct a “general industry” on the site (Parkes Shire Council reference DA2020/0073). The architectural plans and statement of environmental effects accompanying the notice of determination indicate that the consent approved the construction of a demountable shed on a concrete slab to provide cover for equipment required to manufacture ANE. The explosives plant approved in DA2020/0073 is designed to manufacture 3,600 tonnes of ANE per annum and store up to 100 tonnes.³ The architectural plans and statement of environmental effects are both expressly and by necessary implication incorporated into the notice of determination for DA2020/0073. We are instructed that the proposed ANE plant is to operate within the building approved in DA2020/0073.
18. A complete chronology of events relating to the establishment and continued use of the BGER compiled from the documents that we have reviewed is copied at **Annexure B** to this advice.

History of Planning Controls including PLEP 2012

19. Lot 2 has been affected by a number of statutes and planning instruments since 1942. We do not have a complete history of planning controls applying to the BGER since 1942, however for the reasons explained below, those details are not necessary.
20. Our research indicates the land was affected by the following instrument and zoning:

Period	Instrument	Zone
7/12/2012 to Present	Parkes LEP 2012	RU1 Primary Production
14/12/1990 to 7/12/2012	Parkes LEP 1990	1(a) Rural “A”
Prior to 14/12/1990	IDO 1 – Shire of Goobang	Not Known

21. Lot 2 was located within zone 1(a) Rural “A” under *Parkes Local Environmental Plan 1990* (“PLEP 1990”). The zoning table for the 1(a) Rural “A” zone nominates uses that are permitted without development consent and prohibited. All other uses not nominated are permitted with development consent on land in the 1(a) Rural “A” zone. The manufacturing and storage of explosives was not a type of development that was nominated as prohibited or permitted with development consent, and accordingly would have been permitted with development consent while PLEP 1990 remained in force.
22. Lot 2 is presently located within zone RU1 Primary Production under *Parkes Local Environmental Plan 2012* (“PLEP 2012”). The zoning table for the RU1 zone nominates uses that are permitted with and without development consent. All other uses not nominated are prohibited on land in zone RU1. The proposed ANE plant, being a manufacturing activity, is a type of industry. The only types of industry that are permitted with or without development consent in the RU1 zone are extractive industry, home industry and rural industry. Those expressions are defined in the dictionary to PLEP 2012 none of which describe an industry of the character of the proposed ANE plant. The only potential pathway to approval of the proposed ANE plant under PLEP 2012, as it currently stands, is by existing use rights under Part 4 of the EP&A Act.

Advice on Existing Use Rights

23. In NSW planning law an existing use is the use of a building, work or land for a lawful purpose immediately before the coming into force of an environmental planning instrument which had the effect of prohibiting that use.⁴ An existing use is presumed to be abandoned if it “ceases to be actually so used” for a continuous period of 12 or 24 months depending on the date of the cessation.⁵ An existing use that is not abandoned may continue to operate despite any restriction in the EP&A Act or any environmental planning

³ Plant Design Brief, Document No. SMS-ENG-000.G01, dated 28 July 2020, p5 & 14.

⁴ S4.65(a) EP&A Act

⁵ S4.66(3) & (4) EP&A Act

instrument applying to the land. The onus of proving existing use rights rests with the person relying on those rights.⁶

24. The *Environmental Planning and Assessment Regulation 2021* permits an existing use, with development consent, to be enlarged, expanded or intensified, altered and rebuilt,⁷ provided the proposed development is carried out only on the land on which the existing use was carried out immediately before the “relevant date”.⁸ The Regulations are deemed to be included in all environmental planning instruments.
25. Modern day town planning controls in NSW commenced on 5 April 1945 with the introduction of Part XII of the *Local Government Act 1919* (“LG Act”). Part XII enabled the preparation of planning scheme ordinances that contained detailed controls on the carrying out of development. Our research indicates that the earliest planning scheme ordinance that applied to lot 2 was *Shire of Goobang Interim Development Order No.1* (“IDO 1”). We assume for the purposes of this advice that planning approval was **not required** for the BGER under Part XII of the LG Act or IDO 1. Neither Part XII of the LG Act, and by implication IDO 1, were expressed to bind the Crown. Even if they did bind the Crown, they were set aside at least in respect of the Crown in the right of the Commonwealth, by section 109 of the Australian Constitution.⁹
26. When the EP&A Act commenced on 21 December 1979 it expressly applied to the Crown, not only in the right of NSW but also the Crown “in all its other capacities”, including the Crown in the right of the Commonwealth.¹⁰ The EP&A Act and planning instruments made under the Act, continued to be subject to the limitations on the legislative power of the Parliament of NSW in the Australian Constitution. The EP&A Act as presently in force, continues to apply to the Crown in the right of the Commonwealth subject to the same limitations.
27. A restriction in the EP&A Act or subordinate legislation, including an environmental planning instrument, that prohibits or requires consent for the BGER is inconsistent with the power of the Federal Parliament in section 51(vi) of the Australian Constitution to make laws with respect to the military defence of the Commonwealth. Any such restrictions in the EP&A Act and accompanying subordinate legislation that is inconsistent with a law of the Commonwealth is “deemed to be invalid” to the extent of the inconsistency under section 109 of the Australian Constitution. The BGER was no doubt established under a law of the Commonwealth. Accordingly, the BGER facility on lot 2 was a lawful use (being a use to which no State planning law applied) until lot 2 was sold in 2004 to Timber Creek Holdings Pty Ltd.

Characterisation of the Lawful Use of Lot 2 at the Relevant Date

28. When the Commonwealth/Australian Military sold lot 2 to Timber Creek on 8 April 2004 the use of lot 2 as an explosives reserve ceased to be protected by section 109 of the Australian Constitution and became subject to the controls contained in the EP&A Act and PLEP 1990. In effect, PLEP 1990 “came into force” in respect of lot 2 on 8 April 2004. That date is the “relevant date” for existing use rights.
29. Characterisation of an existing use depends on the actual physical use being carried out on the land and the purpose to which for which that use is seen to serve. Where, as was the case with the BGER, a use comprises multiple activities of different kinds, the use is characterised “at a level of generality which is necessary and sufficient to cover the individual activities, transactions or processes carried on, not in terms of the detailed activities, transactions or processes”.¹¹ Immediately prior to 8 April 2004, lot 2 was used for an explosives workshop in which explosives were repaired, modified, and maintained, and explosives storage.¹² These various activities can be described at a level of generality as “explosives workshop and

⁶ *Penrith Waste Services Pty Ltd v Penrith CC* (1998) 101 LGERA 98

⁷ EP&A Regulation 2021 cl 162 to 167

⁸ “relevant date is defined as the date on which an environmental planning instrument having the effect of prohibiting the existing use first came into force effect - EP&A Regulations 2021 cl 162(2)

⁹ “The Law of Land Development in NSW” Wilcox M; The Law Book Company 1967, p206

¹⁰ S6 EP&A Act as made

¹¹ *Royal Agricultural Society (NSW) v Sydney City Council* (1987) 61 LGRA 305

¹² User Requirement Report and Masterplan 1962

explosives storage facility". The extent of the land area on which these activities took place was the whole of lot 2.

30. When lot 2 was sold to Timber Creek on 8 April 2004, PLEP 1990 applied. PLEP 1990 required development consent for an explosives workshop and explosives storage facility. No consent was required by reason of section 109(1) of the EP&A Act (the continuing consent provision) as it then was, which prevented an environmental planning instrument operating so as to require consent to be obtained under the EP&A Act for the "continuance of a use of a building, work or land for a lawful purpose". The BGER was a lawful purpose prior to 8 April 2004 for the reasons outlined above.
31. PLEP 2012 commenced to apply to the land on 7 December 2012. The commencement of PLEP 2012 had the effect of prohibiting development for the purposes of an explosives workshop and explosives storage facility on lot 2. The use of lot 2 continued to be protected by existing use rights because immediately prior to the commencement of PLEP 2012, the use of lot 2 for an explosives workshop and explosives storage facility was a lawful use under section 109(1) of the EP&A Act. On the commencement of PLEP 2012, the continuing use of lot 2 became protected under section 107(1) of the EP&A Act (the existing use provisions).
32. There is no direct evidence that is publicly available, at least that we are aware of, to establish that lot 2 was in fact being used for explosives processing and storage immediately prior to its sale to Timber Creek Holdings Pty Ltd. That fact can be assumed having regard to the presumption of regularity. The presumption or regularity is a legal doctrine that arises when there is no direct evidence of a particular state of affairs, and a public official or public authority subsequently does an act or exercises a power which depended for its validity upon the existence of that state of affairs. In those circumstances the subsequent act carries with it a legal presumption of the prior state of affairs.¹³
33. The granting of development consent by Parkes Shire Council to DA 2020/0073 gives rise to the presumption that lot 2 was in fact being used for explosives processing and storage immediately prior to its sale to Timber Creek. DA2020/0073 could not have been granted unless Parkes Shire Council was satisfied that lot 2 was in fact being used for explosives processing and storage immediately prior to its sale to Timber Creek Holdings Pty Ltd and accordingly benefited from existing use rights.
34. Although not strictly falling within the presumption of regularity, the letter from Parkes Shire Council dated 25 May 2013 saying that lot 2 "benefited from existing use rights" at that time, together with the absence of any enforcement action by the Council to require Johnex or Howards and Sons to cease using lot 2 for the manufacture and storage of explosives, supports an inference that lot 2 was in fact being used for explosives processing and storage immediately prior to its sale to Timber Creek.

Continuance of the Existing Use on Lot 2

35. We are instructed that in 2005 Timber Creek Holdings Pty Ltd leased part of lot 2 to Johnex Explosives for the purpose of manufacture of explosives and another portion to Howards and Sons Pyrotechnics for the purpose of manufacture and store fireworks. One of those leases is registered on the title to lot 2. We are instructed that these companies commenced operations on the land shortly after entering into the leases. The use of parts of the site by Johnex and Howards and Sons was for the purposes of the existing use and had the effect of continuing the existing use.
36. The manufacture and storage of explosives by Johnex and Howards and Sons on a portion of the site had the effect of continuing the existing use over the whole of lot 2. Once an existing use commences, a continuation of the existing use in some form is sufficient to prevent abandonment of the existing use. There is no legal principle of which we are aware that an existing use can be partly abandoned.
37. If our instructions are wrong and Johnex and Howards and Sons have ceased using lot 2 for the manufacture and storage of explosives, the presumption of abandonment can be rebutted if there is a **subjective intention** on the part of the owner of the land to resume the existing use, despite the use

¹³ See summary of case law in *Dosan Pty Ltd v Rockdale City Council* [2001] NSWLEC 252

having ceased to be actually used for a period of more than 12 or 24 months.¹⁴ If necessary, we are instructed that Solar Mining Services can obtain a statement from Timber Creek Holdings Pty Ltd that it intended to lease lot 2 to future occupiers, including SMS, for the purpose of the manufacture and storage of explosives.

Permissibility of the Proposed ANE Plant

38. The proposed ANE plant is either an enlargement, or an alteration to, the existing use, being an enlargement or alteration from the manufacture and storage of military explosives to the manufacture and storage of explosives for industrial purposes. The manufacture and storage of ANE is a type of activity that occurs in an explosives workshop and storage facility. Sections 164 and 165 of the *Environmental Planning and Assessment Regulation 2021* permit an existing use to be enlarged or building used for an existing use to be altered with development consent provided the enlargement or alteration is: (a) for the existing use of the building or work and for no other use, and (b) carried out only on the land on which the existing use, building or work was erected or carried out immediately before the relevant day. Both of those preconditions are satisfied in the case of the proposed ANE plant.
39. The proposed ANE plant is permitted with development consent under Part 4 of the EP&A Act.

Yours faithfully



Madison Marcus Law Firm

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¹⁴ *Dosan Pty Ltd v Rockdale CC* (2001) 117 LGERA 363

ANNEXURE A – 1962 “BGER USER REQUIREMENTS REPORT” AND MASTERPLAN

TELEPHONE FA 0455
Extension 313



AUSTRALIAN MILITARY FORCES



Quote in Reply
420/73/321(Qtg)

HEADQUARTERS
EASTERN COMMAND
VICTORIA BARRACKS
PADDINGTON, NSW

Aug 62
3 SEP 1962

AHQ (CANBERRA)

Copy to : AHQ (MELBOURNE)
(For DOS)
(Less attachments)

7 CAD, BOGAN GATE : MASTER PLANNING

Reference AHQ 51/441/22 of 11 Apr 62

- ... 1. Enclosed are three copies of User Requirement for the Explosives Area of this installation for completion of master planning procedure.
- 2. This user requirement was originally prepared by DOS and has been checked by unit and command service representatives. It is acceptable to HQ E Comd.

[Handwritten Signature]
 Lt-Gen
 GOC E Comd

Discussion with SORE 2 (MP)
one copy to who
one copy to SORE 2 (MP)
John to Maj
4 Sep 62

[Handwritten Signature]
4 Sep 62



000 E 0009
14-000

to HQ R Corp.
been checked by staff and containing various representations. It is necessary
to ensure that all representations are duly considered by the staff.
Under of this instruction for completion of matters arising therefrom.
Enclosed are three copies of the report for the attention

Reference is made to the report of 14 Aug 62
on the subject of the above.

(Three copies)
(For HQ)
Copy to HQ (Information)
HQ (Reference)

25 000

HEADQUARTERS
EASTERN COMMAND
AUSTRALIA BARRACKS
MADDINGTON NSW

(84) (12/12/62)
Date in copy

AUSTRALIAN MILITARY FORCES



MADDINGTON 313
TELEPHONE EA 0422

MASTER PLANNING

USER REQUIREMENT

7 CENTRAL AMMUNITION DEPOT - EXPLOSIVES AREA

GENERAL.

1. DESIGNATION: 7 Central Ammunition Depot (7 CAD).
2. LOCATION AND CONDITIONS.
 - (a) Located at BOGAN GATE, N.S.W., on the SYDNEY-BROKEN HILL railway line.
 - (b) Depot site is approximately two (2) miles from BOGAN GATE township (population approx 100) 22 miles WEST of PARKES (population approx 8000) and 290 miles from SYDNEY.
 - (c) Area. The total area is approximately 2033 acres consisting of:-
 - (i) 839½ acres of cleared land acquired vide CAG No. 36 of 29 Jun 50.
 - (ii) 1193½ acres of timbered land, formerly National Forest No. 25, acquired vide CAG No. 39 of 9 Jun 60.
 - (d) There are no other units in the area.
 - (e) Climate.
 - (i) BOGAN GATE is approx 900 feet above sea level.
 - (ii) Average rainfall is 20 inches, but heavy rain storms are experienced.
 - (iii) Surrounding country is flat and open, with prevailing winds from the WEST. Heavy local dust storms occur during summer.
 - (iv) Winter frosts are frequent and persist until late in the morning, while sustained periods of heat exceeding 100 deg F. are experienced in the summer. Maximum and minimum recorded temperatures are 110 deg F. and 28 deg F.
 - (f) Fire Hazard. The combination of climatic factors and the nature of the country poses a high fire danger in the season.
 - (g) Termites, rabbits and blowfly are present in the area.
 - (h) The installation is divided into an Administrative and Explosives Area. This user requirement deals only with those aspects affecting the technical function of the explosives area.

3. FUNCTION.

(a) Peace.

- (i) Holds portion of central ammunition stocks for mobilization requirements, and replenishment of Command stocks as directed by AHQ.
- (ii) Receives ammunition from local and overseas production.
- (iii) Inspection, repair, modification, maintenance and destruction of ammunition stocks as directed by AHQ.
- (iv) This unit will remain in its present location, and no change of peacetime role is envisaged in the foreseeable future.

(b) War.

- (i) The function of this unit does not change on mobilization.
- (ii) It will, however, become necessary to increase the storage capacity, probably up to 22,000 tons, by the provision of temporary storage accommodation. The existing boundaries of the Army owned property are sufficient to meet this expansion.

4. PERSONNEL.

(a) Peace IV/145F/1(PE).

	<u>ARA</u>	<u>Civ</u>	<u>Total</u>
Officers	4	-	4
Warrant Officers	2	-	2
S/Sgts and Sgts (incl att)	8	2	10
Rank and file (incl att)	12	23(a)	35(a)
Total all ranks (incl att)	26	25(a)	51(a)

- Notes:
- (a) Includes one female.
 - (b) An additional ten to fifteen casual assistant storemen are employed throughout the year.
 - (c) No foreseeable significant variations anticipated in peace.

(b) War.

HE not yet promulgated.

5. VEHICLES AND PLANT

(a) Peace. IV/145F/1(PE).

Truck utility $\frac{1}{2}$ ton	4
Truck carryall $\frac{3}{4}$ ton	1
Truck ambulance	1
Truck 2 $\frac{1}{2}$ ton cargo	3
Truck tank 2 $\frac{1}{2}$ ton water	1
Truck firefighting 2 $\frac{1}{2}$ ton	1
Tractor, wheeled, agricultural	1
Trailer $\frac{1}{2}$ ton cargo	2
Trailer 3 ton cargo	4
Trailer van, 5 ton, ammo repair shop	2

5. VEHICLES AND PLANT (cont).

(b) War.

HE not yet promulgated.

BUILDINGS.

6. ADM & Q.

The following functional elements are required to be located in the Adm HQ building:-

✓ (a) Single office accommodation in accordance with current scale for:-

Chief Ordnance Officer
Deputy COO
Ammunition Technical Officer
Adjutant/Quartermaster

✓ (b) General office accommodation in accordance with current scale for:-

(i) Control Office consisting of three personnel, plus approx. 140 sq. ft for accounting records.

(ii) Typist and twenty-line telephone switchboard.

(iii) Technical library, stationery and registry files.

(iv) Duty room to accommodate one occupant outside normal working hours. This room to be adjacent and with ready access to telephone switchboard.

✓ (c) Toilet and ablution facilities to be provided in accordance with current scale.

✓ (d) Control Point. See Para 13(g).

✓ (e) Q Stores etc.) In accordance with E Comd
Sleeping Quarters) user requirement

✓ (f) Married Quarters. There is no requirement for married quarters in the explosives area. Married quarters in Administrative Area to be in accordance with E Comd user requirement.

✓ 7. CATERING.

In accordance with E Comd user requirement.

✓ 8. TRANSPORT.

A Transport compound is required outside of the explosives area to provide:-

(a) Covered accommodation for vehicles on establishment.

(b) Office for one occupant and transport records.

(c) A storeroom for servicing equipment and tools.

(d) Unit repair workshop for RAEME attached.

8. TRANSPORT (cont).

- (e) Vehicle servicing ramp for unit maintenance, with shelter to enable servicing in all weather.
- (f) Sealed car wash with adequate provision for drainage.
- (g) Petrol issue point with pump and underground storage tank.
- (h) Oil and lubricant store.
- (j) Fire station equipment storeroom.
- (k) Hardstanding required throughout transport compound.
- (l) Ablution facilities required. Adjacent toilet facilities are acceptable.

9. MEDICAL.

RAP/First Aid facilities required outside of the explosives area in accordance with E Comd user requirement.

10. INSTRUCTIONAL.

11. AMENITIES.

12. RELIGIOUS.

In accordance with E Comd user requirement.

13. TECHNICAL BUILDINGS.

(a) Explosives Storehouses.

(i) The planned nominal capacity of this depot is 12,000 tons.

(ii) All existing storage accommodation consists of temporary wartime buildings of timber frame, corrugated iron walls and roof, and is not acceptable within the requirements of Ammunition and Explosives Regulations (Land Service) (ALRS). Refer Annex "A" classified schedule of existing buildings.

(iii) Explosives storehouses to be erected as new works are to be in accordance with Drawing No. ECD15675 Type Plan Ammunition Store. These buildings each have a nominal capacity of 540 tons, and twenty-two (22) such buildings will be required to provide sufficient accommodation.

(iv) Proposed siting of the new storehouses is shown on Zoning Diagram attached as Annex "B". Twenty five (25) sites have been selected to permit optional siting.

(v) The selection of the sites shown on Annex "B" has been determined by requirements for both inside and outside safety distances.

(vi) Buildings containing Category Z explosives are required to be traversed in accordance with ALRS. Whilst provision has been made for Category Z storage in the siting of a number of buildings, it is intended initially to have only five (5) storehouses effectively traversed.

13. TECHNICAL BUILDINGS (cont).

(a) Explosives Storehouses (cont).

(vii) Isolation. An explosives isolation store of approx 400 sq. ft. is required in the explosives area. Storehouse No. 75 would be satisfactory for this purpose.

(b) Ammunition Repair Workshop.

An ammunition repair workshop to provide facilities for repair, derusting, painting and packaging of ammunition and components, tool store, office, shower and toilets. Building type required is to be generally in accordance with Drawing No. MA 1453. — ?

(c) A laboratory with facilities for inspection, sampling and tests. ~~Existing building would be satisfactory with modifications.~~ *New building*

(d) A non-explosive and empty package store of approx 3500 sq ft is required. Storehouses No. 2 and 3 would be satisfactory for this purpose.

(e) A Depot Equipment and Expense Store of approx. 600 sq. ft. is required. *Plus AUI stores.*

(f) Facilities are required for storage of low flash point solvents and similar expense stores/supplies. Accommodation within transport POL building is acceptable providing stock can be segregated from normal POL.

(g) A building is required at the entrance to the explosives area to provide the following facilities:-

(i) Depot Office and Control Point - one occupant.

(ii) Change room with lockers, showers ablutions and toilets for thirty personnel.

(iii) Lunch room for twenty personnel.

(iv) Observation of and easy access to explosives area gate.

(h) Six toilets are required in the explosives area, each to provide service for up to ten personnel. Each toilet to be provided with wash basin.

(j) A demolition firing point shelter is required to accommodate two personnel. Shelter is to provide frontal, side and overhead protection and to be fitted with armour plate observation window. Control board and poles for aerial cables for six firing circuits to be provided.

(k) Carpenters shop and timber store to be provided. This may be located outside the explosives area.

(l) All explosives storehouses are to be provided with protection against lightning and accumulation of static electricity in accordance with Ammunition and Explosives Regulations (Land Service) and British Standard Code of Practice CP 326:101, Protection of Structures against Lighting.

13. TECHNICAL BUILDINGS (cont).

- (m) Fire points, consisting of a shelter approx 8 ft long by 3 ft wide by 5 ft high, to accommodate knapsack sprays, extinguishers, buckets etc. are required throughout the explosives area as shown on Zoning Diagram, Annex 'B'.

FIXED EQUIPMENTS (EXTERNAL).

14. SECURITY.

- (a) The explosives area is required to be fenced in accordance with AHQ memo of 8 Jun 62, "Security of Ammunition Depots".
- (b) A security fence is required around storehouses B2 for attractive small arms ammunition, and around B12 for both SAA and demolition explosives.
- (c) Gates and stock grids are required at main entrance to explosive area adjacent to Depot office, also at NW end and WEST side of explosives area.
- (d) Security lighting is required for attractive items storehouses, vide AHQ memo of 8 Jun 62 "Security of Ammunition Depots". There is no requirement for other security lighting within the explosives area.
- (e) A fire alarm warning device is required to provide clearly audible signals to all parts of the explosives and barracks areas. A push button or similar system is required throughout the explosives area and at Adm HQ building to provide a means of initiating the warning device.

✓ 15. FUNCTIONAL.

- (a) Cranes.)
- (b) Hoists.) No special requirement in explosives
- (c) Street Lighting.) area.
- (d) Ramps. Vehicle servicing ramp required in transport compound.

ENGINEER SERVICES.

16. COMMUNICATIONS.

- (a) Roads. Sealed all weather roads 15 ft wide are required throughout the explosives storage area to service all buildings, burning and demolition areas. Main point of entry from PARKES - CONDOBLIN Road is via barracks area to Dept Office. Maximum anticipated vehicle loading is 15 ton load capacity.
- (b) Rail. A rail siding with loading platform approx 200 ft, transit store approx 2000 sq. ft. and overhead cover is required. Existing facilities are acceptable with the addition of an open sided overhead cover of approx 100 ft at loading platform.
- (c) There is no waterway/airway requirement.

17. WATER SUPPLY.

- (a) Water reticulation is required to ammunition repair workshop and laboratory. A filling point is also required in the explosives area for refilling unit fire tanker when engaged on fire fighting, burning off and similar duties. A fire hydrant would suffice for this purpose.
- (b) A 1000 gal roof catchment storage tank is required at each explosives storehouse.
- (c) Fire fighting mains and hydrants. A fire hydrant is required at ammunition repair workshop and non-explosive/empty package store. There is no other special requirement elsewhere in the explosives area.

18. SEWERAGE.

- (a) Sewerage/septic tank service required at ammunition repair workshop.
- (b) Service provided to remaining toilets in explosives area to be other than EC type.

19. DRAINAGE.

- (a) Surplus water from explosives storehouse roof catchment, and ammunition repair workshop to be drained clear of buildings.
- (b) Surface drainage required throughout explosives area to prevent scouring of roads and hardstandings, and control erosion.

20. ELECTRICITY.

- (a) Three phase power required to ammunition repair workshop and carpenters shop. Single phase 240V required to laboratory, depot office, non-explosive/empty package storehouse and depot equipment store.
- (b) Ammunition repair workshop and laboratory installation to be in accordance with Ammunition and Explosives Regulations (Land Service) Part 1.
- (c) Power required for external security lights on storehouses containing attractive items.

21. TELEPHONES.

- (a) A switchboard is required to provide two outside lines and twenty internal subscribers.
- (b) Telephone service within the explosives area may be supplied by a series of party lines provided this method is efficient.

22. RADIO.

There is some danger that currents induced by radio or radar short wave transmitters may cause premature firing of electric detonators in ammunition components. For this reason there would be an objection to the installation of radio or radar short wave transmitters adjacent to the explosives area.

23. GAS.

No special requirement.

24. GARBAGE.

Refuse and waste from explosives area disposed of by burning and/or buried within area.

25. INSTRUCTIONAL.

No special requirement.

26. RECREATIONAL.

No special requirement.

27. FUNCTIONAL.

(a) Hardstanding is required as follows:-

- (i) Each explosives storehouse loading platform area.
- (ii) Ammunition repair workshop.
- (iii) Rail siding.
- (iv) Unit transport compound.
- (v) Car park areas.

(b) Car parks are required for:-

- (i) Employees - up to eight (8) vehicles.
- (ii) Visitors - up to three (3) vehicles.

28. LANDSCAPING.

As the explosives area is mainly contained in what was formerly a State Forest there is very little requirement for tree planting. Some tree planting will be necessary on the western sector (839A 3R), particularly in relation to proposed storehouses in this area, to provide wind breaks, noise and dust reduction and erosion control.

29. ATTACHMENTS.

- (a) A Zoning Diagram showing the proposed siting of new buildings in the explosives area is attached as Annex 'B'.
- (b) A classified schedule of existing buildings is attached as Annex 'A'.

USER REQUIREMENT - 7 CAD

CLASSIFIED SCHEDULE OF EXISTING BUILDING

Bldg No	Present Use	Proposed Use	Classification
✓ 1	Depot Equipment	Remove	
✓ 87	AIU Office	"	
✓ 2	Explosives Storehouse) Non-explosives &) Empty package store	
✓ 3	" "		
✓ 4	" "	Remove	
✓ 5	" "	"	
✓ 6	Non-explosives Storehouse	"	
✓ 7	" " "	"	
✓ 8	Explosives Storehouse	"	
✓ 9	" "	"	
✓ 10	" "	"	
✓ 11	" "	"	
✓ 12	" "	"	
✓ 13	" "	"	
✓ 14	" "	"	
✓ 15	" "	"	
✓ 16	" "	"	
✓ 17	" "	"	
✓ 18	" "	"	
✓ 84	Sub Depot Office	"	
✓ 19	Explosives Storehouse	"	
✓ 20	" "	"	
✓ 21	" "	"	
✓ 22	" "	"	
✓ 23	" "	"	
✓ 24	" "	"	
✓ 25	" "	"	
✓ 26	" "	"	
✓ 27	" "	"	
✓ 28	" "	"	
✓ 29	Isolation Storehouse	"	

USER REQUIREMENT - 7 CAD

CLASSIFIED SCHEDULE OF EXISTING BUILDING (Cont)










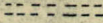
Bldg No	Present Use	Proposed Use	Classification
✓ 30	Explosives Storehouse	Remove	
✓ 31	" "	"	
✓ 32	" "	"	
✓ 33	" "	"	
✓ 34	" "	"	
✓ 35	" "	"	
✓ 36	" "	"	
✓ 37	" "	"	
✓ 38	" "	"	
✓ 39	" "	"	
✓ 40	" "	"	
✓ 41	" "	"	
✓ 42	" "	"	
✓ 43	" "	"	
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✓ 49	" "	"	
✓ 50	" "	"	
✓ 51	" "	"	
✓ 52	" "	"	
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✓ 56	" "	"	
✓ 57	" "	"	
✓ 58	" "	"	
✓ 59	" "	"	
60	" "	"	

USER REQUIREMENT - 7 CAD

CLASSIFIED SCHEDULE OF EXISTING BUILDING (Cont)

Bldg No	Present Use	Proposed Use	Classification
✓ 61	Explosives Storehouse	Remove	
✓ 62	" "	"	
✓ 63	" "	"	
✓ 64	" "	"	
✓ 65	" "	"	
✓ 66	" "	"	
✓ 67	" "	"	
✓ 68	" "	"	
✓ 69	" "	"	
✓ 70	" "	"	
✓ 71	" "	"	
✓ 72	" "	"	
✓ 73	" "	"	
✓ 74	" "	"	
✓ 75	" "	Isolation Store	
✓ 76	" "	Remove	
✓ 77	" "	"	
✓ 78	" "	"	
✓ 79	" "	"	
✓ 80	" "	"	
✓ 81	" "	"	
✓ 82	" "	"	
	ARW	"	
	ARW	"	
	Laboratory	No Change	
162) 86	Married Quarter	Remove	
163) 85	Garage		

LEGEND

-  BUILDINGS EXISTING TO REMAIN
-  BUILDINGS EXISTING TO BE REMOVED
-  BUILDINGS PROPOSED
-  B1 TO B25 INCL. AMMO STOREHOUSE SITES
-  B26 AMMO REPAIR WKSP
-  B27 FIRING POINT SHELTER
-  B28 DEPOT OFFICE/TFC CONTROL/LUNCH/CHANGE ROOM
-  ROADS EXISTING TO REMAIN
-  ROADS EXISTING TO BE DISCONTINUED
-  ROADS PROPOSED
- LAB LABORATORY
- 2) } NON-EXPLOSIVES AND EMPTY PACKAGE STORE
- 3) }
- 75 ISOLATION STORE
- FP FIRE POINT
- P TELEPHONE
- T TOILET

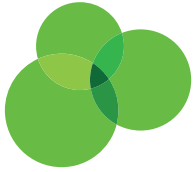
REFERENCE DRAWING CEN 1502 DATED 30.9.60.

MGO BRANCH	SCALE: 1" TO 600'	21.6.62
BOGAN GATE 7 C A D		ZONING DIAGRAM EXPLOSIVES AREA

ANNEXURE B - Chronology of Events

Bogan Gate Explosives Reserve

Date	Event
1942	Australian Military commenced use of land now described as Lot 2 DP 1064474 as an ammunition depot for the storage of ammunition surplus to operational reserves and accommodation for officers and troops
5/04/1945	Part XIA <i>Local Government Act 1919</i> commenced
9/06/1960	Land compulsorily acquired by the Commonwealth of Australia for the purposes of defence
3/9/1962	Masterplan for ammunitions depot prepared by Australian Military Forces – included Lot 2 DP 1064474
1974	Dupont commences explosives manufacturing on Lot 158 DP 750177
21/12/1979	<i>Environmental Planning and Assessment Act 1979</i> commenced
14/12/1990	Parkes LEP 1990 commenced (Shire of Goobang IDO 1 repealed)
2001	Dyno ceases explosives manufacturing on Lot 158 DP 750177, but continues lease until present
2001 – 2005	Gold West operates explosives factory on Lot 158 DP 750177
8/04/2004	Lot 2 DP 1064474 sold by Commonwealth to Timber Creek Holdings Pty Ltd
2005 to Current	Part Lot 2 DP 1064474 leased to Johnex Explosives and Howards Fireworks
20/01/2006	Lot 158 DP 750177 NSW Gazette Notice Crown Lands Assessment for Leased for Commercial Explosives Facility
7/12/2012	Parkes LEP 1990 repealed and Parkes LEP 2012 commenced
23/05/2013	Parkes Shire Council letter confirming existing use rights for use of lots 2 and 4 DP 1064474 as “explosives reserve”
18/11/2020	Development Consent DA2020/0073 issued by Parkes Shire Council for “general industry” on Lot 2 DP 1064474
2020	Part Lot 2 DP 1064474 leased to Solar Mining Services Pty Ltd
9/2/2022	Lot 2 DP 1064474 sold to Lexa Enterprises Pty Ltd



Appendix F. Environmental Assessment Requirements (EAR 1753), issued by the NSW DPE

24 January 2023

Mr Hugh Halliwell
205A Clarinda Street
Parkes NSW 2870

EF22/16067
SEAR 1753

Dear Mr Halliwell

**Clause 2 of Schedule 3 of the Environmental Planning and Assessment Regulation 2021
3577 Henry Parkes Way, Bogan Gate (Lot 2 DP 1064474)
Planning Secretary's Environmental Assessment Requirements (SEAR) 1753**

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

In support of your application, you indicated that your proposal is both designated and integrated development under Part 4 of the *Environmental Planning and Assessment Act 1979* and requires an approval under the *Protection of the Environment Operations Act 1997*. In preparing the SEARs, the Department of Planning and Environment (the Department) has consulted with the Environment Protection Authority (EPA). Unfortunately, the EPA was unable to respond in time. The EPA's advice and input into the SEARs will be forwarded separately upon receipt by the Department.

The Department has also consulted with SafeWork NSW, Transport for NSW and NSW Rural Fire Service. A copy of their additional requirements for the EIS are attached.

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

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

Should you have any further enquiries, please contact Shaun Williams, Planning and Assessment, at the Department on (02) 8275 1345 or via shaun.williams@planning.nsw.gov.au.

Yours sincerely



Joanna Bakopanos
A/Director
Industry Assessments
as delegate of the Planning Secretary

Planning Secretary's Environmental Assessment Requirements

Section 4.12(8) of the *Environmental Planning and Assessment Act 1979*.
Schedule 3 of the *Environmental Planning and Assessment Regulation 2021*.

Designated Development

SEAR Number	SEAR 1753
Proposal	Increase in processing capacity and storage of the existing Ammonium Nitrate Emulsion (ANE) manufacturing and storage facility including: <ul style="list-style-type: none"> • manufacturing of up to 15,000 tonnes of ANE per annum • storage of up to 450 tonnes of Ammonium Nitrate (AN) at any one time • storage of up to 100 tonnes of ANE at any one time
Location	3577 Henry Parkes Way, Bogan Gate (Lot 2 DP 1064474)
Applicant	Solar Mining Services Pty Ltd
Date of Issue	24 January 2023
General Requirements	The Environmental Impact Statement (EIS) must comply with the assessment requirements and meet the minimum form and content requirements in sections 190 and 192 of the <i>Environmental Planning and Assessment Regulation 2021</i> .
Key Issues	<p>The EIS must include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts if necessary) and develop appropriate measures to avoid, minimise, mitigate and/or manage these potential impacts. As part of the EIS assessment, the following matters must also be addressed:</p> <ul style="list-style-type: none"> - strategic and statutory context – including: <ul style="list-style-type: none"> - a demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies - a list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out. - a description of how the proposed expansion integrates with existing on-site operations - a description of any amendments to and/ or additional licence(s) or approval(s) required to carry out the proposed development. - suitability of the site – including: <ul style="list-style-type: none"> - a detailed justification that the site can accommodate the proposed increase in processing capacity, having regard to the scope of the operations and its environmental impacts and relevant mitigation measures - site layout plans depicting the proposed internal layout, including the location of machinery and equipment. - hazards and risk – a Preliminary Hazard Analysis (PHA) must be prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011). The PHA must also include the following: <ul style="list-style-type: none"> - details of the existing operations that occur on-site based on the existing consent as modified, including location and maximum

	<p>quantities of storage, processing, and production capacity on existing dangerous goods</p> <ul style="list-style-type: none"> - details of location of industrial or residential (if any) developments surrounding Solar Mining’s operation and the closest distance from these developments to solar mining’s AN storage or ANE operation - details of compliance with <i>Work Health and Safety Act 2011</i> and <i>Explosive Act 2003</i> for both existing and proposed operations. - verification the development can comply with all relevant standards and codes of practice, including and not limited to AS 4326 and SAFEX for AN storage - hazard identification and the associated safeguards/mitigations - consideration of risks from both the existing and proposed operation, and including but not limited to the following scenarios: <ul style="list-style-type: none"> o AN explosion from the storage shed. The quantity of AN involved in the explosion should take into account the separation distance between the AN stack o ANE explosion from storage tanks based on the maximum tank storage quantity o Fire or explosion event as a result of the process failure for ANE manufacturing process - demonstration the risk from the overall operations can comply with the Department’s Hazardous Industry Advisory Paper No. 4, ‘Risk Criteria for Land Use Safety Planning’, including and not limited to propagation risk to the neighbouring AN related facility operated by Johnex. - traffic and transport – including: <ul style="list-style-type: none"> - details of road transport routes and access to the site - road traffic predictions for the development during construction and operation, including cumulative impacts - swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site - an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development. - biodiversity – including: <ul style="list-style-type: none"> - accurate predictions of any vegetation clearing on site or for any road upgrades - an assessment of the proposal in accordance with the Biodiversity Assessment Method (BAM) including the potential impacts on any threatened species, populations, endangered ecological communities or their habitats and groundwater dependent ecosystems. - a detailed assessment of the potential impacts on any threatened species, populations, endangered ecological communities or their habitats, groundwater dependent ecosystems and any potential for offset requirements. - details of weed management during construction and operation in accordance with existing State, regional or local weed management plans or strategies - a detailed description of the measures to avoid, minimise, mitigate and/or offset biodiversity impacts. - air quality – including: <ul style="list-style-type: none"> - a description of all potential sources of air and odour emissions during construction and operation - an air quality impact assessment in accordance with relevant Environment Protection Authority guidelines, including consideration of cumulative impacts - a description and appraisal of air quality impact mitigation and monitoring measures.
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	<ul style="list-style-type: none"> - noise and vibration – including: <ul style="list-style-type: none"> - a description of all potential noise and vibration sources during construction and operation, including road traffic noise - a noise and vibration assessment in accordance with the relevant Environment Protection Authority guidelines, including consideration of cumulative impacts - a description and appraisal of noise and vibration mitigation and monitoring measures. - soil and water – including: <ul style="list-style-type: none"> - a description of local soils, topography, drainage and landscapes - details of water usage for the proposal including existing and proposed water licencing requirements in accordance with the <i>Water Act 1912</i> and/or the <i>Water Management Act 2000</i> - an assessment of potential impacts on floodplain management and any impact to flooding in the catchment - details of sediment and erosion controls - a detailed site water balance - an assessment of potential impacts on the quality and quantity of surface and groundwater resources - details of the how the proposed stormwater and wastewater management systems (including sewage) integrate with existing on-site operations, water monitoring program and other measures to mitigate surface and groundwater impacts - characterisation of the nature and extent of any contamination on the site and surrounding area - a description and appraisal of impact mitigation and monitoring measures. - waste management – including: <ul style="list-style-type: none"> - details of waste handling including, transport, identification, receipt, stockpiling and quality control including off-site reuse and disposal - the measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the NSW Waste Avoidance and Sustainable Materials Strategy 2041. - community and stakeholder engagement – including: <ul style="list-style-type: none"> - a detailed community and stakeholder participation strategy which identifies who in the community has been consulted and a justification for their selection, other stakeholders consulted and the form(s) of the consultation, including a justification for this approach - a report on the results of the implementation of the strategy including issues raised by the community and surrounding occupiers and landowners that may be impacted by the proposal - details of how issues raised during community and stakeholder consultation have been addressed and whether they have resulted in changes to the proposal - details of the proposed approach to future community and stakeholder engagement based on the results of the consultation. - visual – including an impact assessment at private receptors and public vantage points. - heritage – including Aboriginal and non-Aboriginal cultural heritage.
<p>Environmental Planning Instruments and other policies</p>	<p>The EIS must assess the proposal against the relevant environmental planning instruments, including but not limited to:</p> <ul style="list-style-type: none"> • State Environmental Planning Policy (Transport and Infrastructure) 2021 • State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Chapters 2 and 4) • State Environmental Planning Policy (Primary Production) 2021

	<ul style="list-style-type: none"> • State Environmental Planning Policy (Resilience and Hazards) 2021 (Chapters 2, 3 and 4) • Parkes Local Environmental Plan 2012 • relevant development control plans and section 7.11 plans.
Guidelines	<p>During the preparation of the EIS you should consult the Department’s Register of Development Assessment Guidelines which is available on the Department’s website at https://www.planning.nsw.gov.au/Assess-and-Regulate/Development-Assessment/Industries. Whilst not exhaustive, this Register contains some of the guidelines, policies, and plans that must be taken into account in the environmental assessment of the proposed development.</p>
Consultation	<p>During the preparation of the EIS, you must consult the relevant local, State and Commonwealth government authorities, service providers and community groups, and address any issues they may raise in the EIS. In particular, you should consult with the:</p> <ul style="list-style-type: none"> • SafeWork NSW • Fire & Rescue NSW • Australian Rail Track Corporation • Department of Planning and Environment, specifically the: <ul style="list-style-type: none"> ○ Environment and Heritage Group ○ Water Group ○ Environment Protection Authority ○ National Parks and Wildlife Services ○ Crown Lands Division • Heritage NSW • Department of Primary Industries • Department of Regional NSW, specifically: <ul style="list-style-type: none"> ○ Resources and Geoscience Division • Transport for NSW • NSW Rural Fire Service • WaterNSW • Parkes Shire Council • the surrounding landowners and occupiers that are likely to be impacted by the proposal. <p>Details of the consultation carried out and issues raised must be included in the EIS.</p>
Further consultation after 2 years	<p>If you do not lodge an application under Section 4.12(8) of the <i>Environmental Planning and Assessment Act 1979</i> within 2 years of the issue date of these SEARs, you must consult with the Planning Secretary in relation to any further requirements for lodgement.</p>



Our ref: DOC22/1110006

Your ref: SEAR 1753

Shaun Williams
Senior Environmental Assessment Officer
Industry Assessments
Department of Planning and Environment
shaun.williams@planning.nsw.gov.au

Dear Shaun

Request for SEARs – Ammonium nitrate emulsion manufacturing and storage facility expansion

I refer to your email dated 13 December 2022 seeking input into the Department of Planning and Environment's Environmental Assessment Requirements (EARs) for the preparation of an Environmental Impact Assessment (EIS) to expand an ammonium nitrate emulsion manufacturing and storage facility.

The Biodiversity, Conservation and Science Directorate (BCS) has considered your request and provides EARs for the proposed development in **Attachments A and B**.

BCS recommends the EIS needs to appropriately address the following:

1. Biodiversity and offsetting
2. Water and soils
3. Flooding

If you have any questions about this advice, please do not hesitate to contact me via liz.mazzer@environment.nsw.gov.au or (02) 6883 5325

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Liz Mazzer'.

Liz Mazzer
A/Senior Team Leader Planning North West
Biodiversity, Conservation and Science Directorate

14 December 2022

Attachment A - Environmental Assessment Requirements

Attachment B - Guidance Material

BCS's Recommended Environmental Assessment Requirements (EARs) for expansion of an ammonium nitrate emulsion manufacturing and storage facility at Bogan Gate

BCS	Biodiversity, Conservation and Science Directorate of the NSW Department of Planning and Environment
The Department	NSW Department of Planning and Environment
NPWS	National Parks and Wildlife Service

1. The Proposal

All components of the proposed development must be clearly described, including:

- the location of the proposed development and its context in the locality
- the rationale for the project
- the size, scale and type of the proposed development
- the pre-construction, construction, operational, and, where relevant, decommissioning and rehabilitation phases of the proposed development, and the methods proposed to implement these phases
- plans and maps of the proposed development showing the locations of relevant phases and infrastructure
- the staging and timing of the proposed development
- the proposed development's relationship to any other proposals and developments

2. Environmental Impacts of the Proposal

The proponent must consider, assess, quantify and report on the likely environmental impacts of the proposal if applicable, particularly:

- Biodiversity
- National Park estate: land reserved or acquired under the *National Parks and Wildlife Act 1974*
- Flooding, floodplain issues and coastal erosion
- Cumulative impacts

The Secretary's Environmental Assessment Requirements should address the specific requirements outlined under each heading below and assess impacts in accordance with the relevant guidelines mentioned. A full list of guidelines and reference material is presented in **Attachment B**. Appropriate justification should be provided in instances where the matters below are not addressed.

3. Biodiversity

Biodiversity Assessment Methodology for the Biodiversity Offsets Scheme (BOS)

The EIS should include an assessment of the following:

- a. The EIS must assess the impact of the proposed development on biodiversity values to determine if the proposed development is “likely to significantly affect threatened species” for the purposes of Section 7.2 of the Biodiversity Conservation Act 2016 (BC Act), as follows:
 - a. The EIS must demonstrate and document how the proposed development exceeds, or does not exceed, the biodiversity offsets scheme threshold as set out in Section 7.4 of the BC Act 2016 and Clause 7.1 of the Biodiversity Conservation Regulation 2017 (BC Regulation) by determining whether the proposed development involves:
 - i. **The clearing of native vegetation exceeding the thresholds** listed under Clause 7.23 of the BC Regulation, **or**
 - ii. The clearing of native vegetation, or other action, **on land included on the Biodiversity Values Map** published under Clause 7.23 of the BC Regulation (this map includes areas of outstanding biodiversity value, as declared under Section 3.1 of the BC Act).
 - b. If the proposal does not trigger any of the criteria in (a) above, then the EIS must determine whether the proposed development is likely to have a significant impact based on ‘*the test for determining whether proposed development likely to significant affect threatened species or ecological communities*’ in Section 7.3 of the BC Act.
 - c. Where there is reasonable doubt regarding potential impacts, or where information is not available, then a significant impact upon biodiversity should be considered likely when applying the test in Section 7.3 of the BC Act. Where it is concluded that there is no significant impact, the EIS must justify how the conclusion has been reached.
 - d. If the development exceeds the thresholds in (a) or (b), then the EIS must be accompanied by a biodiversity development assessment report (BDAR) prepared in accordance with Part 6 of the BC Act. That is, the Biodiversity Assessment Methodology applies.

Required Information

Where development is considered “likely to significantly impact on threatened species” and a Biodiversity Development Assessment Report is required, the following requirements apply:

- Biodiversity impacts related to the proposal are to be assessed in accordance with the Biodiversity Assessment Method 2020 and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the *Biodiversity Conservation Act 2016* (s6.12), Biodiversity Conservation Regulation 2017 (s6.8) and Biodiversity Assessment Method.
- The BDAR must document the application of the avoid, minimise and offset hierarchy including assessing all direct, indirect, uncertain and prescribed impacts in accordance with the Biodiversity Assessment Method.
- The BDAR must include details of the measures proposed to address the offset obligation as follows:
 - The total number and classes of biodiversity credits required to be retired for the proposal.
 - The number and classes of like-for-like biodiversity credits proposed to be retired.
 - The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules.
 - Any proposal to fund a biodiversity conservation action.
 - Any proposal to make a payment to the Biodiversity Conservation Fund.

- If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits.

The BDAR must be prepared by a person accredited to apply the Biodiversity Assessment Method under s6.10 of the *Biodiversity Conservation Act 2016*.

NOTE – A BDAR template and guidance document has been created to assist accredited assessors to prepare a BDAR. It has been developed in accordance with best practice, the minimum information requirements and to support BDAR reviewers. The BDAR Template can be found [here](#) and the Guidance for the BDAR Template can be found [here](#).

Where a BDAR is not required and a threatened species assessment is prepared to support a conclusion of “no significant impact”, the EIS must include a field survey of land identified as native vegetation and/or native species habitat inclusive of non-vegetative habitat, namely, karst, caves, crevices, cliffs, rocky outcrops and other features of geological significance and habitat associated with human made structures. This should be conducted and documented in accordance with the relevant guidelines including the Threatened Species Survey and Assessment Guidelines: Field Survey Methods for Fauna – Amphibians (DECCW, 2009), Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities - Working Draft (DEC, 2004) and Guidelines for Threatened Species Assessment (Dept Planning, July 2005). The approach should also reference the field survey methods and assessment information on the Department of Planning, Industry and Environment website including the BioNet Atlas, Threatened Species Profiles, taxon specific survey guidelines and BioNet Vegetation Classification (see Attachment 2).

Category 1 – exempt land

Clearing of native vegetation on land that meets the definition of Category 1 - exempt land (as defined under the Local Land Services Act 2013 (LLS Act)) does not require assessment or offsetting under the Biodiversity Conservation Act 2016. Prescribed impacts as outlined in chapter 6 of the Biodiversity Assessment Method (2020) must still be considered on Category 1 - exempt land. In addition, potential impacts to Matters of National Environmental Significance under the Environment Protection and Biodiversity Conservation Act 1999 on Category 1 – exempt land must be considered.

Section 60F Local Land Services Act 2013 (LLS Act) Act provides the transitional arrangements that are in place until a comprehensive NVR Map with all the land categories is published. During the ‘transitional period’ assessors can make a reasonable approximation of land categorisation for unpublished layers, in consultation with the landholder.

Where a reasonable approximation is required, it is recommended that:

- assessors first identify whether land meets criteria for Category 2 - Regulated Land, prior to Category 1 - Exempt Land.
 - In some circumstances, land may meet multiple map criteria i.e. criteria for Category 2 - Regulated Land, AND Category 1 - Exempt Land
 - In most circumstances’ Category 2 - Regulated Land criteria will determine the categorisation of the land, rather than Category 1 - Exempt Land criteria.

Section 60I of the LLS Act defines the criteria in which land can be classified as Category 2 Regulated Land, this includes land which:

- was not cleared of native vegetation as at 1 January 1990;
- was unlawfully cleared of native vegetation between 1 January 1990 and 25 August 2017;

- contains native vegetation that was grown or preserved with the assistance of public funds (other than funds for forestry purposes);
- contains grasslands that are not low conservation grasslands;
- is subject to a private land conservation agreement;
- is a 'set aside' under a Land Management (Native Vegetation) Code;
- is an offset under a property vegetation plan or a set aside under the former native vegetation laws;
- is subject to an approved conservation measure that was the basis for other land being biocertified;
- is identified as coastal wetlands or littoral rainforest;
- is identified as koala habitat;
- is a declared RAMSAR wetland; or
- is mapped as containing Critically Endangered species of plants or a Critically Endangered Ecological Community

The above criteria are inclusive of both Category 2 Vulnerable Regulated Land and Sensitive Regulated Land categories.

Where an assessor identifies land that does not meet the criteria for Category 2 Vulnerable or Sensitive Regulated land, the assessor should then assess whether or not the land meets the definition of Category 1 – exempt land.

Where the assessor identifies land as Category 1 – exempt land it must be adequately demonstrated that the identified land meets the criteria as set out in section 60H of the LLS Act. Multiple pieces of evidence should be used to demonstrate a Category 1 – exempt land designation. This might include:

- Publicly available data sets on the SEED data portal, such as:
 - Land use mapping – used to identify and map existing and historical agricultural land use in NSW – see the [2017 landuse map](#)
 - Woody vegetation extent – used to identify and map native vegetation extent – see [2008 Woody extent](#) [2011 woody extent](#)
 - State-wide Landcover and Tree Survey (SLATS) woody clearing for NSW – used to identify detectable clearing events since January 1990 – [available here](#)
- Published information on the Native Vegetation Regulatory Map, including Category 2-sensitive regulated, Category 2-vulnerable regulated, and excluded land - [available here](#)
- Site-based information and records, including:
 - Current and historical high-resolution aerial photography
 - current and historical photographs of the subject land
 - historical land management records maintained by the landowner
 - vegetation survey data collected on the subject land
 - documentation demonstrating history of authorised clearing and/or development

The published *Native Vegetation regulatory map: method statement* should be reviewed to determine how the datasets can be best interrogated to support any identification of Category 1 – exempt land.

Where there is uncertainty or datasets/information are conflicting, a precautionary approach should be applied and the land should be categorised as Category 2 – regulated land.

Where Category 1 – exempt land is likely to be present on a development site, early engagement with BCS is encouraged. Prior to the Biodiversity Development Assessment Report being submitted to the consent authority, the accredited assessor should submit a proposed land categorisation method to the BCS North West Planning team at rog.nw@environment.nsw.gov.au for endorsement.

4. NPWS Managed Estate

Land reserved or acquired under the *National Parks and Wildlife Act 1974* (NPW Act)

If the proposed development is within, adjacent to, or in close proximity to, NPWS managed conservation estate (e.g. a national park, nature reserve, state conservation area, land which is declared wilderness under the *Wilderness Act 1987*), or is within, adjacent to, or in close proximity to, a watercourse that flows directly into NPWS managed conservation estate, then the EIS must address impacts upon such area/s.

Where NPWS managed estate is likely to be impacted, the EIS should include:

- The following (as appropriate):
 - Evidence that the proponent has consulted with BCS on the legal permissibility of the proposal under the NPW Act.
 - In the case of proposals on land declared as wilderness under the *Wilderness Act 1987*, evidence that the proponent has consulted with BCS on the appropriateness of the proposal. That is, whether it is consistent with the objects of the *Wilderness Act 1987* (section 3) and the management principles for wilderness areas (section 9).
 - Alternative options that have been explored to avoid impacts on the NPWS managed estate (on-park) and a clear justification of any on-park components of the proposal.
 - If on-park impacts are considered unavoidable, consideration of the issues, including details of any compensation proposal, consistent with the Department's *Revocation, Recategorisation and Road Adjustment Policy* (2012) for proposals that are located wholly or partly in a National Park or other land acquired or reserved under the *National Parks and Wildlife Act 1974*.
- Consideration of the matters identified in the *Guidelines for consent and planning authorities for Developments adjacent to National Parks and Wildlife Service Land* (NPWS, 2020) where a proposal adjoins or is in the immediate vicinity of NPWS managed estate, or is upstream of NPWS managed estate, which include:
 - The nature of the impacts, including direct and indirect impacts
 - The extent of the direct and indirect impacts
 - The duration of the direct and indirect impacts
 - The objectives of the reservation of the land
- A description of the mitigation and management options that will be used to prevent, control, abate or minimise identified direct and indirect impacts associated with the proposal. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.

5. Water

- The EIS must map features relevant to water, including:
 - Rivers, streams, estuaries (as described in s4.2 of the Biodiversity Assessment Method).
 - Wetlands (as described in s4.2 of the Biodiversity Assessment Method).
 - Groundwater.
 - Groundwater dependent ecosystems.
- The EIS must describe background conditions for any water resource likely to be affected by the proposal, including:
 - Existing surface and groundwater.
 - Hydrology

- Water Quality Objectives (as endorsed by the NSW Government) including groundwater as appropriate that represent the community's uses and values for the receiving waters. Indicators and trigger values/criteria for the identified environmental values in accordance with the ANZECC (2000) *Guidelines for Fresh and Marine Water Quality* and / or local objectives, criteria or targets endorsed by the NSW Government
- *Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions* (OEH/EPA, 2017).
- The EIS must assess the impacts of the proposal on water quality, including:
 - The nature and degree of impact on receiving waters for both surface and groundwater, demonstrating how the proposal protects the Water Quality Objectives where they are currently being achieved, and contributes towards achievement of the Water Quality Objectives over time where they are currently not being achieved. This should include an assessment of the mitigating effects of proposed stormwater and wastewater management during and after construction.
 - Identification of proposed monitoring of water quality.
 - Consistency with any relevant certified Coastal Management Program (or Coastal Zone Management Plan).
- The EIS must assess the impact of the proposal on hydrology, including:
 - Water balance including quantity, quality and source.
 - Effects upon rivers, wetlands, estuaries, marine waters and floodplain areas.
 - Effects upon water-dependent fauna and flora including groundwater dependent ecosystems.
 - Impacts to natural processes and functions within rivers, wetlands, estuaries and floodplains that affect river system and landscape health such as nutrient flow, aquatic connectivity and access to habitat for spawning and refuge (e.g. river benches).
 - Changes to environmental water availability, both regulated / licensed and unregulated / rules-based sources of such water.

6. Flooding

- The EIS must map the following features relevant to flooding as described in the Floodplain Development Manual 2005 (NSW Government 2005) including:
 - Flood prone land (ie land susceptible to the probable maximum flood event).
 - Flood planning area, the area below the flood planning level.
 - Hydraulic categorisation (floodway and flood storage areas).
 - Flood hazard.
- The EIS must describe flood assessment and modelling undertaken in determining the design flood levels for events, including a minimum of the 10% Annual Exceedance Probability (AEP), 1% AEP flood levels and the probable maximum flood, or an equivalent extreme event.
- The EIS must model the effect of the proposal (including fill) on the current flood behaviour for a range of design events as identified above, and the 0.5% AEP and 0.2% AEP year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.
- All site drainage, stormwater quality devices and erosion / sedimentation control measures should be identified in the EIS and the onsite treatment of stormwater and effluent runoff and predicted stormwater discharge quality from the proposal should be detailed.
- Modelling in the EIS must consider and document:
 - Existing council flood studies in the area and examine consistency to the flood behaviour documented in these studies.

- The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood (PMF), or an equivalent extreme flood.
- Impacts of the proposal on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land. This may include redirection of flow, flow velocities, flood levels, hazard categories and hydraulic categories.
- Impacts of earthworks and stockpiles within the flood prone land up to the PMF level. The assessment should be based on understanding of cumulative flood impacts of construction and operational phases.
- Relevant provisions of the NSW Floodplain Development Manual 2005.
- The EIS must assess the impacts on the proposal on flood behaviour, including:
 - Whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure.
 - Consistency with Council floodplain risk management plans.
 - Consistency with any Rural Floodplain Management Plans.
 - Compatibility with the flood hazard of the land.
 - Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land.
 - Whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site.
 - Whether there will be a direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.
 - Appropriate mitigation measures to offset potential flood risk arising from the proposal. Any proposed mitigation work should be modelled and assessed on the overall catchment basis in order to ensure it fits its purpose and meets the criteria of the Council where it is located, and to ensure it has no adverse impact to surrounding areas.
 - Any impacts the proposal may have upon existing community emergency management arrangements for flooding. These matters are to be discussed with the NSW SES and Council.
 - Whether the proposal incorporates specific measures to manage risk to life from flood. These matters are to be discussed with the NSW SES and Council.
 - Emergency management, evacuation and access, and contingency measures for the proposal during both construction and operational phases considering the full range of flood risk (based upon the probable maximum flood or an equivalent extreme flood event). These matters are to be discussed with and have the support of Council and the NSW SES.
 - Any impacts the proposal may have on the social and economic costs to the community as a consequence of flooding.

Guidance Material

Title	Web address
<u>Relevant Legislation</u>	
<i>Biodiversity Conservation Act 2016</i>	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-2016-063
<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>	https://www.legislation.gov.au/Details/C2014C00140/Download
<i>Environmental Planning and Assessment Act 1979</i>	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-1979-203
<i>Fisheries Management Act 1994</i>	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-1994-038
<i>National Parks and Wildlife Act 1974</i>	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-1974-080
<i>Protection of the Environment Operations Act 1997</i>	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-1997-156
<i>Water Management Act 2000</i>	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-2000-092
<i>Wilderness Act 1987</i>	https://www.legislation.nsw.gov.au/view/html/inforce/current/act-1987-196
<u>Biodiversity</u>	
Biodiversity Values Map	https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BVMap
Biodiversity Assessment Method (OEH, 2020)	https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-2020
Biodiversity Development Assessment Report Template	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/biodiversity-development-assessment-report-template-220210.docx?la=en&hash=1A4829C7ACA5A51ECE414A767C27361893706CEC
Guidance for the Biodiversity Development Assessment Report Template	https://www.environment.nsw.gov.au/research-and-publications/publications-search/guidance-for-the-biodiversity-development-assessment-report-template
Changes to the Biodiversity Assessment Method from 2017 to 2020	https://www.environment.nsw.gov.au/research-and-publications/publications-search/changes-to-the-biodiversity-assessment-method-from-2017-to-2020
BAM 2020 Operational Manual Stage 1	https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-manual-2020-operational-manual-stage-1
BAM Operational Manual Stage 2	https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-operational-manual-stage-2

Title	Web address
BAM 2020 Operational Manual Stage 3	https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-operational-manual-stage-3
BAM Calculator User Guide	https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-user-guide
Serious and irreversible impacts of development on biodiversity	https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/biodiversity-offsets-scheme/serious-and-irreversible-impacts
Practice Note - Guidance for assessors and decision makers in applying modified benchmarks to assessments of vegetation integrity: Biodiversity Assessment Method	https://www.environment.nsw.gov.au/research-and-publications/publications-search/guidance-assessors-decision-makers-applying-modified-benchmarks-to-assessments-vegetation-integrity
Guidance and Criteria to assist a decision maker to determine a serious and irreversible impact (OEH, 2017)	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/guidance-decision-makers-determine-serious-irreversible-impact-190511.pdf
Accreditation Scheme for Application of the Biodiversity Assessment Method Order 2017	https://www.legislation.nsw.gov.au/view/pdf/asmade/sl-2017-471
Ancillary rules: Biodiversity conservation actions	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/ancillary-rules-biodiversity-conservation-actions-170496.pdf
Ancillary rules: Reasonable steps to seek like-for-like biodiversity credits for the purpose of applying the variation rules	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/ancillary-rules-reasonable-steps-like-for-like-biodiversity-credits-170498.pdf
Ancillary rules: Impacts on threatened species and ecological communities excluded from application of variation rules	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/ancillary-rules-impacts-on-threatened-entities-excluded-from-variation-170497.pdf?la=en&hash=C38840BFF49F012433532DF72E3D90C741E4DAC1
The Department's Threatened Species Website	https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species
NSW BioNet (Atlas of NSW Wildlife)	www.bionet.nsw.gov.au/
Surveying Threatened Plants and their Habitats - NSW Survey Guide For The Biodiversity Assessment Method (DPIE 2020).	https://www.environment.nsw.gov.au/research-and-publications/publications-search/surveying-threatened-plants-and-their-habitats-survey-guide-for-the-biodiversity-assessment-method
Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities - November 2004	https://www.environment.nsw.gov.au/surveys/BiodiversitySurveyGuidelinesDraft.htm
Threatened species survey and assessment guidelines: field survey methods for fauna – amphibians	https://www.environment.nsw.gov.au/research-and-publications/publications-search/threatened-species-field-survey-methods-for-fauna-amphibians

Title	Web address
NSW Survey Guide for Threatened Frogs	https://www.environment.nsw.gov.au/research-and-publications/publications-search/nsw-survey-guide-for-threatened-frogs
Surveying 'species credit' threatened bats and their habitats – NSW survey guide for the Biodiversity Assessment Method	https://www.environment.nsw.gov.au/research-and-publications/publications-search/species-credit-threatened-bats-nsw-survey-guide-for-biodiversity-assessment-method
Bat calls of NSW - region-based guide to the echolocation calls of Microchiropteran bats	https://www.environment.nsw.gov.au/surveys/Batcalls.htm
Community Biodiversity Survey Manual	https://www.environment.nsw.gov.au/surveys/CommunityBiodiversitySurveyManual.htm
BioNet Vegetation Classification - NSW Plant Community Type (PCT) database	www.environment.nsw.gov.au/research/Vegetationinformaticsystem.htm
The Departments Data Portal (access to online spatial data)	http://data.environment.nsw.gov.au/
Fisheries NSW policies and guidelines	https://www.dpi.nsw.gov.au/fishing/habitat/publications/publications/fish-habitat-conservation
<u>National Park Estate</u>	
Guidelines for consent and planning authorities for Developments adjacent to National Parks and Wildlife Service Land (NPWS, 2020)	https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Parks-reserves-and-protected-areas/Development-guidelines/developments-adjacent-npws-lands-200362.pdf
List of national parks	https://www.nationalparks.nsw.gov.au/conservation-and-heritage/national-parks
Revocation, recategorisation and road adjustment policy (OEH, 2012)	http://www.environment.nsw.gov.au/policies/RevocationOfLandandPolicy.htm
List of aquatic reserves	www.dpi.nsw.gov.au/fisheries/habitat/protecting-habitats/mpa
<u>Water</u>	
Water Quality Objectives	http://www.environment.nsw.gov.au/ieo/index.htm
ANZECC & ARM CANZ (2000) Water Quality Guidelines	https://www.waterquality.gov.au/anz-guidelines/resources/previous-guidelines/anzecc-armcanz-2000
Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions	http://www.environment.nsw.gov.au/research-and-publications/publications-search/risk-based-framework-for-considering-waterway-health-outcomes-in-strategic-land-use-planning
Applying Goals for Ambient Water Quality Guidance for Operations Officers – Mixing Zones	http://deccnet/water/resources/AWQGuidance7.pdf
Approved Methods for the Sampling and Analysis of Water Pollutant in NSW (2004)	http://www.environment.nsw.gov.au/resources/legislation/approvedmethods-water.pdf
<u>Flooding</u>	
Floodplain development manual	http://www.environment.nsw.gov.au/floodplains/manual.htm

Title	Web address
Floodplain Risk Management Guidelines	http://www.environment.nsw.gov.au/topics/water/coasts-and-floodplains/floodplains/floodplain-guidelines
NSW Climate Impact Profile	http://climatechange.environment.nsw.gov.au/
Climate Change Impacts and Risk Management	https://www.environment.gov.au/climate-change/adaptation/publications/climate-change-impact-risk-management

Shaun Williams
Senior Environmental Assessment Officer
Department of Planning, Industry & Environment

Via email: shaun.williams@planning.nsw.gov.au

Dear Shaun

**SEARs Request for Input: ANE manufacturing and storage facility expansion – 3577
Henry Parkes Way, Bogan Gate (Lot 2 DP 1064474) – SEAR 1753**

Thank you for the opportunity to comment on the proposed facility expansion by Solar Mining Services (SMS) at Bogan Gate.

SafeWork NSW Inspectors have been working with the facility for some time and we recently granted a licence under the NSW Explosive legislation for the facility to allow it to start production. The current explosive licence permits storage of up to 150 tonnes of Ammonium Nitrate (noting the scoping report states 200 tonnes of AN which is incorrect), and 50 tonnes of Ammonium Nitrate Emulsion ANE).

SafeWork NSW staff involved in review and assessment of the existing site for the purpose of granting an Explosive licence have reviewed the SEARS documentation and we have concerns regarding the proposal. Of greatest concern is that there will probably be insufficient separation from the ANE plant (increasing from 50 tonnes to 100 tonnes) to Shed 69 (50 m tonnes AN).

Further detail of our concerns / commentary is provided below.

SafeWork NSW assessment of separation distances

SafeWork NSW has assessed the proposal according to separation distance requirements of the Queensland Explosives information bulletin no. 53 – Storage requirements for storage of security sensitive ammonium nitrate (SSAN) - (QLD-IB53) and the NSW Discussion Paper for AN separation distances, both of which are currently actively considered in licence assessments.

Background to the assessment

- The existing SMS facility was assessed according to IB53. SMS was informed in 2020 or earlier that, at a minimum, QLD - IB53 should be consulted for separation distances.
- Because the existing facility is licensed to store 150 tonnes of AN, this assessment assumes that the new AN shed will store 300 tonnes of AN and it will be located at approximately - 33.121264° 147.822498°.
- This assessment assumes that the ANE stored by SMS has a TNT equivalence of 80%.
- This assessment is preliminary and cannot be relied upon without detailed information about store locations, quantities, and distances.

ANE Plant

- The increase to 100 t of ANE storage will result in non-compliance of the distance from the ANE Plant to Shed 69. The available distance is 69 m but the required distance will increase from 64 m to 79 m. Decreasing the proposed ANE store from 100 tonnes to 75 tonnes would reduce the required separation to 70 m.
- It is possible that there will be sufficient distance from the ANE Plant to the new AN shed, depending on its exact location. The required separation is 79 m according to the AEISG ANE Code.

New AN Shed

- It is possible that there will be sufficient distance from the new AN shed to the ANE Plant, depending on the exact location of the new AN shed. The required separation is 82 m according to the NSW Discussion Paper for AN separation distances.
- There is insufficient separation from the new AN shed to the nearest Protected Works Class B, which is Johnex admin building 61. The available separation is approximately 840 m, depending on the exact location of the new AN shed. The required separation is 1017 m according to the NSW Discussion Paper for AN separation distances. Note that the required separation from Protected Works Class B according to QLD IB53 is 815 m, with which the new AN shed would comply.
- There is insufficient separation from the new AN shed to the nearest Vulnerable Facility, which is the railway line near the entrance to the Bogan Gate Explosives Reserve. The available separation is approximately 1500 m. The required separation is 2033 m according to QLD IB53 and the NSW Discussion Paper for AN separation distances.

Specific comment on Scoping Report section 5.1.4 – Site separation

Proposed separation distances

The report states "*Figure 9 broadly shows the separation distances required for the proposed capacity increases at the SMS ANE facility from residences, based on the manufacture of 15,000 tonnes of ANE and storage of 450 tonnes of AN and 100 tonnes of ANE at the site.*"

Comment:

- Comments in the previous section about Shed 69, Shed 70 and the ANE Plant apply equally to Figure 9.
- Figure 9 depicts a "QD Buffer" of 1017 m around the new AN storage shed but does not describe the quantity of AN that will be stored in the new shed. It is not known how this distance was calculated and Figure 9 does not provide distances for the full range of protected works.

"Buffer Distances"

The report states "*Figure 10 broadly shows the separation distances required between existing / proposed AN and ANE storages at the site and surrounds.*"

Comment:

- Figure 10 refers to "Buffer Distances" but does not provide a definition of the term.
- Figure 10 does not provide distances for the "Buffer Distances". It only provides circles on a sketch of the BGER.
- Without this information, the circles cannot be verified.

Comment on Figures 8-10

The report does not present a full or detailed picture of the stored quantities and locations of AN and ANE. The information about separation distances does not address all types of on-site and off-site protected works and does not explain which protected works are relevant to the terms "QD Buffer" and "Buffer Distances".

The report does not identify the publications or methods used to determine the distances, and in the case of Figure 10 does not state any distances.

The report cannot be used as an assessment of compliance with separation distances required under explosives legislation.

Comment on 6.1 – Statutory context

The report does not identify that the facility and the proposal are subject to the Explosives Act 2003 and the Explosives Regulation 2013 and does not assess compliance with these instruments.

Comment on 9.1 – Government stakeholder engagement

The report states that "SMS have held several meetings and discussions with the following government agencies to progress the proposal".

The Dangerous Goods & Explosives team of SafeWork NSW, which assesses and grants licences to manufacture and store AN and ANE, was informed by Solar Mining Systems that the SEARS proposal had been submitted to the Department of Planning and Environment but has not held any discussions with Solar Mining Systems about the proposal. The detail of the proposal was only known when a copy of the report was received from the Department of Planning and Environment.

Finally, we strongly recommend that Fire & Rescue NSW are consulted on the proposal prior to any consent being given.

Yours sincerely



Andrew Battye
Manager, Dangerous Goods & Explosives

23 December 2022



NSW RURAL FIRE SERVICE

Department of Planning and Environment (Sydney Offices)
GPO Box 39
Sydney NSW 2001

Your reference: SEAR 1753
Our reference: DA20221215012277-SEARS-1

ATTENTION: Shaun Williams

Date: Monday 16 January 2023

Dear Sir/Madam,

Development Application
State Significant - SEARS - Industry
3577 Henry Parkes Way Bogan Gate NSW 2876, 2//DP1064474

I refer to your correspondence regarding the above proposal which was received by the NSW Rural Fire Service on 14/12/2022.

The proposal appears to be generally consistent with the aims and objectives of *Planning for Bush Fire Protection 2019*, however any development (as proposed) must comply with clause 8.3.9 (*Hazardous Industry*) of *Planning for Bush Fire Protection 2019*.

For any queries regarding this correspondence, please contact Bryce Pascoe on 1300 NSW RFS.

Yours sincerely,

Adam Small
Supervisor Development Assessment & Plan
Built & Natural Environment

Postal address

NSW Rural Fire Service
Locked Bag 17
GRANVILLE NSW 2142

Street address

NSW Rural Fire Service
4 Murray Rose Ave
SYDNEY OLYMPIC PARK NSW 2127

T (02) 8741 5555
F (02) 8741 5550
www.rfs.nsw.gov.au

Industry Assessments
Department of Planning & Environment
Locked Bag 5022
PARRAMATTA NSW 2124

Attention: Shaun Williams

20th January 2023

**SEARs-1753: Request for Secretary's Environmental Assessment Requirements (SEARs)
Ammonium Nitrate Emulsion (ANE) manufacturing and storage facility expansion**

Dear Mr Williams,

Thank you for referring the abovementioned request for SEARs via email on 13 December 2022 inviting comment from Transport for NSW (TfNSW).

TfNSW has reviewed the Scoping Report, prepared by Currajong Pty Ltd dated 24 November 2022 for the expansion of the existing Ammonium Nitrate Emulsion (ANE) manufacturing and storage facility approved under DA2020/0073 granted by Parkes Shire Council on 18 December 2020.

TfNSW understands the proposal includes:

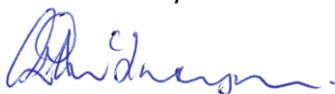
- Increasing the ANE manufacturing to 15,000 tonnes per annum.
- Storing up to 450 tonnes of Ammonium Nitrate (AN) and 100 tonnes of ANE at any one time.
- Deliveries of semi-trailer tankers or rigid truck configurations carrying approximately 24,000 litres of ANE. A total of 6 truck movements per day is estimated to be generated from the proposal. It is noted that B-doubles, road trains or other long configurations will not be used.
- The use of existing buildings as well as the proposed construction of a storage shed to the north-east of the existing ANE manufacturing plant.

It is further understood the development will utilise the intersection of Henry Parkes Way (HW61) and Memorial Lane (local road) to access the site within the Bogan Gate Explosive Reserve.

To ensure TfNSW's key interests are addressed, TfNSW requests the Environmental Impact Assessment (EIA) be accompanied by a Traffic Impact Assessment (TIA), prepared in accordance with the *Austrroads Guide to Traffic Management Part 12, Australian Standards, TfNSW Supplements, and Roads and Maritime Guide to Traffic Generating Developments*. The TIA is to contain information listed in **Attachment A**.

TfNSW encourages early discussions with proponents regarding the traffic and network matters associated with the development. If you wish to discuss this matter further, please contact Phoebe Wilkinson, on 0418 437 829. On determination of this matter, please forward a copy of the final SEARs to TfNSW at development.west@transport.nsw.gov.au.

Yours faithfully



Andrew McIntyre
Manager Development Services West
Regional and Outer Metropolitan

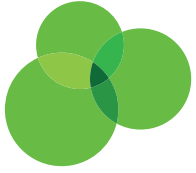
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Attachment A: Traffic Impact Assessment (TIA)

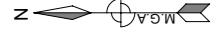
The TIA is to address the impact of traffic generation on the public road network and measures employed to ensure traffic efficiency and road safety during construction, operation and decommissioning of the project.

The TIA is to be tailored to the scope of the proposed development and include, but not limited to, the following:

- Project schedule:
 - Hours and days of work, number of shifts and start and end times,
 - Phases and stages of the project, including construction and operation.
 - Traffic volumes including:
 - Existing background traffic,
 - Project-related traffic for each phase or stage of the project,
 - Projected cumulative traffic at commencement of operation, and a 10-year horizon post-commencement.
 - Traffic characteristics including:
 - Number and ratio of heavy vehicles to light vehicles,
 - Peak times for existing traffic,
 - Peak times for project-related traffic including commuter periods,
 - Interactions between existing and project-related traffic.
 - Source(s) for input materials and quantification of traffic generation associated with the haulage of the source materials.
 - Road safety assessment of key haulage route/s.
 - Controls for transport and use of any dangerous goods in accordance with *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*, the *Australian Dangerous Goods Code* and *AS4452 Storage and Handling of Toxic Substances*.
 - Identify the necessary road network infrastructure upgrades that are required to cater for and mitigate the impact of project related traffic on both the local and classified road network for the development (for instance, road widening and/or intersection treatments). In this regard, preliminary concept drawings need to be submitted with the EIS application for any identified road infrastructure upgrades. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council.
 - Proposed road facilities, access and intersection treatments are to be identified and be in accordance with Austroads Guide to Road Design including provision of Safe Intersection Sight Distance (SISD).
 - Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather).
 - The layout of the internal road network, parking facilities and infrastructure.
 - Impact on rail corridors and level crossings detailing any proposed interface treatments. Note, the rail manager for rail corridors in the vicinity of the site is ARTC.
 - Propose a Driver Code of Conduct for haulage operations which could include, but not be limited to:
 - Safety initiatives for haulage through residential areas and/or school zones.
 - An induction process for vehicle operators and regular toolbox meetings.
- A public complaint resolution and disciplinary procedure.



Appendix G. Arndell Surveying Detail Survey



NEAREST DWELLING IN BOGAN GATE

NEAREST DWELLING OUTSIDE BGER



- KEY:
- SMS BUILDING ROOFLINE
 - EXTERNAL DWELLING ROOFLINE
 - BGER BUILDING ROOFLINE
 - FENCE
 - RAILWAY TRACKS

NOTES:
 1. THIS IS ONLY GDA2020 MGA ZONE 55
 2. CONTOURS SHOWN ARE INDICATIVE ONLY AND NOT SUITABLE FOR DESIGN
 3. RAILWAY BOUNDARIES ARE INDICATIVE ONLY.



A1

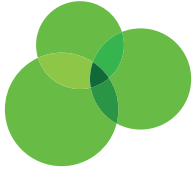
ARND ELL
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Rev	Date	Description	AA	Approved
A	15/08/2023	SIMPLIFIED PLAN	AA	Approved

Reduction Ratio: 1:4000 @A1	Job No: 11890	Date: 15/08/2023
Height Datum: AHD	Drawn by: BI	Client: Curajong Planning
Datum Source: GDA2020	Checked by: AA	
Projection: MGA ZONE 55		

PLAN SHOWING LOCATIONS OF BUILDINGS ON BGER
LOT 2 DP1064474
 3577 Henry Parkes Way

Drawing No.	
Revision A	
Sheet 1 of 1	



Appendix H. Greenice Process and Risk Report

Solar Mining Services Pty Ltd

Process Risk Report

Proposed Expansion of Ammonium Nitrate Emulsion (ANE) Manufacturing Facility

Bogan Gate Explosives Reserve NSW

Version 5

13th September 2023

Prepared by:
Michael du Plessis
Greenice Pty Ltd

Approved by:
Vetkav Ramesh
Solar Mining Services Pty Ltd



Disclaimer

In conducting the process and risk review I have relied solely on information regarding the manufacturing and storage facility and locations on the BGER site provided by Solar Mining Services (the *Client*). I have assumed the information provided by the Client is correct and accurately reflects the design, specifications, and location of the ANE manufacturing facility. I have not sought to independently verify the information provided by the Client.

This report only considers information provided to me up to the date of this report and so its findings may be affected by new information.

Document History

Version No.	Date	Description	Approved by
1	24/04/2023	For initial review by planning consultant	Vetkav Ramesh
2	29/5/2023	Update separation distances following site survey	Vetkav Ramesh
3	28/7/2023	Update following review by Currajong Town Planning	Vetkav Ramesh
4	1/8/2023	Draft for review	Vetkav Ramesh
5	13/9/2023	Amended AN quantity in line with EIS	Vetkav Ramesh

Executive Summary

Solar Mining Services Pty Ltd (SMS) has constructed an ammonium nitrate emulsion (ANE) manufacturing facility on the Bogan Gate Explosives Reserve (BGER) located approximately

1.5km east of Bogan Gate and 35km west of Parkes in NSW. Under the conditions of the DA2020/0073 granted by Parkes Shire Council, the SMS manufacturing plant is limited to 960t of ANE per annum. A SafeWork NSW Explosives Manufacture Licence XMNF200034 has also been granted which allows ANE manufacturing and storage of 50t of ANE and 166t of Ammonium Nitrate (AN) at the SMS facility.

This report has been prepared in support of a development application for an increase in annual production of the plant from 960t per annum to 20,000t per annum. There will be no change to the plant processes or equipment to meet the proposed increase in production.

Additional storage of ANE and AN will be required to meet the increased production demand. There are adequate buffer zones between the additional ANE and AN storage facilities and infrastructure on the BGER and external to the site (public areas). Increased storage quantities of AN and ANE will not expose adjacent facilities on the BGER and the external public to increased levels of risk. Exclusion zones between the SMS facility and external infrastructure meet the requirements of relevant standards.

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1. INTRODUCTION

Solar Mining Services Pty Ltd (SMS) has constructed an ammonium nitrate emulsion (ANE) manufacturing facility on the Bogan Gate Explosives Reserve (BGER) located approximately 1.5km east of Bogan Gate and 35km west of Parkes in NSW. This facility was constructed in accordance with Development Consent No. DA2020/0073 granted by Parkes Shire Council on 18th November 2020. Under the conditions of the DA2020/73, the production capacity of the plant is limited to 960t of ANE per annum. The plant was granted a five year explosives manufacturing and storage licence by SafeWork NSW on January 2023 (XMNF200034).

This report has been prepared in support of a development application for an increase in annual production of ANE from the plant from 960t per annum to 20,000t per annum. The development will be lodged on the NSW Planning Portal for assessment and determination by the relevant consent authority; being Parkes Shire Council. There will be no change to the plant processes or equipment to meet the proposed increase in production.

SMS propose to amend to DA2020/0073 and XMNF200034 to allow for additional storage of ANE and AN on the site. It is noted that an Environment Protection Licence from the NSW Environment Protection Authority (EPA) will also need to be obtained for the increased levels of dangerous goods production.

The report focuses on the risk profile of manufacturing and storage operations and covers the following aspects in support the statutory approvals required:

- Location of the SMS facility on the BGER and the proximity to other operations on the site and external public infrastructure,
- Manufacturing technology to be used in the plant,
- Chemicals that will be stored and used on the site,
- The properties and hazards of the chemicals to be manufactured, processed, and stored on site,
- Manufacturing and storage hazards and critical control measures, and
- Compliance with Australian standards, codes of practice and guidelines.

2. STANDARDS, POLICIES, GUIDELINES AND CODES OF PRACTICE

The risk assessment and hazard analysis approach for this facility follows the integrated approach in the NSW Planning Guidelines and policies, Australian Standards, and explosive industry guidelines. These are listed below:

- NSW DPIE Major Projects. Key Guidance. Hazards and Risks. Assessment of chemical, biological, and chemical hazards and risks.
- NSW State Planning Policy No 33 – Hazardous and Offensive Development
- Planning for Bush Fire Protection, A guide for councils, planners, fire authorities and developers, Issued by NSW Rural Fire Service, November 2019.
- NSW Planning Guidelines for risk assessment, hazard analysis and risk criteria:
 - Assessment Guideline. Multilevel Risk Assessment, 2011
 - Hazardous Industry Planning Advisory Paper no 4. Risk Criteria for land Use Safety Planning, 2011.
 - Hazardous Industry Planning Advisory Paper No 6. Hazard Analysis, 2011
- NSW Work Health and Safety Regulation 2017 (Major Hazard Facilities)
- Code of Practice - *Storage and Handling of UN3375, Edition 5 July 2018*, published by the Australian Explosives Industry Safety Group (AEISG)
- Code of Practice - *Storage and Handling of Solid Ammonium Nitrate, Edition 1 June 2022*, published by the Australian Explosives Industry Safety Group (AEISG)
- AS 2187.1 - 1998 Explosives - Storage, transport and use – Storage.
- Hazards in Emulsion Explosives Manufacture and Handling by Andy Begg, SAFEX Topical Papers Series Paper no. 05/2008.

- Good Practice Guide: Storage of Solid Technical grade Ammonium Nitrate by the International Working Group on Ammonium Nitrate. SAFEX Good Practice Guide Series GPG 02.

The following statutory guidelines and instruments have been reviewed and are not applicable to the risk and hazard assessment for an ammonium nitrate emulsion manufacturing and storage facility.

- Dangerous goods (Road and Rail and Transport) Act 2008
- Environmental Hazardous Chemicals Act 1985
- Australian Dangerous Goods Code (ADG Code)

3. FACILITY OVERVIEW

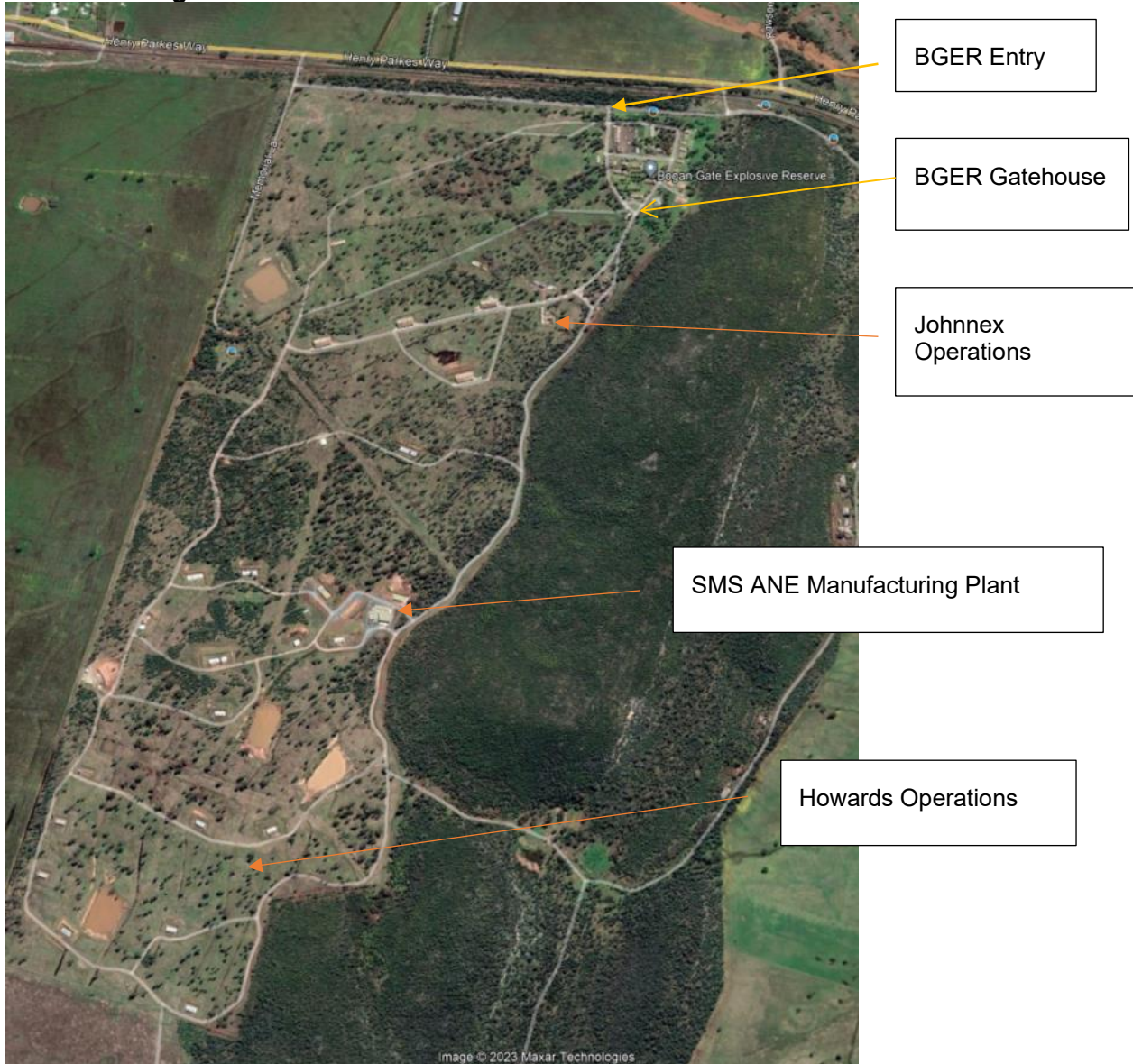
3.1 Site Location, Surrounding Land Uses and Layout

The SMS ANE plant is located on a lease on the Bogan Gate Explosive Reserve (BGER) located about 35km from Parkes, NSW. There are two other explosives related entities on the site:

- Johnnex – packaged emulsion manufacture, storage of ammonium nitrate, ANE and Class 1 explosives
- Howards Fireworks – storage of fireworks

The aerial photograph below shows the location of SMS facility on the BGER.

Figure 1: Location of SMS Plant on the BGER



3.2 Process Description

The SMS plant manufactures ammonium nitrate emulsions (ANE). ANE is not an explosive and is classed as a 5.1 Oxidiser (UN3375). The ANE processing plant is located within steel sheds on a concrete pad. In addition to the ANE processing plant, the facility also includes tanks for storage of finished ANE, diesel fuel as well as other chemical storage sheds and other ancillary services.

The SMS facility has been licensed by SafeWork NSW to manufacture ANE and store ANE and AN.

Figure 2: SMS ANE Manufacturing Facility

The process steps for manufacturing ANE are:

- Deliver and store of ammonium nitrate,
- Dissolve AN prills / CN or Urea granules in water to form an oxidiser solution,
- Mix surfactant (emulsifier) and diesel oils to make a fuel blend,
- Pump the oxidiser solution and fuel blend through a blender to create ANE, and
- Pump the ANE through a cooler into storage tanks ready for despatch.

3.2.1 Delivery and Storage of Ammonium Nitrate

Ammonium nitrate prill (AN) is delivered to the site, in “bulk” bags (normally of nominal weight 1.25t or 1.2t, depending on source), by road truck. On arrival, the materials are offloaded and stored into dedicated AN storage sheds. AN bags are transported from the sheds to the production facility by forklift and small truck and placed in a day storage area within the production plant.

Figure 3: Delivery of AN bags

Figure 4: Storage of AN bags in the Shed

3.2.2 Preparation of the Oxidiser Solution

An aqueous oxidiser solution of ammonium nitrate, urea and / or calcium nitrate (dependant on the product being manufactured) along with trace elements such as nitric acid and sodium hydroxide, is prepared to meet specifications for pH and concentration. The oxidiser solution is prepared in dedicated oxidiser tanks. The tanks are fitted with agitators and stainless-steel heating coils. Tanks have temperature indicators. Heat is provided through a closed-circuit steam heating loop delivered by a diesel fired steam boiler.

Oxidiser solution preparation begins with the addition of a predetermined amount of water to the solution tanks using a flow meter (as specified on the product batch sheet). The water is heated above a temperature of 60°C. When the solution is above the agitator blade levels, then the agitators are started.

AN/CN or urea in the form of a small beads, (prills or granules), contained in bulk bags, is lifted using a forklift above hopper of the feed auger for the solution tank and emptied. The feed auger transfers the feedstock from the hopper into the solution tank holding the set amount of water. The solution is then heated to a temperature of above 80°C but less than 90°C.

Due to the endothermic reaction (absorption of energy) that occurs between the oxidiser and water when it is dissolving, the solution cools. Heat is continuously applied through the coils to ensure the solution is held above the 56°C crystallisation point. Ammonium nitrate is progressively added in this manner until the specified amount has been added as per the solution batch sheet. Urea or calcium nitrate can then be then added using the same process as required, depending on formulation.

Nitric acid or sodium hydroxide is then transferred from a 200l plastic drum through a dosing pump into the solution tank for pH correction.

The solution is then heated and mixed using the agitators for a set period as prescribed on the specific product batch sheet. A sample of the solution is then collected for quality control / quality

assurance (QA/QC). The quality test entails testing for pH and concentration. Corrections to pH are made by adding sodium hydroxide (if too low) or nitric acid (if too high). Corrections to concentration are made by the addition of water or more solid oxidiser material.

Figure 5: AN Dosing Augers and AN Solution Tanks



3.2.3 Preparation of Fuel Oil Blend

A mixture of diesel oil and a proprietary surfactant (emulsifier) component are prepared in fuel oil blend tanks to meet specifications for viscosity. The predetermined amount of diesel fuel is transferred from bulk storage and added to the fuel oil blend tank using a transfer pump and flow meter. Surfactant is transferred from 1,000 L IBC pods and added to the fuel oil blend tank using a transfer pump and weigh cells. The two components are mixed using tank agitators for a prescribed period prior to conducting quality control tests. The fuel oil blend quality test consists of testing the viscosity (level of resistance to flow) using a standard cup.

Figure 6: Fuel Blend Tanks



3.2.4 Emulsion Manufacture

The oxidiser solution is blended with the fuel blend to form the ammonium nitrate emulsion (ANE). The fuel blend and the oxidiser solutions are pumped at pre-set flow rates to the blender unit. The blender comprises a high-speed agitator system which imparts a vigorous mixing action to blend the two products into an emulsion.

The emulsion from the blender unit is then transferred into a hopper. The emulsion is then transferred to the ANE storage tanks using a progressive cavity (PC) pump. Prior to being transferred to the ANE storage tanks, the emulsion may be cooled in a heat exchanger unit. The PC pump discharge housing is fitted with both a high- and low-pressure sensor and a high temperature sensor. These sensors are both hard wired to trip amplifiers and interface relays. This ensures that the pump is automatically shut down in the event of over pressure and or overheating from deadheading of the pump or a blockage. There is also a mechanical failsafe device in the form of a bursting disc that is independent of any interlock or other safety device.

A sample of the ANE is collected from the ANE hopper for quality testing at regular intervals. This final quality test involves establishing the viscosity of the ANE using a viscometer. Corrections to the viscosity are made by changing the process flow and blender settings. A quality test is also conducted on the final product to measure product density using a cup and scales. Any density test result outside of the specified range would prompt the plant operator to stop production and investigate. There is also a rework tank which allows out of spec ANE to be reworked by adding a controlled quantity of this material back into the blender.

Figure 7: Emulsion Blender, Hopper, and Rework Tank



3.2.5 Storage and Load Out of ANE

After manufacture, ANE is stored in four, 25t horizontal storage silos (total 100t), pending transfer into tankers for transport to customer sites.

Transfer of ANE from the storage tanks to the tanker is achieved using a gear pump with nitrile rubber impellers (Napco pump). This pump is fitted with temperature and pressures sensors as well as a bursting discs, in accordance with AEISG emulsion pumping guidelines.

4. HAZARDOUS MATERIAL PROPERTIES

4.1 Ammonium Nitrate (Oxidizing Agent Class 5.1 UN1942)

Ammonium nitrate prill (AN) is a white solid oxidiser (Class 5.1), which under certain conditions can thermally decompose generating some toxic gases (NO_x) and, when heated under strong confinement, may decompose violently. AN is a strong oxidising agent that will sustain combustion as it produces oxygen as one of its decomposition products.

AN prill occurs in two forms – porous prill (PPAN) which is designed to absorb fuel oil in the manufacture of ANFO and dense prill (HDAN) that is generally used to manufacture AN solution. AN prill is hygroscopic and therefore small amounts of additives are added as a prill coating to reduce the chance of consignments of AN forming into lumps. These anti-caking agents need to be carefully controlled to ensure that they do not sensitise the AN (i.e. effectively adding a fuel) that can increase the sensitivity of AN to heat. This control is performed at the source factory and every incoming shipment is accompanied by a Certificate of Analysis / Conformance.

For decomposition to occur, the temperature of the AN must be increased well above its melting point of 169°C. Decomposition proceeds with both endothermic reactions and exothermic reactions occurring simultaneously. In the decomposition process, the solid material is converted into a gas. If the AN is not confined, the decomposition can achieve a steady state temperature of approximately 292°C at one bar pressure. This is a self-sustaining decomposition that will generate mainly NO_x and ammonia fumes.

However, in certain extreme circumstances the reaction may run away when the heat generated exceeds the heat lost. This is difficult to achieve due to both the low decomposition rates of pure AN and the endothermic reaction effect when the material is unconfined. For a runaway reaction to occur the material must be strongly confined which allows the exothermic reaction effect to dominate and the pressure builds up accelerating the reaction. On the BGER plant there will be vents on tanks and temperature gauges linked to the PLC control system to ensure that overheating or overpressure cannot occur.

Another hazard is sensitising contamination of solid AN either in manufacturing or in storage (e.g. by mixing with sensitising materials) which in some circumstances can lead to an increase in the risk of decomposition / explosion. Typical contaminants are organic compounds such as spilled fuel oil, acids and other oxidising agents. On the BGER plant there will be strict protocols to ensure that incompatible materials are stored separately.

AN prill is classified as a Security Sensitivity Ammonium Nitrate (SSAN).

4.2 Ammonium Nitrate Emulsion - ANE (Oxidizing Agent Class 5.1 UN3375)

ANE is a viscous fluid containing ANSOL, fuel oil and emulsifiers. Under certain conditions ANE may thermally decompose generating some toxic gasses (NO_x). ANEs are not flammable, and do not burn at the range of temperatures and pressures experienced in manufacture, storage, and handling.

ANE is a Division 5.1 oxidiser. The ANE manufactured at the proposed BGER facility are not classed as explosives. The formulations have successfully passed the UN Series 8 tests (a, b, c and d) that allow these mixtures to be classified as a non-explosive pre-cursor and transported as such. ANE to be manufactured at the BGER facility are classified as UN 3375, a 5.1 Oxidising Agent.

The main hazard associated with ANE is decomposition due to excessive heating and/or contamination which can cause accelerating decomposition to the point where explosion or detonation can occur, especially if the decomposing gases are sufficiently confined (e.g. in an inadequately vented storage tank, pump, process vessel etc.).

In processing of ANE the main hazards occur in pumping. It is essential that the ANE is not allowed to overheat in the pumping process through deadheading or dry running of the pump. For this reason, the international explosives industry has developed guidelines for pumping ANE. These guidelines and pump standards will be implemented at the BGER facility.

Sensitivity to accidental decomposition/detonation is increased by the presence of energetic sensitising materials or chemical contaminants. ANE is insensitive to friction, impact, and sparks.

ANE is a poor conductor of heat and contains a high-water content, which acts as a heat sink in the event of the material being heated in a fire.

ANE is classified as a Security Sensitivity Ammonium Nitrate (SSAN).

4.3 Ammonium Nitrate Solution - ANSOL (Oxidizing Agent Class 5.1)

Hot concentrated ammonium nitrate solutions (>60%) are Division 5.1 oxidising agents and are a hot clear liquid routinely found at temperatures up to 130°C in factory environments. Burns from oxidiser solutions are very severe as they are both thermal and chemical burns. High concentration ANSOL (above 80%) can thermally decompose under certain conditions such as change in pH or water content. Some of the gaseous products of ANSOL decomposition are toxic (various NO_x gases).

At the SMS facility, the maximum temperature of the ANSOL manufactured will be 90°C and the maximum target concentration is approximately 83%.

Certain contaminants and incompatible chemicals can catalyse the decomposition of ANSOL. Contaminants that may increase the risk of decomposition include acids, chlorides, organics, alkali metals, and nitrites.

ANSOL does not burn but, as an oxidising agent, it will support fire, even in the absence of an external source of oxygen. ANSOL is insensitive to friction, impact, and sparks.

ANSOL is not classified as a Security Sensitivity Ammonium Nitrate (SSAN).

5. SCHEDULE OF CHEMICALS AND RAW MATERIALS

5.1 Schedule 15 Chemicals

The current SafeWork NSW Manufacturing Licence allows a total storage of 166t of AN. Table 1 shows the Schedule 15 chemicals that will be stored on site to allow for increased production. Storage in Shed 70 will be increased to 110t. Sheds 69 will no longer be used for AN and will store

non-dangerous goods. Two new storage sheds Shed 70b and 70c will be utilized for AN storage. Shed 69a will continue to serve as the AN day store to be used during plant operating hours. Refer to table 5 below.

All the Schedule 15 chemicals in table 1 are below the Major Hazard Facility (MHF) threshold levels. The facility is therefore not a Major Hazard Facility under the NSW Work Health and Safety Regulation 2017.

Table 1: Inventory of Schedule 15 Chemicals

Material	UN No.	DG Class	MHF Threshold (t)	Quantity Stored (t)	% MHF Threshold	Type of Storage
Prilled AN	1942	5.1	2,500	450	18	3 Steel sheds on concrete bases
Ammonium Nitrate Emulsion (ANE)	3375	5.1	200	105	53	4 Stainless steel tanks
						Stainless steel rework tank (1.5t)
Total Site MHF Threshold %					71	

Table 2: Other Raw Materials to be Used and Stored on Site

Material	Type	Quantity	Type of storage (TBC)
Diesel oil	C1 Combustible Liquid	61,000L	Self-bunded trans tank in a concrete bund
Surfactant	Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code)	10,000L	1,000 L IBC stored in a concrete bund
Calcium Nitrate	Not classified as Dangerous Goods	72,000kg	1,200kg bulk bag.
Nitric Acid	Class 8 PGII UN2790	1,000L	200L drums stored on bund in DG Store and within the manufacturing area
Sodium Hydroxide	Class 8	1000 kg	200L drums on pallets stored in a Designated Storage Container
Sodium Thiocyanate (50% Solution)	Not classified as Dangerous Goods.	12,000L	1,000L IBC store on concrete floor in a stand-alone small shed.
Urea	Not classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code)	50 t	1t bulka bags stored in cladded shed.
ANSOL	Class 5.1 PGIII UN2426	16,000 L	2 x 8,000 L Tanks

6. HAZARD AND RISK ASSESSMENT APPROACH

6.1 Hazard and Incident Identification

This section describes the risk and hazard analysis approach that SMS uses to assess hazards and risks. This is an integrated process for safety assurance that follows the guidance in the NSW Assessment Guideline, Multi-level Risk Assessment (2011). The risk assessment and hazard

analysis approach will also be compliant with the guidelines and recommendations in NSW HIPAP 4 and 6.

The risk assessment and hazard analysis process for the BGER facility includes the following elements:

6.1.1 Preliminary Risk Assessment

Prior to the construction of the ANE plant, SMS conducted a preliminary risk assessment based on SMS' experience in designing and building ANE plants. The plant design is based on a proven plant design used in Australia and around the world. The outcome of the risk assessment process provided the broad design and operating principles for the BGER facility.

SMS has ensured that learnings from explosives incidents that have happened all over the world are incorporated in the initial high level risk assessment for the BGER plant.

SMS has access to extensive engineering and technical resources with deep experience in hazard identification and risk assessment. SMS has called upon the expertise of its parent company, Solar Industries India and external consultants in Australia. These resources were actively involved in the preliminary risk assessment process and subsequent risk assessments during the construction of the plant and prior to plant commissioning.

6.1.2 Detailed Review of Existing Risk Assessments

This detailed risk assessment process built on the outcomes generated by the high level risk assessment. SMS conducted a rigorous review of the hazard studies conducted by Solar Industries India for similar facilities that Solar Industries has built in India and other parts of the world. These hazard studies were all conducted using cross-functional teams from Solar, technology vendor and external consultants.

6.1.3 BGER Specific Hazard Studies

Although the emulsion production plant is based on a standard, proven design, there are specific requirements implanted in the final plant design and layout to meet Australian standards, site conditions and market needs.

The SMS facility was also subjected to a detailed explosives hazard study process. This study approach originally developed by ICI (UK) has been widely implemented across the explosives industry worldwide. The SMS process was conducted by a multi-disciplinary team including Solar Industries India and external Australian experts.

6.1.4 Broad Brush Risk Assessment

Upon commissioning of the facility, a pre-production risk review was conducted to assess the operational requirements and to ensure that all major risks have been identified and managed in the day-to-day operation of the facility.

6.2 Identification of Key risks

Based on the hazard and risk assessment approach, SMS has identified the key risks that apply to the BGER facility.

International experience shows that uncontrolled heating of ammonium nitrate and ammonium nitrate mixtures can result in explosions and is a key risk in the manufacture of ANE. The main causes of uncontrolled heating arise from:

- ANE pumps overheating,
- Fires under ANE storage tanks,
- Ammonium nitrate emulsion mixtures being overheated and allowed to dry out,
- Contamination of solid ammonium nitrate causing a run-away decomposition, and
- Fires near ammonium nitrate storage areas.

In line with relevant guidelines, key risks are framed around the potential for uncontrolled heating of ANE and solid ammonium nitrate and the control measures to avoid overheating. There is a considerable body of knowledge from HAZOP studies and risk assessments conducted ANE plants. Table 3 shows key risk scenarios and control measures that have been implemented in the BGER plant. Hazard studies and risk assessments have been conducted on all manufacturing and operational elements of the SMS facility to ensure that critical controls are adequate and that risks have been reduced so as far as is reasonably practicable.

Table 3: Key Risk Scenarios for the SMS Facility

Operational Element	Process Description	Hazards	Consequence	Controls
ANE Manufacture - emulsion pumping	High pressure pumping of ANE	PC pump over pressure/ overheating	Explosion of ANE in process	High pressure & temp trips on PC pumps
ANSOL Mixing	Transfer of AN prill via auger and dissolving of AN in water	Overheating	Fire	Control systems & trips on heating circuit and boilers
AN Delivery	Loading AN to storage from truck	Truck/Auger fire	Fire	Accredited DG contractor Maintenance procedures
AN Storage	Bulk storage of HDAN bulka bags in AN sheds	Truck or bushfire Contamination with incompatible materials	Explosion of AN storage	Accredited DG contractor Separation of incompatible materials
ANE Storage	Storage of finished ANE in four 25t tanks prior to loading on tanker	Fire under tank	Explosion of ANE storage	Plant design ensures fuels cannot pool under ANE tanks
ANE Load Out	Pumping of ANE from tanks to road tanker for transport to mine	Pump over pressure/overheating	Explosion of ANE storage	Pump temp trips Bursting disk

6.3 Critical Controls

In line with international explosives industry best practices and specific knowledge from the technology vendor, the following critical control systems have been implemented at the SMS facility:

6.3.1 Pump Safety Systems

The highest risk element of ANE manufacture involves the high pressure of ANE in the blender and static mixers. The international explosives industry has adopted pump standards that define the required pump specification and the types of safety systems that need to be installed to ensure safe operation of ANE and ANSOL pumps. The pump standard implemented at the BGER facility is in accordance with the Australian Explosives Industry and Safety Group (AEISG): *Code of Practice Ammonium Nitrate Emulsions, Suspensions or Gels - ANEs (UN3375), Edition 5, 2018* which specifies requirements for pumps used for ANE.

Pump safety systems are a critical control in the manufacture of ANE. SMS has implemented the key requirement that the pump should have a pump protection system to detect and prevent deadheading (high pressure), dry operation (low flow) and or high temperature. Pump safety systems implemented on the plant include:

- Emulsion specified progressive cavity (PC) pump
- High temperature and pressure trips
- Bursting disc

6.3.2 Process Temperature Control

A steam boiler is used for heating of the ANSOL and fuel blend tanks. The PLC system controls the heating process to ensure that the ANSOL temperature does not exceed 90 C.

In addition to heating sensors, the ANSOL and fuel blend tanks have independent analogue temperature indicators that allow operators to monitor temperature during the manufacturing process.

Any fault or failure in the temperature control resulting in elevated solution temperature will be identified by the operator using the independent temperature gauges.

The steam boiler is a commercial unit with full safety monitoring systems and trips.

6.3.3 Programmable Logic Controller (PLC)

The ANE manufacturing plant is operated from control panels linked to Programmable Logic Controllers (PLCs). It consists of an engineered set of hardware and software controls which are used to manage ANSOL and fuel blend preparation and ANE manufacture. This means that a minimal level of operator manual input is required to operate these processes.

There are three Human Machine Interface (HMI) control panels for the PLCs. One is in the oxidiser blend, one for the fuel blend makeup area and one in the area where the emulsion is blended.

The PLC systems are linked to a hardwired trip system to ensure that once a process is up and running and an operational problem occurs, the system will revert to a "Safe State" (i.e. manufacturing stops and all upstream systems are placed into recirculation or stopped) to avoid adverse safety, health and environmental (SH&E) consequences.

The processes within the manufacturing plant managed by the PLC systems are:

- Pumping of oxidiser blend, fuel blend and pre-emulsion,
- Oxidiser solution mixing and heating,
- Fuel blend preparation,
- Blending and refinement of emulsion,
- Control of the flow and quantities of raw ingredients,
- Displays of temperature, high and low pressure, and level sensors, and
- Display of alarms when triggered by hard wire trip system.

Operator intervention will be required to open and close valves to tanks and to load solid oxidiser material via the auger into the ANSOL tank. The PLC monitors these operations and alarms are triggered if a change in pre-set conditions occur.

The process parameters controlled by the PLC system cannot be changed by operators or any other personnel. Any changes to the PLC program can only be changed by an authorised control engineer from Solar Industries India under the auspices of the Management of Change procedure for the BGER facility.

The critical trips such as temperature and pressure sensors will be linked to the PLC but operate independently of the PLC system. In the event of a fault, the trips will send an alarm to the PLC control panel and stop all upstream & downstream process' independently (see below).

6.3.4 High Level Protection on ANSOL Tanks

The ANSOL tanks use high level switches that are wired to the PLC. The high level switch identifies when the ANSOL tank is at 90% and isolates the water addition valve and, if in Transfer mode, the ANSOL Transfer pump.

6.3.5 Emergency Stops

Emergency stop buttons provided in locations throughout the plant. Emergency stop buttons cut power to the manufacturing and transfer operations, effectively stopping all mixing, heating, pumping, or blending activities which may be the source of any unwanted high temperature or high pressure.

Each individual piece of equipment has an individual E-Stop fitted. There will be additional Emergency Shutdown E-Stops throughout the facility that shut down the entire manufacturing process (aside from the water pump as it is required to utilise fire hose reels).

6.3.6 Emergency Response Plan

The Emergency Response Plan is designed to mitigate the consequence of a major incident occurring on the manufacturing facility site. Reduction of the consequences of an explosion is achieved through evacuation. A critical element of the Emergency Response Plan is to have a credible evacuation plan that will ensure that there will be a high likelihood that within 45 minutes of the evacuation being initiated there is no person within a Protected Class B (PWB) distance from the plant. This means the plant Emergency Response Plan will be fully integrated with both the BGER site emergency procedures and emergency response plan of Johnex.

6.3.7 Housekeeping

Site procedures require a high standard of housekeeping to ensure that incompatible materials are separated and stored appropriately. Housekeeping inspections are conducted weekly. Waste management procedures prevent the build-up of waste on site.

6.3.8 Operator Presence and Competency

Operators are always present during manufacturing and transfer activities undertaken at the BGER site. In particular:

- Competent operators will always present within the ANE manufacturing area during the manufacturing process.
- Competent operators will always present during the ANSOL and fuel blend manufacturing and transfer processes,
- Competent operators will always present during ANE load out to delivery tankers,
- Competent delivery driver will always be present during filling of diesel storage tank, and
- Competent operator will be present during delivery of bulk AN into the AN storage sheds.

Operational control measures for manual tasks and operation of the PLC system will be for operators to follow operating instructions. A comprehensive set of operational instructions for the plant and site operations has been developed. A training needs analysis is in place for each operator and training in the required operational procedures conducted. Records of the training needs analysis, copies of procedures and training assessments are held for each operator.

6.3.9 Site Security

The SMS facility is located within a fenced area on the BGER with locked gates to ensure the security of Security Sensitive Ammonium Nitrate (SSAN) stored on the site. Security monitoring systems, cameras and alarms have been installed. Site security is also integrated with the BGER site security systems.

7. SAFETY MANAGEMENT SYSTEM

A comprehensive Safety Management System (SMS) has been developed for the SMS facility. This document describes all the policies, standards, processes, and procedures for the safe and efficient operation of SMS facility. Table 4 shows how the requirements of the SMS are addressed by policy and procedure documents. Each of these elements has a defined process with reference to procedures and forms in supporting management systems.

Table 4. Safety Management System Elements

SMS Requirement	How Addressed
Leadership, management, accountability, and commitment	<ul style="list-style-type: none"> • Health & Safety Policy • Accountability & Responsibility • Responsibility Matrix • Management Review • Delegation of SHE Responsibilities
Hazard and risk management	<ul style="list-style-type: none"> • Risk management • Engineering Design and Risk Analysis • Hazard Reporting
Information and documentation	<ul style="list-style-type: none"> • Integrated Management System
Design and construction	<ul style="list-style-type: none"> • Basis of Safety • Engineering Design and Risk Analysis
Incident management	<ul style="list-style-type: none"> • Incident Management • Incident Investigation and Reporting • Incident Reporting Matrix
Management of change	<ul style="list-style-type: none"> • Change Management • Clearance Certificate & Permit to Work
Contractor management	<ul style="list-style-type: none"> • Subcontractor Management
Emergency preparedness and response	<ul style="list-style-type: none"> • Incident and Emergency Procedures
Purchasing	<ul style="list-style-type: none"> • Purchasing controls and management
Asset Integrity	<ul style="list-style-type: none"> • Scheduled Maintenance • Defect Management
Systems of work	<ul style="list-style-type: none"> • Systems of work

SMS Requirement	How Addressed
Personnel	<ul style="list-style-type: none"> • Training/Competent People • Training Needs Analysis • Communication & Consultation • Site Authorisations
Monitoring, auditing, review, and improvement	<ul style="list-style-type: none"> • Continual Improvement • Performance Standards & Metrics • Inspections and Audits • Objectives and Targets
Health and fitness for work	<ul style="list-style-type: none"> • Occupational Health
Environment and waste management	<ul style="list-style-type: none"> • Care for the Environment

8. RISK ASSESSMENT AND CONSEQUENCE ANALYSIS

8.1.2 Risk Scenarios

The risk scenarios that have been considered for the SMS facility in this section. They consider the local conditions, including bushfire hazard areas and meteorological conditions. On this basis the risk scenarios are:

Explosion of ANE during manufacturing (10 kg in process)

The continuous ANE manufacturing process minimises the amount of in-process ANE in the system (in pumps, pipes, and mixers). It is estimated that the amount of in-process ANE during production will be approximately 10kg. In this scenario it is assumed that explosion of in-process ANE would occur *without warning*. This is the worst case scenario. In practice, prior warning would be provided by the control systems on the plant linked to the PLC control system and alarms. These safety systems would shut the plant down immediately.

Explosion of AN storage as a result of fire (maximum 170 t of AN per storage)

There are 4 AN storage sheds on the site as shown in the table below. They are separated from each other so it is assumed that in the unlikely event that an entire storage explodes, the explosion would not propagate to an adjacent AN store. In this scenario it is assumed that explosion in an AN storage would occur *with warning*.

Table 5: Proposed AN Storage Sites¹

AN Storage Site	Capacity (t)	NEQ (t) - 32% TNT
Shed 70 ²	110	36
Shed 70b ³	170	55
Shed 70c ³	170	55

1. Shed 69a is the day store and will continue to be used as a temporary store. AN will be transported from the AN storage site to the day store and unused AN returned at the end of the day. Total quantity of AN on site will not exceed 450t as shown in table 1.
2. Existing shed
3. New sheds

Explosion of ANE storage as a result of fire (maximum 105 t of ANE)

The industry reference case is the incident at Porgera (PNG), where burning fuel from a spill engulfed ANE tanks that eventually exploded. The SMS facility has been designed such that ANE storage and fuel are separated from the ANE manufacturing area and that even a fuel spill from the manufacturing unit cannot flow or be directed to the ANE storage tanks. The explosion of 4 storage tanks and the ANE rework tank (ie total of 105 t) has been considered as a criterion for consequence analysis. In the scenario it is assumed that explosion of the ANE storage would occur *with warning*.

Table 6: ANE Storage Sites

ANE Storage Site	Capacity (t)	NEQ (t) - 80% TNT
4 ANE tanks and Rework Tank	105t	84

8.1.3 Risk Assessment Process

The risk assessment process follows the standard explosives industry process recommended in SAFEX Good Practice Guide GPG-02. The process steps are:

- Determine the TNT Equivalence of materials involved (AN and ANE). The TNT equivalence of AN is 32% and ANE 80%
- Based on the quantities of materials, determine the Net Explosives Quantity (NEQ) for AN and ANE
- Calculate the separation distance to the Maximum Allowable Overpressures for the various exposed locations and buildings. If the distance is equal or greater than the distance to the Maximum Allowable Overpressures, then an adequate buffer zone exists between the location of the potential explosive event and the exposed site then there is no need to continue the risk assessment process.

8.1.4 Risk Assessment Assumptions

The separation distance between the AN and ANE storages meets the requirements of the AEISG ANE Code, Qld IB53 and AS2187.1 (refer to Appendix 1). Therefore, it is assumed that should explosion of an AN store or ANE store occur, there would be no knock-on effect leading to sympathetic explosion of the other stores. There are therefore six potential explosive sites (PES):

- PES1, 2, 3, 4: Single AN storage with a maximum NEQ of 55 t,
- PES5: ANE storage with a NEQ 84 t (four 90 ANE tanks and rework tank aggregated),
- PES6: In-process ANE with NEQ of 10 kg

In the case of the explosion of ANE in-process (PES6), the separation of the mixer, ANE pump and hopper from the ANE storage tanks and the AN stores is adequate to prevent sympathetic explosion of AN and ANE stores (refer Appendix 1). Risk reduction to employees working in the plant is achieved through the implementation of the best practice control measures discussed in Section 6.3. The layout of the plant has been designed such that a safe, minimum separation will be achieved.

8.1.5 Separation Distances (Quantity Distances – QD)

An exposed site (ES) is defined in the SAFEX Good Practice Guide GPG-02 as infrastructure or a building where people may be exposed to blast effects (from the explosion overpressure), or critical public infrastructure like railway lines, powerlines etc that may be damaged by blast effects.

Exposed sites are classified as Protected Works A, B or as a Vulnerable Facility. ANE Associated Works are offices, workshops, stores, ablutions, that are directly associated with the operation of the ANE premises. External infrastructure not directly involved in the operation of the facility may also be classed as Associated Works if they are fully integrated into the emergency plan for the facility. This situation may arise if there are multiple operations on a particular site. This is the case at the BGER where Johnnex and Howards Fireworks also have operations on the site.

Protected Works Class A include the following:

- Public street, road or thoroughfare, railway, navigable waterway, dock, wharf, pier or jetty, marketplace, public recreation and sports ground or other open place where the public is accustomed to assemble,
- Open place of work in another occupancy, river-wall, seawall, reservoir, water main (above ground), radio or television transmitter, main electrical substation, and
- Private road which is a principal means of access to a church, chapel, college, school, hospital, or factory.

Protected Works Class B include the following:

- Dwelling house, public building, church, chapel, college, school, hospital, theatre, cinema or other building or structure where the public is accustomed to assembling,
- Shop, factory, warehouse, store, building in which any person is employed in any trade or business, depot for the keeping of flammable or dangerous goods, and
- Major dam

Vulnerable Facility includes, but is not restricted to, the following:

- Multistorey buildings, e.g. above 4 storeys,
- Large glass fronted buildings of high population,
- Health care facilities, childcare facilities, schools,
- Public buildings or structures of major historical value,
- Major traffic terminals, e.g. railway stations, airports, and
- Major public utilities, e.g. gas, water, electricity works.

Appendix 1 shows the actual and required separation distances from the plant. The required separation distances from the ANE storage references the AEISG ANE Code (which references AS2187.1) and the separation distances from AN storage which references Qld IB53.

The Johnnex packaged emulsion plant and administration office is treated as an Associated Works. These facilities have been fully integrated into the SMS Emergency Plan. The SMS Emergency Plan incorporates credible evacuation scenarios for *with warning* explosives materials (ANE and AN) that covers to the SMS plant as well as the adjacent Johnnex plant. A credible evacuation scenario is one with a high likelihood that within 45 minutes of the evacuation being initiated there is no person in a building within PWB distance and no person in the open within PWA distance.

There are no Vulnerable Facilities close to the SMS facility.

In all cases, the exposed sites are located further away from the PES than the required separation distances in the AESIG ANE Code and AS 2187.1. This applies to both internal (within the SMS facility, and adjacent facilities on the BGER) and external to the site.

No further risk analysis for AN and ANE storage is required because the separation distances between potential explosives sites and exposed sites are greater than the distances to the maximum allowed overpressure at the exposed sites. This means there is an adequate buffer zone between the facility and infrastructure within the SMS facility and external to the BGER site.

8.1.6 Consequence Analysis

In compliance with the requirements of NSW HIPAP 6, the consequence of the explosion of AN and ANE has been considered. The consequence analysis is based on the acceptable explosion overpressure at the exposed sites to minimise injuries to people and damage to infrastructure. The maximum allowable overpressures are taken from NSW HIPAP 4, which is the recognised standard to ensure an acceptable safety level in relation to the overpressures if a high consequence explosion of AN and ANE occurs.

Table 7. Maximum Allowable Overpressure for Exposed Sites (NSW HIPAP 4)

Type of Infrastructure/Facility	Maximum Allowable Overpressure
Associated Works	21 kPa
Protected Works Class A	14 kPa
Protected Works Class B	7 kPa

The overpressure at all exposed sites will be lower than the maximum allowable overpressure pressure because the exposed sites are further away from the six potential explosion sites than what is required in the AESIG ANE Code, Qld IB53 and AS2187.1. The level of risk for the increased storage of AN and ANE on the site is tolerable and meets the acceptable risk criteria in HIPAP 4.

9. CONCLUSIONS AND RECOMMENDATIONS

1. The SMS ANE manufacturing facility is based on standard, proven ANE manufacturing technology. Appropriate safety control systems and procedures have been incorporated into the plant design in accordance with international explosives industry best practice and the AEISG ANE Code. The plant has been licensed by SafeWork NSW to manufacture ANE and store ANE and AN.
2. The key hazards and risks scenarios for the plant have been identified and appropriate explosives industry control measures have been put in place to ensure that the overall risk to employees and the public can be reduced so far as is reasonably practicable.
3. The existing plant can deliver increased production rates without any changes to processes and equipment.
4. Additional ANE and AN storage will be required on the site to meet higher levels of production. There are adequate buffer zones between the ANE and AN storages and infrastructure on the BGER and external public infrastructure.
5. A comprehensive Safety Management System has been developed for the SMS facility that incorporates requirements to operate the plant at increased rates of production.
6. The Emergency Plan for the SMS facility will be upgraded to include credible evacuation scenarios that are fully integrated with other operations on the BGER. Evacuation plans will be integrated into the BGER emergency plan and site communication system.

APPENDIX 1: SEPARATION DISTANCES**Table A1.1 – Separation Distances on the BGER**

Potential Explosion Site (PES)	NEQ (t)	Johnnex ANE Store Exposed Site (ES)		Johnnex AN Store Exposed Site (ES)		Johnnex Class 1 Magazine Exposed Site (ES)			Johnnex (Associated Works) Exposed Site (ES)			Nearest House (PWB) Exposed Site (ES) (Jim's House)	
		Actual (m)	Required (m)	Actual (m)	Required (m)	75t	100t	Required (m)	Office	Factory	Required (m)	Actual (m)	Required (m)
						Actual (m)	Actual (m)		Actual (m)	Actual (m)			
ANE Store ¹	84	724	209	669m	79	585	604	209	918	762	349	1,349	969
AN Store Shed 70 ²	36	605	157	655m	59	428	463	157	924	657	262	1,367	583
AN Store Shed 70B ²	55	563	182	705m	68	470	421	182	982	716	303	1,424	674
AN Store Shed 70C ²	55	540	182	747m	68	485	406	182	1013	745	303	1,460	674

Table A1.2 Separation Distances to External Infrastructure

Potential Explosion Site (PES)	NEQ (t)	Cemetery (PWA) Exposed Site (ES)		Railway Line (PWA) Exposed Site (ES)		Highway (PWA) Exposed Site (ES)		Communication Tower (PWA) Exposed Site (ES)		Nearest Dwelling outside BGER (PWB)		Nearest Dwelling in Bogan Gate township	
		Actual (m)	Required (m)	Actual (m)	Required (m)	Actual (m)	Required (m)	Actual (m)	Required (m)	Actual (m)	Required (m)	Actual (m)	Required (m)
ANE Store ¹	84	714	646	1,541	646	1,571	646	1,416	646	1,780	969	1,925	969
AN Store Shed 70 ²	36	576	341	1,467	341	1,498	341	1,319	341	1,712	583	1,789	583
AN Store Shed 70B ²	55	625	394	1,530	394	1,559	394	1,380	394	1,777	674	1,837	674
AN Store Shed 70C ²	55	647	394	1,560	394	1,587	394	1,407	394	1,803	674	1,856	674

Table A1.3 Separation Distances between AN and ANE Stores

Potential Explosion Site (PES)	NEQ (t)	ANE Store Exposed Site (ES)		Shed 70B Exposed Site (ES)		Shed 70 Exposed Site (ES)		Shed 70C Exposed Site (ES)	
		Actual (m)	Required (m)	Actual (m)	Required (m)	Actual (m)	Required (m)	Actual (m)	Required (m)
		ANE Store ¹	84	-	-	145	79	146	79
AN Store Shed 70 ²	36	147	59	44	8	-	-	76	8
AN Store Shed 70B ²	55	145	68	-	-	44	8	10	8
AN Store Shed 70C ²	55	161	68	10	8	76	8	-	-

Notes to tables A1.1 – A1.3:

1. Reference AEISG ANE Storage Code
2. Qld IB53

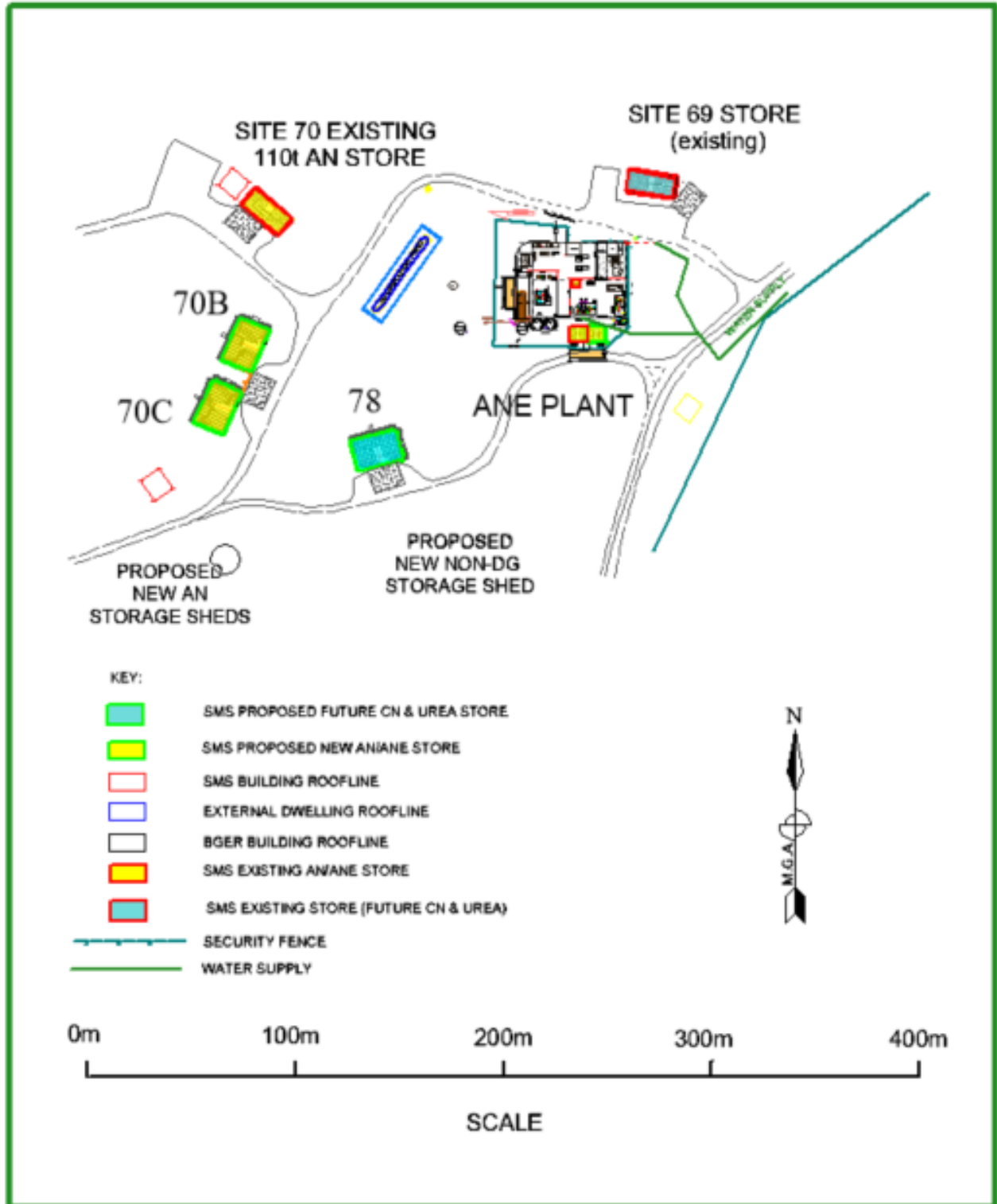
Table A1.4 Separation Distances between in Process ANE and Other Stores and Facilities

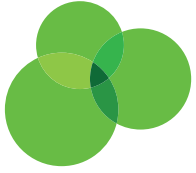
Potential Explosion Site (PES)	NEQ (kg)	ANE Store Exposed Site (ES)		Closest AN Store Exposed Site (ES)		Lunchroom (Associated Works)** Exposed Site (ES)		Toilet (Associated Works)** Exposed Site (ES)	
		Actual (m)	Required (m)	Actual (m)	Required (m)	Actual (m)	Required (m)	Actual (m)	Required (m)
		ANE in Process	10	16	10	17	4	13	4

activity area so separation distance to AN store applies (see table 6.3, AEISG Code)

** Low

APPENDIX 2: PROPOSED PLANT LAYOUT





Appendix I. GHD Traffic Impact Assessment



Traffic Impact Assessment

Proposed Increased Capacity of ANE Manufacturing and Storage Facility

Solar Mining Services Pty Ltd

August 16, 2023

→ **The Power of Commitment**



Project name		Bogan Gate Traffic Impact Assessment					
Document title		Traffic Impact Assessment Proposed Increased Capacity of ANE Manufacturing and Storage Facility					
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Appendices

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Appendix B	TfNSW TIA Requirements
Appendix C	Driver Code of Conduct

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1. Introduction

1.1 Background

GHD has been commissioned by Currajong (on behalf of Solar Mining Services) to undertake a Traffic Impact Assessment (TIA) to support a development application for an expansion of the existing Ammonium Nitrate Emulsion (ANE) manufacturing and storage facility (hereafter referred as the facility), operated by Solar Mining Services (the proponent) at 3577 Henry Parkes Way, Bogan Gate.

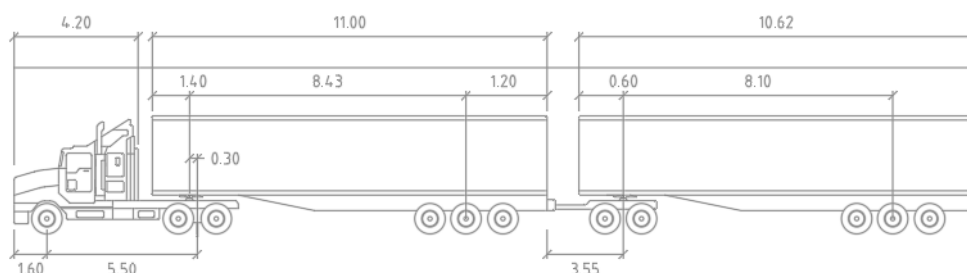
The expansion of the existing ANE facility has triggered an Environmental Impact Statement (EIS), for which the Department of Planning, Industry and Environment (DPIE) has issued the proponent a requirement for a traffic and transport assessment as part of the Planning Secretary's Environmental Assessment Requirements (SEAR) for the facility's expansion.

The existing facility currently holds a permit for the manufacturing of up to 960 tonnes per annum of ANE as per DA2020/0073 granted by Parkes Shire Council on 18 November 2020. The facility proposes to increase the processing capacity to permit the following:

- Manufacturing of up to 20,000 tonnes of ANE per annum.
- Storage of up to 450 tonnes of Ammonium Nitrate (AN) at any one time.
- Storage of up to 100 tonnes of ANE at any one time.

1.2 Haulage vehicle

With the expansion of the existing facility, the proponent is also seeking vehicle access for B-Double (26 metre) and A-Double (30 metre) vehicles (refer to Figure 1.1 for the reference A-Double vehicle) to access/egress the site. The existing DA for the site limits heavy vehicle deliveries to the site to 19 metre semi-trailers.



A DOUBLE 30m REF VE AS ADVISED BY CLIENT

	Tractor	Trailer	Tractor	Trailer
Tractor Width	: 2.50	Lock to Lock Time	: 6.0	
Trailer Width	: 2.50	Steering Angle	: 23.4	
Tractor Track	: 2.50	Articulating Angle	: 70.0	
Trailer Track	: 2.50			

Figure 1.1 Proposed heavy vehicle configuration A-Double (30 metre) to access the site

1.3 Purpose of this report

The purpose of this report is to satisfactorily address the traffic and transport assessment requirements for the SEAR for the facility's expansion, inclusive of TfNSW requirements outlined in Appendix B:

- Details of road transport routes and access to the site.
- Road traffic predictions for the development during construction and operation, including cumulative impacts.
- Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site.
- An assessment of impacts on the safety and function of the road network and the details of any road upgrades required for the development.

Additional assessment has also been included in this report to assess the safe access of A-Doubles vehicles to the site (as the largest heavy vehicle type).

1.4 Site location

The facility is located at 3577 Henry Parkes Way on the southern side of Lot 2 DP 1064474 as shown in Figure 1.2 below, approximately 33 kilometres west of Parkes.



Figure 1.2 ANE Manufacturing and Storage Facility

Source Google Maps Modified by GHD

Access to the proposed facility (refer to Figure 1.3) will be provided via Memorial Lane (as per the current arrangement), which intersects Henry Parkes Way at a priority controlled (Give Way) intersection.

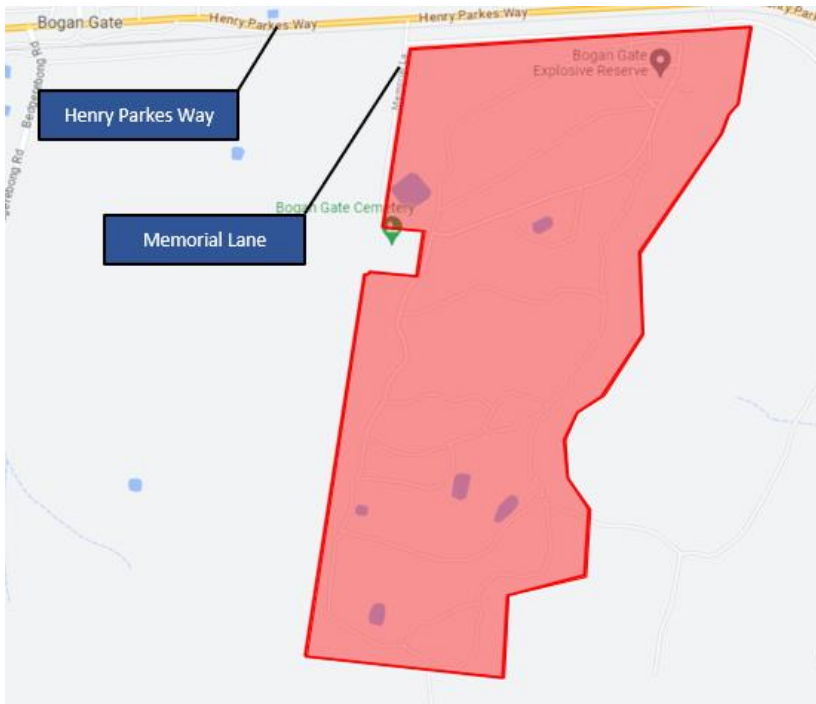


Figure 1.3 Road network

Source Google Maps modified by GHD

1.5 Scope and limitations

As part of the SEARs, Transport for NSW has requested the traffic assessment for the site to address the following requirements:

Table 1.1 TfNSW requirements

Requirements	Comments
<ul style="list-style-type: none"> – Project schedule: <ul style="list-style-type: none"> • Hours and days of work, number of shifts and start and end times • Phases and stages of the project, including construction and operation 	Addressed in Section 3.3
<ul style="list-style-type: none"> – Traffic volumes including: <ul style="list-style-type: none"> • Existing background traffic • Project- related traffic for each phase or stage of the project • Projected cumulative traffic at commencement of operation, and a 10-year horizon post-commencement 	Addressed in Section 2.3.1 and Section 3.6
<ul style="list-style-type: none"> – Traffic characteristics including: <ul style="list-style-type: none"> • Number and ratio of heavy vehicles to light vehicles • Peak times for existing traffic • Peak times for project- related traffic including commuter periods • Interactions between existing and project- related traffic • Sources for input materials and quantification of traffic generation associated with the haulage of the source materials 	Addressed in Section 2.3.1 and Section 3.3
<ul style="list-style-type: none"> – Road safety assessment of key haulage routes 	Addressed in Section 2.6.1 and Section 2.6.2
<ul style="list-style-type: none"> – Controls for transport and use of any dangerous goods in accordance with State Environmental Planning Policy No.33 – Hazardous and Offensive Development, the Australian Dangerous Goods Code and AS4452 Storage and Handling of Toxic Substance. 	Addressed in Section 3.8

Requirements	Comments
<ul style="list-style-type: none"> – Identify the necessary road network infrastructure upgrades that are required to cater for and mitigate the impact of project related traffic on both the local and classified road network for the development (for instance, road widening and/or intersection treatments). In this regard, preliminary concept drawings need to be submitted with the EIS application for any identified road infrastructure upgrades. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council. 	Addressed in Section 3.4 and Section 3.5
<ul style="list-style-type: none"> – Proposed road facilities, access and intersection treatments are to be identified and be in accordance with Austroads Guide to Road Design including provision of Safe Intersection Sight Distance (SISD). 	Addressed in Section 2.6.2
<ul style="list-style-type: none"> – Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather). 	Addressed in Section 2.6.1 and Section 2.6.2
<ul style="list-style-type: none"> – The layout of the internal road network, parking facilities and infrastructure. 	Addressed in Section 3.2
<ul style="list-style-type: none"> – Impact on rail corridors and level crossings detailing any proposed interface treatments. Note, the rail manager for rail corridors in the vicinity of the site is ARTC. 	Addressed in Section 2.2
<ul style="list-style-type: none"> – Propose a Driver Code of Conduct for haulage operations which could include, but not be limited to: <ul style="list-style-type: none"> • Safety initiatives for haulage through residential areas and/or school zones • An induction process for vehicle operators and regular toolbox meetings 	Addressed in Section 3.9

The development of the Traffic Assessment has relied on the following information and assumptions:

- Concept plans for the proposed ANE manufacturing and storage facility were sourced from the Scoping Report prepared by Curranjong.
- Existing traffic volume information was sourced from traffic surveys conducted by Transport for NSW (TfNSW) in 2018.
- An annual growth rate of 2.5 percent has been applied to the current volumes to determine the projected 2033 background traffic volumes.
- Trip generation and traffic distribution assumptions were made on a first principles basis in relation to information provided by the client.
- No site visit was completed by GHD staff. The conditions of the surrounding network were based on information supplied by the traffic surveys and Google Maps / Street view, as well as a ground survey undertaken by a survey consultant of the intersection of Memorial Lane/Henry Parkes Way, and the adjacent heavy rail crossing of the Parkes to Broken Hill line.
- Road upgrades necessary to allow A-Double access to the site has also been identified, based on a reference A-Double vehicle provided by the proponent.

1.6 Report structure

The TIA is structured as follows:

- Section 1 Introduction
- Section 2 Existing Conditions
- Section 3 Impact Assessment
- Section 4 Summary and Conclusions

2. Existing conditions

2.1 Existing road network

2.1.1 Road hierarchy

Functional road classification involves the relative balance of mobility and access functions. Transport for NSW (TfNSW) define four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility to high accessibility and low mobility. These road classes are:

Arterial Roads – generally controlled by Transport for NSW, typically no limit in flow and designed to carry vehicles long distance between regional centres.

Sub-Arterial Roads – can be managed by either Transport for NSW or local council. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a subregion or provide connectivity from arterial road routes (regional links).

Collector Roads – provide connectivity between local roads and the arterial road network and typically carry between 2,000 and 10,000 vehicles per day.

Local Roads – provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

A summary of the key roads in proximity to the proposed subdivision is provided below.

2.1.1.1 Henry Parkes Way

Henry Parkes Way (refer to Figure 2.1) is an arterial road that intersects Memorial Lane at a priority controlled intersection. Henry Parkes Way has the following key features as outlined in Table 2.1 below.

Table 2.1 Henry Parkes Way key features

Feature	Description
Carriageway	An undivided carriageway with a single travel lane in either direction, and a broken barrier line in the centre.
Parking	On-street parking typically is unavailable on Henry Parkes Way.
Speed Limit	100 km/h
Pedestrian Facilities	No dedicated facilities
Bicycle Facilities	No dedicated facilities
Vehicle Permit	Permitted route for both B-Double (26 metre) and Performance Based Standards (PBS) vehicles up to 30 metre in length, including A-Doubles.
Public Transport	Bus stops are not provided on Henry Parkes Way at the intersection with Memorial Lane.



Figure 2.1 Henry Parkes Way east of Memorial Lane looking west

Source: Google Streetview (April 2010)

2.1.1.2 Memorial Lane

Memorial Lane (refer to Figure 2.2) is a local road that provides access to the facility. In proximity to the facility, Memorial Lane has the following key features as outlined in Table 2.2 below.

Table 2.2 Memorial Lane key features

Feature	Description
Carriageway	Typically an undivided carriageway, with a single travel lane in each direction. Memorial Lane has a carriageway width of approximately six metres, without kerb and gutter.
Parking	There is insufficient road reserve width to support on-street parking.
Speed Limit	50 km/h
Pedestrian Facilities	No footpaths are provided on Memorial Lane
Bicycle Facilities	No dedicated facilities
Vehicle Permit	General access vehicles only (up to semi-trailers)
Public Transport	No dedicated facilities



Figure 2.2 Memorial Lane looking south from Henry Parkes Way

Source: Google Streetview (April 2010)

2.2 Railway crossing

2.2.1 Location

A heavy railway crossing is located approximately 30 metres south of the Henry Parkes Way intersection with Memorial Lane, as shown in Figure 2.3 below.



Figure 2.3 Railway Crossing at Memorial Lane

Source: Google Streetview (June 2023)

2.2.2 Frequency of train

The frequency of the trains passing through the railway crossing was extracted from the ARTC website and summarised in Table 2.3 below.

Table 2.3 Train Frequency

Day	Cootamundra West- Broken Hill (Number of Trains through Railway Crossing)	Broken Hill – Cootamundra West (Number of Trains through Railway Crossing)
Monday	3	2
Tuesday	2	4
Wednesday	5	4
Thursday	3	1
Friday	2	2
Saturday	2	3
Sunday	1	4

The data in Table 2.3 indicated, train frequencies vary from a low of five daily services (on a Sunday) to a high of nine daily services (on a Wednesday). The maximum permitted section train speeds in the vicinity of the level crossing is 145 kilometres per hour for passenger train services (NSW Train Link Explorer service), and 115 kilometres per hour for freight services.

2.3 Existing traffic volumes

2.3.1 Traffic surveys

A traffic survey was conducted by TfNSW in 2018 on the eastern approach to Bogan Gate on Henry Parkes Way, with 998 bi-directional vehicles per day, including 24.1 percent heavy vehicles. Comparing the 2018 traffic volumes with 2017 traffic volumes, the annual traffic growth rate was 0.5 percent.

According to the Austroads, *Guide to Traffic Management Part 6: Intersection Interchanges and Crossing Management*, the Design Peak Hour Traffic Volume for rural roads typically ranges from 11 percent to 16 percent of daily traffic. A design peak hour of 12.5 percent was adopted for Henry Parkes Way, which equated to a peak hour volume of 125 (bi-directional) vehicles per hour (2018).

Assuming an conservative linear growth rate of 2.5 percent, a design peak hour volume would equate to 141 (bi-directional) vehicles in 2023.

For the purpose of estimating existing trip directionality (i.e. eastbound vs westbound trips), 70 percent of movements were assumed to be travelling to the east in the morning (AM) peak, with 30 percent travelling to the west, with these movements reversed for the afternoon (PM) peak.

Currently, the facility is approved for up to six truck trips (in and out) per day and ten light vehicles trips (in and out) per day, with a total of 16 vehicles movement (in and out) per day. For a conservative approach, it is assumed that all the vehicle movement will occur in each of the AM and PM peak periods, with eight movements in each peak periods.

For the AM peak, it is assumed that 70 percent will be inbound trips and 30 percent will be outbound trips with a reverse of those movements in the PM peak.

For trip distribution it has been assumed the majority of movements will occur from/to the direction of Parkes, as detailed in Table 2.4. below.

Table 2.4 Trip distribution data

Peak hour	Inbound		Outbound	
	From the east	From the west	To the east	To the west
AM peak hour	80%	20%	80%	20%
PM peak hour	80%	20%	80%	20%

The existing peak hour traffic volumes based on the assumptions described above are displayed in Figure 2.4.

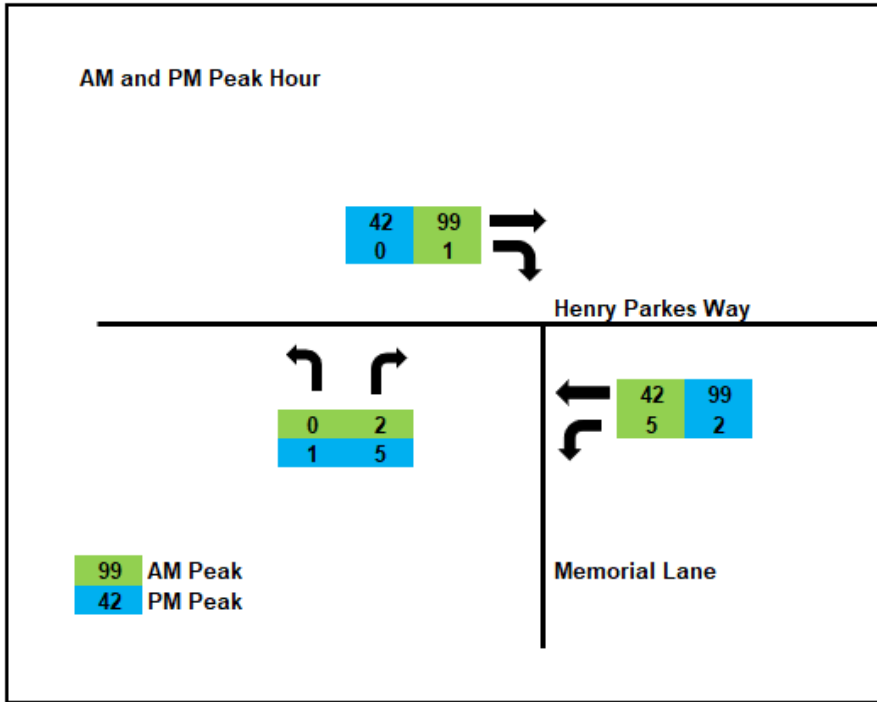


Figure 2.4 Current peak hour traffic volumes

2.4 Existing road permit

The TfNSW PBS (Performance Based Standards) Map (refer Figure 2.5) indicates that the Henry Parkes Way is a PBS 2B Tier-1 approved route, catering for high productivity vehicles of up to 30 metres in length.

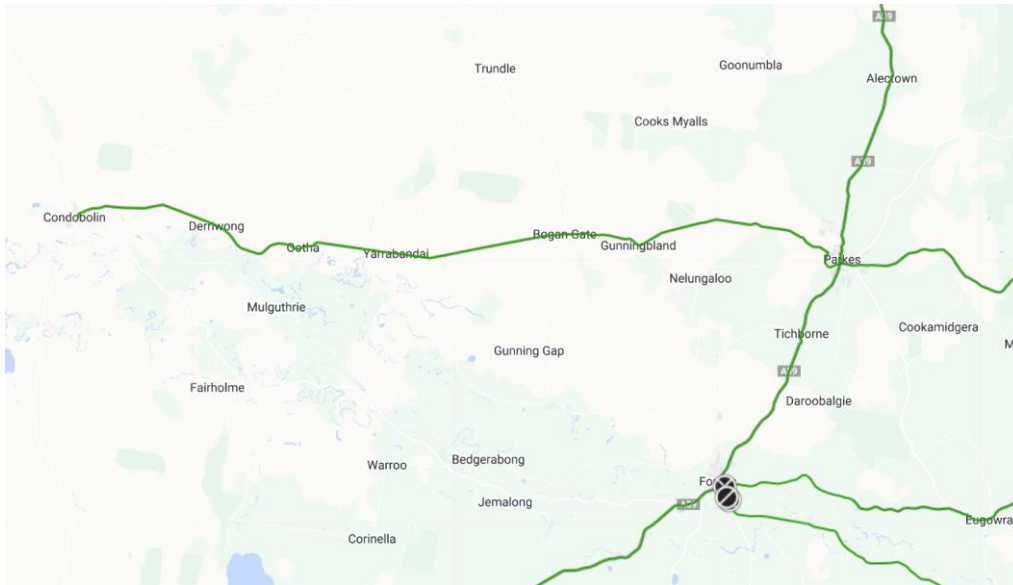


Figure 2.5 PBS 2B – Tier 1 mass approved route map

Source: Transport for NSW, Performance Based Standard Map

Being a low volume local road, Memorial Lane is a general access road, with heavy vehicle access limited to 19 metre semi-trailers.

2.5 Crash data

A review of crash data provided from the TfNSW Centre for Road Safety website has been undertaken. The review is based on five years (2017-2021) for roads within the vicinity of the subject site as shown in Figure 2.6 below. The data indicates that:

- There have been no crashes on Henry Parkes Way within 350 metres of the intersection with Memorial Lane. However, a crash has been recorded in 2018 approximately 1.3 kilometres east of the intersection at the Rawson Road/Henry Parkes Way intersection, which was categorised as a serious injury crash.
- There has been no recorded crashes on Memorial Lane.



Figure 2.6 Crash statistics in the vicinity of the facility

Source: TfNSW Centre for Road Safety modified by GHD

2.6 Ground survey

A ground survey was undertaken on the immediate area of the Henry Parkes Way and Memorial Lane intersection including the adjacent heavy railway crossing. The survey identified existing road and railway crossing signage, vegetation, spot road heights, intersection sight distance, utilities, road edgeline, shoulders, and confirmed distances between the intersection of Henry Parkes Way and the heavy railway crossing.

2.6.1 Existing traffic control signs

The existing warning signs identified from the survey were assessed against Transport for NSW standards and were found to be satisfactory.

However, the extent of the survey did not assess existing warning signs south of the railway crossing. As such, it is recommended that warning signs south of level crossing be confirmed through an additional site visit (as shown in Figure 2.7 below).

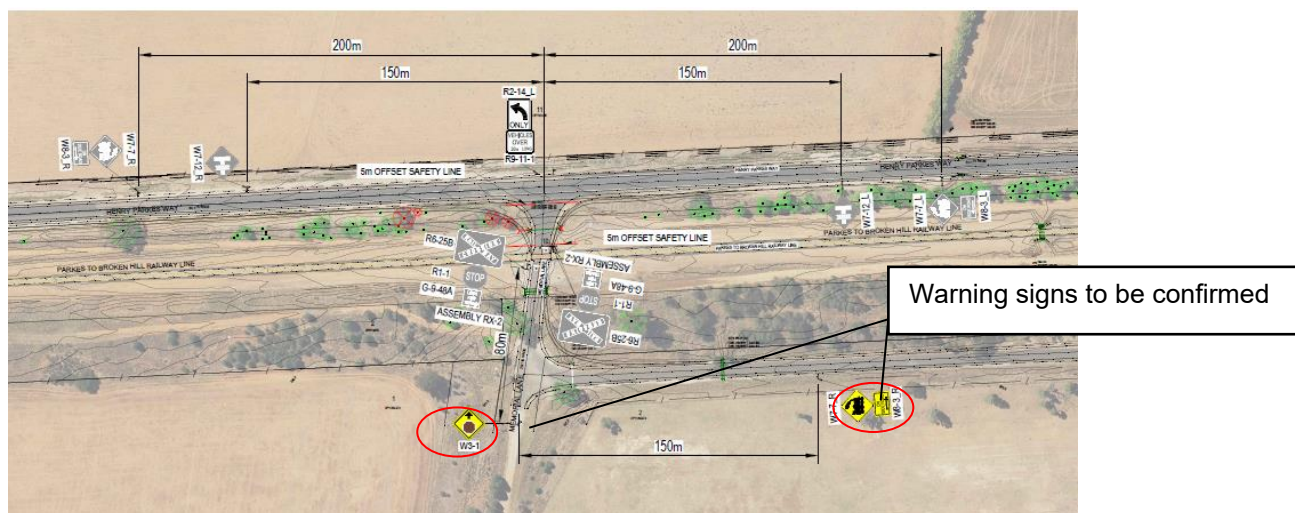


Figure 2.7 Existing traffic control signs

Source: MetroMap modified by GHD

2.6.2 Sight distance

As per Transport for NSW standards, the minimum sight distance and safe intersection sight distance required on either side on Henry Parkes Way are 205 and 320 metres, respectively.

The surveyed data was exported to AutoCAD and the available sight distance and safe intersection sight distance was checked. From Figure 2.8, it is noted that some vegetation clearing adjacent to the intersection would be required to maintain minimum sight and safe intersection sight distances.

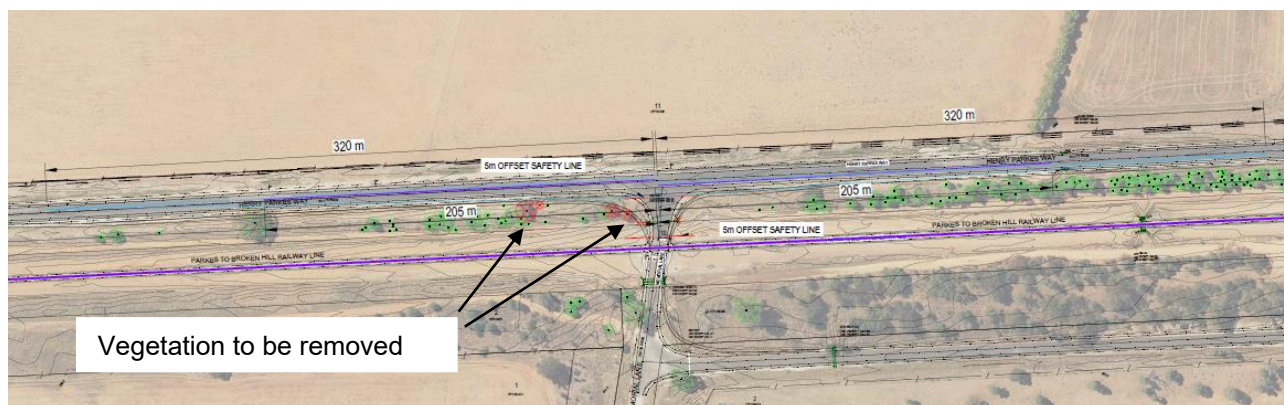


Figure 2.8 Sight distance and safe intersection sight distance

Source: MetroMap modified by GHD

3. Impact assessment

3.1 Development overview

In terms of the development, it is noted that:

- The site (refer Figure 3.1) of the Solar Mining Services (SMS) ANE manufacturing and storage facility is located on the southern portion of Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate.
- Lot 2 DP 1064474 is owned by Lexa Enterprises Pty Ltd who have granted various leases for existing land-use activities on the site, including a lease to SMS for ANE manufacturing and storage.
- The proposed development is characterised as a heavy industry, which is prohibited on land zoned RU1 Primary Production.
- The proposal seeks to increase the production capacity at the SMS ANE facility to the following:
 - Manufacturing of up to 20,000 tonnes of Ammonium Nitrate Emulsion (ANE) per annum
 - Storage of 450 tonnes of Ammonium Nitrate (AN) at any one time
 - Storage of 100 tonnes of ANE at any one time
- Other materials are stored at the existing premises, such as Calcium Nitrate (CN) and diesel, and will remain at their current storage limits approved under DA2020/0073.
- The site is located approximately 35 kilometres west of Parkes and the nearest residences to the site are located approximately 1.5 kilometres to the north of the facility, within the minimum safety distances recommended for the residences.

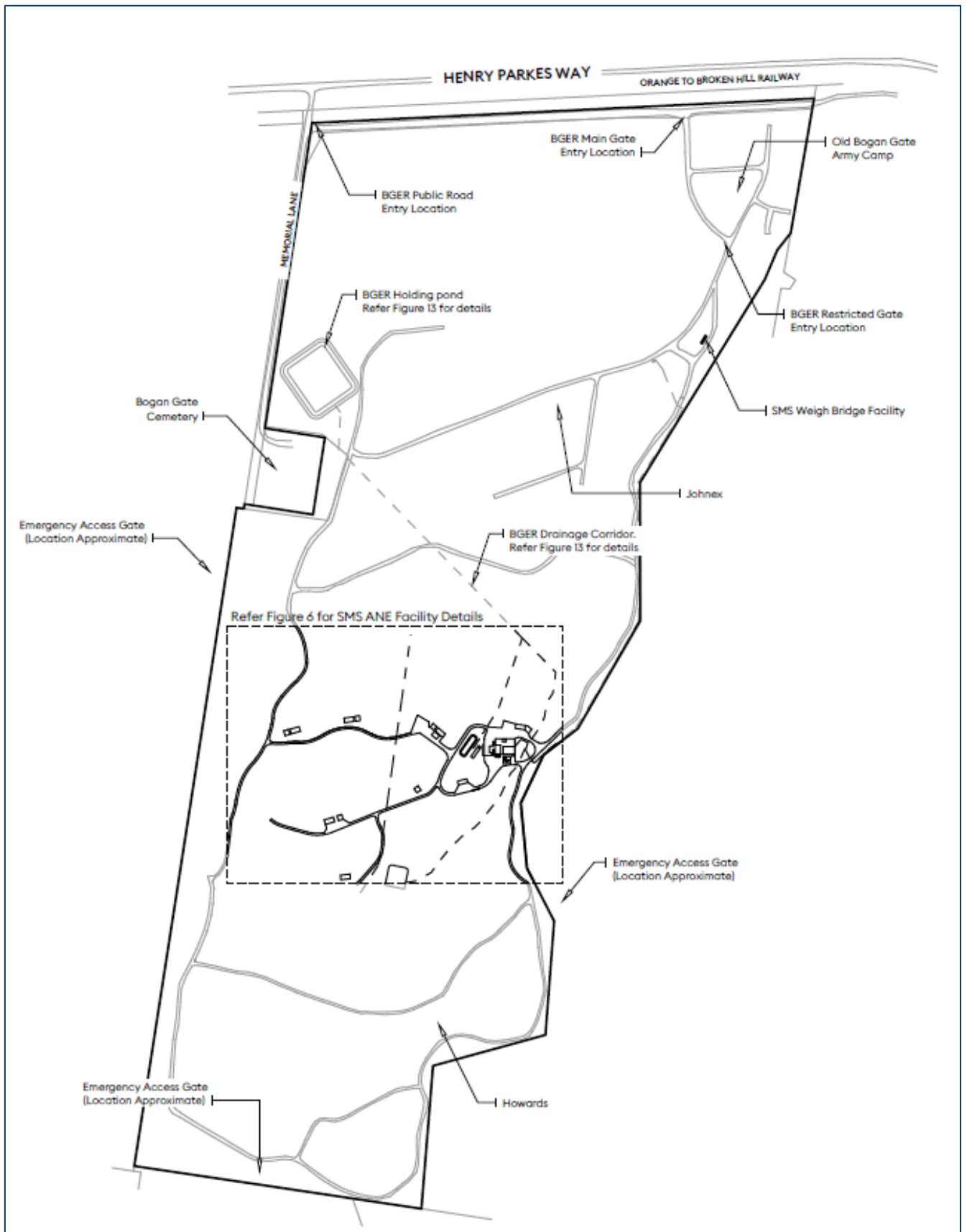


Figure 3.1 Proposed development

Source: Scoping Report prepared by Currajong

3.2 Internal road network, parking facilities and infrastructure

The proposal involves alterations and additions to the existing SMS ANE Facility at the BGER, including increased transport operations to deliver raw products, and finished ANE for delivery in trucks to various locations in NSW and potentially further afield. Access to the subject site is existing via existing internal roads, Memorial Lane and then onto the Henry Parkes Way. Truck deliveries of raw products, unloading operations and product dispatch from the existing SMS ANE Facility is undertaken via the existing internal SMS gravel access road that links to a bitumen sealed internal road at the BGER Gatehouse, and then onto Memorial Lane and Henry Parkes Way, which are bitumen sealed public roads. A weighbridge has been installed south of the BGER Gatehouse by SMS to check compliance with truck load limits and determine customer billing of ANE product. Concrete loading areas are to be established at each of the storage sheds and manufacturing plant. There are dedicated light vehicle parking stations, including at the SMS ANE plant site.

3.3 Staff, operations and vehicle movements

The details regarding staff and operations (approved and proposed) are presented in Table 3.1 below.

Table 3.1 Staff and Operation (Approved and Proposed)

Development Aspect	Approved DA	Proposed DA
Hours of Operation	<ul style="list-style-type: none"> – 7:00 am to 6:00 pm on weekdays – 8:00 am to 1:00 pm on Saturday – No work on Sunday and Public Holiday 	<p>The SMS ANE facility is designed to operate seven (7) days a week. A two (2) shift operation is proposed to manufacture up to 20,000 tonnes ANE per year. The hours of operation under this scenario would be as follows:</p> <p>Monday to Saturday</p> <ul style="list-style-type: none"> – Shift 1 – 7:00 am to 2:00 pm – Shift 2 – 2:00 pm to 9:45 pm <p>Sundays or Public Holidays</p> <ul style="list-style-type: none"> – Shift 1 – 8:00 am to 2:00 pm – Shift 2 – 2:00 pm to 9:45 pm <p>Operation of the SMS ANE manufacturing plant on a two (2) shift roster would only be required where the plant reaches consistent production rates over 12,000 tonnes of ANE per annum. Until this production threshold is met, the SMS ANE facility would operate under the following hours of operation:</p> <ul style="list-style-type: none"> – Monday to Saturday: 7:00 am to 6:00 pm – Sundays and Public Holidays: 8:00 am to 6:00 pm <p>In general, no manufacturing process changes are required to the existing SME ANE Facility to accommodate the production increases up to 20,000 tonnes per annum, other than increased storage, handling and transport of raw materials, and finished ANE product.</p>
Staff	<ul style="list-style-type: none"> – Four (4) Staff 	<ul style="list-style-type: none"> – Eight (8) staff per day in two shift operation
Heavy vehicle	<ul style="list-style-type: none"> – 6 trucks (in and out) day 	<ul style="list-style-type: none"> – Indicative daily truck movements: 2 A-Doubles, 2 B-Doubles (total 8 heavy vehicle movements (in and out). – Maximum daily truck movements: 8 heavy vehicles (total 16 heavy vehicle movements in and out). <i>Maximum daily truck movements has formed the basis of the traffic impact assessment.</i>
Light vehicle	<ul style="list-style-type: none"> – 10 light vehicle trips (in and out) per day 	<ul style="list-style-type: none"> – 24 light vehicle trips (in and out) per day

From Table 3.1, the development would result in a minor increase in operational staff, with a consequent minor increase in light vehicle movements to the site (10 to 24 light vehicle trips per day). Further, a minor increase in daily heavy vehicle movements is also forecast (from six to eight).

3.4 Swept path analysis

Swept path analysis was undertaken for the three intersections to identify potential issues with the use of A-Double vehicles (as the largest heavy vehicle type) accessing the site from Henry Parkes Way.

In addition to this, heavy vehicle swept path analysis was also undertaken for the intersection of Leafy Tank Road / Henry Parkes Way, where downstream u-turn movements will be required to facilitate A-Double (and B-Double) egress from the site.

Swept path analysis was also undertaken with the semi-trailers in which no issues were identified (as shown in Appendix A).

3.4.1 Henry Parkes Way/Memorial Lane

Short Stacking:

To assess the potential impact of 30 metre A-Double (as the largest heavy vehicle) access to the site, preliminary swept path analysis using the existing network and intersection geometries was assessed.

The analysis identified that A-Doubles would not be able to safely store on the level crossing (for southbound movements), without impacting through movements on Henry Parkes Way. For the reverse (northbound) movements, A-Double vehicles propped to undertake a right-turn to head east on Henry Parkes Way, would straddle the level crossing, causing a short-staking issue. A summary of the analysis for each movement is shown below in Figure 3.2.



Figure 3.2 Short stacking issue with A-Doubles (existing conditions)

Source: MetroMap Modified by GHD

In order to mitigate the risk of short stacking, exiting A-Double vehicles would be required to turn left inclusive of an auxiliary left turn lane to overcome sight distance issues (discussed further in Section 3.7), before undertaking a u-turn at a designated intersection.

For A-Double vehicles accessing the site, localised widening to provide an auxiliary left turn lane would be required to ensure a left-turning A-Double could safely store at the level crossing, without impacting on through movements along Henry Parkes Way. A summary of works required to accommodate A-Double access and egress from the Memorial Lane intersection (inclusive of the level crossing) is shown below in Figure 3.3.

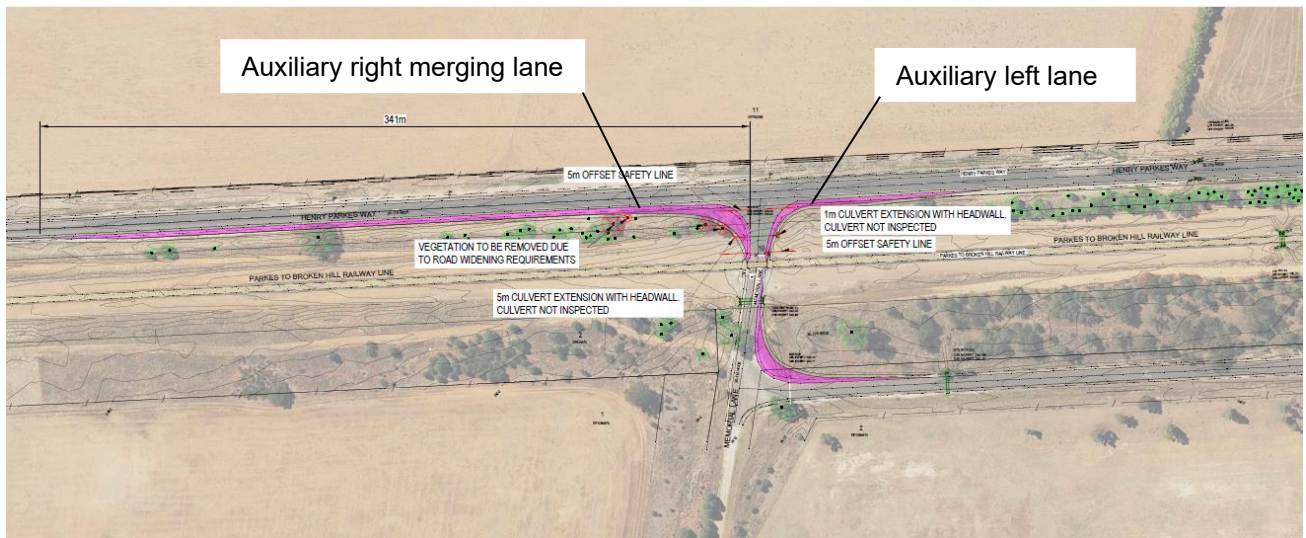


Figure 3.3 Proposed widening at the intersection of Memorial Lane and Henry Parkes Way

Source: MetroMap Modified by GHD

The proposed intersection upgrade to accommodate A-Double movements (inclusive of intersection sight distance clearing) would also provide safer access to the site for all vehicles, including the additional staff accessing the site.

Swept path plans for A-Doubles entering and exiting the site are provided in Appendix A.

3.4.2 Memorial Lane/BGER Service Road

Swept paths showing A-Doubles entering and exiting the site through the intersection of Memorial Lane/BGER Service Road is shown below in Figure 3.4.

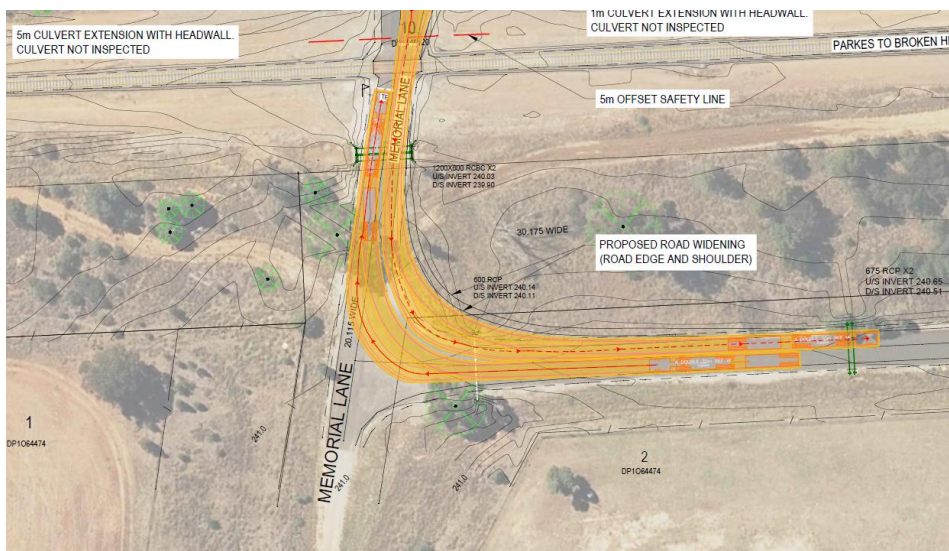


Figure 3.4 Turning paths at Memorial Lane/BGER Service Road intersection (A-double)

Source: MetroMap Modified by GHD

The existing intersection configuration does not allow for A-Doubles (noting the existing corridor is only gazetted for semi-trailer movements). A widening of the intersection would be required to accommodate A-Double movements as shown in below in Figure 3.3 above (and Appendix A).

3.4.3 BGER Service Road and Entrance

Swept paths showing A-Doubles entering and exiting the site through the access gate are shown below in Figure 3.5.



Figure 3.5 A-double entering and exiting to/from the gate

Source: MetroMap Modified by GHD

The existing layout does not allow for A-Double access. A widening of the road would be required to accommodate A-Double movements (as shown in Appendix A).

3.5 A-Double u-turn facility

Given the concerns for short-stacking for A-Double vehicles propping to turn right to head eastbound along Henry Parkes Way, A-Double access would be contingent on limiting egress from the site to left-turn exit movements only, from which a down-stream u-turn facility would need to be provided.

A review of potential intersections west of Memorial Lane was undertaken to identify potential intersections to facilitate eastbound u-turns for A-Double vehicles.

The intersection of Leafy Tank Road and Henry Parkes Way (located approximately five kilometres west of Memorial Lane) has recently been upgraded to facilitate heavy vehicle movements from a nearby grain silo located immediately south of the railway level crossing. This intersection was identified as being suitable (pending minor upgrades) to eastbound u-turns by A-Doubles, as shown below in Figure 3.6.



Figure 3.6 A-double doing U-turn

Source: MetroMap Modified by GHD

The extent of widening works (minor) at the intersection of Leafy Creek Road to accommodate eastbound A-Double u-turn movements is shown in Appendix A.

3.6 Traffic 2033

Assuming a conservative annual linear background traffic growth rate of 2.5 percent for through traffic, and including the generated traffic after the expansion of the proposed facility, future traffic for the horizon year 2033 is calculated as shown in Figure 3.7 below.

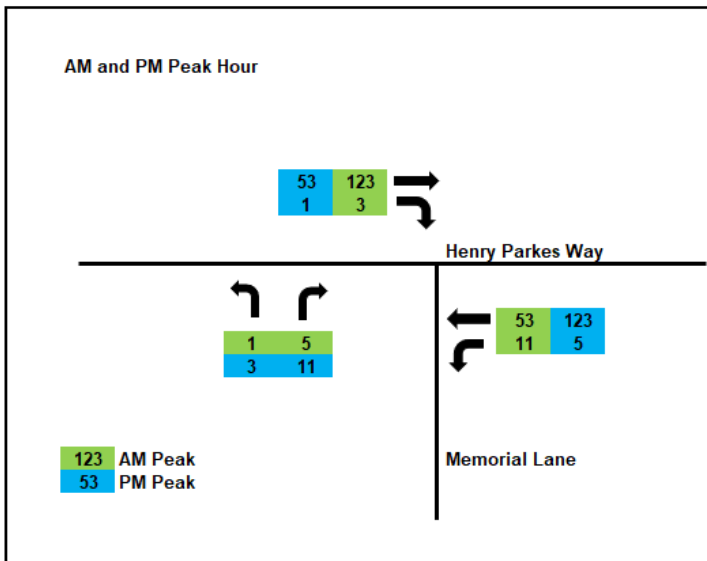
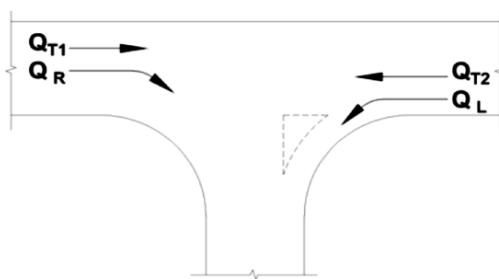


Figure 3.7 Future peak hour traffic volumes 2033

From Figure 3.7, projected turning movements to the site (including for additional staff access) is relatively low.

3.7 Intersection turn treatment

In order to determine the intersection turn treatments required for site access off Henry Parkes Way, the Austroads *Guide to Traffic Management Part 6: Intersections, Interchanges and Crossing management* was referred, which considers both the through volumes and speed limit of Henry Parkes Way (posted speed limit at 100 km/h), as well as left turning volumes from Memorial Lane. A summary of the methodology (in figures) is shown below in Figure 3.8, which identifies whether a basic left turn treatments is acceptable, or whether a channelised intersection treatments' are more appropriate.



Road type	Turn type	Splitter island	Q_m (veh/h)
Two-lane two-way	Right	No	$= Q_{T1} + Q_{T2} + Q_L$
		Yes	$= Q_{T1} + Q_{T2}$
	Left	Yes or no	$= Q_{T2}$
Four-lane two-way	Right	No	$= 50\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 50\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 50\% \times Q_{T2}$
Six-lane two-way	Right	No	$= 33\% \times Q_{T1} + Q_{T2} + Q_L$
		Yes	$= 33\% \times Q_{T1} + Q_{T2}$
	Left	Yes or no	$= 33\% \times Q_{T2}$

Source: TMR (2016a).

Figure 3.8 Warrants for the speed limit greater and equal to 100km/h, and turn calculations

The turning volumes (Q_M) with respect to left turn movements in Henry Parkes Way for both AM and PM peak is shown in Figure 3.9 and graphically against the intersection warrants' chart in Figure 3.10 below.

	AM	PM		AM	PM
Q_M (Left)	53	123	Q_L	11	5

Figure 3.9 Calculated Q_M (turning volumes) for horizon year 2033

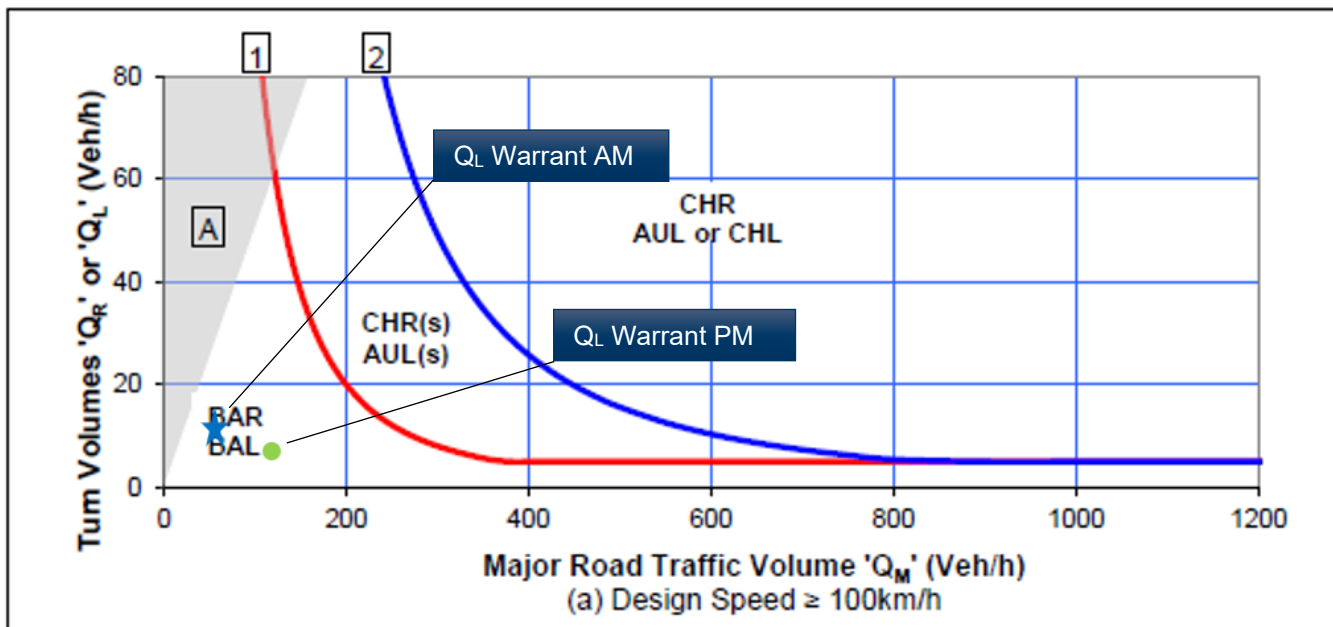


Figure 3.10 Turning Lane Warrants

From Figure 3.10, the intersection warrants' suggests a Basic Left (BAL) treatment is required on Henry Parkes Way at the intersection of Memorial Lane, reflecting the low through and turning volumes at the intersection.

3.8 Control for transport and use of any dangerous goods

The SMS ANE Facility involves the transport of dangerous goods into and out of the BGER via Memorial Lane and Henry Parkes Way. To meet the transport Chain of Responsibility (CoR) requirements, SMS has installed a weighbridge that weighs the ANE tankers prior to the haulage of ANE from the site. This is to ensure compliance requirements for vehicle weights. Due to Security Sensitive Ammonium Nitrate (SSAN) and Australian Dangerous Goods (ADG) Transport Codes, all heavy vehicle transportation to the site will be in accordance with NSW and Federal Dangerous Goods transportation codes and requirements.

3.9 Driver Code of Conduct

Pending approval of B-Double and A-Double access to the site, the driver Code of Conduct would be updated (a draft has already been prepared and provided as Appendix C) to reflect particular requirements access for high productivity vehicles, including the requirement for all A-Double and B-Double vehicles to undertake a left-turn at the intersection of Memorial Lane/Henry Parkes Way (for site egress), and that all eastbound u-turn movements be undertaken at the intersection of Leafy Tank Road and Henry Parkes Way.

The updated Driver Code of Conduct would form part of an operational plan for A-Double and B-Double operators to the site.

The light vehicle and heavy vehicle procedures from the existing Transport Code of Conduct (refer further in Appendix C) is summarised below:

Light Vehicle Transport Procedure

All drivers of light vehicles associated with transportation of materials to and from the SMS Facility are to abide by the following:

- Will be appropriately licensed to operate the vehicle.
- Will be fit for work and fit for task (drug and alcohol free and fatigue appropriately managed).
- Will ensure that the vehicle is fully roadworthy and maintained.
- Will obey all road traffic regulations, signs, directions, and instructions and display respect for other road users at all times.
- Will ensure that loads are appropriately secured.

Heavy Vehicle Transport Procedure

All drivers of heavy vehicles associated with transportation of materials to and from the SMS Facility are to abide by the following:

- Will be appropriately licensed to operate the vehicle.
- Will be fit for work and fit for task (drug and alcohol free and fatigue appropriately managed).
- Will ensure that the vehicle is fully roadworthy and maintained.
- Will obey all road traffic regulations, signs, directions, and instructions and display respect for other road users at all times.
- Will ensure that loads are appropriately secured.
- Will comply with relevant regulations and standards with regard to the transport of dangerous goods.
- Will only travel on the nominated haulage route, as shown in Appendix E (of the Code of Conduct).
- Will familiarise themselves with travel restrictions during school bus hours and avoid travel on the relevant sections of the haulage route during these times.
- Will stagger departure to avoid creation of convoys with other BGER trucks.
- Will be familiar with and adhere to the requirements of the Noise and Vibration Assessment for the SMS ANE Facility prepared by Acoustik dated July 2023.
- Will avoid the use of engine brakes on Memorial Lane, the BGER and Bogan Gate township.

All drivers of heavy vehicles to the site will be required to undergo site induction training, and will be required to abide (and acknowledge through signing) the SMS ANE Facility Transport Code of Conduct Agreement in Appendix D, including following the required haulage routes (shown in Appendix E of the Code of Conduct).

Disciplinary action may be undertaken if drivers fail to meet the requirements set out in the Code of Conduct or if SMS receives a confirmed community complaint regarding Driver actions that are in breach of this code including on-road driving behaviour.

3.10 Construction Traffic Management Plan

A Construction Traffic Management Plan (CTMP) would be prepared by the contractor prior to the commencement of construction activities. The CTMP will aim to facilitate the safety of all workers and road users within, including access to the Project site. The primary objectives of the CTMP will be:

- To minimise the impact of the vehicle traffic (particularly heavy vehicle traffic) on the operation of the adjoining road network.
- To facilitate the continuous, safe, and efficient movement of traffic for both the general public and site personnel/ workers.

- To provide a description of the types of vehicles and estimated vehicle volumes during each stage of the construction works.
- To provide information regarding the access arrangement and a description of the proposed routes for the vehicles accessing and egressing the proposal site.

The CTMP should include the following:

- CTMP objectives (similar to the defined above).
- Vehicle approach and departure routes to the site that will minimise the impacts of heavy vehicles and equipment on the adjacent road network.
- Vehicle numbers, types and mobile equipment to be used.
- Areas of parking for site personnel, which should preferably be within site premises.
- Transport options for workers to the site that will maximise safety and maintain accessibility.
- Site access constraints such as vehicle restrictions (e.g. road network load limits/height restrictions). This must note any existing heavy vehicle restrictions to the site.
- Preparation of Traffic Guidance Schemes (TGSs).
- Methods of communicating traffic changes on the road network.
- Road network operational impacts within the vicinity of the site.
- A Driver's Code of Conduct.
- Liaison with specific stakeholders to confirm additional requirements, including with Transport for NSW (for Henry Parkes Way), Parkes Shire Council (for access to Memorial Lane) and ARTC for access across the heavy rail crossing on Memorial Lane.
- General mitigation measures.

Pending a risk assessment, construction access to the site (off Henry Parkes Way) may be limited to left-in/left-out access during construction works.

4. Summary and conclusion

GHD has been commissioned by Currajong to undertake a Traffic Impact Assessment to support the development application for the upgrading of an ANE manufacturing and storage facility.

The facility is proposed to increase the capacity to the following.

- Manufacturing of up to 20,000 tonnes of Ammonium Nitrate Emulsion (ANE) per annum
- Storage of up to 450 tonnes of Ammonium Nitrate (AN) at any one time
- Storage of up to 100 tonnes of ANE at any one time

The facility will operate for 7:00 am to 9:45 pm on weekdays and 8:00 am to 6:00 pm on Saturday and Sunday (once production rates consistency exceed 12,000 tonnes per annum).

Following the expansion, the facility will generate 16 heavy vehicle movements (in and out) a day and 24 light vehicle movements (in and out) a day, an increase from six truck and 10 light vehicle movements.

The facility expansion will also increase the number of on-site staff from four to eight, with a consequent minor increase in light vehicle access to the site, with most staff expected to be commuting from Parkes (east of the site).

Analysis of projected turning movements by 2033 (10 years post opening) at the intersection of Memorial Lane/Henry Parkes Way identified that a Basic Left (BAL) lane would be required due to the low volume of through and turning traffic.

To ensure safe access and egress of A-Doubles to/from the site, the following works and operational requirements would be required:

- A-Doubles would be restricted to left in/left out at the intersection of Memorial Lane and Henry Parkes Way (inclusive of upgraded signage).
- An upgrade of the intersection of Memorial Lane/Henry Parkes Way would be required to ensure A-Doubles could be safely accommodated at the intersection (inclusive of swept paths), clear of both the adjacent railway level crossing and Henry Parkes Way (due to the risk of short-stacking).
- Irrespective of A-Double access, vegetation clearing at the intersection of Henry Parkes Way/Memorial Lane is recommended to provide safe intersection sight distance.
- Upgrades to the intersection of Memorial Lane/BGER Service Road, and the BGER Service Road/Site Access would be required to accommodate A-Double swept paths.
- An upgrade of the intersection of Henry Parkes Way/Leafy Tank Road is required to accommodate eastbound u-turn A-Double movements.
- Updates to the existing Driver Code of Conduct would be undertaken outlining the revised heavy vehicle access/egress to the site.

This traffic assessment has identified that the minor increase in traffic movements (including A-Double access) associated with the upgrade of the ANE manufacturing and storage facility by Solar Mining Services, could be safely accommodated subject to the proposed intersection upgrades at Memorial Lane/Henry Parkes Way, Memorial Lane/BGER Service Road, BGER Service Road/Site Access and Henry Parkes Way/Leafy Tank Road.

Further, the proposed upgrades are also expected to provide a generally safer road environment for all vehicles accessing the site and travelling along Henry Parkes Way.

With respect to construction traffic management, a construction traffic management plan (CTMP) would be required to be developed by the construction contractor, of which consultation would be required with Transport for NSW, Parkes Shire Council and ARTC. The CTMP would confirm construction traffic volumes, access and any controls required to minimise construction staff and road user risks.

Noting that Memorial Lane is a local government road, a permit would subsequently be sought from Parkes Shire Council to request A-Double access (noting A-Double access is already permitted along Henry Parkes Way). The aforementioned works at the intersection Memorial Lane/Henry Parkes Way, and Memorial Lane/BGER Service Road has been designed to accommodate projected A-Double movements along Memorial Lane.

Noting the limit of ground survey to the to the immediate intersections of Memorial Lane/Henry Parkes Way, and Memorial Lane/BGER Service Road, follow up survey would be needed to confirm upgrade requirements at the intersections of Henry Parkes Way/Leafy Tank Road, BGER Service Road/Site Access, inclusive of approach signage.

Appendices

Appendix A

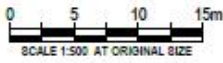
**Swept Path Analysis and Intersection
Upgrade Requirements**

Semi Trailer Left Turn In and Stacking



PLAN
SCALE 1:500

Rev	Description	Checked	Approved	Date
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Author	P.ERECE			
Designer				
	Drafting Check			
	Design Check			

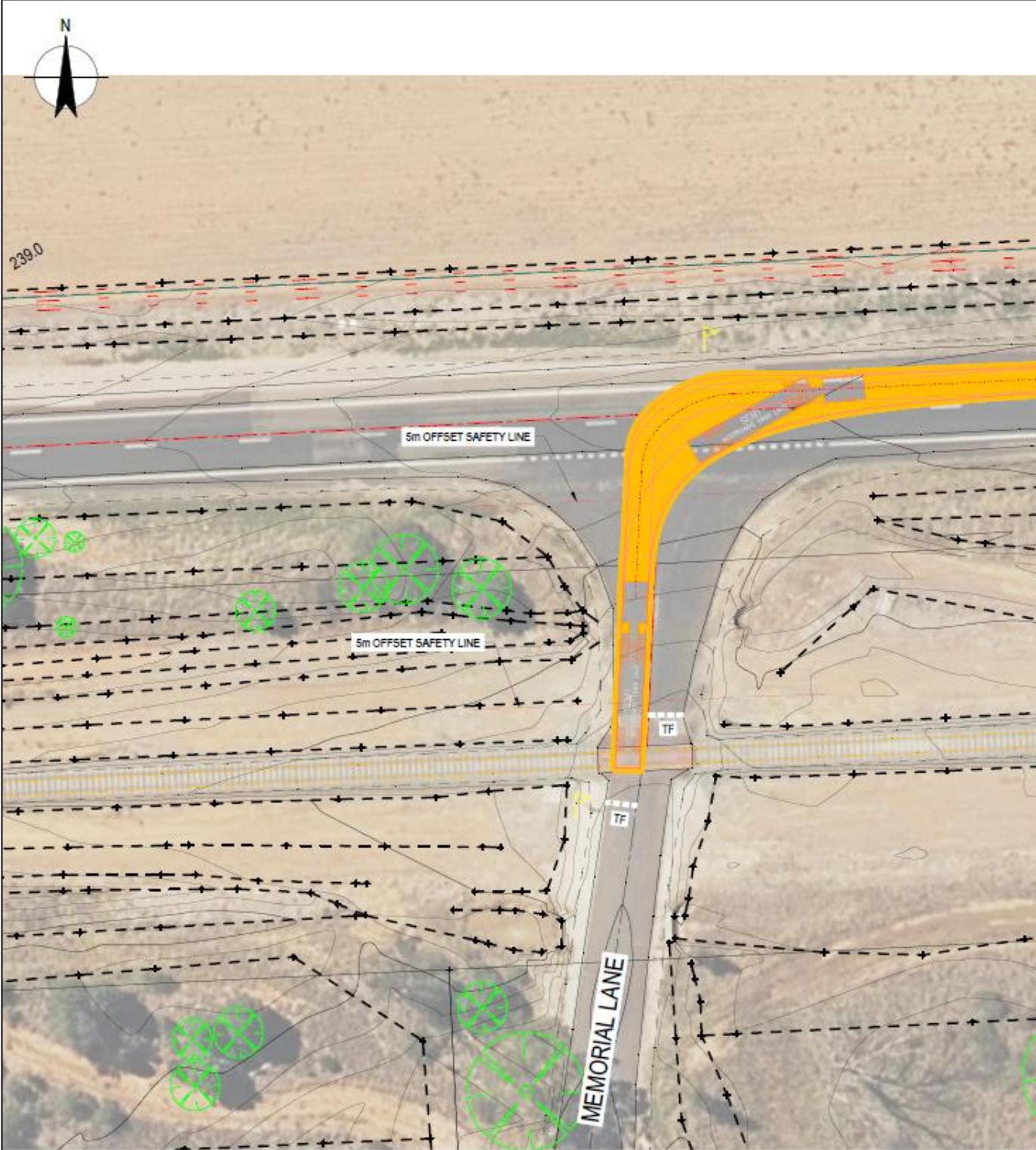


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Plotted by: Haley Towers

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Semi Trailer Right Turn Out



PLAN
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	Designer Design Check			

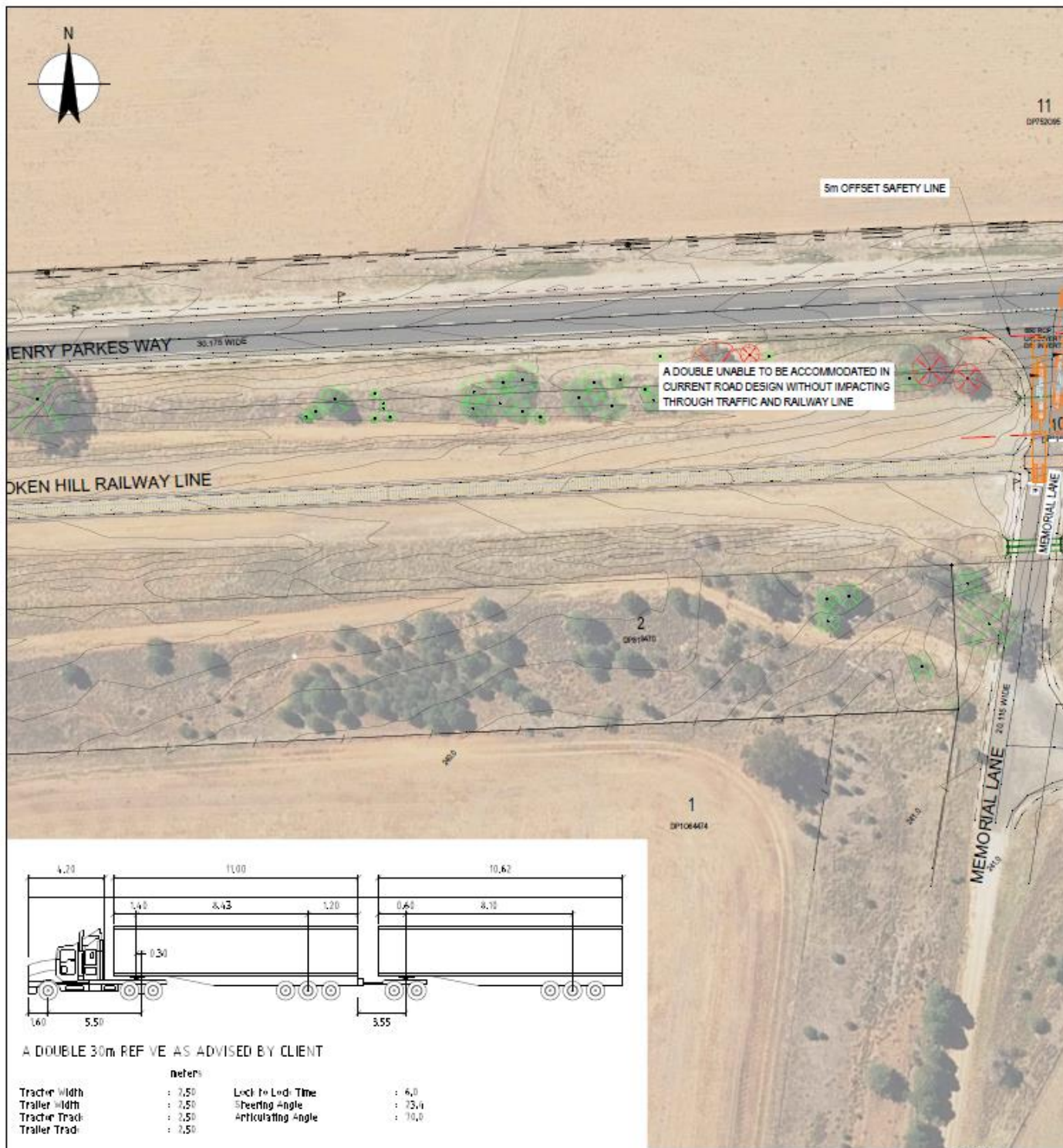


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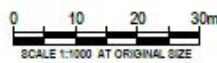
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A-double Short Stacking (With present configuration)

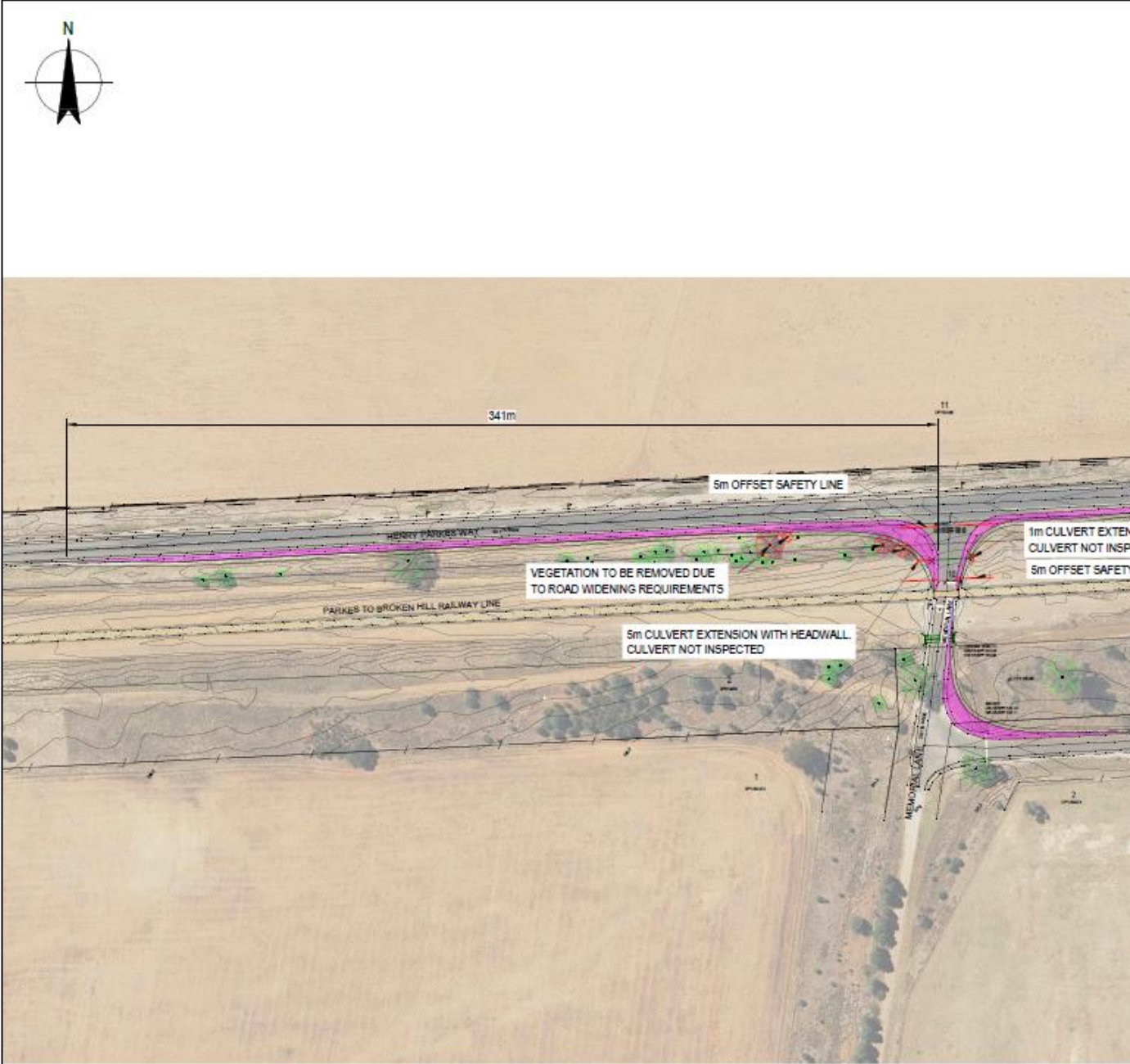


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	Author J.MAYTOM Drafting Check			
	Designer H.TOWERS Design Check			



Proposed Road Widening at Henry Parkes Way, Memorial Lane and Private Road



PLAN
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Rev	Description	Checked	Approved	Date
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Author	J.MAYTOM	Drafting Check		
Designer	H.TOWERS	Design Check		

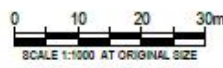


A-double exiting site through Gate



PLAN
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Designer	H.TOWERS	Design Check		

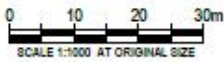


Proposed Road Widening at Gate

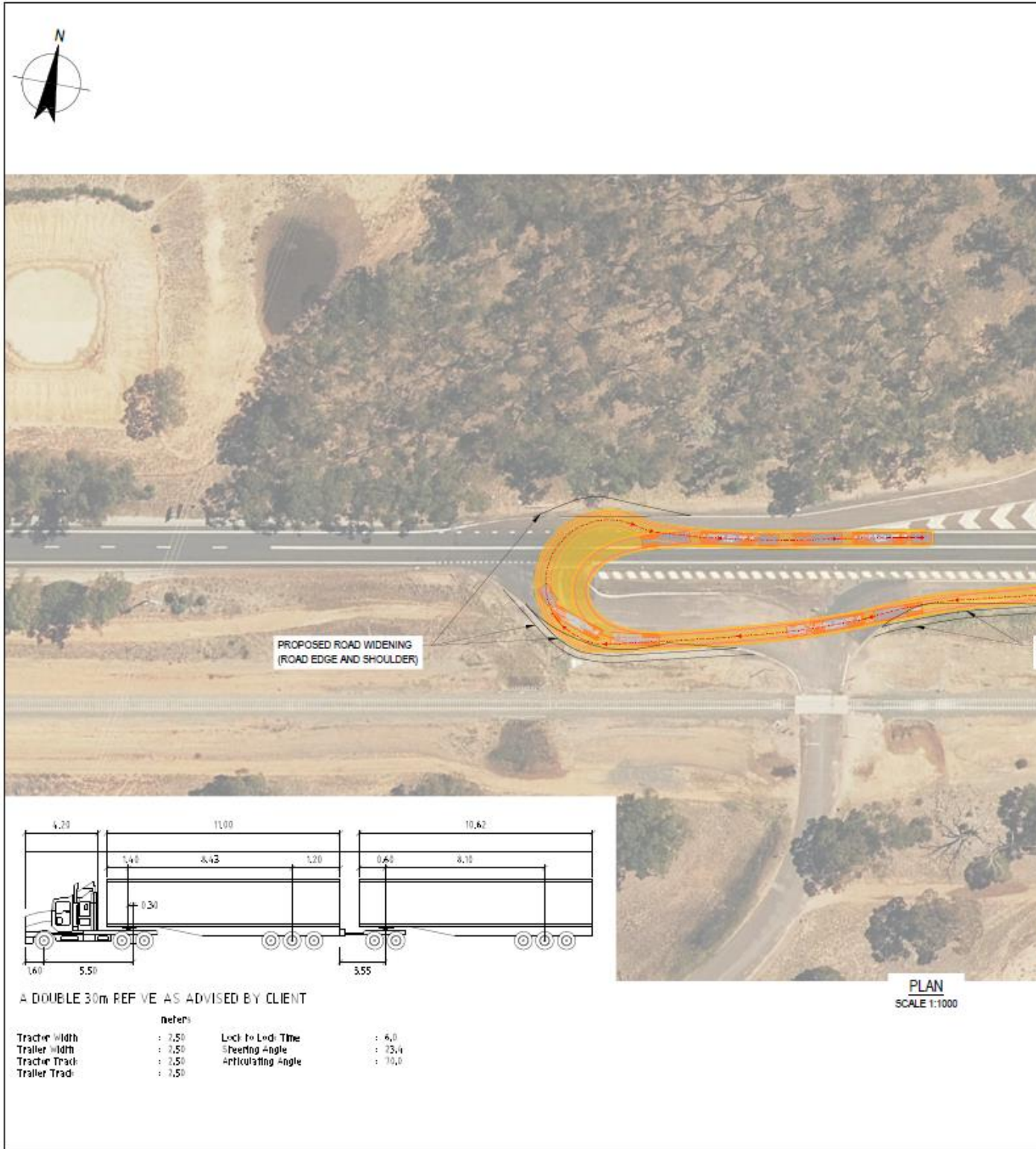


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Rev	Description	Checked	Approved	Date
Author	J.MAYTOM	Drafting	Check	
Designer	H.TOWERS	Design	Check	



A-double doing U turn from Leafy Tank Road and Henry Parkes Way intersection



A. FOR INFORMATION			
Rev	Description	Checked	Approved Date
Author	J.MAYTOM	Drafting Check	
Designer	H.TOWERS	Design Check	

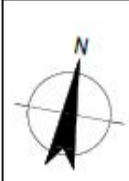


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Proposed Road Widening at Leafy Tank Road and Henry Parkes Way intersection

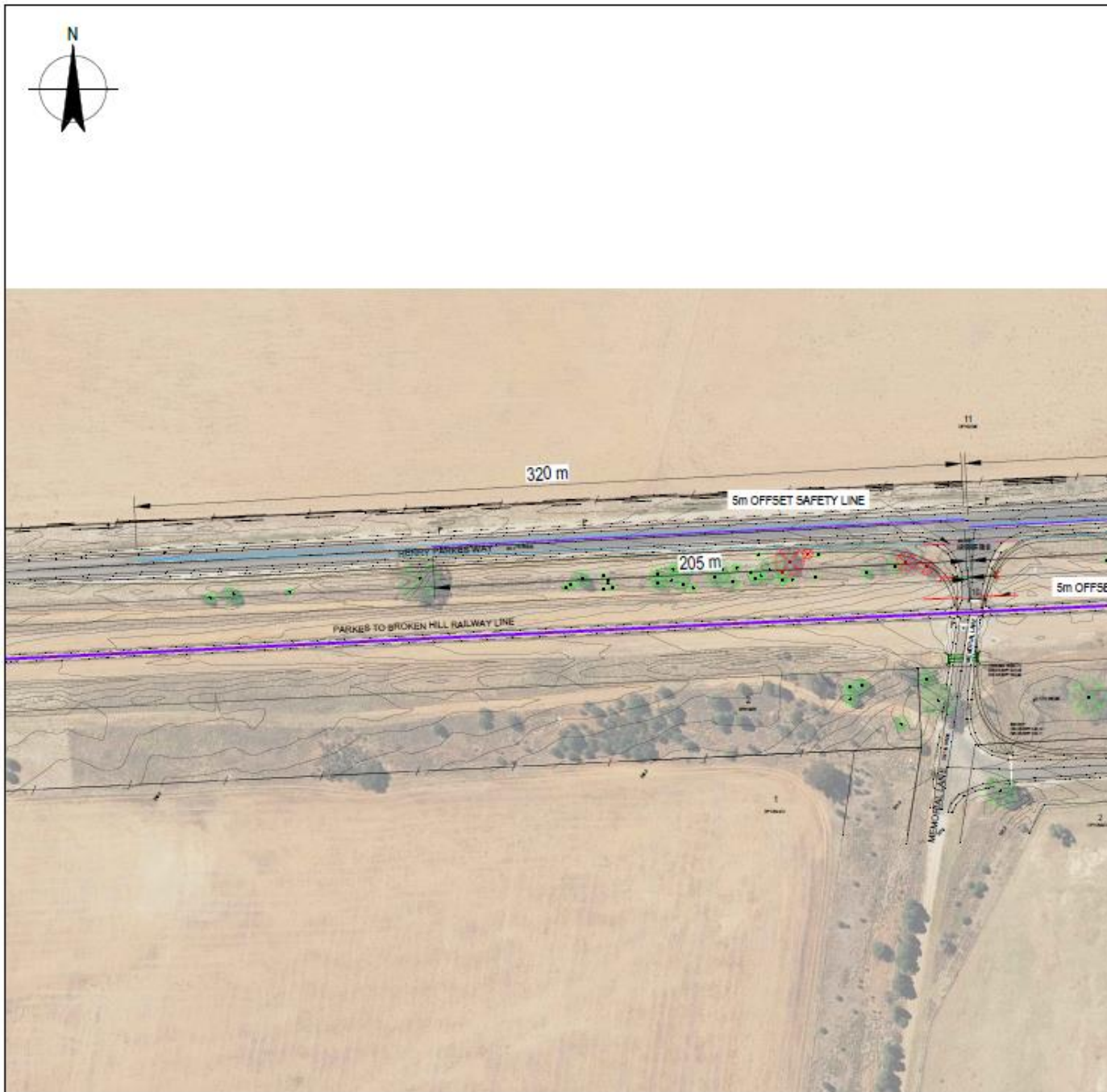


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Designer	H.TOWERS	Design Check		

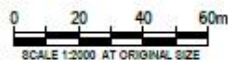


Sight Distance Check



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Designer	H.TOWERS	Design	Check	

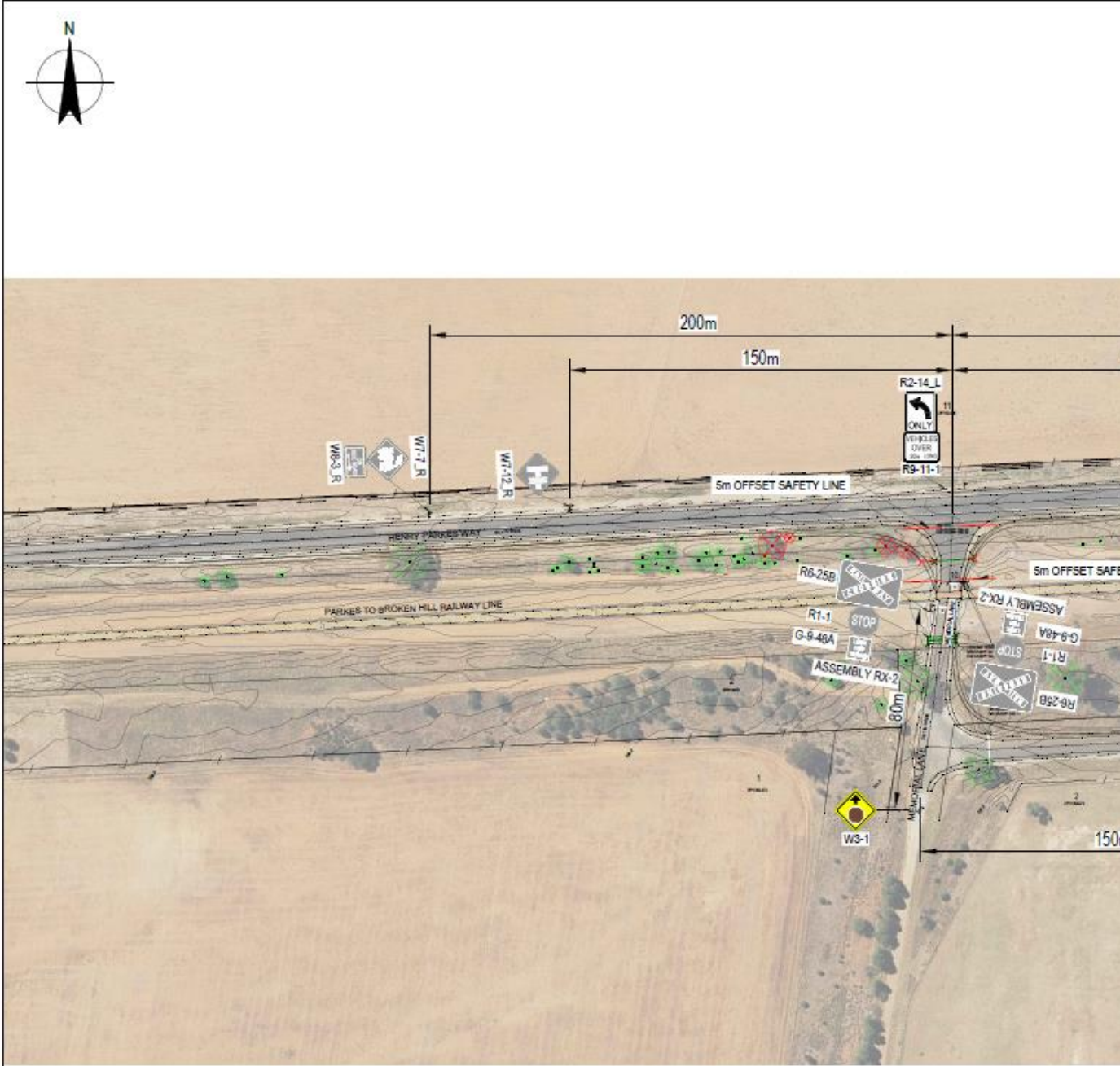


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Plotted by: Joshua Mayton

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Existing Signage Check (Immediate Area to Henry Parkes Way and Memorial Lane intersect)

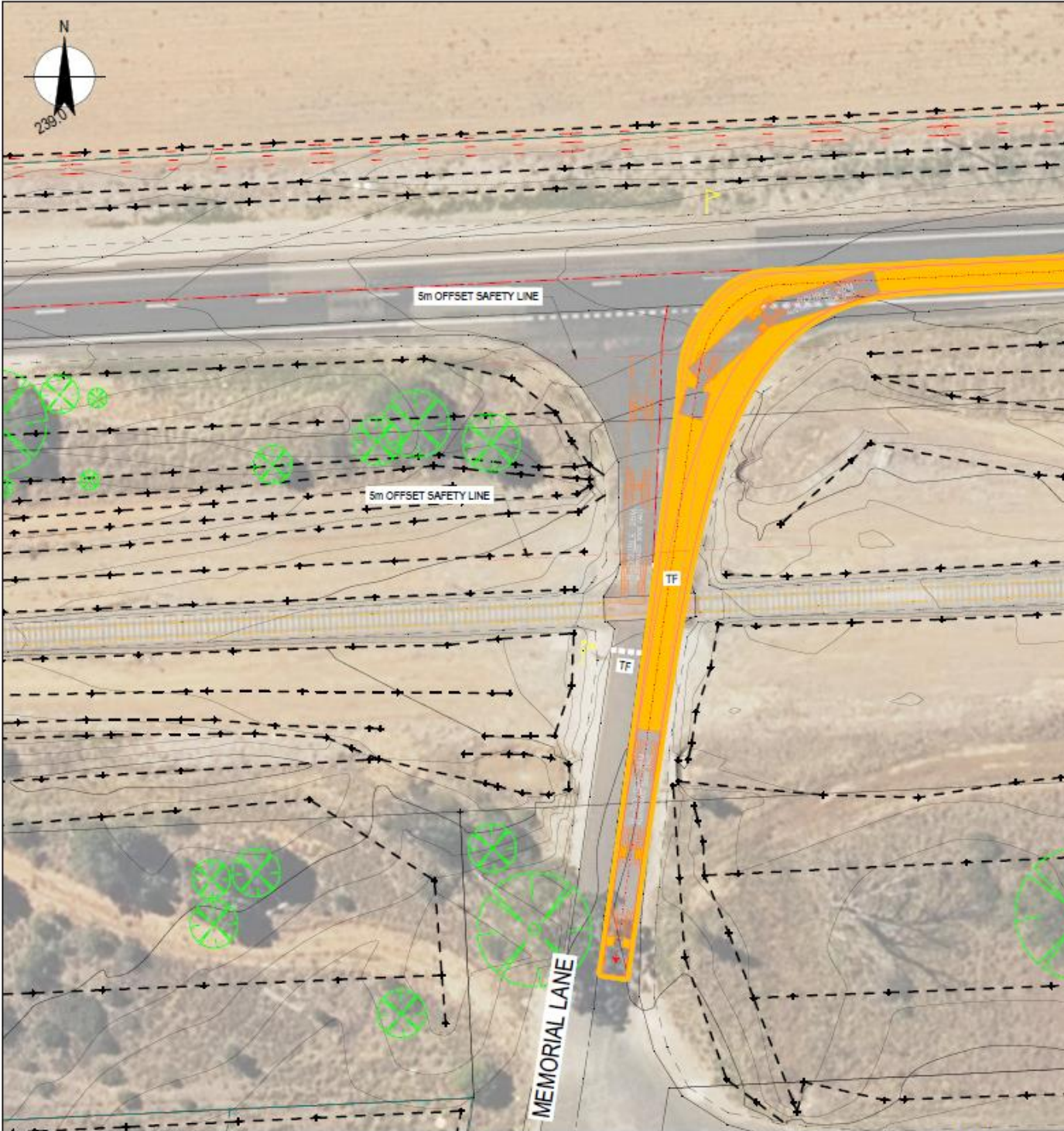


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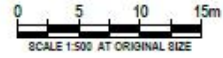
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Author	J.MAYTOM	Drafting Check	
Designer	H.TOWERS	Design Check	



B- Double Left In and Stacking

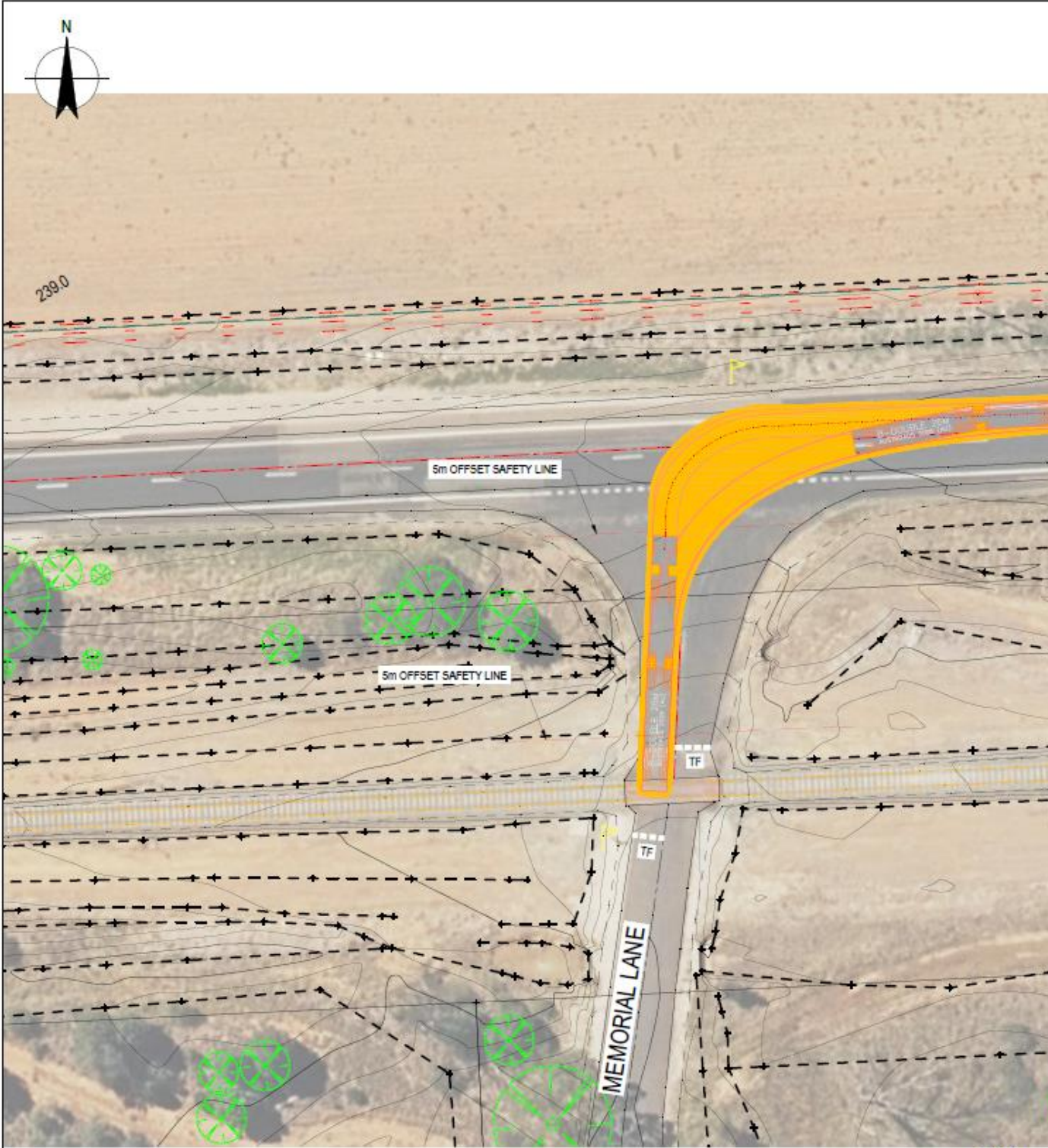


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	Author P.ERECE	Drafting Check		
	Designer	Design Check		



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B- Double Right Out



PLAN
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	Author P.ERECE		Drafting Check	
	Designer		Design Check	



Plot Date: 1 June 2023 - 9:22 AM

Plotted by: Haley Towers

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Appendix B

TfNSW TIA Requirements

Transport for NSW

Attachment A: Traffic Impact Assessment (TIA)

The TIA is to address the impact of traffic generation on the public road network and measures employed to ensure traffic efficiency and road safety during construction, operation and decommissioning of the project.

The TIA is to be tailored to the scope of the proposed development and include, but not limited to, the following:

- Project schedule:
 - Hours and days of work, number of shifts and start and end times,
 - Phases and stages of the project, including construction and operation.
 - Traffic volumes including:
 - Existing background traffic,
 - Project-related traffic for each phase or stage of the project,
 - Projected cumulative traffic at commencement of operation, and a 10-year horizon post-commencement.
 - Traffic characteristics including:
 - Number and ratio of heavy vehicles to light vehicles,
 - Peak times for existing traffic,
 - Peak times for project-related traffic including commuter periods,
 - Interactions between existing and project-related traffic.
 - Source(s) for input materials and quantification of traffic generation associated with the haulage of the source materials.
 - Road safety assessment of key haulage route/s.
 - Controls for transport and use of any dangerous goods in accordance with *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*, the *Australian Dangerous Goods Code* and *AS4452 Storage and Handling of Toxic Substances*.
 - Identify the necessary road network infrastructure upgrades that are required to cater for and mitigate the impact of project related traffic on both the local and classified road network for the development (for instance, road widening and/or intersection treatments). In this regard, preliminary concept drawings need to be submitted with the EIS application for any identified road infrastructure upgrades. It should be noted that any identified road infrastructure upgrades will need to be to the satisfaction of TfNSW and Council.
 - Proposed road facilities, access and intersection treatments are to be identified and be in accordance with Austroads Guide to Road Design including provision of Safe Intersection Sight Distance (SISD).
 - Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather).
 - The layout of the internal road network, parking facilities and infrastructure.
 - Impact on rail corridors and level crossings detailing any proposed interface treatments. Note, the rail manager for rail corridors in the vicinity of the site is ARTC.
 - Propose a Driver Code of Conduct for haulage operations which could include, but not be limited to:
 - Safety initiatives for haulage through residential areas and/or school zones.
 - An induction process for vehicle operators and regular toolbox meetings.
- A public complaint resolution and disciplinary procedure.

Appendix C

Driver Code of Conduct

Environmental Management Plan

Transport Code of Conduct

Document Number: SMS-HSQ-000.X11

Status: Draft - working

Version: 05 (04 April 2023)

Owner: Manager Compliance

Review: 3 years



**SOLAR
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1 Introduction

- 1-1 This Transport Code of Conduct identifies the minimum requirements for Solar Mining Services (SMS) personnel and contractors to access the SMS ANE Facility via the public road network.
- 1-2 This follows the requirements of the SMS Integrated Management System (IMS), particularly **SMS-IMS-B00.L10 Environment Policy** and supports **SMS-HSQ-000.X01 - HSEQS Management Plan** to identify and control hazards that may arise at SMS workplaces.
- 1-3 The objective of this plan is to outline the standards of behaviour expected of staff and contractors in the transport of goods and services to and from the SMS ANE Facility at the Bogan Gate Explosives Reserve (BGER).
- 1-4 The SMS ANE Facility Transport Code of Conduct has been developed in accordance with the Australian Road Rules and the guidance from GHD in their Traffic Impact Assessment, dated July 2023.
- 1-5 TfNSW and Parkes Shire Council have been consulted as part of the preparation of the SMS ANE Facility Transport Code of Conduct.

2 Scope

- 2-1 This plan is applicable to all SMS personnel and contractors conducting transport activities in and around the SMS ANE Facility, BGER and wider Bogan Gate area.

3 Purpose of this Plan

- 3-1 The purpose of this Transport Code of Conduct is to minimise the potential for traffic accidents or road asset impacts from SMS operations at the BGER through the design and operation of the SMS ANE Facility transport operations in accordance with the relevant standards.

4 Site Description

- 4-1 The SMS ANE Facility is located at Bogan Gate Explosives Reserve, Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate NSW.
- 4-2 SMS lease buildings towards the southern portion of Lot 2 DP 1064474 from Lexa Enterprises Pty Ltd for the operation of their SMS ANE Facility. Also leasing space on Lot 2 DP 1064474 is JONNEX (for explosives manufacturing and storage) and Howards (for fireworks storage) as well as several residential tenancies in existing dwellings located at the army camp complex.
- 4-3 The SMS ANE Facility at the BGER is fully operational in accordance with Development Consent No. DA2020/0073 granted by Parkes Shire Council on dated 18 November 2020 and an Explosives Manufacturing and Storage Licence granted by SafeWork NSW in January 2023.
- 4-4 The SMS ANE Facility involves transport of dangerous goods in and out of the BGER.
- 4-5 Road access to the SMS ANE Facility is already provided, utilising existing BGER internal roads that link to Memorial Lane and the Henry Parkes Way.
- 4-6 A plan of the SMS ANE Facility in relation to the BGER and town of Bogan Gate is shown in Appendix A.

5 Road Network Description

Access Roads

- 5-1 The SMS ANE Facility has access via an internal road through the BGER that connects to the Henry Parkes Way (MR 61) via Memorial Lane.
- 5-2 All trucks transporting dangerous goods to and from the SMS ANE Facility are required to enter and leave via internal BGER roads and then onto Memorial Lane and the Henry Parkes Way.
- 5-3 A road network map is included in Appendix B.
- 5-4 The Orange to Broken Hill Railway forms part of the transcontinental railway connecting the eastern parts of Australia to SA and WA.
- 5-5 Information about road crash data, road conditions and other data is included in the GHD Traffic Impact Assessment dated July 2023, included in Appendix C.

Intersection design and operation

- 5-6 The GHD Traffic Impact Assessment dated July 2 provides details of design treatment at the intersection of Memorial Lane and the Henry Parkes Way (see Appendix C).

6 Transport Code of Conduct

- 6-1 This Transport Code of Conduct must be read in conjunction with the GHD Traffic Impact Assessment dated July 2023 (see Appendix C).

Light Vehicle Transport Procedure

- 6-2 All drivers of light vehicles associated with transportation of materials to and from the SMS Facility are to abide by the following:
 - a) Will be appropriately licensed to operate the vehicle.
 - b) Will be fit for work and fit for task (drug and alcohol free and fatigue appropriately managed).
 - c) Will ensure that the vehicle is fully roadworthy and maintained.
 - d) Will obey all road traffic regulations, signs, directions, and instructions and display respect for other road users at all times.
 - e) Will ensure that loads are appropriately secured.

Heavy Vehicle Transport Procedure

- 6-3 All drivers of heavy vehicles associated with transportation of materials to and from the SMS Facility are to abide by the following:
 - a) Will be appropriately licensed to operate the vehicle.
 - b) Will be fit for work and fit for task (drug and alcohol free and fatigue appropriately managed).
 - c) Will ensure that the vehicle is fully roadworthy and maintained.

- d) Will obey all road traffic regulations, signs, directions, and instructions and display respect for other road users at all times.
 - e) Will ensure that loads are appropriately secured.
 - f) Will comply with relevant regulations and standards with regard to the transport of dangerous goods.
 - g) Will only travel on the nominated haulage route, as shown in Appendix D.
 - h) Will familiarise themselves with travel restrictions during school bus hours and avoid travel on the relevant sections of the haulage route during these times.
 - i) Will stagger departure to avoid creation of convoys with other BGER trucks.
 - j) Will be familiar with and adhere to the requirements of the Noise and Vibration Assessment for the SMS ANE Facility prepared by Acoustik dated July 2023.
 - k) Will avoid the use of engine brakes on Memorial Lane, the BGER and Bogan Gate township.
- 6-4 Disciplinary action may be undertaken if drivers fail to meet the requirements set out in the Code of Conduct or SMS receives a confirmed community complaint regarding Driver actions that are in breach of this code including on-road driving behaviour.
- 6-5 All drivers of heavy vehicles must sign the SMS ANE Facility Transport Code of Conduct Agreement in Appendix D and follow the transport haulage map in Appendix E.

7 Management System

Site Manager

- 7-1 The Site Manager is responsible for:
- a) Identification of hazards likely to cause environmental harm on the site.
 - b) Provision of resources to maintain control of hazards likely to cause environmental harm on the project and maintain risk to workers and the environment to acceptable levels.
 - c) Seek support to assess materials, tasks or equipment to be used on the site, likely to cause environmental harm.
 - d) Implement this Transport Code of Conduct.
 - e) Monitor site activities to ensure conformance to this Transport Code of Conduct.

Site Employees and Contractors

- 7-2 Any SMS employee or contractor on site is responsible for:
- a) Following the requirements of this Transport Code of Conduct.
 - b) Ensuring any risk from transport operations is reported as soon as practical to the Site Manager.

Manager Compliance

- 7-3 The Manager Compliance is responsible to:
- a) Identify the legislative requirements relevant to the SMS ANE Facility.

- b) Assist the Site Manager to identify suitable specialist personnel to provide inspection and audit processes.
- c) Provide an audit schedule and adequate resources to conduct audits and inspections for timely rectification of non-conformances to this Transport Code of Conduct.

8 Document Information

8-1 Relevant legislation, standards and codes are regularly reviewed and monitored for updates and are included in the **SMS-IMS-B00.R01 – National Legislation Register** for tracking and management. Related documents and reference information in this section provides the linkage and source to develop and maintain the site compliance register and document management system.

Terms and Definitions

8-2 Terms and definitions are listed in a single definitions document, refer to the **SMS-IMS-000.G01 - Glossary of terms and definitions** on SharePoint.

Related Documents

8-3 Related documents, listed in **Table 8-3** are internal documents directly related to or referenced from this document.

Number	Document Type	Title
SMS-IMS-B00.L10	Policy	Environment Policy
SMS-IMS-B00.R01	Register	National Legislation Register
SMS-ENV-A00.R02	Register	Transport Code of Conduct
SMS-MAN-A01.R03	Register	Operational aspects & impacts register
SMS-IMS-000.G01	Guideline	Glossary of terms and definitions
SMS-HSQ-000.X01	Management Plan	HSEQS Management Plan

Table 8-3 – Related documents

Reference Information

8-4 Reference information, listed in **Table 8-4** is information that is directly related to the development of this document or referenced from within this document.

Reference	Title
ARR	Australian Road Rules
AG	Austroroads Guide
RF Act	NSW Rail Safety (Adoption of National Law) Act 2012
PFBFP	GHD Traffic Impact Assessment, July 2023
WHS	Passenger Transport Act 1990 (NSW)
WHS	NSW Work Health and Safety Act 2011
WHSR	Work Health and Safety Regulations 2017 NSW

Reference	Title
ER	Explosives Regulations 2012 NSW

Table 8-4 – Reference information

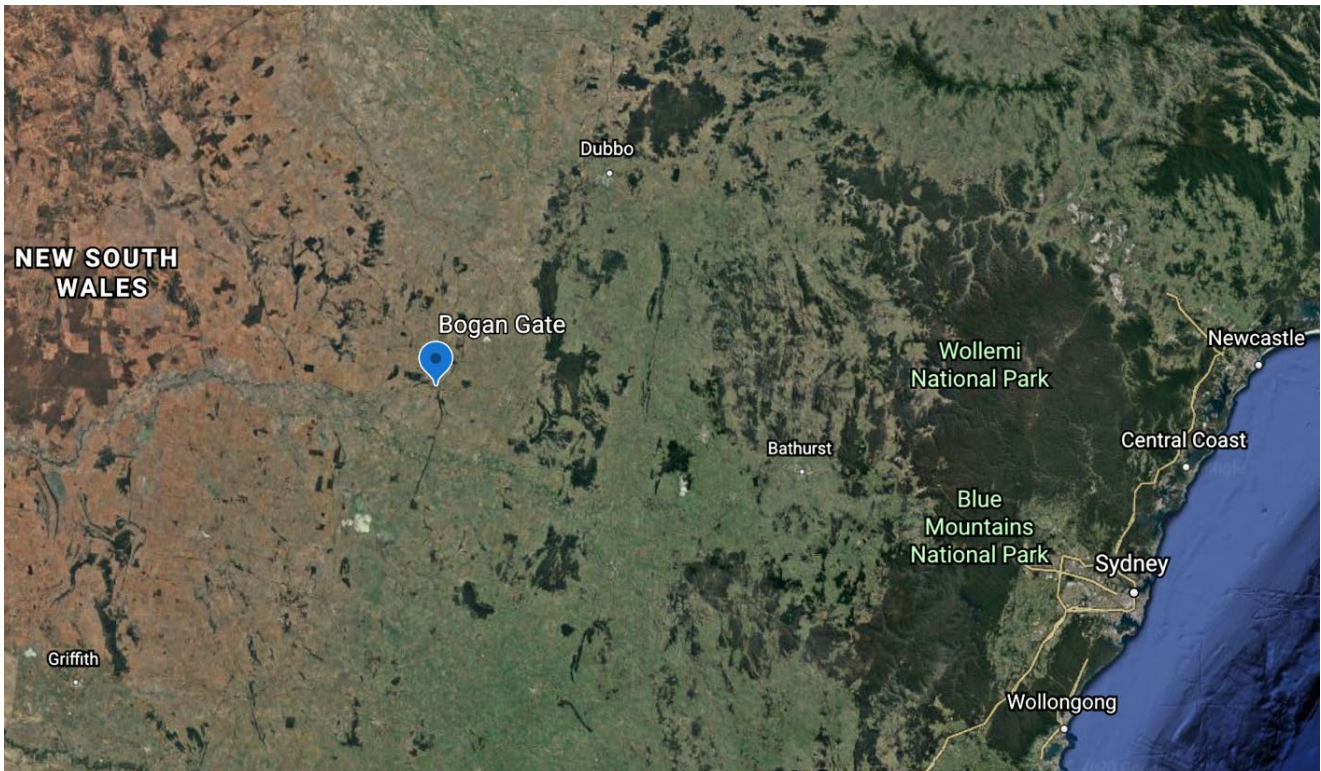
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8-5 Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in **Table 8-5**.

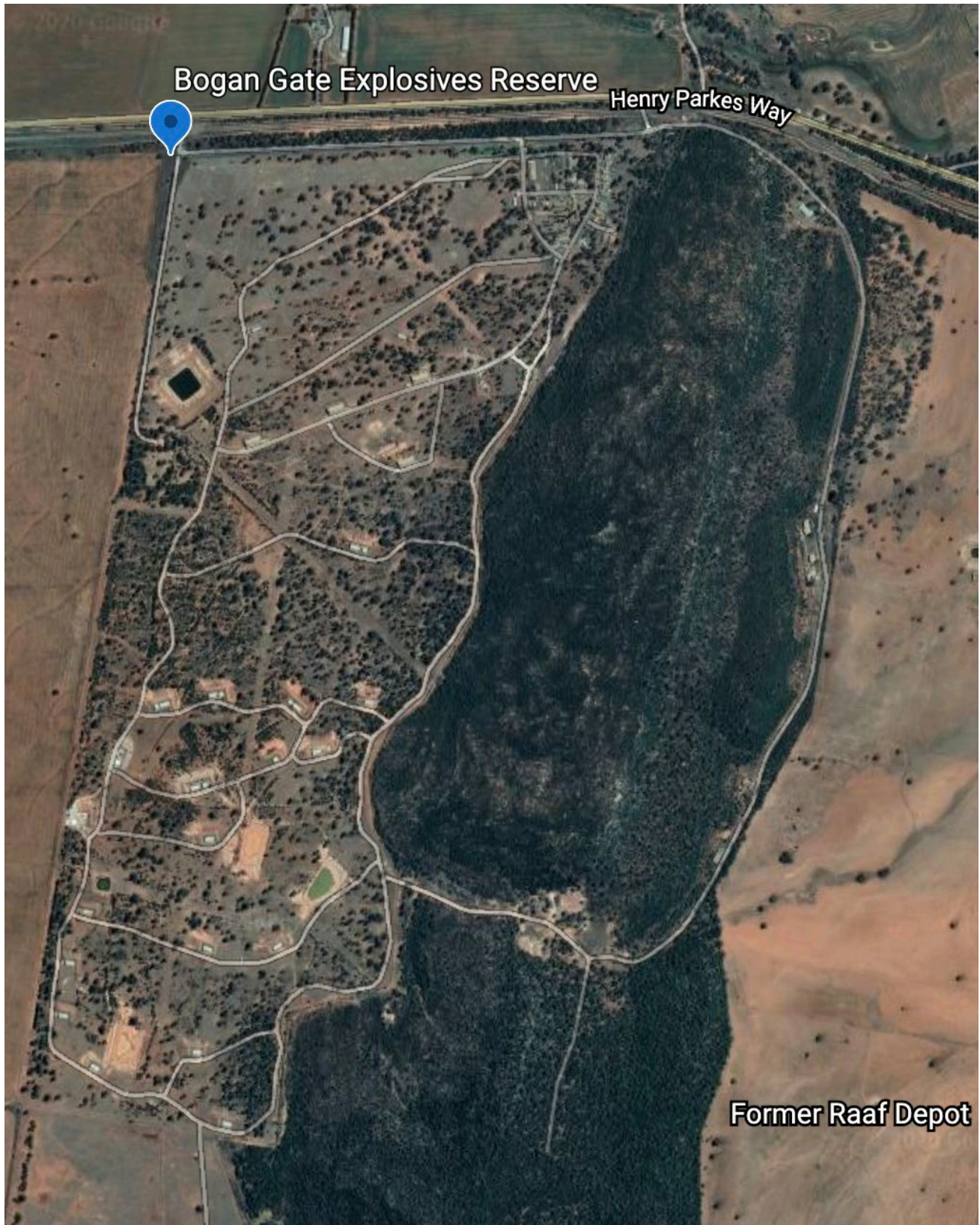
Version	Date	Change Summary

Table 8-5 – Change information

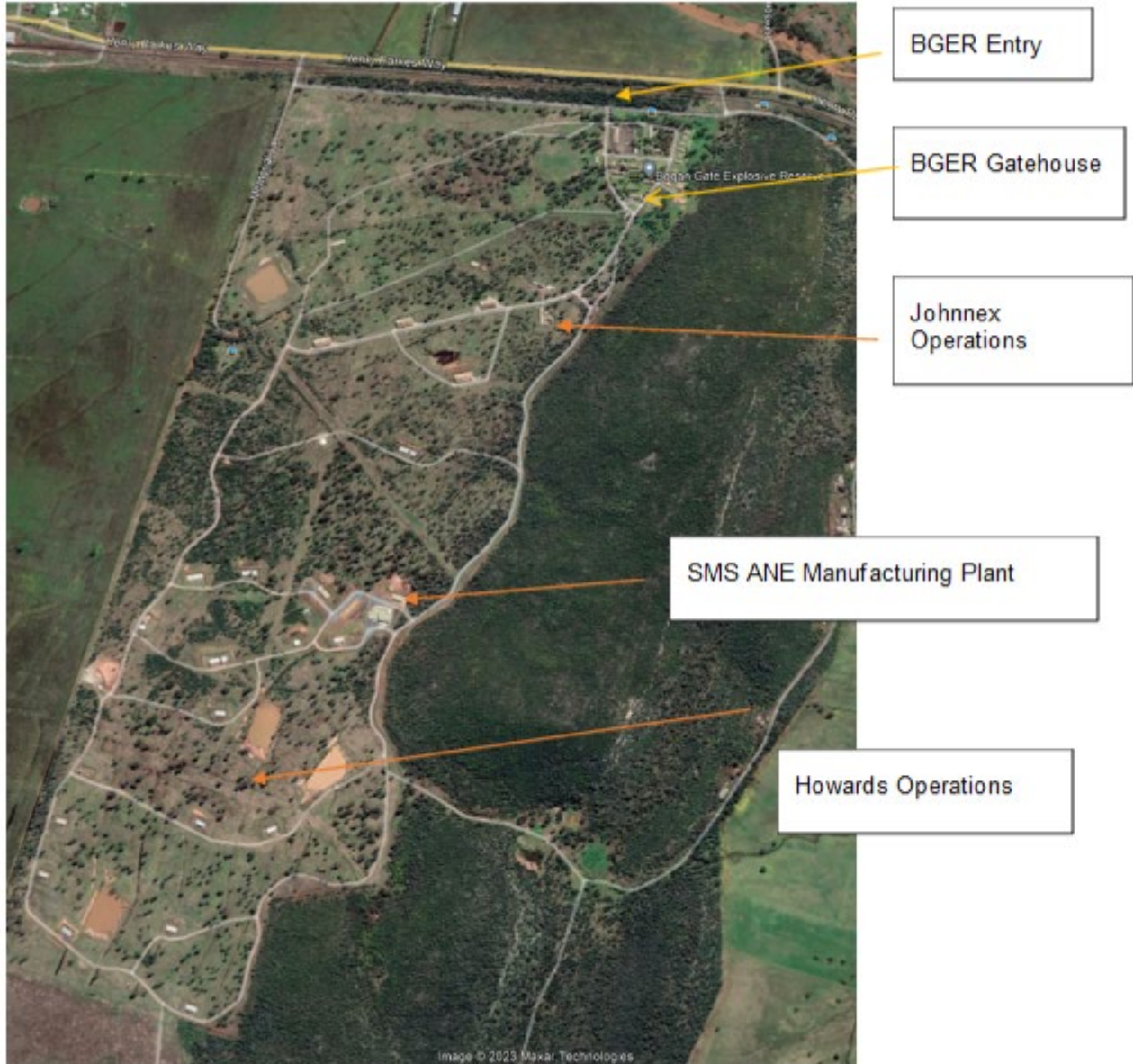
Appendix A – SMS ANE Facility Location Map







Appendix B – BGER Road Network Map



Appendix C – GHD Traffic Impact Assessment

Appendix D –Transport Code of Conduct Agreement

All drivers of heavy vehicles associated with transportation of materials to and from the SMS Facility are to abide by the following:

- a) Will be appropriately licensed to operate the vehicle.
- b) Will comply with relevant regulations and standards with regard to the transport of dangerous goods.
- c) Will be fit for work and fit for task (drug and alcohol free and fatigue appropriately managed).
- d) Will ensure that the vehicle is fully roadworthy and maintained.
- e) Will obey all road traffic regulations, signs, directions, and instructions and display respect for other road users at all times.
- f) Will ensure that loads are appropriately secured.
- g) Will only travel on the nominated haulage route, as shown on the SMS ANE Facility Haulage Route Map.
- h) Will familiarise themselves with travel restrictions during school bus hours and avoid travel on the relevant sections of the haulage route during these times.
- i) Will stagger departure to avoid creation of convoys with other BGER trucks.
- j) Will be familiar with and adhere to the requirements of the Noise and Vibration Assessment prepared by Acoustik dated July 2023.
- k) Will avoid the use of engine brakes on Memorial Lane, the BGER and Bogan Gate township.

Disciplinary action may be undertaken if drivers fail to meet the requirements set out in the Code of Conduct or SMS receives a confirmed community complaint regarding Driver actions that are in breach of this code including on-road driving behaviour.

By signing below, you certify that you have read and understand the requirements of the SMS BGER ANE Facility Driver Code of Conduct.

SMS Requirements	Driver Details
Driver's name (please print)	
Driver's Signature	
Date	

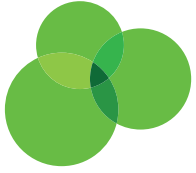
Appendix E – SMS ANE Facility Haulage Route Map





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Appendix J. Currajong Preliminary Biodiversity Assessment and Scoping Report



CURRAJONG
PLANNING, PROPERTY + PROJECT MANAGEMENT

Preliminary Biodiversity Assessment and Scoping Report

Alterations and additions to Solar Mining Services Ammonium Nitrate Emulsion
Facility, 3577 Henry Parkes Way, Bogan Gate

DOCUMENT CONTROL

Project Report Details

Document Title	Alterations and additions to the Solar Mining Services Ammonium Nitrate Emulsion (ANE) Facility, 3577 Henry Parkes Way, Bogan Gate
Principal Author	Michael Carter, Director Currajong Pty Ltd
Client	Solar Mining Services
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Currajong acknowledge Traditional Owners of the area on which this assessment took place and pay respect to their beliefs, cultural heritage, and continuing connection with the land. We also acknowledge and pay respect to the post-contact experiences of Aboriginal people with attachment to the area and to the elders, past and present, as the next generation of role models and vessels for memories, traditions, culture and hopes of local Aboriginal people.

Currajong has prepared this Preliminary Biodiversity Assessment and Scoping Report on behalf of Solar Mining Services to assist with the lodgement of an application for a Development Application for proposed alterations and additions to the SMS ANE Facility located on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate. The information, commentary and recommendations (together the "Information") contained in this report have been prepared by Currajong generally in accordance with the NSW Government Biodiversity Assessment Method 2020 Operational Manual – Stage 1, 2022.

Currajong has not sought any independent confirmation of the reliability, accuracy or completeness of this information from an accredited assessor at this stage. Currajong has not carried out a formal Biodiversity Assessment Report (BAR) or Biodiversity Development Assessment Report (BDAR) for this proposal. This Preliminary Biodiversity Assessment and Scoping Report is to determine whether a BAR or BDAR is specifically required.

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EXECUTIVE SUMMARY

Project Overview

Currajong has prepared this Preliminary Biodiversity Assessment and Scoping Report (PBASR) on behalf of Solar Mining Services Pty Ltd (SMS) to determine whether proposed alterations and additions to their ANE manufacturing facility at Bogan Gate will trigger the requirement for the preparation of a Biodiversity Assessment Report (BAR) or Biodiversity Development Assessment Report (BDAR) by an accredited assessor.

The preliminary biodiversity assessment of the proposal has been carried out in accordance with the Biodiversity Assessment Method 2020 Operational Manual – Stage 1, including:

1. Desktop searches and review of ecological databases and information to identify threatened species, populations or ecological communities listed in the NSW Biodiversity Conservation Act 2016 (BC Act 2016), Fisheries Management Act 1994 (FM Act 1994) or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act 1999) that have the potential to occur in the study area.
2. Site inspection of the subject site to collate species list of predicted threatened species and ecological communities.
3. Assessment of the impacts of the proposal on native vegetation and threatened species, populations and ecological communities.

Clearing of white cypress pine (*Callitris glaucophylla*) is proposed by SMS to establish Asset Protection Zones (APZs) west of proposed new storage sheds.

Inspection of historic maps and aerial photography as well as site inspection confirms the white cypress pines required to be cleared are regrowth vegetation that does not fit the definition of 'native vegetation' as defined under Local Land Services Act 2013 (LLS Act 2013) as the area was cleared of native vegetation as of 1 January 1990. The extent of vegetation clearing at approximately 1,500m² is also well below the threshold for 'native vegetation clearing' requiring entry into the Biodiversity Offset Scheme (BOS) for the purposes of Part 7 of the BC Act 2016 and as quantified under clause 7.2 of the BC Regulation 2017.

The tests of significance completed for the site conclude the proposed clearing is not 'likely to significantly affect threatened species' as the habitat value in and directly around the SMS ANE Facility is assessed as low. Biodiversity values are identified along the Gunningbland Creek (1.3km north of site) and the forested areas of the Gunning Ridge directly east of the site. No aspects of the SMS ANE Facility proposal are assessed to affect these natural ecosystems, including threatened species.

The findings of the preliminary biodiversity assessment are that entry into the BOS is not required, nor is it a requirement to prepare a BAR or BDAR for the SMS proposal.

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ABBREVIATIONS, REFERENCES & DRAWINGS

The following abbreviations are regularly used in the PBASR:

AHIMS	Aboriginal Heritage Information Management System
AHIP	Aboriginal Heritage Impact Permit
BAR	Biodiversity Assessment Report
BDAR	Biodiversity Development Assessment Report
BC Act	Biodiversity Conservation Act 2016
CEMP	Construction Environmental Management Plan
CEEC	Critically Endangered Ecological Community
DA	Development Application
DEE	Department of Environment and Energy
DPI	Department of Primary Industries
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979
EPA	Environment Protection Authority
EPL	Environment Protection Licence
FM Act	Fisheries Management Act 1994
KTP	Key Threatening Process
LGA	Local Government Area
MNES	Matters of National Environmental Significance
POEO Act	Protection of the Environment Operations Act 1997
PSC	Parkes Shire Council
REF	Review of Environmental Factors
WoNS	Weed of National Significance

The main project details are summarised below:

Project name	Alterations and additions to the SMS ANE Facility, 3577 Henry Parkes Way, Bogan Gate
Proponent	Solar Mining Services Pty Ltd
Activity proposal	Industry
Determining authority	Parkes Shire Council
Land ownership	Lexa Enterprises Pty Ltd
Project area	Lot 2 DP 1064474, Bogan Gate
Study area	Rural land uses with an historic explosives manufacturing and storage and army camp occupation
Zoning	Zone RU1 – Primary Production under the Parkes Local Environmental Plan 2012

This report has been prepared as a single document of several sections as follows:

Section 1	Introduces the proposal and key project drivers
Section 2	Outlines the proposed alterations and additions to the SMS ANE Facility
Section 3	Outlines the methodology for assessment of potential biodiversity impacts
Section 4	Describes the site context
Section 5	Reviews the activity proposal against the relevant legislative requirements
Section 6	Assesses biodiversity values (native vegetation, threatened ecological communities and vegetation integrity) as well as the potential impacts of the proposal, including EPBC Act MNES assessment, BC Act significance assessment and the assessment of threatening processes
Section 7	Documents the mitigation and management strategies proposed to minimise environmental impacts
Section 8	Provides the conclusion for the preliminary biodiversity assessment and scoping report

1. INTRODUCTION

Currajong has been engaged by SMS to undertake a preliminary assessment of biodiversity values, issues and potential impacts relating to their plans to undertake alterations and additions to their existing SMS ANE Facility located on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate.

The SMS ANE Facility is located on Lot 2 DP 1064474, approximately 1.5km east of Bogan Gate and 35km west of Parkes via the Henry Parkes Way. Lot 2 DP 1064474 is currently managed by Bogan Gate Explosives Reserve who lease to Johnex for explosives manufacturing and storage operations, Howards for explosives storage and more recently to SMS for their ANE Facility.

A map showing the location of Lot 2 DP 1064474 in relation to surrounding roads, rural holdings, native vegetation and other features is provided in Figure 1.

Figure 1 - Site Location Map



Source: Six Maps

The SMS ANE Facility operates in the context of a larger explosives reserve known as the Bogan Gate Explosives Reserve (BGER) which has been used for manufacturing, storage and testing of explosives since World War II. The site is largely influenced by historic use of the BGER for explosives manufacturing and storage and army camp activities.

Land-use surrounding the BGER is rural land supporting grazing and cropping activities. The Bogan Gate Cemetery is located on the western edge of the BGER adjoining Memorial Lane. Vegetation in the area has been modified to support rural and peri-urban land-use activities, with remnant vegetation mostly along road and rail corridors, ridgelines and creek lines. Isolated paddock trees with a grassy / weedy / cropped groundcover predominate the farming lands on the flatter topography. The Gunning Ridge to the east of the site holds the largest remnant of native vegetation in the locality.

The SMS ANE Facility is located on the lower slope of the western side of the Gunning Ridge which has an elevation of RL 360, some 120 metres higher than the surrounding landscape around Bogan Gate. The SMS ANE Facility is located on RL 270 and has a slight fall (average 2%) to the north-west. There are no named watercourses that traverse Lot 2 DP 1064474. The nearest watercourse is the Gunningbland Creek located approximately 1.2km north of the SMS ANE Facility.

This preliminary biodiversity assessment and scoping report has been undertaken to determine whether proposed alterations and additions at the SMS ANE Facility, including clearing of vegetation, would lead to significant impacts on threatened species, or whether the thresholds for entry into the BOS would be triggered by the proposed subdivision, which are as follows:

- If the amount of native vegetation proposed to be cleared exceeds the threshold area.
- When the development is located on land identified in the Biodiversity Value Map (<https://www.lmbc.nsw.gov.au/Maps/>), as defined by Clause 7.3 of the BC Regulation.
- If, in the absence of the above thresholds, the proposal is likely to be a significant impact to threatened species, ecological communities or their habitat.

2. PROPOSED DEVELOPMENT

The proposed development involves alterations and additions to the SMS ANE Facility located on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate to increase the processing capacity of ANE manufactured at the facility. The following works are proposed to cater for the increased manufacturing, storage and transport operations:

- Demolition of existing Shed 78 structure.
- Construction of three (3) new AN storage sheds (Sheds 70B and 70C and new Shed 78) and associated concrete loading areas.
- Installation of two (2) new 25 tonne capacity ANE metal storage tanks.
- Clearing of approximately 1,500m² of regrowth white cypress pine (*Callitris glaucophylla*).

The vegetation proposed to be cleared is shown in Figure 2.

Figure 2 – SMS Proposed Land Clearing



Source: Six maps

A photograph of the vegetation proposed to be cleared is provided in Photo 1 overleaf.

Photo 1 – White Cypress Pine Clearing (view from new shed site)



3. BIODIVERSITY ASSESSMENT METHODOLOGY

This PBASR has been carried out as follows:

3.1. Background Research

Preliminary assessment drew on local experience, previous reporting and information held on government databases and archives. Results of database searches were used to assist in identifying distributions, suitable habitats and known records of threatened species to increase the effectiveness of field investigations.

Information sources reviewed included the following:

- NSW Government online aerial imagery at <https://maps.six.nsw.gov.au/>
- Critical habitat register, available on the DPIE website at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/programs-legislation-and-framework/registers>
- NSW Government Biodiversity Values Map which identifies land with high biodiversity value, as defined by the Biodiversity Conservation Regulation 2017 (<https://www.lmbc.nsw.gov.au/>)
- Flora and fauna records and profiles contained in the NSW Threatened Species Database, EPBC Protected Matters Search Tool and DPI threatened fish distribution maps.
- NSW Government Native Vegetation Regulatory Map at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/programs-legislation-and-framework/registers>
- BioNet (www.bionet.nsw.gov.au) Wildlife Atlas and Plant Community Type (VIS) databases.
- Flora of NSW (Harden 1991-2002) and Flora of NSW Online at: <https://plantnet.rbgsyd.nsw.gov.au/>
- State Vegetation Type Map C1.1.M1 (DPE 2022) at: <https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map>
- Gateway to the Bogan, First Edition, 1997
- Through the Years – A History of the Army Camp at Bogan Gate

3.2. Site Inspection

In addition to the desktop data searches, a site inspection was undertaken. The objectives of the field work are to:

- Identify native species and vegetation communities present.
- Describe the quality and value of the vegetation and the flora and fauna habitat at the development site.
- Determine the extent of the proposed impact to these communities.
- Determine if species, populations, or ecological communities listed as threatened under the BC Act 2016 or EPBC Act 1999 are / may be present.

Vegetation was assessed using the online NSW Master Plant Community Type Classification 2018 and the BioNet Vegetation Classification database. The site was traversed on foot to confirm the nature and extent of

the vegetation (i.e. native or non-native). Considering the scope of works proposed and the environmental conditions at the BGER, no targeted surveys were carried out and no aquatic surveys were undertaken.

3.3. Habitat Suitability Assessment

The results of the desktop review and site inspection were collated to determine the extent and integrity of native vegetation on the site.

The SMS ANE Facility comprises a number of fixed buildings, roads and drainage improvements within a cleared area sown down to exotic grasses, surrounded by patches of native and regrowth vegetation. The habitat value on and around the immediate area of the SMS site are assessed as low.

Higher value habitat is found to the east of the SMS site, known as the Gunning Ridge. A long strip of dry sclerophyll forest comprises this ridgeline which runs in a north-south direction. The Gunningbland Creek is located to the north of the SMS site, which also has sections of higher value riparian native vegetation.

3.4. Likelihood Assessment

A review of species considered to have a moderate to high likelihood of occurring at the site was undertaken and detailed in this report.

3.5. Significance Assessment

A test of significance is recorded in this report, which provides a list of ecological flora communities found at the site and the fauna species likely to inhabit or visit the site. These assessments have been undertaken in accordance with the BC Act 2016 and the EPBC Act 1999 to determine the extent of impacts on threatened species identified as likely occurring at the site.

4. SITE CONTEXT

4.1. Regional Context

The proposal site lies in the NSW South Western Slopes Bioregion – Lower Slopes subregion of the Parkes Shire. The subject site is zoned RU1 Primary Production under the Parkes Local Environmental Plan 2012. A range of rural and supporting land-use activities are permitted in the RU1 Primary Production zone. Table 1 provides wider context.

Table 1 – Environmental Context Summary

Attributes	Description
LGA	Parkes
Zoning	RU1 Primary Production Zone
Catchment	Lachlan
IBRA Bioregion	NSW South Western Slopes
IBRA Subregion	Lower Slopes
Mitchell Landscape	Jemalong Range and Slopes - Prominent strike ridges of upper Devonian quartz sandstone. Oriented north south with welldefined water gaps. General elevation 250 to 400m, local relief 120 to 150m, and prominent asymmetry with steeper eastern faces of stepped cliffs and narrow benches. Lower colluvial slopes of coalescing alluvial fans on small streams. Thin very stony soils on ridges with abundant currawang (<i>Acacia doratoxylon</i>), red stringybark (<i>Eucalyptus macrorhyncha</i>), red ironbark (<i>Eucalyptus sideroxylon</i>), Dwyer's red gum (<i>Eucalyptus dwyeri</i>) and black cypress pine (<i>Callitris endlicheri</i>). Deeper stony soils on lower slopes with grey box (<i>Eucalyptus microcarpa</i>), red ironbark, bimple box (<i>Eucalyptus populnea</i>), white cypress pine (<i>Callitris glaucophylla</i>) and some white box (<i>Eucalyptus albens</i>)
Nearest Waterway	Gunningbland Creek, located approximately 1.3 kilometres north and north-west of the SMS ANE Facility
Nearest NPWS Park	Goobang National Park, located approximately 55 kilometres east of the SMS ANE Facility
Connectivity	The site adjoins the Gunning Ridge that comprises a large / long corridor of native vegetation
Soils	Ordovician slates and phyllite
Biodiversity Values Map	Nearest identified area is the Gunningbland Creek north the site
Other Mapping	Nil

The Bureau of Meteorology Atlas of Groundwater Dependant Ecosystems (GDE) mapping 2018 shows only areas of low potential for terrestrial GDE. No Areas of Outstanding Biodiversity Value are recorded to occur within the site, as per the criteria under the BC Regulation 2017.

4.2. Site Context

The site of the SMS ANE Facility is wholly within Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate.

Lot 2 DP 1064474 sits within the context of a larger explosives reserve known today as the Bogan Gate Explosives Reserve (BGER). The explosives reserve was originally used by the Australian Military as an explosive storage and testing area established during World War II. The BGER included an army camp that accommodated communal army barracks, free-standing dwellings, multiple storage sheds, mess hall and other administration / community style facilities. The site was utilised by the Australian Military to store ammunitions with an activation process where explosives missiles were tested. Historically, the BGER is understood to have functioned with other land parcels to the east, south and west of Lot 2 DP 1064474.

Lot 2 DP 1064474 today is currently managed by Bogan Gate Explosives Reserve who lease to Johnex for explosives manufacturing and storage operations, Howards and Sons for explosives storage and more recently SMS for their ANE Facility.

The State Vegetation Map (SVM) 'Central West Lachlan v1 4468' spatial layer shows the following Plant Community Types (PCT) could be present within the Bioregion:

- PCT70: White Cypress Pine woodland on sandy loams in central NSW wheatbelt
- PCT76: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
- PCT185: Dwyer's Red Gum - White Cypress Pine - Currawang shrubby woodland mainly in the NSW South Western Slopes Bioregion
- PCT217: Mugga Ironbark - Western Grey Box - cypress pine tall woodland on foot slopes of low hills in the NSW South Western Slopes Bioregion

Site inspection confirms predominant plant types in and around the site as PCT70: White Cypress Pine woodland on sandy loams in central NSW wheatbelt and PCT76: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions. These plant community types are associated with the Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia, listed as Endangered under the EPBC Act 1999.

5. STATUTORY AND PLANNING ASSESSMENT

5.1. Commonwealth Framework

5.1.1. Environment Protection & Biodiversity Conservation Act 1999

The Commonwealth EPBC Act 1999 provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and other matters which are defined as matters of national environmental significance (MNES) under the Act.

Under the EPBC Act 1999, referral is required to the Australian Government for proposed actions that have the potential to significantly impact on Matters of National Environmental Significance (MNES) or the environment of Commonwealth land.

Under the EPBC Act 1999, an action that may potentially have a significant impact on a MNES or Commonwealth land must be referred to the Commonwealth Department of Agriculture, Water and the Environment (DAWE) for determination as to whether or not it is a 'controlled action', requiring assessment and approval by the Commonwealth Minister for the Environment, including:

- Wetlands of international importance (listed under the Ramsar Convention).
- Listed threatened species and ecological communities.
- Listed migratory species protected under international agreements.

Birds listed in the following international agreements are classified as migratory birds under the EPBC Act:

- Japan-Australia Migratory Bird Agreement (JAMBA),
- China-Australia Migratory Bird Agreement (CAMBA),
- Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA).

The MNES Significant Impact Guidelines 2013 provides the criteria to be assessed. Matters which fall under this legislation and guidelines are addressed in later sections of this report. However, it is assessed the proposal is unlikely to be of significant impact on relevant MNES or on Commonwealth land and does not warrant referral under the EPBC Act 1999.

5.2. NSW framework

5.2.1. Environmental Planning and Assessment Act 1979

The Environmental Planning and Assessment Act 1979 (EP&A Act 1979) forms the legal framework for environmental assessment and approvals process in NSW. The objects of the EP&A Act are:

- a. to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,
- b. to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,
- c. to promote the orderly and economic use and development of land,
- d. to promote the delivery and maintenance of affordable housing,
- e. to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,

- f. to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),
- g. to promote good design and amenity of the built environment,
- h. to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,
- i. to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,
- j. to provide increased opportunity for community participation in environmental planning and assessment.

SMS intend to lodge a Development Application (DA) for alterations and additions to their facility to increase production of ammonium nitrate emulsion. The proposal involves the construction of additional sheds, which requires clearing of a section of vegetation to ensure suitable APZs for bushfire protection purposes.

The DA would be assessed under Part 4 of the EP&A Act 1979 dealing with development on land zoned RU1 Primary Production. As such a Development Consent from Parkes Shire Council will be required to be granted prior to alterations and additions commencing on the site.

5.2.2. Biodiversity Conservation Act 2016

The BC Act 2016 provides the legal framework for the management of flora and fauna on lands within NSW, using ecologically sustainable development principles to achieve the conservation and protection of biodiversity values. The BC Act 2016 compliments the EP&A Act 1979 by incorporating the concepts of development, development consent, consent authority and activity. The EP&A Act 1979 has effect subject to the provisions of Part 7 of the BC Act 2016 (refer s1.7 EP&A Act).

Pursuant to Section 7.7(2) of the BC Act 2016, an application for development consent that is 'likely to significantly affect threatened species' must be accompanied by a biodiversity development assessment report (BDAR). A proposed development is likely to significantly affect threatened species if any of the criteria in section 7.2(1) of the BC Act 2016 are triggered; with those criteria being:

- The test in section 7.3 of the BC Act 2016, or
- The development exceeds the biodiversity offsets scheme threshold (BOST) if the biodiversity offsets scheme (BOS) applies to the impacts of the development on biodiversity values, or
- The development is carried out in a declared area of outstanding biodiversity value.

'Threatened species' is defined in Section 1.6(1) of the BC Act 2016 as 'a critically endangered species, an endangered species or a vulnerable species listed in Schedule 1 [of the BC Act]'. The circumstances in which a proposed development exceeds the BOST for the purposes of Part 7 of the BC Act 2016 are prescribed in Clause 7.1 of the BC Regulation 2017. Those circumstances are if the proposed development involves:

- The clearing of native vegetation of an area declared by Clause 7.2 of the BC Regulation 2017 as exceeding the threshold, or
- The clearing of native vegetation, or other action prescribed by Clause 6.1 of the BC Regulation 2017, on land included on the Biodiversity Values Map published under Clause 7.3 of the Regulation.

Native vegetation and clearing native vegetation under the BC Act 2016 have the same meanings as in Section 60B(1) and 60C of the Local Land Services Act 2013 (LLS Act 2013), namely:

'Native vegetation means any of the following types of plants native to New South Wales:

- (a) trees (including any sapling or shrub or any scrub),
- (b) understorey plants,
- (c) groundcover (being any type of herbaceous vegetation),
- (d) plants occurring in a wetland.'

The threshold in Clause 7.1 of the BC Regulation 2017 is triggered regardless of whether the native vegetation on the land contains threatened species. The BOS operates by reference to the expression "native vegetation" as defined in Section 60B(1) of the LSS Act 2013, which is a much broader concept than threatened species. Threatened species is a subset of native vegetation. Not all native vegetation is a threatened species.

Clearing of native vegetation is prescribed by Clause 7.2 of the BC Regulation 2016 to exceed the BOS by reference to the minimum lot size applicable to the land under an environmental planning instrument, or if no such minimum lot size exists, the actual size of the development site. If the proposed development results in clearing of an area greater than the prescribed area in Clause 7.2 of the BC Regulation 2017, the development is deemed likely to significantly affect threatened species, regardless of whether any threatened species exist on the site.

In the case of the proposal, the area of clearing proposed is approximately 1,500m² of regrowth cypress pines which is well below the 1-hectare threshold specified in the BC Regulation 2017 when the total area of Lot 2 DP 1064474 is taken into account.

5.2.3. Local Land Services Act 2013

The objectives of the LLS Act 2013 include ensuring *'the proper management of natural resources in the social, economic and environmental interests of the State, consistently with the principles of ecologically sustainable development.'*

60D the LLS Act 2013 defines *'areas of the State to which Part 5A [of the LLS Act] applies as category 1-exempt land on the native vegetation regulatory map'*. In order to be classed as category 1-exempt land, the land must be both (a) within an area of the State to which Part 5A of the LLS Act 2013 applies and (b) be designated as category 1-exempt land on the native vegetation regulatory map.

Land zoned RU1 Primary Production is not listed under Clause 2.3(1)(b) of State Environmental Planning Policy (Biodiversity and Conservation) 2021, which allows land to be identified as category 1-exempt land. Section 60H provides the criteria for category 1-exempt land, if the land:

- was cleared of native vegetation on 1 January 1990, or
- was lawfully cleared of native vegetation between 1 January 1990 and the commencement of Part 5A, or
- contains low conservation value grasslands or native vegetation that was identified as regrowth in a property vegetation plan referred to in Section 9(2)(b) of the Native Vegetation Act 2003, or
- is of a kind prescribed by the regulations as category 1-exempt land.

In the case of the proposal, the area of clearing proposed is approximately 1,500m² of cypress pine. All evidence suggests these species are regrowth trees post 1990 and are therefore not native vegetation as defined under the LLS Act 2013.

5.2.4. Fisheries Management Act 1994

Part 7A of the Fisheries Management Act 1994 (FM Act 1994) and schedules within the FM Act 1994 list threatened aquatic and marine species, populations and ecological communities and key threatening processes which must be considered as part of obligations under Section 5.5 of the EP&A Act 1979.

Section 201 of the FM Act 1994 states that a person (other than a public or local government authority) must not carry out dredging work or reclamation work except under the authority of a permit issued by the Minister. Dredging work means any work that involves excavating water land. Reclamation work means any work that involves depositing any material on water land.

Dredging work means any work that involves excavating water land. Reclamation work means any work that involves depositing any material on water land. No specific FM Act 1994 permits are required to be obtained for the proposal.

5.2.5. National Parks and Wildlife Act 1974

The National Parks and Wildlife Act 1974 (NPW Act 1974) is administered by the Office of Environment and Heritage and provides the basis for the legal protection of flora and fauna in NSW. Under the NPW Act 1974, it is an offence to harm any animal that is protected or is a threatened species, population or ecological community. It is also an offence to pick any plant that is protected or is a threatened species, population or ecological community. In addition, a person must not, by act or omission, damage any critical habitat.

The NPW Act 1974 also provides the basis for the legal protection and management of Aboriginal sites within NSW, including protection of any physical / material evidence of Aboriginal occupation of NSW and places of cultural significance to the Aboriginal community. Aboriginal cultural heritage impacts are not assessed in this report, which is limited to the assessment of biodiversity impacts only.

The site is assessed to comprise 'disturbed land', as defined under NPW Regulation.

5.2.6. State Environmental Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 consolidates, transfers and repeals provisions of 11 SEPPs. These individual SEPPs are no longer current; however, their provisions are incorporated into the BC SEPP 2021.

In the case of the SMS proposal, the area of clearing proposed is approximately 1,500m² comprising regrowth cypress pines.

5.2.7. State Environmental Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 consolidates, transfers and repeals provisions of 11 SEPPs. These individual SEPPs are no longer current; however, their provisions are incorporated into the BC SEPP 2021.

The BC SEPP 2021 does not list land zoned RU1 Primary Production as applying to Clause 2.3(1)(b), which means Part 5A of the LLS Act 2013 applies and the land is not to be identified as category 1-exempt land under the LLS Act 2013. Accordingly, no further assessment under Chapter 2 of the SEPP is required.

6. BIODIVERSITY ASSESSMENT

6.1. Plant Community Assessment

Desktop review of Plant Community Types (PCT) was completed using the NSW Government map layer Central West Lachlan State Vegetation Map v1 4468. Several PCTs are mapped within close proximity of the BGER, as follows:

- PCT0: Not classified.
- PCT70: White Cypress Pine woodland on sandy loams in central NSW wheatbelt
- PCT76: Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions
- PCT185: Dwyer's Red Gum - White Cypress Pine - Currawang shrubby woodland mainly in the NSW South Western Slopes Bioregion
- PCT217: Mugga Ironbark - Western Grey Box - cypress pine tall woodland on foot slopes of low hills in the NSW South Western Slopes Bioregion

Site inspection confirms predominant plant types in and around the site as PCT70: White Cypress Pine woodland on sandy loams in central NSW wheatbelt. This plant community type is associated with the Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia, listed as Endangered under the EPBC Act 1999.

Other predicted TECs were confirmed not to be present in the study area.

6.2. Threatened Species Assessment

Section 7.3 of the BC Act 2016 provides the criteria to test whether a development is likely to significantly affect threatened species or ecological communities, or their habitats.

The NSW Government BioNet species database was reviewed to arrive at a species populations and communities list, as shown in Table 2.

Table 2 – BioNet Species Records NSW Lower Slopes Subregion

Scientific name	Common name	NSW status	Commonwealth status
Amphibians			
<i>Crinia sloanei</i>	Sloane's Froglet	Vulnerable	Endangered
Birds			
<i>Anthochaera phrygia</i>	Regent Honeyeater	Critically Endangered	Critically Endangered
<i>Artamus cyanopterus</i>	Dusky Woodswallow	Vulnerable	
<i>Burhinus grallarius</i>	Bush Stone-curlew	Endangered	
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Vulnerable	Endangered
<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	Vulnerable	
<i>Certhionyx variegatus</i>	Pied Honeyeater	Vulnerable	
<i>Chthonicola sagittata</i>	Speckled Warbler	Vulnerable	
<i>Circus assimilis</i>	Spotted Harrier	Vulnerable	
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	Vulnerable	
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Vulnerable	
<i>Falco hypoleucos</i>	Grey Falcon	Endangered	
<i>Falco subniger</i>	Black Falcon	Vulnerable	
<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet	Vulnerable	
<i>Glossopsitta pusilla</i>	Little Lorikeet	Vulnerable	
<i>Grantiella picta</i>	Painted Honeyeater	Vulnerable	Vulnerable
<i>Grus rubicunda</i>	Brolga	Vulnerable	
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Vulnerable	
<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	Vulnerable	
<i>Hieraetus morphnoides</i>	Little Eagle	Vulnerable	
<i>Hirundapus caudacutus</i>	White-throated Needletail	Not listed	Vulnerable
<i>Lathamus discolor</i>	Swift Parrot	Endangered	Critically Endangered
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	Vulnerable	

Scientific name	Common name	NSW status	Commonwealth status
<i>Lophoictinia isura</i>	Square-tailed Kite	Vulnerable	
<i>Melanodryas cucullata</i>	Hooded Robin (south-eastern form)	Vulnerable	
<i>Melithreptus gularis</i>	Black-chinned Honeyeater (eastern subspecies)	Vulnerable	
<i>Neophema pulchella</i>	Turquoise Parrot	Vulnerable	
<i>Ninox connivens</i>	Barking Owl	Vulnerable	
<i>Pachycephala inornata</i>	Gilbert's Whistler	Vulnerable	
<i>Petroica boodang</i>	Scarlet Robin	Vulnerable	
<i>Petroica phoenicea</i>	Flame Robin	Vulnerable	
<i>Polytelis swainsonii</i>	Superb Parrot	Vulnerable	Vulnerable
<i>Pomatostomus temporalis</i>	Grey-crowned Babbler (eastern subspecies)	Vulnerable	
<i>Stagonopleura guttata</i>	Diamond Firetail	Vulnerable	
<i>Tyto novaehollandiae</i>	Masked Owl	Vulnerable	
Threatened Ecological Communities			
Grey Box (<i>Eucalyptus microcarpa</i>) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia		Not listed	Endangered
Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Penepplain, Nandewar and Brigalow Belt South Bioregions		Endangered Ecological Community	
Mallee and Mallee-Broombush dominated woodland and shrubland, lacking Triodia, in the NSW South Western Slopes Bioregion		Critically Endangered Ecological Community	
White Box - Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions		Critically Endangered Ecological Community	Critically Endangered
Mammals			
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	Vulnerable	
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Vulnerable	Vulnerable

Scientific name	Common name	NSW status	Commonwealth status
<i>Chalinolobus picatus</i>	Little Pied Bat	Vulnerable	
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Vulnerable	Endangered
<i>Myotis macropus</i>	Southern Myotis	Vulnerable	
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	Vulnerable	Vulnerable
<i>Petaurus norfolcensis</i>	Squirrel Glider	Vulnerable	
<i>Phascolarctos cinereus</i>	Koala	Vulnerable	Endangered
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Vulnerable
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Vulnerable	
<i>Sminthopsis macroura</i>	Stripe-faced Dunnart	Vulnerable	
Plants			
<i>Austrostipa metatoris</i>	A spear-grass	Vulnerable	Vulnerable
<i>Austrostipa wakoolica</i>	A spear-grass	Endangered	Endangered
<i>Brachyscome papillosa</i>	Mossgiel Daisy	Vulnerable	Vulnerable
<i>Caladenia arenaria</i>	Sand-hill Spider Orchid	Endangered	Endangered
<i>Cullen parvum</i>	Small Scurf-pea	Endangered	
<i>Diuris</i> sp. (Oaklands, D.L. Jones 5380)	Oaklands Diuris	Endangered	
<i>Diuris tricolor</i>	Pine Donkey Orchid	Vulnerable	
<i>Eleocharis obicis</i>	Spike-Rush	Vulnerable	Vulnerable
<i>Goodenia macbarronii</i>	Narrow Goodenia	Not listed	
<i>Lepidium aschersonii</i>	Spiny Peppercross	Vulnerable	Vulnerable
<i>Lepidium monoplacoides</i>	Winged Peppercross	Endangered	Endangered
<i>Leptorhynchus orientalis</i>	Lanky Buttons	Endangered	
<i>Pilularia novae-hollandiae</i>	Austral Pillwort	Endangered	
<i>Swainsona murrayana</i>	Slender Darling Pea	Vulnerable	Vulnerable
<i>Swainsona recta</i>	Small Purple-pea	Endangered	Endangered
<i>Swainsona sericea</i>	Silky Swainson-pea	Vulnerable	
<i>Tylophora linearis</i>	Tylophora linearis	Vulnerable	Endangered
Populations			

Scientific name	Common name	NSW status	Commonwealth status
<i>Calyptorhynchus lathami</i> - endangered population	Glossy Black-Cockatoo, Riverina population	Endangered Population	
<i>Climacteris affinis</i> - endangered population	White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	Endangered Population	
<i>Petaurus norfolcensis</i> - endangered population	Squirrel Glider in the Wagga Wagga Local Government Area	Endangered Population	

6.3. Habitat Assessment

The results of the desktop review, field assessment, PCT assessment and species populations and communities list assessment were reviewed to provide a broad assessment of the habitat value on the site and around the study area. The findings of the habitat assessment are summarised in the Table 3.

Table 3 – Habitat Values Assessment

Factor	Impact
Land identified on the Biodiversity Values Map under the NSW <i>BC Act 2016</i> ?	No
Area of Outstanding Biodiversity Value (AOBV) under the NSW <i>BC Act 2016</i> ?	No
Critical habitat nationally?	No
An area reserved or dedicated under the <i>National Parks and Wildlife Act 1974</i> ?	No
Is the proposal located within land reserved or dedicated within the meaning of the <i>Crown Lands Act 1989</i> for preservation of other environmental protection purposes?	No
A World Heritage Area?	No
Environmental Protection Zones in environmental planning instruments?	No
Lands protected under <i>SEPP (Biodiversity and Conservation) 2021</i> ?	No
Land identified as wilderness under the <i>Wilderness Act 1987</i> or declared as wilderness under the <i>National Parks and Wildlife Act 1974</i> ?	No
Aquatic reserves dedicated under the <i>Fisheries Management Act 1994</i> ?	No
Aquatic Threatened Ecological Community?	No
Wetland areas dedicated under the Ramsar Wetlands Convention?	No
Land subject to a conservation agreement under the <i>National Parks and Wildlife Act 1974</i> ?	No

Factor	Impact
Land identified as State Forest under the <i>Forestry Act 1916</i> ?	No
Acid sulphate area?	No
Protected riparian habitat?	No
Mapped Key Fish Habitat?	No
Hollow bearing trees were recorded within the subject site.	No

6.4. MNES Assessment

The MNES: Significant Impact Guidelines 2013 provide guidance on determining whether an action is likely to have a significant impact on a matter protected under the Environment Protection and Biodiversity Conservation Act 1999. In determining the nature and magnitude of impacts, the following were considered:

- The EPBC Act protected matters search tool: www.environment.gov.au/erin/ert/epbc/index.html
- Lists of threatened species and ecological communities: www.environment.gov.au/epbc/protect/species-communities.html
- List of migratory species: www.environment.gov.au/epbc/protect/migratory.html
- List of Australia's Ramsar Wetlands map: www.environment.gov.au/epbc/protect/wetlands.html
- Commonwealth marine environment information: www.environment.gov.au/epbc/protect/marine.html
- World Heritage properties map: www.environment.gov.au/epbc/protect/heritage.html
- National Heritage places map: www.environment.gov.au/epbc/protect/heritage.html
- Great Barrier Reef Marine Park information: www.gbrmpa.gov.au
- Water resource mapping: www.environment.gov.au/epbc/about/water-trigger.html

An assessment of whether the proposal is likely to impact MNES is provided in Table 4.

Table 4 – MNES Assessment

Factor	Impact
Any impact on a World Heritage property?	No
Any impact on a National Heritage place?	No
Any impact on a wetland of international importance?	No
Great Barrier Reef Marine Park	No
Commonwealth Marine Area	No
Any impact on a listed threatened species or communities?	No
Any impacts on listed migratory species?	No

Factor	Impact
Any impact on a Commonwealth marine area?	No
Does the proposal involve a nuclear action (including uranium mining)?	No
Additionally, any impact (direct or indirect) on Commonwealth land?	No
Any impact on a water resource, in relation to coal seam gas development and large coal mining development?	No

No entities listed under the EPBC Act are likely to be significantly impacted by this proposal.

6.5. Likelihood Assessment

In determining the nature and magnitude of impacts on threatened species, the following were considered:

- Pre-construction, construction and occupation / maintenance phases.
- All on-site and off-site impacts, including location, installation, operation and maintenance of auxiliary infrastructure and fire management zones.
- All direct and indirect impacts.
- The frequency and duration of each known or likely impact / action.
- The total impact which can be attributed to that action over the entire geographic area affected, and over time.
- The sensitivity of the receiving environment.
- The degree of confidence with which the impacts of the action are known and understood.

Table 5 documents the assessment findings of the likelihood assessment.

Table 5 – Species and Populations Likelihood Assessment

Scientific Name	Common Name	Likely to occur in the development footprint	Likely to be impacted	Test of significance required
<i>Crinia sloanei</i>	Sloane's Froglet	Species is predicted to occur in periodically inundated areas in grassland, woodland and disturbed habitats which may occur in the development footprint	Unlikely	No
<i>Anthochaera phrygia</i>	Regent Honeyeater	Preferred food species are not present in the development footprint. There is no important habitat within 100km	Unlikely	No
<i>Artamus cyanopterus</i>	Dusky Woodswallow	Suitable woodland habitat is present, with an understorey of eucalypt saplings which is desirable	Unlikely	No
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Suitable wetland pools and associated vegetation are not present in the study area	N/A	No
<i>Burhinus grallarius</i>	Bush Stone-curlew	Historic clearing, removal of woody debris and a landscape with a partial ground cover mean there is little suitable habitat for this species	N/A	No
<i>Calidris ferruginea</i>	Curlew Sandpiper	Suitable wetland / mudflat habitat is not present in the study area	N/A	No
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Calyptorhynchus lathami</i>	Glossy Black-Cockatoo	Minimal foraging habitat exists in the study area	Unlikely	No



Scientific Name	Common Name	Likely to occur in the development footprint	Likely to be impacted	Test of significance required
<i>Certhionyx variegatus</i>	Pied Honeyeater	Suitable food species such as <i>Eremophilla longifolia</i> and <i>grevillea</i> are not present in the study area	N/A	No
<i>Chthonicola sagittata</i>	Speckled Warbler	This species requires relatively large undisturbed remnant woodlands which are not present in the study area	N/A	No
<i>Circus assimilis</i>	Spotted Harrier	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Climacteris picumnus victoricae</i>	Brown Treecreeper (eastern subspecies)	Preferred food species are not present in the development footprint. Hollows for nesting not identified	Unlikely	No
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Preferred food species are not present in the development footprint	Unlikely	No
<i>Falco hypoleucos</i>	Grey Falcon	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Falco subniger</i>	Black Falcon	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Glossopsitta porphyrocephala</i>	Purple-crowned Lorikeet	Landscape does not support suitable habitat. Minimal foraging habitat exists in the study area	Unlikely	No
<i>Glossopsitta pusilla</i>	Little Lorikeet	Landscape does not support suitable habitat. Minimal foraging habitat exists in the study area	Unlikely	No



Scientific Name	Common Name	Likely to occur in the development footprint	Likely to be impacted	Test of significance required
<i>Grantiella picta</i>	Painted Honeyeater	Preferred species including Myall and Brigalow are not present in the study area, further, presence of Mistletoe is unlikely to be at a desirable density for this species	N/A	No
<i>Grus rubicunda</i>	Brolga	Landscape does not support suitable habitat	N/A	No
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	The study area is more than 1km from a major waterway meaning the species is unlikely to target this habitat for breeding or foraging	N/A	No
<i>Hamirostra melanosternon</i>	Black-breasted Buzzard	Landscape does not support suitable habitat. Minimal foraging habitat exists in the study area	N/A	No
<i>Hieraetus morphnoides</i>	Little Eagle	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Hirundapus caudacutus</i>	White-throated Needletail	Species rarely comes to ground, and otherwise feeds high above the canopy. Minimal foraging habitat exists in the study area	N/A	No
<i>Lathamus discolor</i>	Swift Parrot	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Leipoa ocellata</i>	Malleefowl	No mallee vegetation present in the study area	N/A	No
<i>Lophochroa leadbeateri</i>	Major Mitchell's Cockatoo	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Lophoictinia isura</i>	Square-tailed Kite	Minimal foraging habitat exists in the study area	Unlikely	No



Scientific Name	Common Name	Likely to occur in the development footprint	Likely to be impacted	Test of significance required
<i>Melanodryas cucullata</i>	Hooded Robin (south-eastern form)	Unlikely: It is unlikely the woodland remnant areas are suitable structurally diverse for this species, notable the absence of small native shrubs	Unlikely	No
<i>Melithreptus gularis</i>	Black-chinned Honeyeater (eastern subspecies)	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Neophema pulchella</i>	Turquoise Parrot	Landscape does not support suitable habitat. Minimal foraging habitat exists in the study area	Unlikely	No
<i>Ninox connivens</i>	Barking Owl	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Numenius madagascariensis</i>	Eastern Curlew	Suitable wetland/ mudflat habitat is not present in the study area	N/A	No
<i>Pachycephala inornata</i>	Gilbert's Whistler	Landscape does not support suitable habitat. Minimal foraging habitat exists in the study area	Unlikely	No
<i>Petroica boodang</i>	Scarlet Robin	This species requires abundant fallen logs which are not present in the study area	N/A	No
<i>Petroica phoenicea</i>	Flame Robin	Landscape does not support suitable habitat. Minimal foraging habitat exists in the study area	Unlikely	No



Scientific Name	Common Name	Likely to occur in the development footprint	Likely to be impacted	Test of significance required
<i>Polytelis swainsonii</i>	Superb Parrot	Landscape does not support suitable habitat. Minimal foraging habitat exists in the study area	Unlikely	No
<i>Pomatostomus temporalis</i>	Grey-crowned Babbler (eastern subspecies)	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Rostratula australis</i>	Australian Painted Snipe	Suitable wetland / mudflat habitat is not present in the study area	N/A	No
<i>Stagonopleura guttata</i>	Diamond Firetail	Landscape does not support suitable habitat. Minimal foraging habitat exists in the study area	Unlikely	No
<i>Tyto novaehollandiae</i>	Masked Owl	Minimal foraging habitat exists in the study area	N/A	No
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	This species occurs in woodlands with a rich shrub understorey	N/A	No
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Species roosts in caves which are not known from within or in reasonable proximity to the study area	N/A	No
<i>Chalinolobus picatus</i>	Little Pied Bat	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Minimal foraging habitat exists in the study area	Unlikely	No
<i>Myotis macropus</i>	Southern Myotis	Rarely recorded more than 100km inland. The study area is over 400km inland	N/A	No



Scientific Name	Common Name	Likely to occur in the development footprint	Likely to be impacted	Test of significance required
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat	Known to roost in tree hollows in box woodlands	Unlikely	No
<i>Petaurus norfolcensis</i>	Squirrel Glider	Prefers stands of woodland / forests with a missed Acacia mid-storey which is not present in the study area or surrounding landscape	N/A	No
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	Landscape does not support suitable rocky habitat	N/A	No
<i>Phascolarctos cinereus</i>	Koala	Landscape does not support suitable habitat	Unlikely	No
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Records of this species within Lachlan area. No camp recorded during the field assessment	Unlikely	No
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Landscape does not support suitable habitat	Unlikely	No
<i>Sminthopsis macroura</i>	Stripe-faced Dunnart	Prefers ungrazed habitat with healthier understory vegetation	N/A	No
<i>Maccullochella peelii</i>	Murray Cod	There are no water bodies in study area	N/A	No
<i>Macquaria australasica</i>	Macquarie Perch	There are no water bodies in study area	N/A	No
<i>Aprasia parapulchella</i>	Pink-tailed Legless Lizard	Suitable surface rock is not present in the study area	N/A	No
<i>Calyptrorhynchus lathamii</i> - endangered population	Glossy Black-Cockatoo, Riverina population	The study area is not in the Riverina	N/A	No



Scientific Name	Common Name	Likely to occur in the development footprint	Likely to be impacted	Test of significance required
<i>Climacteris affinis</i> - endangered population	White-browed Treecreeper population in Carrathool local government area south of the Lachlan River and Griffith local government area	Unlikely: The study area is not in the Carrathool LGA	N/A	No
<i>Petaurus norfolcensis</i> - endangered population	Squirrel Glider in the Wagga Wagga Local Government Area	The study area is not in the Wagga Wagga LGA	N/A	No
<i>Acacia meiantha</i>	Barradam-bang Wattle	Conspicuous species not recorded during the field assessment	N/A	No
<i>Ammobium craspedioides</i>	Yass Daisy	Associated upper stratum species are not present in the study area	N/A	No
<i>Eucalyptus aggregata</i>	Black Gum	Conspicuous species not recorded during the field assessment	N/A	No
<i>Eucalyptus canobolensis</i>	Silver-Leaf Candlebark	Not known from the Lachlan area. Not recorded during the field assessment	N/A	No
<i>Eucalyptus pulverulenta</i>	Silver-leaved Mountain Gum	Not known from the Lachlan area. Not recorded during the field assessment	N/A	No



Scientific Name	Common Name	Likely to occur in the development footprint	Likely to be impacted	Test of significance required
<i>Eucalyptus robertsonii</i> <i>subsp. hemisphaerica</i>	Robertson's Peppermint	Not recorded / known to exist in the Lachlan area	N/A	No
<i>Eucalyptus saxicola</i>	Mt Canobolas Box	Not known from the Lachlan area	N/A	No
<i>Euphrasia arguta</i>	Euphrasia arguta	Study area is not within the known distribution for this species. Also, would be threatened by the dominating grass layer in areas of the study area	N/A	No
<i>Lepidium aschersonii</i>	Spiny Pepper-cress	Particular habitat details such as gilgai clays are not present in the study area	N/A	No
<i>Lepidium hyssopifolium</i>	Basalt Pepper-cress	Not recorded / known to exist in the Lachlan area	N/A	No
<i>Leucochrysum albicans</i> <i>var. tricolor</i>	Hoary Sunray	More common in the south of the state and is not able to thrive in areas where grass is strongly dominant as is the case in the study area	N/A	No
<i>Prostanthera gilesii</i>	Prostanthera gilesii	Not known from the Lachlan area. Not recorded during the field assessment	N/A	No
<i>Swainsona recta</i>	Small Purple-pea	Not known to occur in Inland Grey Box communities	N/A	No
<i>Swainsona sericea</i>	Silky Swainson-pea	Not recorded during the field assessment	Unlikely	No
<i>Thesium australe</i>	Austral Toadflax	Not recorded during the field assessment	Unlikely	No

6.6. Biodiversity Conservation Act Significance Assessment

Section 7.3 of the BC Act 2016 provides the criteria to test whether a development is likely to significantly affect threatened species or ecological communities, or their habitats. Table 6 documents the relevant assessment under the BC Act 2016. In summary the test of significance indicates that a significant effect is unlikely on any threatened species or ecological communities listed under the BC Act 2016.

Table 6 – BC Significance Assessment

BC Test	Assessment
Section 7.3(1)(a) - likely adverse affect on the life cycle of threatened species	The site is located in the Parkes LGA near Bogan Gate. The land in and directly around the SMS ANE Facility has been largely cleared in the past of woodland native vegetation. The BGER largely comprises cleared managed grassland with isolated paddock trees and stands of trees and larger pockets of vegetation, including remnant native vegetation. The SMS ANE Facility sits in a cleared area. The proposed alterations and additions to the SMS ANE Facility involves clearing a section of regrowth cypress pines to the west of the manufacturing plant. The clearing proposed is unlikely to have an adverse effect on the life cycle of native species such that a viable local population of the species is likely to be placed at risk of extinction. Breeding for species is more likely to occur in the established forested areas along Gunningbland Creek to the north and Gunning Ridge to the east, with limited potential for occasional foraging occurring within the site. SMS staff advise that native fauna species found on the site are generally visiting bird species
Section 7.3(1)(b) - likely adverse effect on the extent or composition of an endangered ecological community	The removal of the regrowth cypress pines will not likely adversely affect native vegetation woodland in the area, as the stand of pines are quite immature, and the area is already highly disturbed
Section 7.3(1)(c) - likely adverse affects on habitat of threatened species or ecological community	Foraging for food resources may be impacted by this proposal during construction works. SMS fences may also restrict some movement across the landscape. The extent of impacts would be low, given the highly disturbed nature of the site, existing roadways and infrastructure limiting connection and separation of the vegetation from larger foraging areas
Section 7.3(1)(d) - likely adverse affect on declared area of outstanding biodiversity value	No Areas of Outstanding Biodiversity Value are recorded to occur on or around the site, as defined under the BC Regulation 2017. The proposal will not have an adverse effect on any declared area of outstanding biodiversity value
Section 7.3(1)(e) - potential for the development to be part of a key threatening / impact process	The proposal would not significantly increase the prevalence or risk of key threatening process. The potential for foraging over the site will likely be reduced, however foraging over this area is already severely limited

7. Management and Mitigation

While flora and fauna impacts are assessed as low, as demonstrated in the BC Act 2016 test of significance and the EPBC Act 1999 assessments of significance and assessment under the MNES: Significant Impact Guidelines 2013, a number of measures are proposed to be incorporated into the SMS design to minimise impacts on the receiving environment.

7.1. Management and Mitigation

SMS has a document management system that lists a number of plans and procedures to manage and minimise potential environmental impacts, including safeguards for erosion, sediment, flora and fauna habitat management and weed control. Table 7 provides a summary of the SMS flora environmental management control measures that have been applied to the site.

Table 7 – SMS Management and Mitigation Measures

Impact	Management Measures
Pre-construction	
General	Procedures will be implemented for unexpected threatened species finds and fauna handling as well as protocols to manage weeds and pathogens
Soil erosion and sediment	Procedures will be implemented to control soil erosion and sediments
Invasion and spread of pathogens and disease	Pathogen control protocols shall be developed and implemented in accordance with the requirements of the Biosecurity Act 2015
Invasion and spread of weeds	Weed control protocols shall be developed and implemented
During construction / operation	
Fauna protection	No trees on adjoining sites are to be removed
Threatened species protection	If threatened fauna or flora species are discovered, works which may disturb the species would cease until any potential impacts are reviewed and assessed by a suitably qualified ecologist
Disturbance to fallen timber and dead wood	Any woody debris will be re-used at the site of the proposed road reserve / extension (western side of site) for habitat improvement. Woody debris would be lifted and placed appropriately outside the road footprint in an adjacent area of the site to enhance habitat
Pest animal monitoring / control	Pest animals such as rodents, foxes, rabbits, wild dogs and feral cats are to be controlled on the site

8. CONCLUSION

This Preliminary Biodiversity Assessment and Scoping Report has been prepared by Currajong Pty Ltd to determine whether there is a requirement to prepare a Biodiversity Assessment Report or Biodiversity Development Assessment Report to support the proposed alterations and additions to the SMS ANE Facility located on Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate.

Assessment of the proposal includes background research and analysis of readily available data, reports and studies. The assessment also includes the results of a site inspection, plant species assessment, habitat and plant species assessment, MNES assessment and the relevant tests of significance required under Environmental Planning and Assessment Act 1979 and the Environment Protection and Biodiversity Conservation Act Matters of National Environmental Significance – Significant Impact Criteria Guideline 2013.

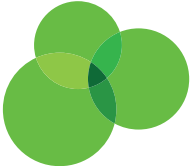
The assessment concludes the proposal is unlikely to have a significant impact on threatened species as defined under the Biodiversity Conservation Act 2016. Nor will the proposal impact on nationally listed biodiversity matters under the Environment Protection and Biodiversity Conservation Act 1999. Entry into the BOS is not triggered by the proposal, as less than 1,500m² of regrowth native species (not assessed to be native vegetation) is proposed to be cleared / disturbed.

It is the findings of this report that neither a Biodiversity Assessment Report nor a Biodiversity Development Assessment Report are required to support the lodgement of a Development Application.

All work will be completed in accordance with the SMS environment management plans in place at the SMS ANE Facility, including plans that aim to manage and / or minimise of potential environmental impacts from works, including safeguards for erosion and sediment control, flora and fauna habitat management and weed control.

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Appendix K. Acoustik Noise and Vibration Impact Assessment

11 August 2023



Noise and Vibration Impact Assessment

3577 Henry Parkes Way



Currajong

Document Control

Acoustik 13 Orana Street, Orange NSW 2800		Report Ref:		2302.02.Report.3
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Subject:	3577 Henry Parkes Way
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Client:	Currajong
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2	Final Issue – 10 August 2023
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Tom Harper
 Acoustic Consultant - Acoustik

Notice on Qualifications

Tom Harper BE (mechanical), BA (Chinese Studies), MAAS

Mr Harper is a full member of the Australian Acoustical Society (Member since 2002). Working as an acoustic consultant since graduating from the University of NSW in 1998 both domestically and internationally in Singapore and South East Asian countries.

Acoustik was established in August 2013 and provides a full range of professional acoustic consulting services.

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1 Introduction

Acoustik was engaged by Currajong to provide an acoustic report to support the increased processing capacity at the existing Solar Mining Services Ammonium Nitrate Emulsion (ANE) Manufacturing and Storage Facility at Lot 2 DP 1064474, Bogan Gate NSW 2876.

The facility is located within the Bogan Gate Explosives Reserve (BGER). Solar Mining Services (SMS) is one of the lease holders with authority to manufacture and store ANE on the site. The proposed increase in manufacturing capacity by SMS is noted in the Table 1 below.

The expansion of manufacturing capacity is not expected to increase noise emissions from the existing manufacturing processes. But will lead to increases in transportation volumes, and increases in loading and unloading activity at the manufacturing site.

Table 1: Planned expansion of manufacturing and Storage – Solar Mining Services

Approved	Proposed
Manufacturing of 960 tonnes of ANE per annum	Manufacturing of 20,000 tonnes of ANE per annum
Storage of 200 tonnes of AN at any one time	Storage of 450 tonnes of AN at any one time
Storage of 50 tonnes of ANE at any one time	Storage of 100 tonnes of ANE at any one time
Delivery in and out by semi-trailer tanker	Delivery in and out by A-Double tanker

The following noise sources expected to require noise assessment:

- the manoeuvring of heavy vehicles transporting raw goods and finished products,
- the operation of loading vehicles (i.e., reverse beepers, air brake releases)
- plant operations, noting all operational plant will be located within the building,
- alarm sounds associated with early warning systems in the event of plant or operations failures.

The SMS site location within the BGER is shown in Appendix B. A detailed view of the manufacturing building and storage areas is included in Figure 1 below.



Figure 1: SMS Site within BGER

The manufacturing facility includes an emergency power generator, pumps, boiler, alarms storages and the plant building that is located towards the middle portion of Lot 2 DP 1064474. Existing and proposed new storage sheds are located to the north, west and south of the manufacturing facility.

A “Liftsmart LS-RT25-35 Rough Terrain Forklift” is used on the site to transport materials from the storage sheds to the manufacturing facility.

Approved hours of operation are currently from 7.00am to 6.00pm. The increases to manufacturing capacity requires hours of operation from 7.00am to 9.45pm. Note that on Sundays and public holidays the day/evening period is 8 am to 10 pm. Operational hours on Sundays and Public Holidays will not start until 8 am.

A list of residences surrounding the proposed site is included in Table 2 below. The overview of the BGER and surrounding areas is included in Appendix A.

Table 2: Summary of noise receiver locations relative to site

Type	Location	Notes
Res 1	3327B Henry Parkes Way Bogan Gate	Residence to East
Res 2	3544 Henry Parkes Way Bogan Gate	Residence to the North – Closest to HPW traffic
Res 3	3332 Henry Parkes Way Bogan Gate	Residence to the North East
BG Town	1-3 Station Street Bogan Gate	The location of the closest residence within the Bogan Gate Town

1.1 References

The following reference material was consulted while preparing this report:

- NSW Environmental Protection Authority (EPA) Noise Policy for Industry (NPI)
- NSW EPA Noise Guide for Local Government 2013
- NSW Road Noise Policy

1.2 Glossary

A short list of acoustic terms is included below:

L_{Aeq} : is the Sound Pressure Level (SPL) in decibels (dB), equivalent to the total sound energy over a measurement period (or the energy average). The A signifies that an A-Weighting applied to the spectrum to simulate human hearing response.

L_{Amax} : is the maximum Sound Pressure Level (SPL) in decibels (dB) that occurs during a measurement.

L_{A90} : is the noise level exceeded for 90% of the measurement period, calculated by Statistical Analysis, it is considered to represent the background noise level or the noise that is present for most of the time.

L_{A01} : is the noise level exceeded for 1% of the measurement period, calculated by Statistical Analysis, it is considered to represent close to the maximum noise level.

L_{Ceq} , dBC or C-weighting: C-weighting is an adjustment made to sound-level measurements which takes account of low-frequency components of noise within the audibility range.

Intrusive noise: is noticeably louder than the background noise and considered likely to disturb or interfere with those who can hear it. Depending on the nature of the noise source it is defined as:

- (RBL or L_{A90}) + 5 dB for noise sources that are continuous in nature for extended periods or all day and night typical of industrial or residential sources that are a permanent fixture.
- (RBL or L_{A90}) + 10 dB for noise sources that are temporary in nature like construction where the activity is limited to day time operation some elements of the noise may be continuous.

2 Noise Measurements

2.1 Environmental Noise

Traffic noise levels were measured using an unattended noise logger located 7 metres from the Southern near side kerb of the Henry Parkes Way (HPW). The location is noted on the map in Appendix A.

The primary purpose of the noise logging was to establish the existing traffic on HPW. HPW is an arterial road connecting Parkes to rural areas to the West and primarily the town of Condobolin.

This assessment is based on the NSW EPA Noise Policy for Industry (NPI). Acoustik nominate that the RBL will be assumed to be set at the minimum RBL levels nominated in the NPI. The day and evening time RBLs are relevant. The ANE facility is proposed to operate during the day and up to 9.45pm in the evening.

The acoustic environment in the area is rural and dominated mostly by natural noises, although traffic noise along HPW is significant. The Orange -Broken Hill railway line parallels HPW for the section of the road relevant to this project.

The railway carries two passenger services (Sydney-Broken Hill Explorer and the Indian Pacific) that operate a once weekly return service and freight traffic. The frequency of rail traffic is insignificant relative to the HPW traffic. HPW is an arterial road and carries local and thru traffic between Parkes and Condobolin.

The assumed RBL levels are listed in Table 3 below. Amenity values will not control the overall trigger levels nominated by the NPI.

Table 3: Assumed Minimum Environmental Noise Levels – Day and Evening

	Day 7am – 6pm		Evening 6m – 10pm	
	RBL/L _{A90}	L _{Aeq}	RBL/L _{A90}	L _{Aeq}
RBL/Ambient	35	N/A	30	N/A

2.2 Existing Traffic Levels

Acoustik placed a noise logger, 7 m from the southern kerb of Henry Parkes Way (Location -33.107484, 147.823295) approximately 280 m east of the driveway to Resident 2 noted in this assessment. The logger was placed on Thursday, 16 March 2023 at 7:00 pm until Tuesday 28 March 2023 at 12:00 pm.

Acoustik have reviewed the measured L_{Aeq, 15hr} (7 am to 10 pm) traffic noise results for the 12 days of logged data. Excluding the data (refer to Appendix A) that is affected by rain and wind, The calculation of L_{Aeq, 15 hr} results are presented in Table 4 below.

Table 4: Calculation of L_{Aeq, 15hr} results – Logarithmic Average at Logger

Parameter\Date	17/3	20/3	21/3	24/3	27/3	Avg
L _{Aeq, 15hr}	60.6	58.9	61.0	59.9	60.3	60.2

2.3 Instrumentation

Instrumentation listed below was used during this acoustic study.

Instrument	Make and model	Serial Number	Instrument Type
Sound Level Meter	Larson Davis 813	0003983	Class 1
Field Calibrator	Larson Davis CAL250	5542	Class 1
Noise Logger	SVAN 958A	59161	Class 1

Instrumentation was field calibrated before and after measurements; no significant calibration drift was noted.

3 Project Criteria

Parkes Shire Council has requested that an acoustic noise impact assessment report is submitted to with the Development Application (DA). Noise levels due to traffic noise generation on HPW is also requested.

3.1 Environmental Noise Triggers

In the NPI, trigger levels are not intended to be treated as a mandatory requirement; if noise levels exceed the trigger a noise management response is required that includes all reasonable and feasible mitigation measures and an assessment of the impact of any residual noise that continue to exceed trigger levels. The final level of acceptable noise is determined by the regulatory authority balancing the noise impact against other social and economic benefits.

The NPI employs two measures to control noise so that residential acoustic amenity is protected. The first is the intrusive noise trigger (L_{A90} background + 5dB) and the second is the amenity level based on the type of area.

The noise receivers are in a Rural Residential zone as defined in the NPI. Vehicles using Henry Parks Way are the dominate noise source in the area.

The amenity level is designed to halt the increase of background levels due to continuing development and to control noise emissions affecting a community from the total industrial noise. The Project Amenity noise level limits the noise emissions from any one site and is equal to the Recommended Amenity Noise Level (re Table 2.2 of NPI) minus 5 dB to allow for other developments and plus 3 dB to convert the amenity limits to 15 minute assessment periods.

The project noise trigger levels are detailed in Table 5 below, in this case, the project noise triggers will be controlled by the intrusive trigger levels. Night-time assessment is not required.

Table 5: Proposed Noise Trigger Levels – Rural Residential

Area	Intrusive Level $L_{A90} + 5$ dB	Project Amenity Noise Rural Residential	Noise Trigger dBA
Day 0700 – 1800	40	48	40
Evening 1800 – 2200	35	43	35

3.2 Noise Criteria - Road Traffic

The NSW Road Noise Policy (RNP) provides assessment criteria for increased road noise due to the development. The traffic noise criteria for overall residential noise receivers are listed in Table 6 below.

Table 6: Road Traffic Assessment for residential land users (Table 3 from NSW RNP)

Road Category	Type of Project/Land Use	Assessment criteria – dBA	
		Day (7 am-10pm)	Night (10 pm-7 am)
Freeway/Arterial/ sub-arterial roads	1. Existing residences affected by noise from new freeway/arterial/sub-arterial road corridors	L_{Aeq} , 15 hour 55 external	L_{Aeq} , 9 hour 50 external
Freeway/Arterial/ sub-arterial roads (Point 3 is the applicable noise criteria for this project)	2. Existing residences affected by noise from redevelopment of existing freeway/arterial/sub-arterial roads 3. Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	L_{Aeq} , 15 hour 60 external	L_{Aeq} , 9 hour 55 external
Local roads	4. Existing residences affected by noise from new local road corridors 5. Existing residences affected by noise from redevelopment of existing local roads 6. Existing residences affected by additional traffic on existing local roads generated by land use developments	L_{Aeq} , 1 hour 55 external	L_{Aeq} , 1 hour 50 external

In addition to overall noise levels Section 3.4.1 “Process for applying the criteria” of NSW RNP includes advice based on a 4-step process specifically for increases traffic noise on existing roads generated by land use developments in Step 4 of the process. The following is stated:

Step 4

For each assessment location in the study area, if it is not possible for the total traffic noise to meet the traffic noise criteria in Table 6 above, justification should be provided that all feasible and reasonable mitigation has been applied.

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 should be limited to 2 dB above that of the corresponding ‘no build option’.**

3.3 Weather Induced Noise-Enhancement

To make the assessment all assessment periods will have source-to-receiver wind vectors for all receivers and F class temperature inversions with wind speeds up to 2 m/s at night. This assumes the default worst conditions for noise enhancement noting that the assumption will have a minimal effect on the results. The Predictor Noise model includes the Noise-enhancing meteorological conditions requirements.

4 Predicted Noise Levels

The Predictor model assumes a ground factor of 0.8 as the ground in the area is rural without significant areas of hard paving. All predictions assume a normal environmental measurement location of 1.5 m above ground level within the residential areas. In rural settings the residential area extends 30 m from the residential façade of the affected residence or to the property boundary where that is less than 30 m.

4.1 SMS - ANE Manufacturing Operations

Predictor noise levels from the operation of the ANE manufacturing facility used the following source data to calculate noise levels at the affected residents.

Table 7 below lists the sound power levels used in the predictor model. We note that the noise source data for a site Alarm was selected to achieve a noise level of 85 dBA at ground level on the site so that the alarm signal could be heard above any other processes at the site.

Table 7: Sound Power and Sound Pressure Levels used in Predictor Noise Model

Noise Source	Octave Band Frequencies								dBA	dB
	63	125	250	500	1k	2k	4k	8k		
Factory Internal SPL*	84	81	83	76	72	71	69	63	89	74
Cooling Tower – Typical	79	75	72	71	71	67	65	61	73	82
Gear Pump – for ANE transfer	107	99	92	92	95	91	85	82	96	109
Forklift Operations	96	100	95	94	93	89	86	81	95	104
Trucks at 20 km/hour	106	105	104	101	100	100	96	90	104	111
Cars at 20 km/hour	104	95	92	87	84	84	83	77	89	105
Alarms at site	76	86	79	79	81	93	113	106	115	114
Emergency Generator	103	104	105	97	93	90	83	76	96	109
HPW Traffic data	108	100	99	102	102	104	100	93	107	112
Trucks at 100 km/hour	108	101	98	100	100	102	97	91	105	111
Trucks at 80 km/hour	109	102	95	97	97	98	94	88	102	111
Trucks at 50 km/hour	101	94	95	93	94	101	99	91	104	107
Cars at 100 km/hour	102	94	92	91	92	98	95	88	101	105
Cars at 80 km/hour	102	95	88	87	89	93	90	83	96	104
Cars at 50 km/hour	79	75	72	71	71	67	65	61	73	82

Note*: The factory internal noise level is based on Acoustik's database of typical factory noise levels where process equipment is being used and would be representative of the noise levels in this instance. The factory internal noise level is predicted with the roller shutter doors open.

Table 8 lists the $L_{Aeq, 15min}$ predictions for all affected residences detailed noise contour maps in Appendix B. The results are predicted for normal Day operations and include weather noise-enhancement corrections. The operation of emergency equipment is not included as it not part of normal operations. The audibility of alarm systems is a priority safety concern and is generally a short-term activation.

Table 8: Predictor $L_{Aeq, 15min}$ Noise Levels

Description	Day	Evening	Notes
L_{Aeq} Predictions	40	35	Intrusive Noise Trigger
Res 1 - 3327B Henry Parkes Way Bogan Gate	< 20	< 20	Complies
Res 2 - 3544 Henry Parkes Way Bogan Gate	29	<20	Complies
Res 3 - 3332 Henry Parkes Way Bogan Gate	< 20	< 20	Complies
BG Town - 1-3 Station Street Bogan Gate	< 20	< 20	Complies

Note: The combined operation of the emergency generator and a warning alarm at the ANE manufacturing site is predicted to generate a noise level of 31 dBA at residence 2, and 28 dBA at 1 Station Street, and < 20 dBA at the other residences. The emergency warning and generator noise levels are below the noise triggers and not part of normal operations.

4.2 Traffic Noise Generation

The operation of the Solar Mining Services ANE manufacturing facility will generate vehicle traffic for employees and commercial vehicle traffic.

The number of vehicles visits expected to service the upgraded site operations is detailed by the Currajong EIS. Table 2 in the EIS lists that the “Proposed Operations and Storage” will require:

- Heavy vehicle transport – 8 Truck trips (in and out) per day
- Light Vehicle transport – 24 light vehicle trips (in and out) per day
- Staffing – Eight (8) staff per day in 2 shifts

4.2.1 Henry Parkes Way

Existing traffic noise levels along HPW were measured with a noise logger located 7 m from the kerb side of the road. The measured average $L_{Aeq, 15 \text{ hour}}$ noise level of 60.2 dBA at the noise logger was used to calibrate the predictor noise model. Allowing for 10% of traffic to be heavy vehicles Acoustik calculated that ADT volumes for the 15-hour day period (7 am to 10 pm) the flow of bi-directional traffic is predicted at 1300 cars and 130 heavy vehicles.

We have assumed that the rail traffic is infrequent and does not significantly add to the overall traffic noise levels.

The predictor model was used to calculate the 15-hour traffic noise level at the affected residences. The daily vehicle trip numbers quoted in Section 4.2 above were used to predict the $L_{Aeq, 15 \text{ hour}}$ noise levels from the internal site traffic on HPW.

Refer Table 9 below for existing and expected changes in traffic noise levels.

Table 9: Predicted L_{Aeq} levels (incl. façade correction calculated in Predictor) at residences close to HPW

Location	Existing Traffic* 15hr	Site Traffic 15hr	Total traffic 15hr
Res 1 - 3327B Henry Parkes Way	30	15	30
Res 2 - 3544 Henry Parkes Way	43	21	43
Res 3 - 3332 Henry Parkes Way	36	22	36
BG Town - 1-3 Station Street	45	33	45

Note*: The existing traffic noise predicted is based traffic flows calibrated a noise logger 7 m from kerb of HPW and includes façade reflection.

Note#: The total traffic level does not increase over existing traffic noise and the total traffic level is well below the NSW RNP criteria of $L_{Aeq, 15 \text{ hour}}$ 60 dBA.

4.2.2 Site Traffic Noise Generation

Based on the daily vehicle trip numbers quoted in Section 4.2 above Acoustik have determined that the loudest $L_{Aeq, 1 \text{ hour}}$ traffic noise would be at the 2 pm shift change. Four staff would arrive and 4 staff depart. Due to the general lack of public transport in the area, we consider that all staff would arrive and leave within the hour which is the worst case because staff could car pool.

Sticking to a worst case scenario we could allow that two light vehicle deliveries were made, and heavy vehicle pickup/delivery was made. Leading to:

- 12 total light vehicle trips (8 staff vehicle trips and 2 light vehicle deliveries)
- 2 trips for the heavy vehicle (a single visit of heavy vehicle/truck)

During the evening after 6 pm deliveries would be minimal with the highest activity occurring in the last hour with the 4 staff leaving the site.

The calculated $L_{Aeq, 1 \text{ hour}}$ traffic noise will be included in the noise emissions from the site for assessment at the residences. Refer Table 8 above.

4.3 Assessment

From the above predictions the normal operations of the SMS facility will not exceed 29 dBA at the most affected residence (Residence 2) and there is no expected increase in the total traffic noise levels along HPW.

The SMS facility is operational during the day and evening periods, no night time sleep arousal assessment is required.

5 Conclusion

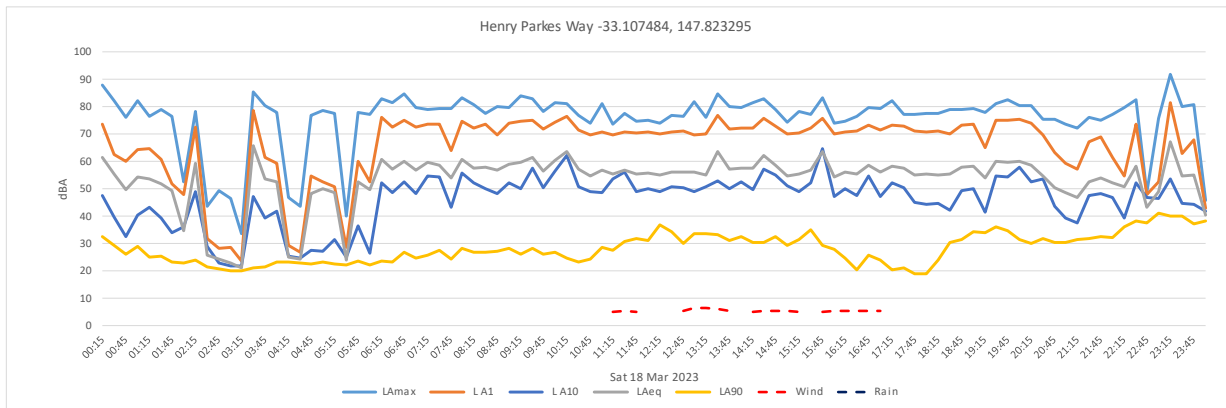
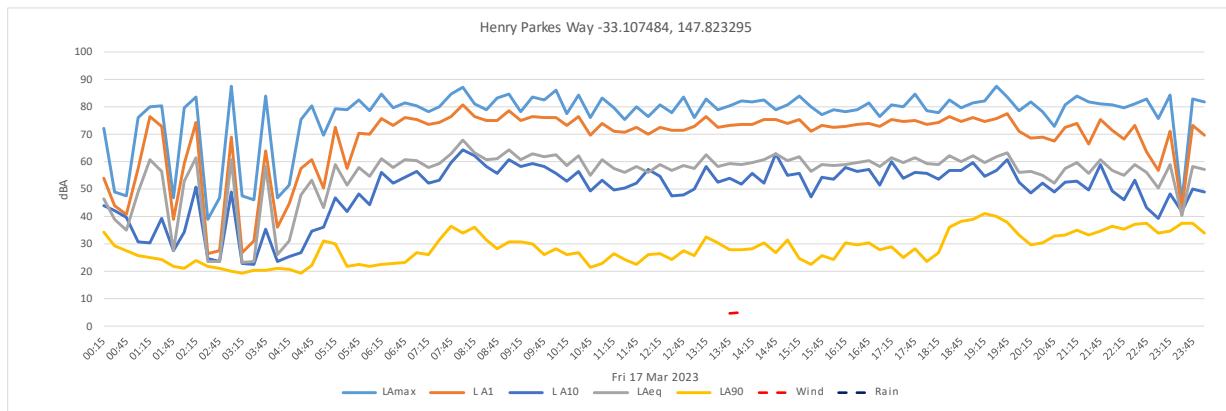
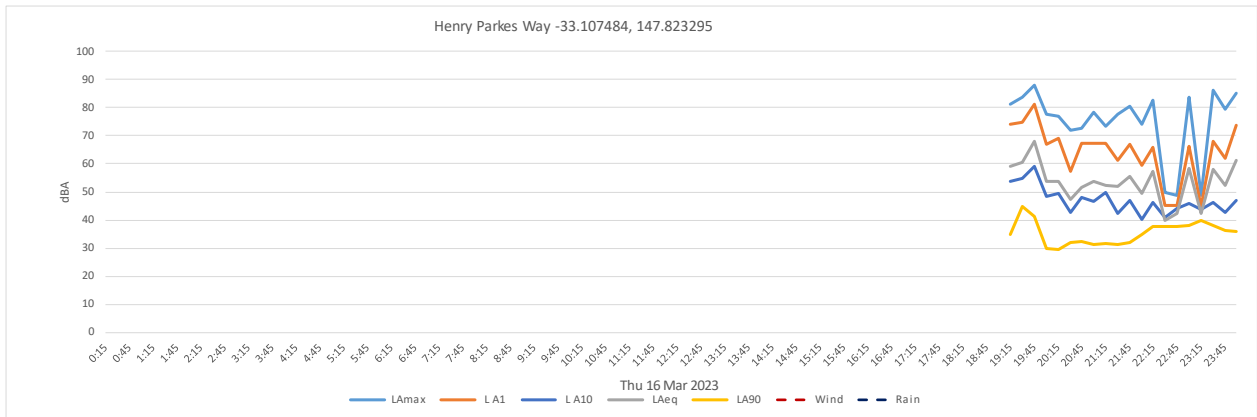
Acoustik was engaged by the Currajong to provide a noise impact report for the increase in the capacity of the operation of the Solar Mining Services facility at the Bogan Gate Explosives Reserve (BGER) located near to the town of Bogan Gate NSW. The facility manufactures Ammonium Nitrate Emulsion (ANE)

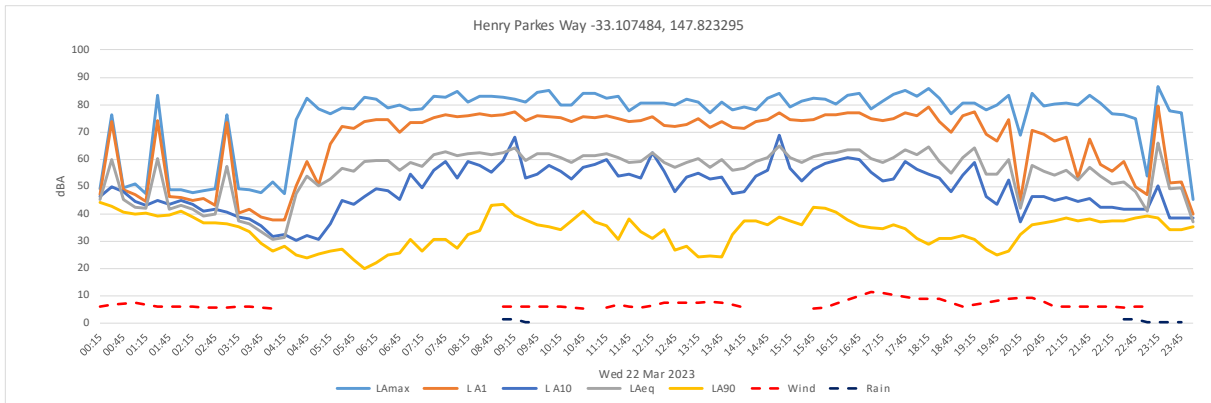
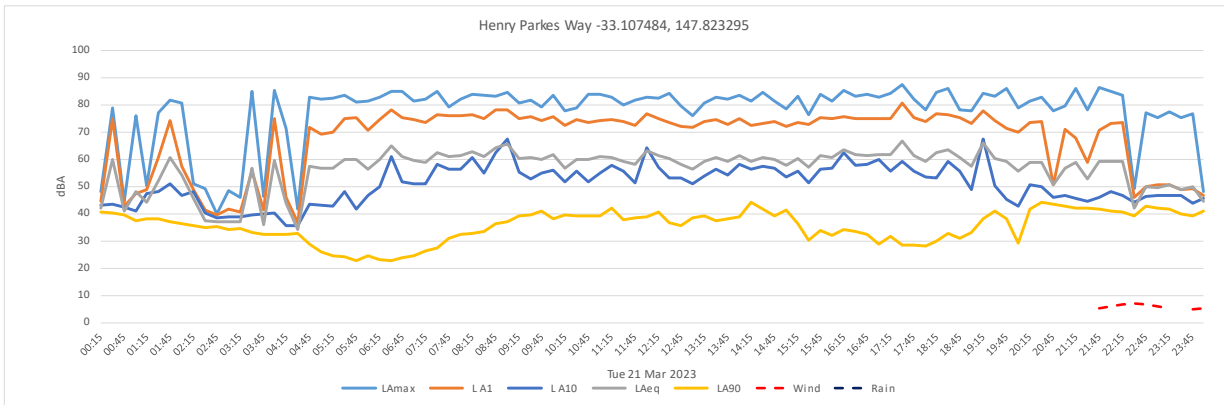
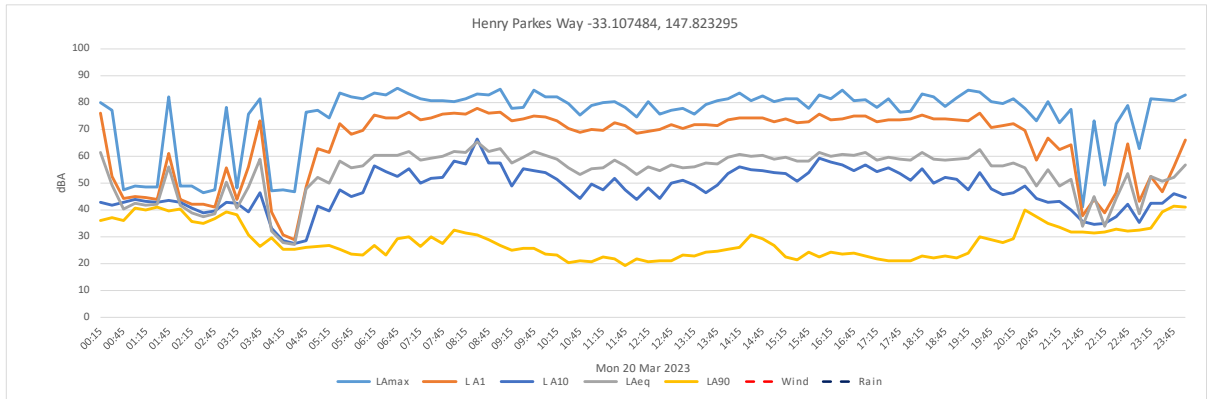
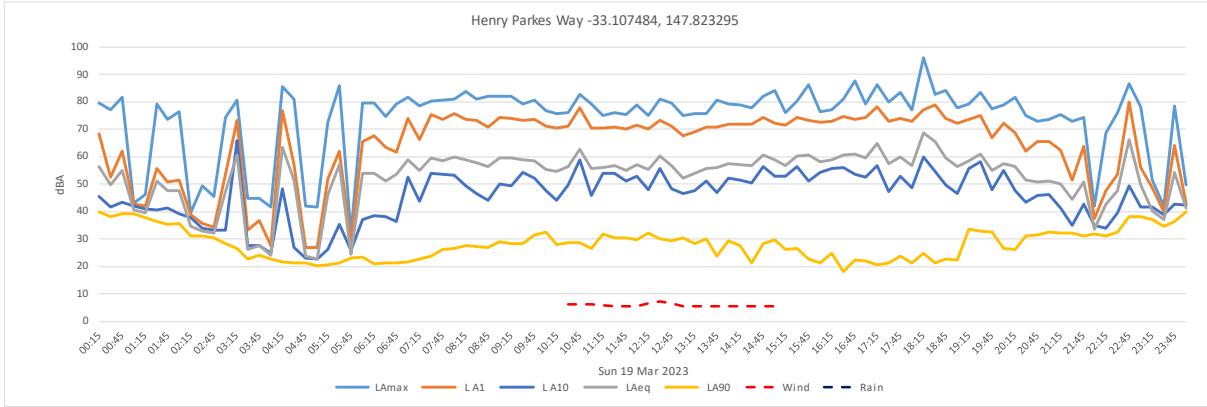
Acoustik have predicted noise level emissions due to increasing the manufacturing capacity from 960 tonnes of ANE to 20,000 tonnes of ANE and generally a doubling of the existing storage for ANE and AN at the site.

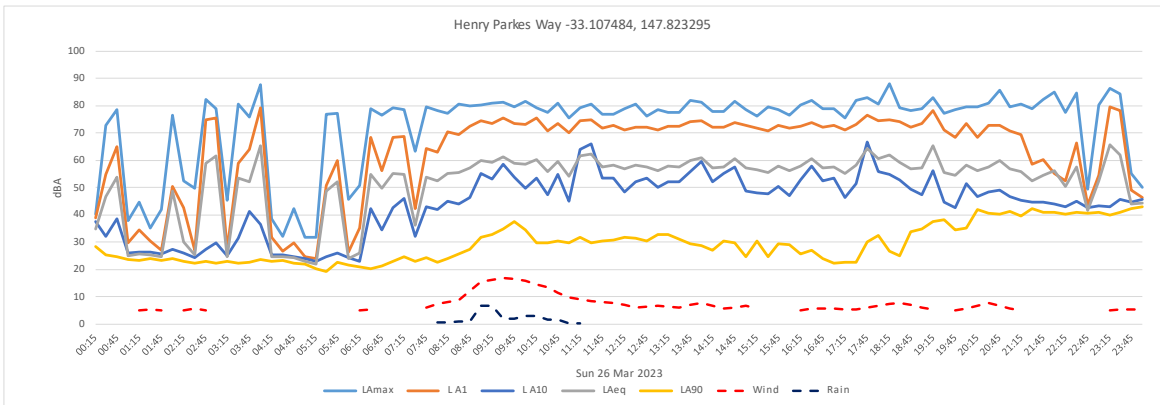
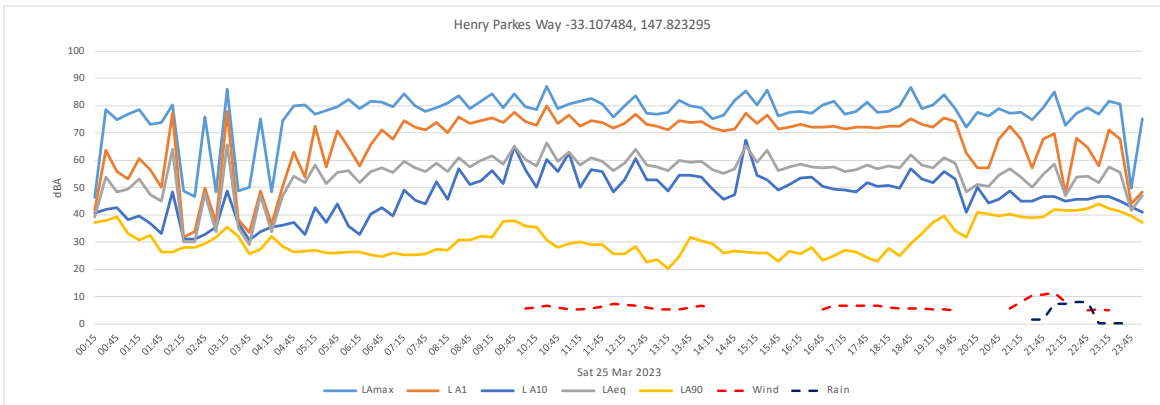
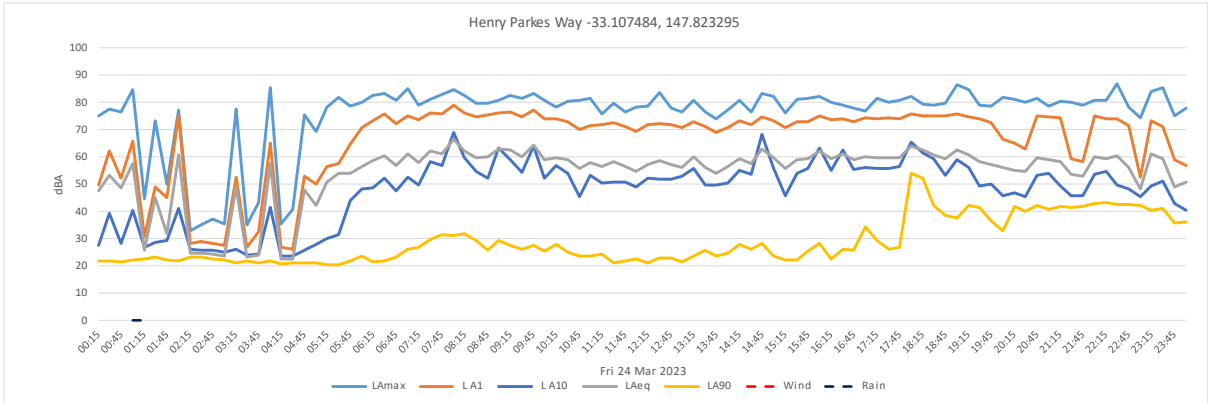
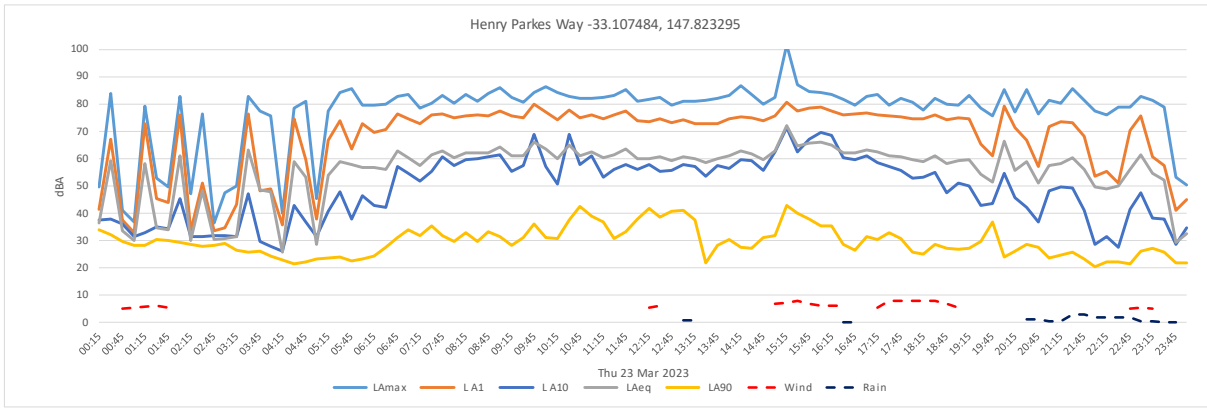
Noise levels generated at the site and from vehicle traffic on the site does not exceed any noise trigger levels set in the NSW Noise Policy for Industry and the total traffic noise along Henry Parkes Way is not increased.

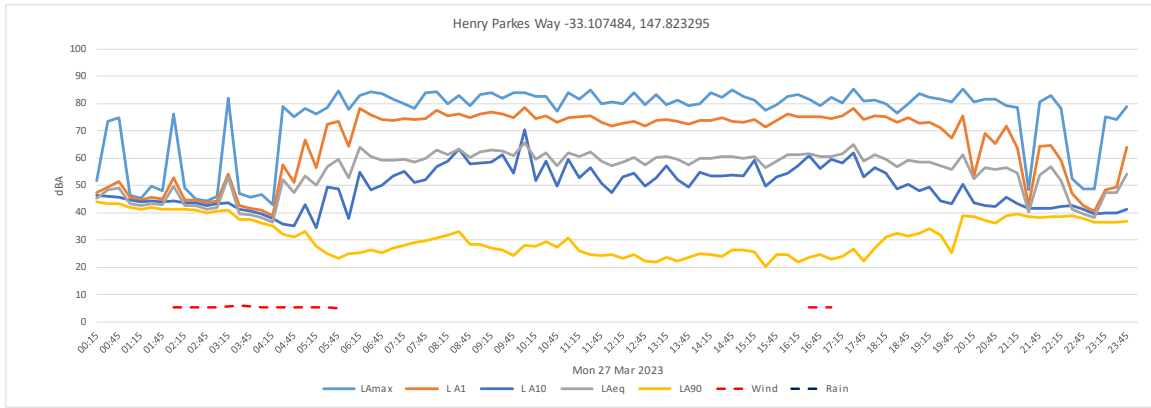
A. Appendix A - Traffic Noise Logging Results - HPW

Noise logging along Henry Parkes Way









B. Appendix B - Site Map and Surrounds

Map of Solar Mining Site and Surrounds



Res 3

Res 1

Res 2

Logger

Site

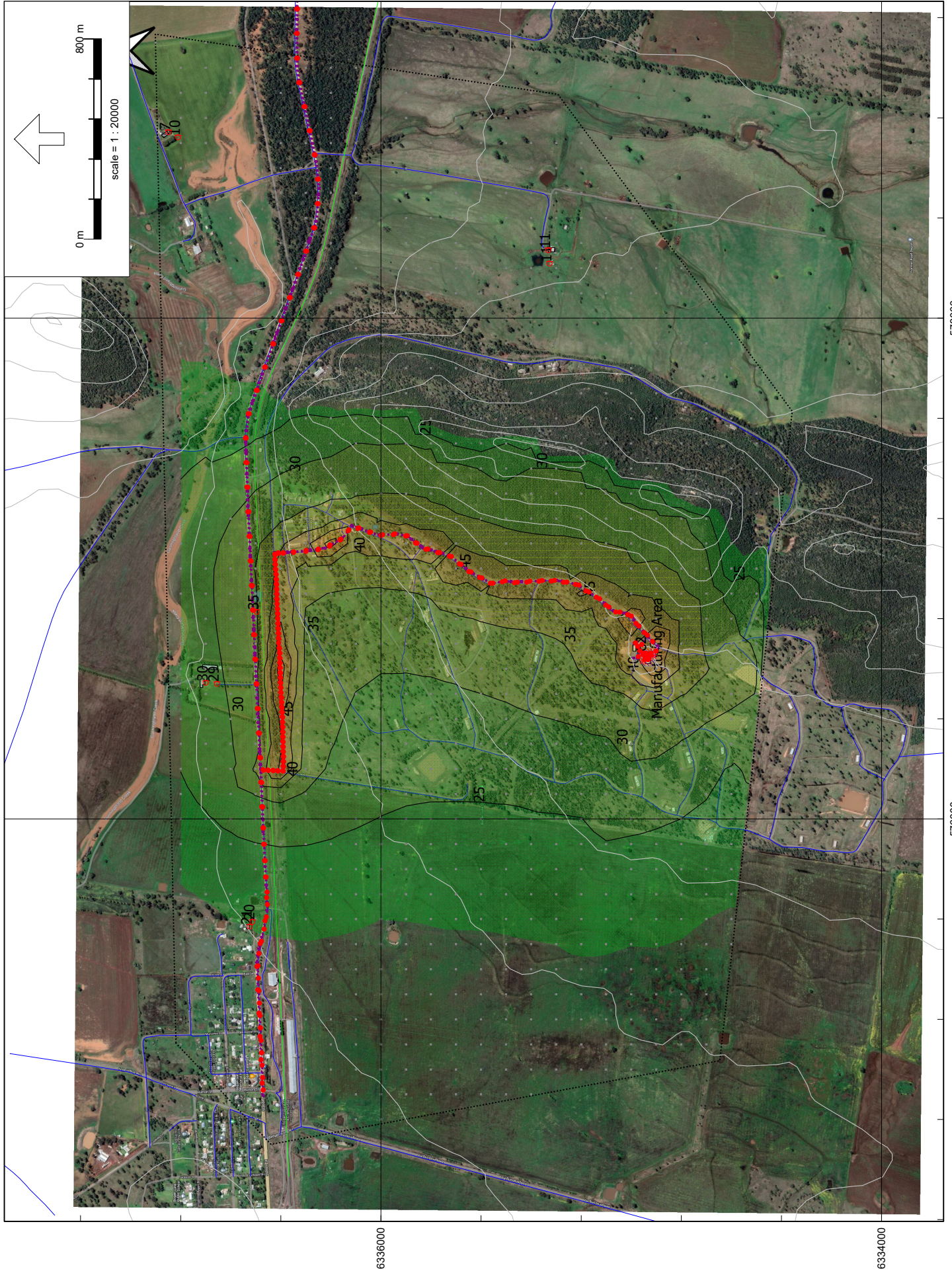
Bogan Gate Town

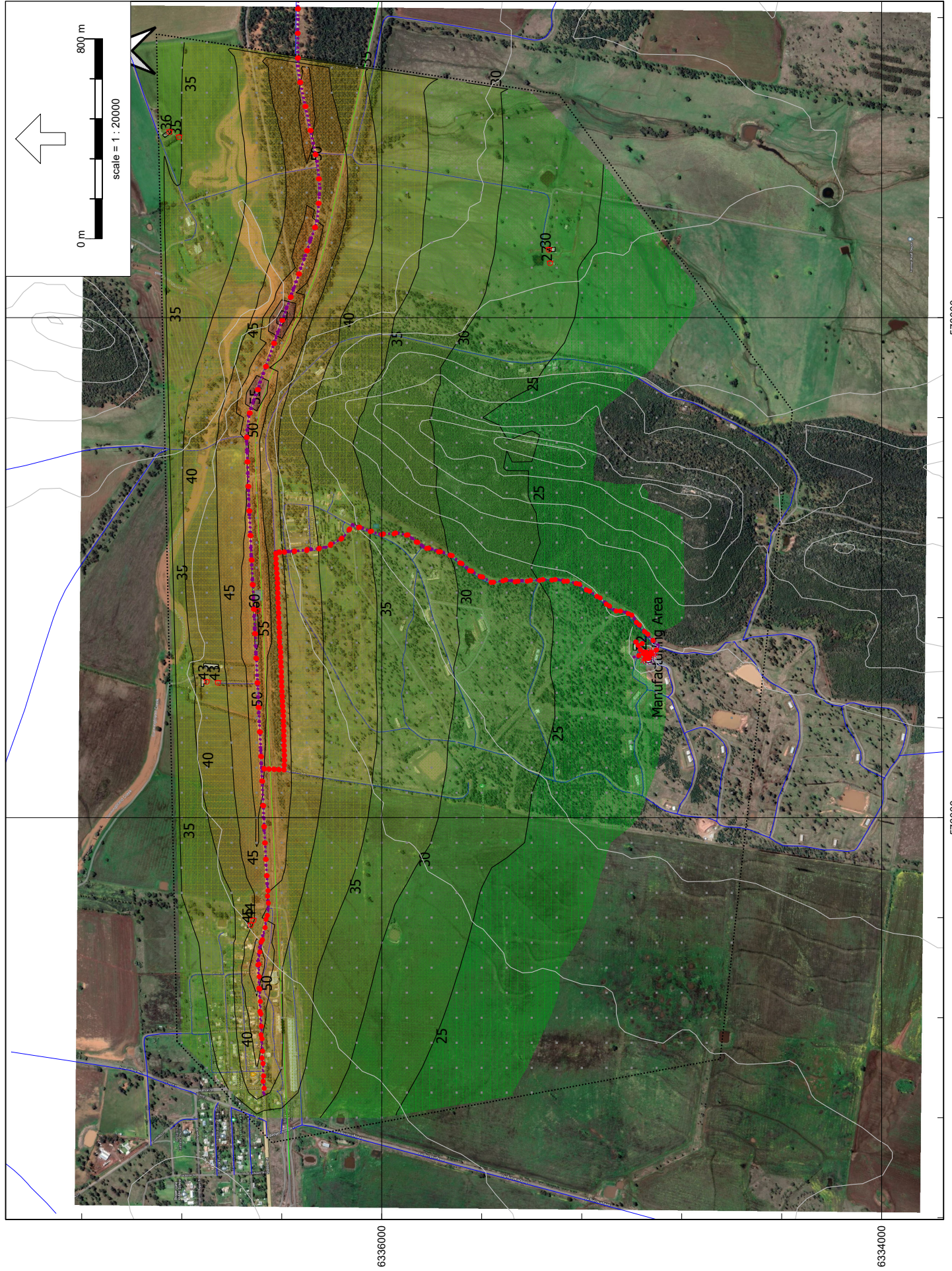
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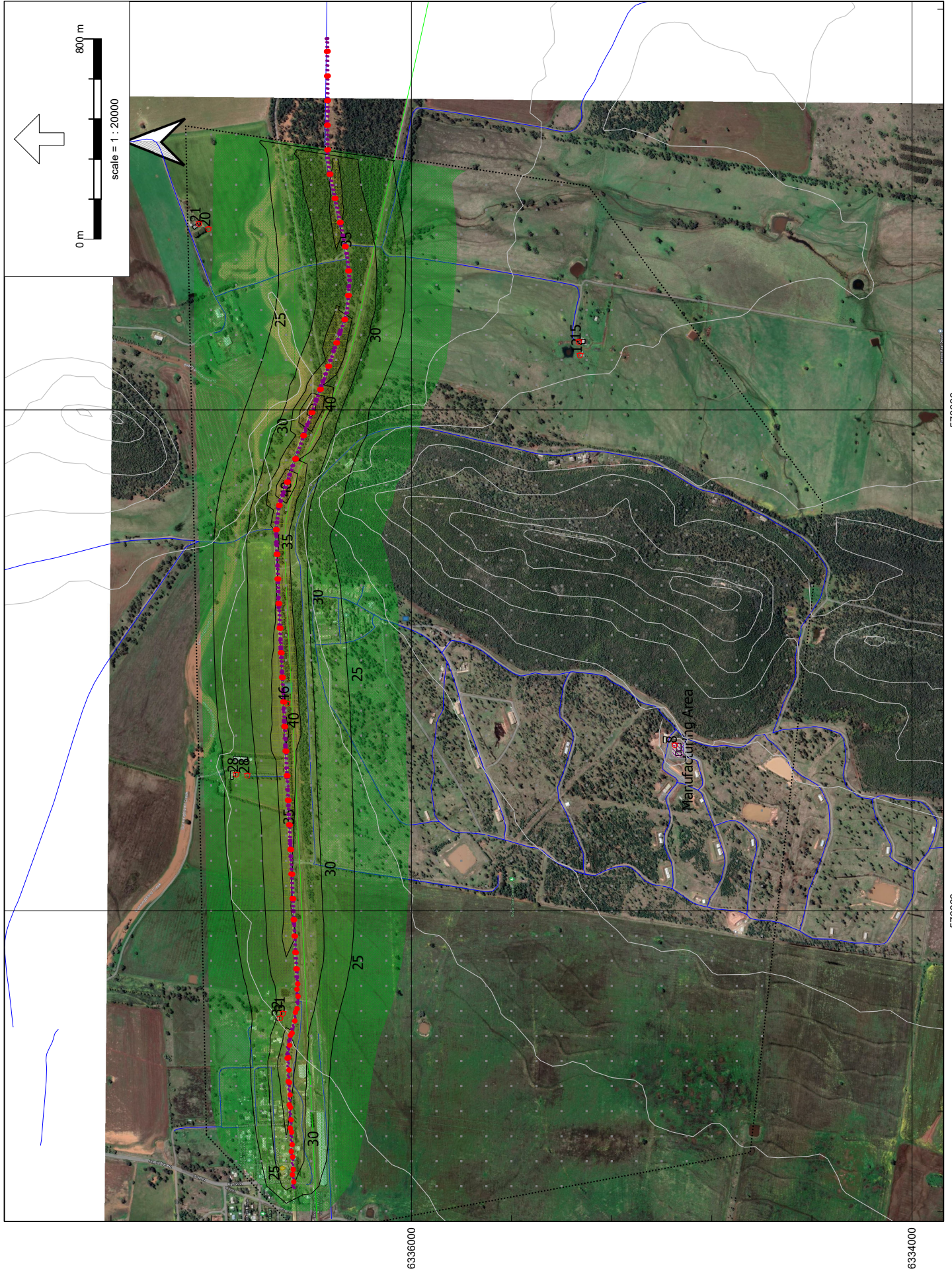
C. Appendix C - Noise Contour Plots

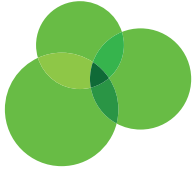
Noise Contours

- Day Operations – ANE Facility normal daytime operations
- Traffic noise generation – HPW existing traffic and Generated Traffic from Development









Appendix L. SMS Bushfire Management Plan, prepared by
SMS

Environmental Management Plan

Bushfire Assessment and Management Plan

Document Number: SMS-HSQ-000.X11

Status: Working

Version: 05 (04 April 2023)

Owner: Manager Compliance

Review: 3 years



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1 Introduction

- 1-1 This bushfire assessment and management Plan identifies the minimum requirements for Solar Mining Services (SMS) personnel to implement and to adequately manage risk from fires relating to the SMS controlled workplaces within Bogan Gate Explosives Reserve (BGER).
- 1-2 The objective of this plan is to minimise the potential risk of uncontrolled fires from SMS operations at the BGER as well as the response to bushfire and other fire threats at the facility.
- 1-3 The plan has been developed in accordance with the RFS Guideline, Planning for Bushfire Protection 2019.
- 1-4 The NSW Rural Fire Service Bogan Gate Brigade and Fire and Rescue NSW have been consulted as part of the preparation of the Bushfire Management Plan.
- 1-5 This follows the requirements of the SMS Integrated Management System (IMS), particularly **SMS-IMS-B00.L10 Environment Policy** and supports **SMS-HSQ-000.X01 - HSEQS Management Plan** to identify and control hazards that may arise at SMS workplaces.

2 Scope

- 2-1 This bushfire assessment and management plan has been carried out on the basis of relevant standards and guidelines, including:
 - a) Section 100B of the Rural Fires Act 1997.
 - b) Clause 47 of the Rural Fires Regulation 2022.
 - c) Planning for Bush Fire Protection 2019 (PBP).
- 2-2 This plan is applicable to all SMS personnel and contractors conducting activities on the SMS lease area within the BGER.
- 2-3 This plan is to be used for all circumstances where operational activities occur within SMS BGER work area, including:
 - a) Manufacture, re-work, or storage of emulsion.
 - b) Storage and handling of raw materials.
 - c) Transfer of products or raw materials.
 - d) Maintenance operations.
 - e) Response to bushfire emergency situations.

3 Purpose of this Plan

- 3-1 The purpose of this bushfire assessment and management plan is to minimise the potential risk of uncontrolled fires impacting on SMS operations at the BGER through the design and operation of the SMS ANE Facility in accordance with the relevant guidelines, including the RFS Guideline, Planning for Bushfire Protection 2019.

4 Site Description

- 4-1 The site of the SMS ANE Facility is wholly within Lot 2 DP 1064474, 3577 Henry Parkes Way, Bogan Gate.
- 4-2 The SMS ANE Facility is located 1.5km east of Bogan Gate and approximately 35km west of Parkes, via the Henry Parkes Way.
- 4-3 Access to Lot 2 DP 1064474 is from Henry Parkes Way and Memorial Lane which are bitumen sealed public roads.
- 4-4 An internal private road from Memorial Lane to the SMS ANE Facility is the primary access used for all SMS transport operations. The first 1,300m of this road from Memorial Lane to the BGER Control Room is constructed to a minimum 6m wide bitumen sealed standard with 1m gravel shoulders. From the BGER Control Room to the SMS ANE Facility (approximately 1,200m distance) the internal road is constructed to a minimum 6m wide all-weather gravel road standard.
- 4-5 A location plan is provided in Appendix A.

5 Current Land-uses

- 5-1 Lot 2 DP 1064474 is currently owned by Lexa Enterprises Pty Ltd who have granted various leases for existing land-use activities on the site, including a lease to Johnex for explosives manufacturing and storage operations, Howards and Sons for fireworks storage and more recently the SMS ANE Facility.
- 5-2 The operations on Lot 2 DP 1064474 are known as the Bogan Gate Explosives Reserve (BGER).
- 5-3 The BGER is generally surrounded by rural land comprising broadacre farming paddocks, native vegetation and regrowth vegetation. The Henry Parkes Way and railway line, to the north, directly adjoins the BGER.
- 5-4 A plan showing the layout of existing land-uses at the BGER is provided in Appendix B.

6 Proposed Land-uses

- 6-1 SMS propose to manufacture up to 20,000 tonnes of ANE per annum within the existing manufacturing plant, served by five (5) outlying chemical storage sheds that will feed the plant with the raw product required to make ANE.
- 6-2 Three (3) of the storage sheds are proposed new sheds to be constructed for AN storage.
- 6-3 Two (2) new horizontal tanks are also required for ANE storage.
- 6-4 Existing internal roads are to be used to link the SMS ANE Facility at the BGER to Memorial Lane and the Henry Parkes Way.
- 6-5 Limited clearing of vegetation is required to achieve adequate Asset Protection Zones at chemical storage sheds.
- 6-6 A plan showing the layout of the SMS ANE Facility (including additional sheds) is provided in Appendix C.

7 Bushfire Condition Assessment

- 7-1 The site assessment methodology from Appendix 1 of PBP has been applied in this assessment to determine the Asset Protection Zone (APZ) requirements.

Climate and Bushfire Season

- 7-2 Climatic conditions influence the environmental impacts and management of SMS operations, particularly regarding noise, water, and air quality related matters.
- 7-3 Part of Lot 2 DP 1064474 is shown as 'Bushfire Prone Area' on the NSW RFS Bushfire Prone Land Map for Parkes Shire.
- 7-4 Bogan Gate is within the Australian Climate Zone 4 which is described as having hot dry summers and cool winters.
- 7-5 The mean rainfall for Bogan Gate is 365mm per year.
- 7-6 The bush fire season generally runs from October to March.
- 7-7 The warmest month in Bogan Gate is January, with an average high-temperature of 32.6°C and an average low-temperature of 20.4°C. January is also the least humid month, with an average relative humidity of 45%.
- 7-8 July is the coldest month, with an average high-temperature of 12.7°C and an average low-temperature of 4.2°C.
- 7-9 Wind rose data for summer, autumn, winter and spring 2022 is included in Appendix D.

History of Bushfires at BGER

- 7-10 Bushfires on a large scale are an irregular occurrence in the Bogan Gate area. Such events usually only occur after a prolonged period of below average rainfall, with fires originating from electrical storms, roadsides, railways, farming or industrial activities during hot windy conditions.
- 7-11 Information on fire history is lacking in detail at the BGER, with the last known fire occurring in the 2014 as a result of a fireworks explosion leading to a grass fire in the Bogan Gate area.

Bushfire Prone Land Mapping

- 7-12 The Rural Fires Act (RF Act) 1997 requires the preparation of bushfire prone land mapping for Local Government Areas in NSW.
- 7-13 Land along the eastern boundary of Lot 2 DP 1064474 is identified as Bushfire Prone Land – Vegetation Buffer and Vegetation Category 1.
- 7-14 A map showing the bushfire prone land in and around the SMS ANE Facility is provided in Appendix E.
- 7-15 Consultation with NSW Rural Fire Service and Fire and Rescue NSW has been undertaken by SMS in the preparation of the SMS ANE Facility Bushfire Management Plan.

Vegetation and Slope Assessment

- 7-16 The SMS site has been majorly cleared of native vegetation.
- 7-17 The predominant vegetation has been assessed for a distance of 140 metres from the SMS ANE Facility.
- 7-18 The slope that would most significantly influence fire behaviour was determined over a distance of 100 metres from the SMS ANE Facility. The effective slope has been determined by the contours shown on detail surveys.
- 7-19 The site has a slope from north-west to south-east ascending.
- 7-20 The western and southern sides are a mix of grassland with isolated box eucalypts and pines to form small patches of regrowth woodland.
- 7-21 The northern side comprises grassland and drainage corridor, with patches of woodland.
- 7-22 The eastern side comprises grassland, roads and drainage corridor, with Dry Sclerophyll Forest further afield.
- 7-23 The effective slope under the bushfire hazard to the east falls under PBP slope category of 'all upslopes and flat land'. The slope to the north, south and west fits within the '>0-5 degrees downslope'.

Bushfire Hazard Assessment

- 7-24 The site assessment methodology from Appendix 1 of PBP has been applied in this assessment to determine the Asset Protection Zone (APZ) requirements.
- 7-25 **Table 7-25** provides an evaluation of APZ criteria, as follows:

Transect	Slope	Vegetation Formation	Required APZ	Proposed APZ	BAL
North	>0° to 5° downslope	Grassland and small patches of woodland	42m	42m	N/A
East	'all upslopes and flat land'	Grassland and Dry Sclerophyll Forest	67m	67m	N/A
South	>0° to 5° downslope	Grassland	36m	36m	N/A
West	>0° to 5° downslope	Grassland and small patches of regrowth woodland	40m	40m	N/A

Table 7-25 – Asset Protection Zones

- 7-26 SMS are mindful not to unnecessarily clear vegetation where practical.

Broad Brush Risk Assessment

- 7-27 SMS have carried out a risk assessment at the BGER to:
- a) Identify process risks at the SMS ANE Facility.
 - b) Identify the fire risks, including the sources of ignition, sources of fuel and the source of oxygen.
 - c) Identify people at risk, including the people occupying land in and around the SME ANE Facility.
 - d) Evaluate the risk of fires in accordance with the RFS Guidelines Planning for Bushfire Protection 2019, AEISG, AS2187 and the SMS broad brush risk assessment process, to provide the basis for listing appropriate responses to the various fire scenarios.
 - e) Provide guidance on the design of facilities and their clearances from other buildings, fuel source features and bushfire prone land.
 - f) Provide guidance on the design of essential services and facilities necessary to deal with fires at the SMS ANE Facility and wider BGER, including fire extinguishers at buildings, first aid, water supplies for firefighting purposes and access for firefighters and / or emergency evacuation.

8 Bushfire Protection Measures

- 8-1 The proposed development has been defined as other development under Section 8 of PBP, requiring fire protection through Bushfire Protection Measures (BPM's).
- 8-2 Section 8.3.10 commercial and industrial development of the PBP states:
"where no residential component is included, commercial and industrial development is addressed through the aim and objectives of PBP. A suitable package of BPMs should be proposed commensurate with the assessed level of risk to the development. The scale of the development and numbers of people likely to be occupying the building will be directly relevant to the BPMs proposed. The provisions within Chapter 7 of this document should be used as a base for the development of a package of measures."
- 8-3 There is no residential component associated with the SMS ANE Facility.
- 8-4 BPM's have been considered against the baseline criteria in PBP and detailed in the following sections.

Asset Protection Zones

8-5 **Table 8-5** demonstrates compliance of the proposed development against the performance criteria and acceptable solutions for APZ's, as follows:

Performance criteria	Acceptable solutions	Comment
APZs are provided commensurate with the construction of the building and a defendable space is provided.	APZs are provided in accordance with Table A1.12.2 or A1.12.3 in Appendix 1.	Appropriate APZs are established around existing SMS buildings to meet the requirements of Table A1.12.3. Some clearing of regrowth pines west of new sheds is required to meet APZ criteria.
APZs are managed and maintained to prevent the spread of a fire to the building.	APZs are managed in accordance with the requirements of Appendix 4 of PBP.	APZs will be maintained in perpetuity at the SMS ANE Facility, or until the use ceases.
the APZ is provided in perpetuity. APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.	APZs are wholly within the boundaries of the development site. APZs are located on lands with a slope less than 18 degrees.	The SMS ANE Facility is located centrally upon the allotment and the APZ will be fitting within the subject land. The land has less than 5% slope (<18 degrees).

Table 8-5 – Asset Protection Zones

8-6 A small amount of clearing of regrowth pines is required at the western boundary to achieve AZP for proposed new storage sheds.

Access

8-7 **Table 8-7** demonstrates compliance of the proposed development against the performance criteria and acceptable solutions for access, as follows:

Performance criteria	Acceptable solutions	Comment
Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	Property access roads are two-wheel drive, all-weather roads.	The existing access is constructed to a minimum 6m wide bitumen sealed standard to the BGER Control Room, with the access road to the SMS manufacturing plant constructed to a minimum 6m wide compacted gravel standard to provide all-weather access for heavy vehicles.
The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes), bridges	The existing internal road network is capable of handling up to 36 tonne trucks and therefore has sufficient capacity.

	and causeways are to clearly indicate load rating.	
There is appropriate access to water supply.	There is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	Fire hose reels are available in accordance with the relevant clauses of AS 2419.1:2005. Water tanks with firewater reserves and Stortz fittings are located near the SMS manufacturing plant. Two large water holding ponds are located at the BGER.
Firefighting vehicles can access the dwelling and exit the property safely.	<p>Minimum 4m carriageway width and vertical clearance of 4m to any overhanging obstructions, including tree branches.</p> <p>Property access must provide a suitable turning area in accordance with Appendix 3. Curves to have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress.</p> <p>The minimum distance between inner and outer curves is 6m; the crossfall is not more than 10 degrees.</p> <p>Maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads.</p>	The existing internal road network is compliant with a width exceeding 4 metres, vertical clearance of more than 4 metres and suitable turning area for B-double trucks to circulate. The land is relatively level and the internal service roads do not exceed the maximum prescribed slope.

Table 8-7 – BPM Emergency Vehicle Access

Construction, Siting and Design

8-8 **Table 8-8** demonstrates compliance of the proposed development against the performance criteria and acceptable solutions in relation to the construction, siting and design of the SMS facilities, as follows:

Performance criteria	Acceptable solutions	Comment
The proposed building can withstand bush fire attack in the form of embers, radiant heat and flame contact.	BAL is determined in accordance with Tables A1.12.5 to A1.12.7; and construction provided in accordance with the NCC and as modified by section 7.5 (please see advice on construction in the flame zone).	The SMS manufacturing plant and sheds are compliance with the BCA and are typical metal clad shed structures on concrete slabs. There are no specific construction standards in the NCC or Australian Standard AS3959 for the SMS buildings and structures. In the event of bushfire, the site would be evacuated.
Proposed fences and gates are designed to minimise the spread of bush fire.	Fencing and gates are constructed in accordance with section 7.6.	Fencing is galvanised steel mesh in accordance with AS1725.

Table 8-8 – BPM Performance Criteria

Landscaping

8-9 **Table 8-9** demonstrates compliance of the proposed development against the performance criteria and acceptable solutions for landscaping, as follows:

Performance criteria	Acceptable solutions	Comment
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Compliance with the NSW RFS 'Asset protection zone standards' (see Appendix 4). A clear area of low-cut lawn or pavement is maintained adjacent to the house. Fencing is constructed in accordance with section 7.6. Trees and shrubs are located so as not to impact buildings. Windbreaks are not located where fires are likely to approach.	The SMS ANE Facility is majorly cleared of vegetation. There are no vegetation windbreaks at the facility. There is no continuous canopy of trees or individual trees that overhang buildings. The boundary of the site is currently fenced with a secure access point.

Table 8-9 – Landscaping

Services

8-10 **Table 8-10** demonstrates compliance of the proposed development against the performance criteria and acceptable solutions in relation to utility services, as follows:

Performance criteria	Acceptable solutions	Comment
An adequate water supply is provided for firefighting purposes.	A static water supply is provided where no reticulated water is available.	Reticulated water supply is available at the SMS ANE Facility, as well as onsite water tanks for firefighting purposes. Large water holding ponds are also located at the BGER.
Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.	Where overhead, electrical transmission lines are proposed as follows: Lines are installed with short pole spacing (30m), unless crossing gullies, gorges, or riparian areas; and No part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines.	The SMS ANE Facility draws its power from generators and there are no new powerlines proposed. Existing powerlines at the BGER appear to be maintained with cleared areas by Essential Energy.

Table 8-10 – BPM Services

Water Supply and Storage

- 8-11 The SMS ANE Facility is serviced by a 40mm diameter water service from the Parkes Shire Council B-Section Pipeline.
- 8-12 The SMS ANE Facility currently has a total of 100,000 litres of tank water storage, located directly south of the manufacturing plant, with one tank (50,000 litres) reserved for firefighting purposes.
- 8-13 Appropriate specification Stortz fittings are installed at the fire reserve tank for use by emergency services.

Bushfire Management Procedure

- 8-14 In the event of bushfire or other sources of fire at the SMS ANE Facility, the Site Manager or other member of staff is to dial 000 as well as contact the BGER Manager to report the fire.
- 8-15 Where safe to do so by the Site Manager, SMS staff shall take action to fight the fire using appropriate firefighting equipment available at the SMS ANE Facility.
- 8-16 In the event of a large fire or bushfire, the Site Manager is to ensure that all processing equipment is turn off and all staff, contractors and visitors evacuate the site in accordance with the BGER and SMS Emergency Evacuation Plans.

Evacuation Procedure

- 8-17 In the event of a large fire or bushfire, the Site Manager is to ensure that all processing equipment is turned off and all staff, contractors and visitors evacuate the site in accordance with the BGER and SMS Emergency Evacuation Plans.
- 8-18 Once the evacuation procedure is completed, the Site Manager and all staff are not to enter the SMS ANE Facility until it is deemed safe to do so by the BGER Manager and authorised emergency services.

First Aid Station

- 8-19 Safety showers and eyewash stations are provided at or near dangerous goods and hazardous substances where the risk of injury to a worker is likely through the worker storing, handling or using the substance.
- 8-20 The safety shower or eyewash station is located such that a worker has unobstructed access, must be more than 2 meters and no more than 15 m from the storage, handling or use point. Safety showers and eyewash stations are located in accordance with relevant standards.
- 8-21 The water delivered to the safety shower or eyewash station is clean potable water, having a continuous flow and at a temperature no greater than 40 degrees Celsius at any time.
- 8-22 Safety showers and eyewash stations have been designed, constructed and continue to be operated in accordance with the Australian Standard 4775:2007 *Emergency eyewash and shower equipment (AS4775)*.

9 Management System

Site Manager

- 9-1 The Site Manager is responsible for:
- Identification of hazards likely to cause environmental harm on the site.
 - Provision of resources to maintain control of hazards likely to cause environmental harm on the project and maintain risk to workers and the environment to acceptable levels.
 - Seek support to assess materials, tasks or equipment to be used on the site, likely to cause environmental harm.
 - Implement this plan.
 - Monitor site activities to ensure conformance to this plan.

Site Employees and Contractors

- 9-2 Any SMS employee or contractor on site is responsible for:
- Following the requirements of this bushfire management plan.
 - Ensuring any risk of fire is reported as soon as practical to the Site Manager.

- c) Respond to fires as soon as practicable, in accordance with SMS site procedures.
- d) Manage fires and emergency evacuation procedures in accordance with the SMS site procedures for fire management, including this Bushfire Management Plan.

Manager Compliance

- 9-3 The Manager Compliance is responsible to:
- a) Identify the legislative requirements relevant to the facility.
 - b) Assist the Site Manager to identify suitable specialist personnel to provide inspection and audit processes.
- 9-4 Provide an audit schedule and adequate resources to conduct audits and inspections for timely rectification of non-conformances to this plan.

10 Document Information

- 10-1 Relevant legislation, standards and codes are regularly reviewed and monitored for updates and are included in the **SMS-IMS-B00.R01 – National Legislation Register** for tracking and management. Related documents and reference information in this section provides the linkage and source to develop and maintain the site compliance register and document management system.

Terms and Definitions

- 10-2 Terms and definitions are listed in a single definitions document, refer to the **SMS-IMS-000.G01 – Glossary of terms and definitions** on SharePoint.

Related Documents

- 10-3 Related documents, listed in **Table 13-13**, are internal documents directly related to or referenced from this document.

Number	Document Type	Title
SMS-IMS-B00.L10	Policy	Environment Policy
SMS-IMS-B00.R01	Register	National Legislation Register
SMS-ENV-A00.R02	Register	Bushfire Assessment and Management Plan
SMS-MAN-A01.R03	Register	Operational aspects & impacts register
SMS-IMS-000.G01	Guideline	Glossary of terms and definitions
SMS-HSQ-000.X01	Management Plan	HSEQS Management Plan

Table 13-1 – Related documents

Reference Information

10-4 Reference information, listed in **Table 10-**, is information that is directly related to the development of this document or referenced from within this document.

Reference	Title
BCA	NSW Building Code of Australia
RF Act	NSW Rural Fires Act 1997
PFBFP	NSW RFS Planning for Bushfire Protection 2019
WHS Act	Work Health and Safety Act 2011 NSW
WHSR	Work Health and Safety Regulations 2017 NSW
EA	Explosives Act 2003 NSW
ER	Explosives Regulations 2012 NSW

Table 10-4 – Reference information

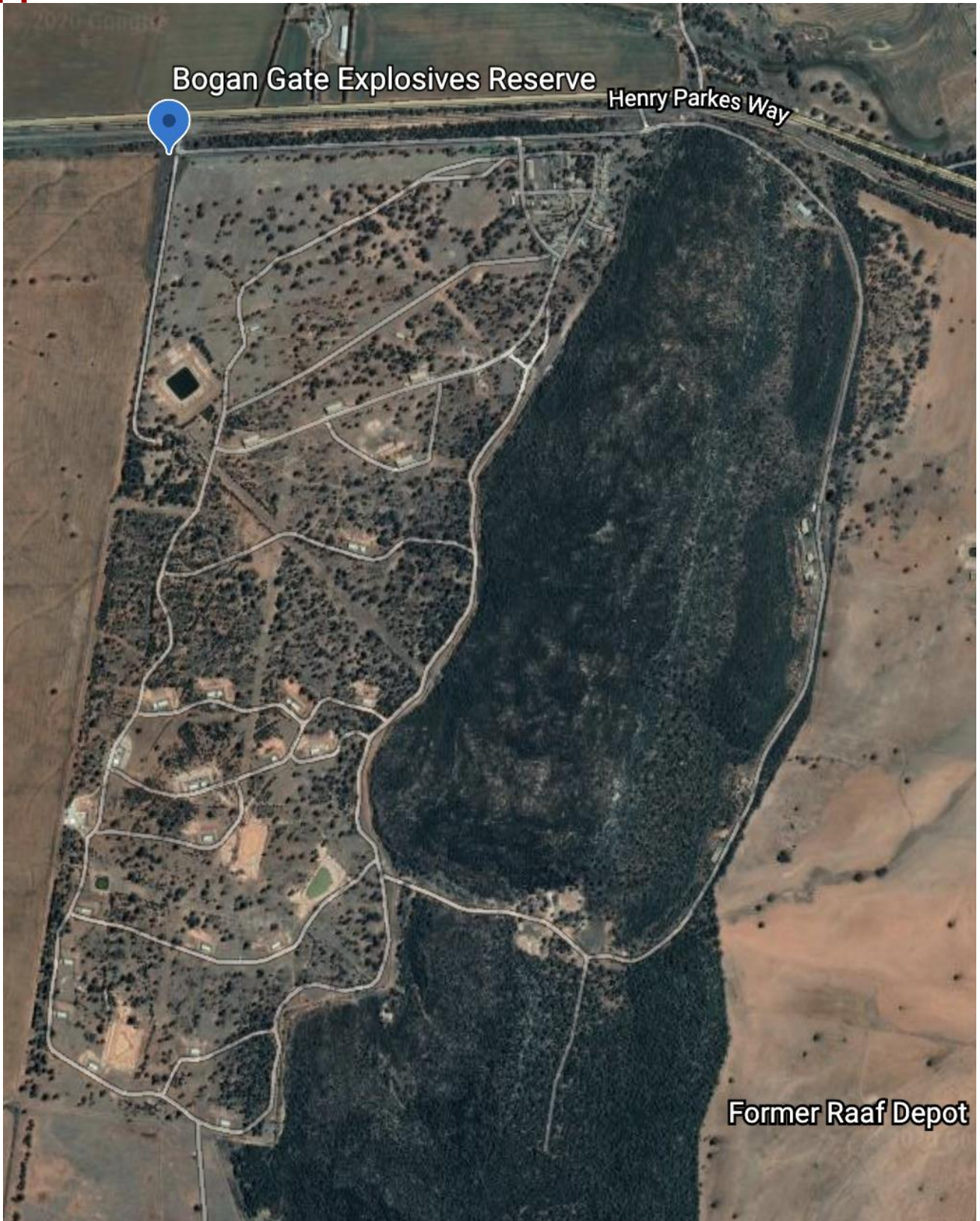
Change Information

10-5 Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in **Table 10-5**.

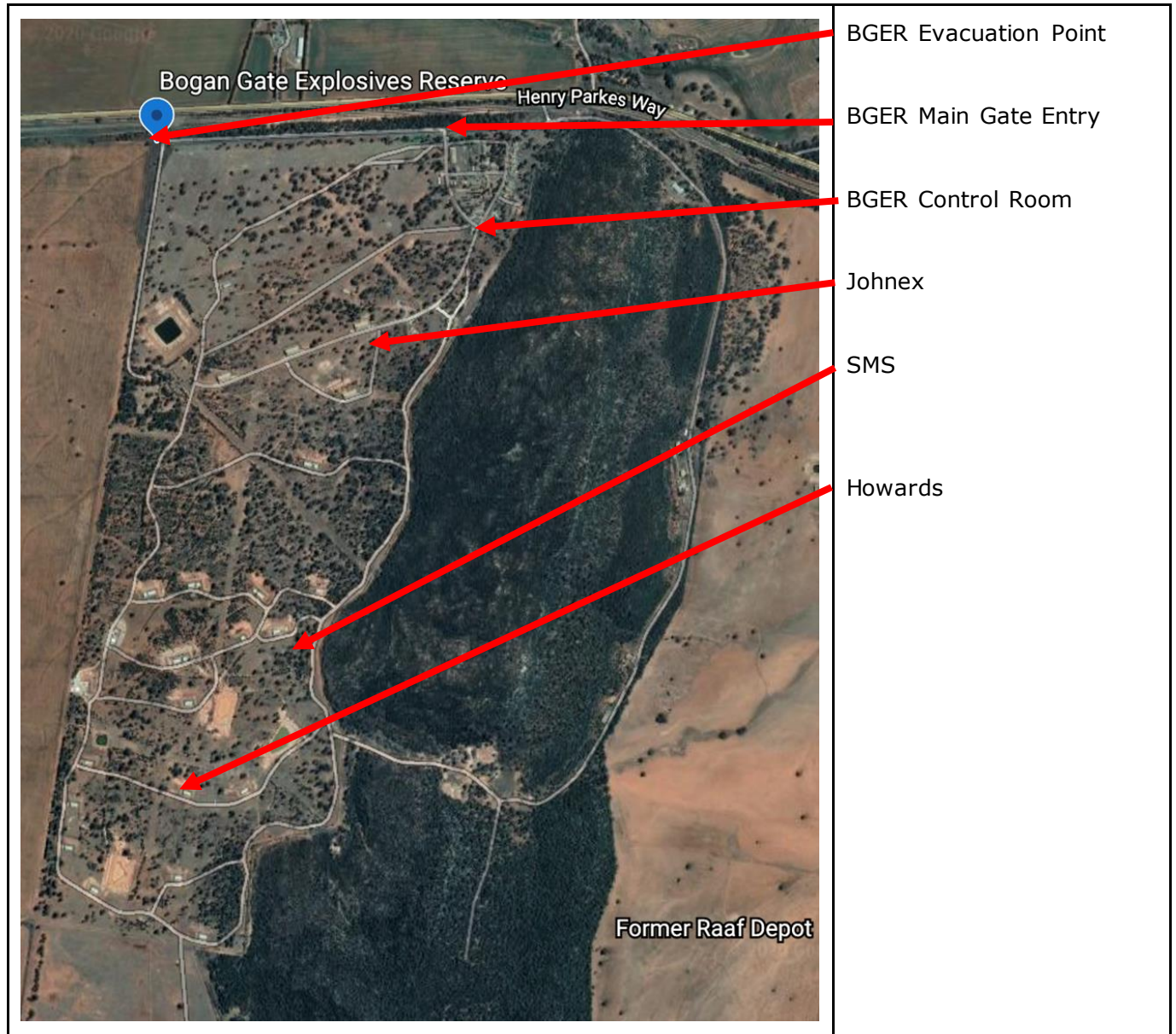
Version	Date	Change Summary

Table 10-5 – Change information

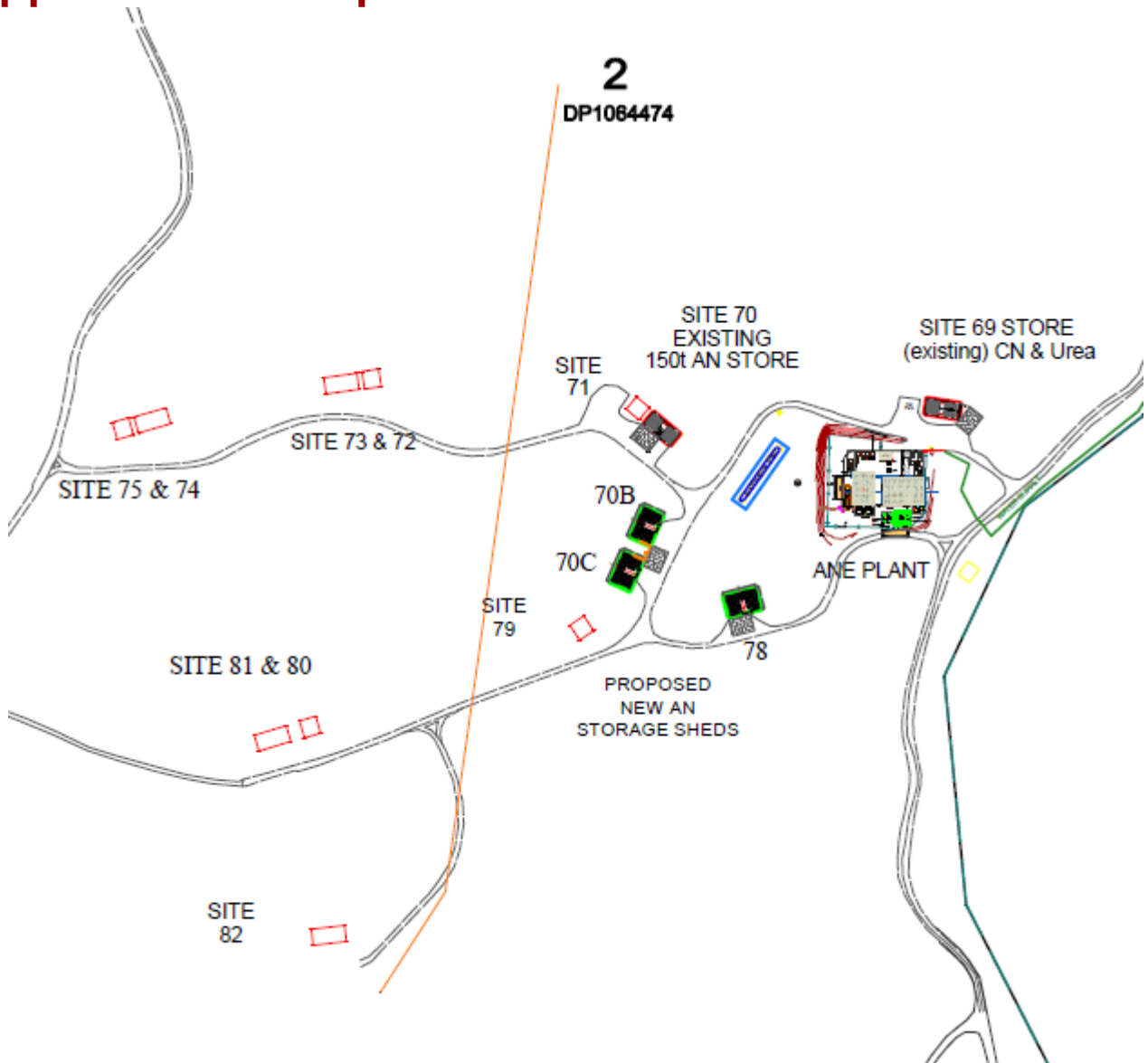
Appendix A - Location Plan



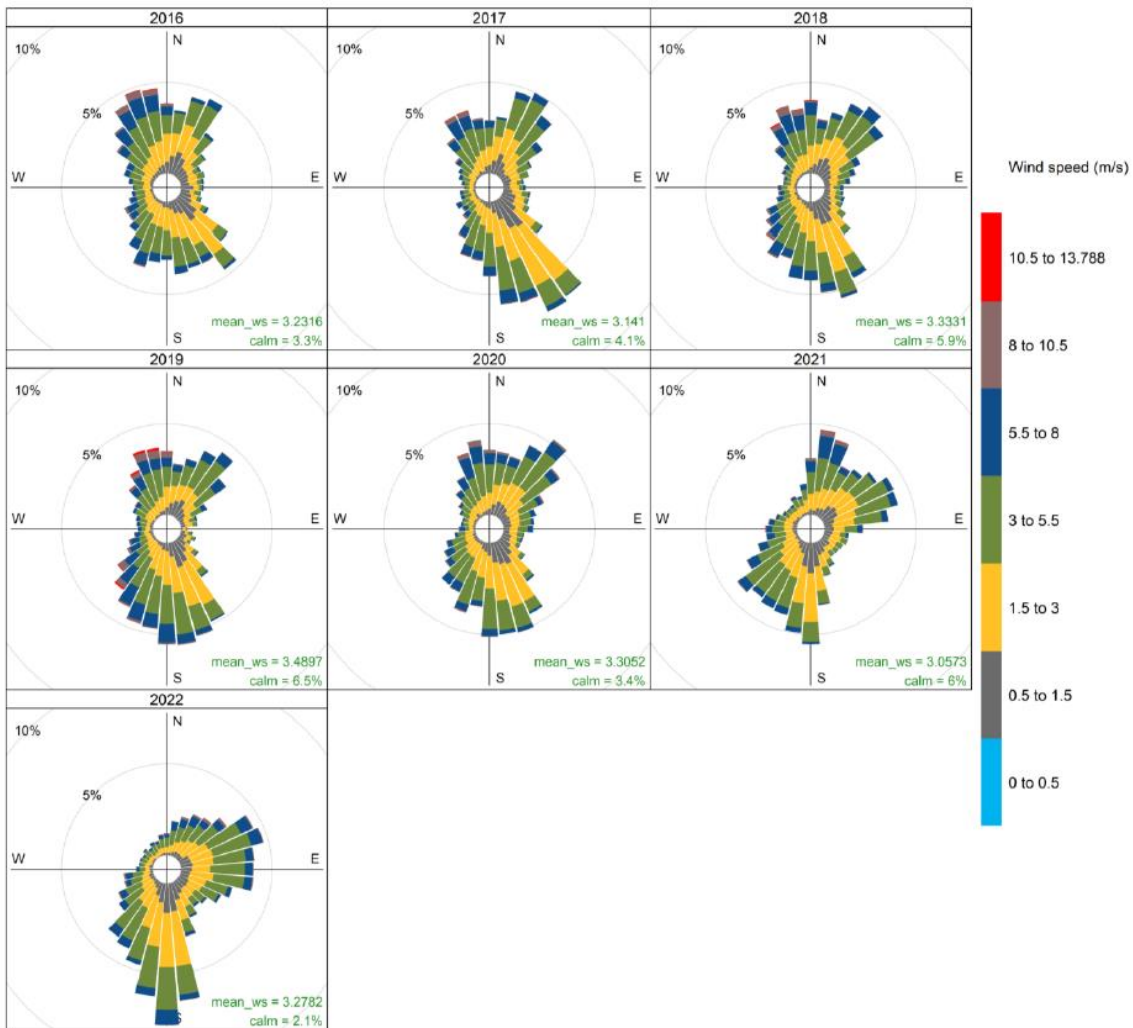
Appendix B - Existing Land-use Plan



Appendix C - Proposed SMS Additions

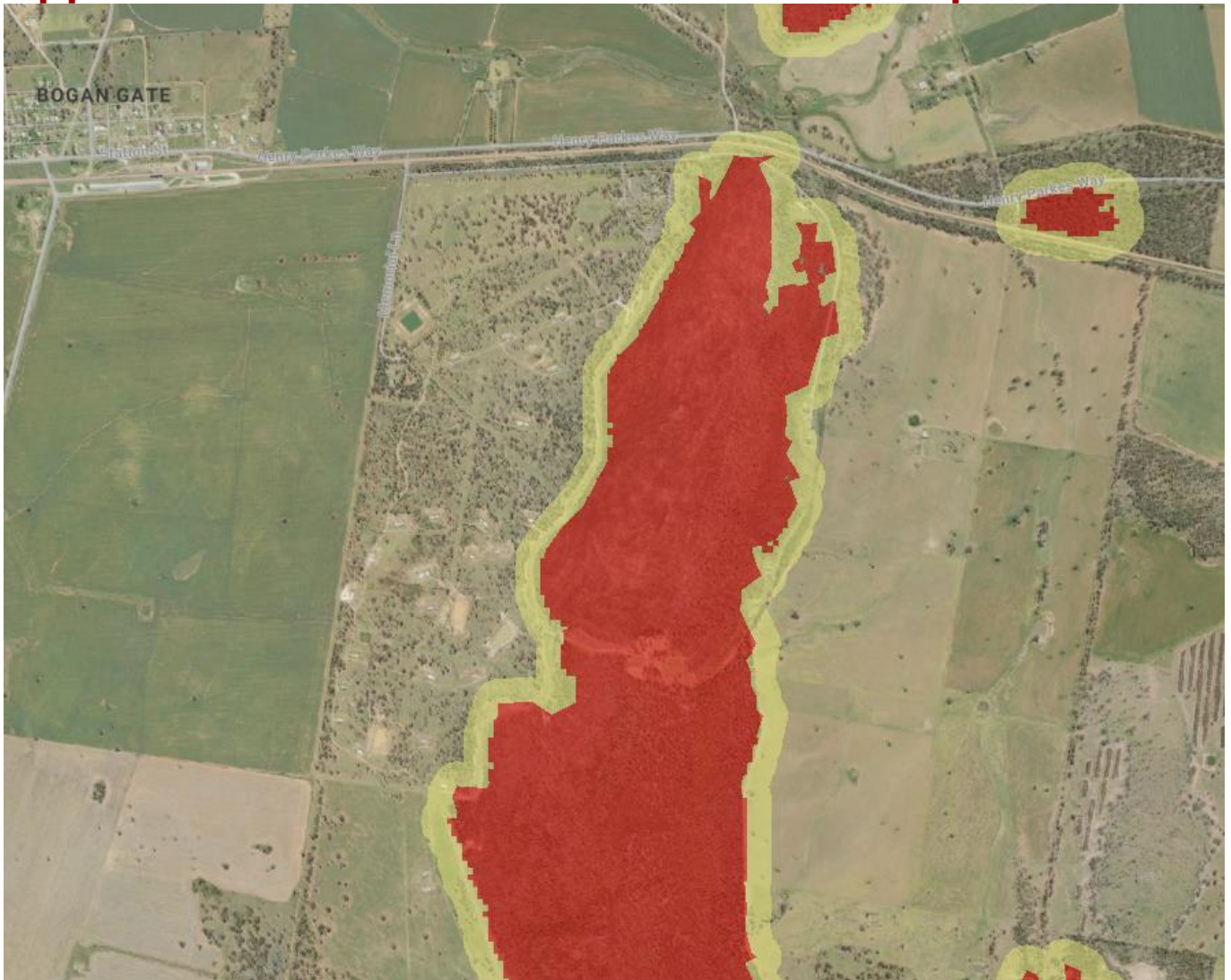


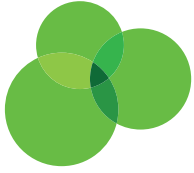
Appendix D - Wind Rose Data



Source: - Northparkes meteorological monitoring station

Appendix E – RFS Bushfire Prone Land Map





Appendix M. Envirowest Preliminary Contamination Investigation

Preliminary contamination investigation

Part 3577 Henry Parkes Way, Bogan Gate NSW



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Summary report

Background

A general industry development is proposed for a parcel of land located within Lot 2 DP1064474, 3577 Henry Parkes Way, Bogan Gate NSW. The development will include a new explosives emulsion plant and the redevelopment of three existing sheds. The development is located on a former explosives reserve. The former land-uses are potential sources of contamination. A preliminary contamination investigation is required for the site to determine suitability for the proposed land-use.

Objectives of investigation

The objective of the investigation was to determine suitability of the site for the proposed land-use.

Scope

The scope was to identify past potentially contaminating activities, identify potential types of contamination, discuss the site condition, provide a preliminary assessment of site contamination and assess the need for further investigation to determine suitability for commercial land use. The scope of works included site inspection, soil sampling and analysis of the soil samples for contaminants of concern.

Summary

An assessment of the site was made on 18 January 2021 consisting of a site walkover, desktop study and limited soil sampling.

The preliminary contamination assessment comprised a soil sampling and laboratory analysis program. Four soil samples were collected from the investigation area and analysed for contaminants of concern.

The site has a land-use history as part of an explosive storage facility. No evidence of mines, sheep dips or mixing sheds were identified on the site from the review of site history and site walkover. The site consisted of native grasses, herbs and weeds. Medium sized cypress pines had been cleared from the site.

The levels of all metals and explosives screen of potential contaminants assessed in the soil sampling program were below the commercial land-use thresholds (NEPC 1999).

Recommendations

The investigation area is suitable for the proposed commercial land-use.

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1. Introduction

A general industry development is proposed for a parcel of land located within Lot 2 DP1064474, 3577 Henry Parkes Way, Bogan Gate NSW. The development will include a new explosives emulsion plant and the redevelopment of three existing sheds. The development is located on a former explosives reserve. The former land-uses are potential sources of contamination. A preliminary contamination investigation is required for the site to determine suitability for the proposed land-use.

2. Objectives

The objective of the investigation was to determine suitability of the site for the proposed land-use.

3. Scope of work

Envirowest Consulting Pty Ltd was commissioned by Solar Mining Services to undertake a preliminary contamination investigation, in accordance with the contaminated land management planning guidelines, from the *Contaminated Land Management Act 1997* and the *State Environmental Policy No. 55 (SEPP 55)*, for a parcel of land located within Lot 2 DP1064474 Henry Parkes Way, Bogan Gate NSW. The objective was to identify past potentially contaminating activities, identify potential contamination types, discuss the site condition, provide a preliminary assessment of site contamination and assess the need for further investigation. The scope of works included site inspection, soil sampling and analysis of the soil samples for contaminants of concern.

4. Site identification

Address	3577 Henry Parkes Way Bogan Gate NSW
Deposited plans	Total Lot 2, 3, 4, 5 DP1064474 (whole reserve) Investigation area part Lot 2 DP 1064474
Latitude and longitude	-33.07° 147.49°
Geographic coordinates	55H E576598m N6334946m
Client	Solar Mining Services
Owner	Yallawadgera Investments Pty Ltd
Current occupier	Solar Mining Services
Area	Total approximately 690 hectares Investigation area 100m by 100m
Local government area	Parkes Shire Council
Current zoning	RU1 – Primary Production (Parkes LEP 2012)
Trigger for investigation	Redevelopment
Locality map	Figure 1

5. Site history

5.1 Land-uses

The historical land-use of the site is part of an explosives reserve. The reserve was used to store explosives.

5.2 Summary of council records

Lot 4, lot 5 and the central section of lot 3 is mapped in a biodiversity area, terrestrial biodiversity map (Parkes LEP 2012).

A request for information was sent to Parkes Shire Council however, to date no response has been received.

5.3 EPA contaminated sites list

The investigation area is not listed on the NSW EPA register of contaminated sites (accessed 20 January 2021) or sites notified to the EPA (14 December 2020).

5.4 Sources of information

Site inspection 18 January 2021 by Greg Madafiglio of Envirowest Consulting

NSW EPA records of public notices under the CLM Act 1997

Soil and geological maps

Historical aerial photographs

Parkes Local Environmental Plan 2012 (LEP 2012)

Department of Defence GEMS Environmental Factor Management Contaminated Site Records

5.5 Review of historic aerial photographs, maps and plans

The site contains numerous bunded storage sheds located sparsely across the site. An abandoned residential village is evident in the north eastern corner.

Aerial photographs indicate that no significant changes are evident on the site since the 1960's.

5.6 Chronological list of site uses

Historically the site was owned and operated in some capacity as an explosive's storage facility by the Department of Defence. Explosives are expected to have been stored in numerous bunded sheds located on the site from 1940 until 1980. No explosives were tested or manufactured in the assessment area.

The site was decommissioned by the Department of Defence in 1995. The site was sold in 2004 and purchased by Timber Creek Holdings Pty Ltd.

The investigation area is currently leased by Solar Mining Services.

A historical local knowledge suggest that a rifle range may have been located at the south of the site. This area is outside the investigation area.

No horticultural activities, mines, sheep dips, underground storage tanks (UST) are known to have been located on or within the investigation area from the site inspection and site history.

5.7 Buildings and infrastructure

Numerous bunded sheds, used for the storage of explosives are located sparsely over the site. An abandoned residential village is located in the north east of the site. Earth mounds have been constructed as safety mitigation measures at the location of storage sheds.

The investigation area incorporates three existing corrugated iron sheds with concrete floors. The existing sheds will be painted white. The new emulsion plant area is vacant.

Shipping containers located in the investigation area are used for interim storage prior to plant construction.

An existing on site dam located approximately 400m south will be utilised as a wastewater storage pond for the new emulsion plant.

5.8 Spills, losses or discharges

No records for spills or losses on the site were available. No records for discharges to land, water or air were available.

A sludge sample collected for the proposed wastewater storage pond provides a baseline for environmental background levels of heavy metals at the sampling location.

5.9 Relevant complaint history

None known.

5.10 Previous investigations

No previous investigations are known to have been undertaken on the site.

A request for information was sent to the Department of Defence however, to date no response has been received.

A request for information was sent to Parkes Shire Council however, to date no response has been received.

5.11 Historical neighbouring land-use

North – Explosive reserve

South – Explosive reserve

East – Explosive reserve

West – Explosive reserve

Historical neighbouring land-uses may have impacted on the site.

5.12 Contaminant sources

It is unlikely but possible that explosives were used and residue exists on the site. Explosives were stored on the site and some spillage of materials may have occurred over time.

5.13 Contaminants of concern

Based on historical activities and site inspection, potential contaminants have been identified as;

- Heavy metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc, mercury)
- Explosives

5.14 Integrity assessment

The site history was obtained from a site inspection and history review. The information is consistent with the current site condition and to the best of the assessor's knowledge is accurate.

6. Site condition and surrounding environment

6.1 Site inspection

The site was inspected by Greg Madafiglio of Envirowest Consulting Pty Ltd on 18 January 2021.

6.2 Land-use

The site was vacant. The site is part of a larger lot which has been used as an explosives reserve for the storage of explosives.

6.3 Current neighbouring land-use

North – Vacant

South – Vacant

East – Vacant

West – Vacant

6.4 Surface cover and vegetation

The site consisted of native grasses, herbs and weeds. Medium sized cypress pines were cleared from the site in July 2020.

6.5 Evidence of visible contamination

The existing sheds were used for storage. Product spills and losses are unlikely to have occurred at the site of the new emulsion plant.

Small bare areas were identified on the site due to recent vegetation removal activities and poor pasture regrowth following the prolonged dry period.

No signs of visible contamination such as discolouration, staining or odour was identified on the surface of the investigation area.

6.6 Topography

The site is predominantly located on a lower slope. Aspect is predominantly west and slopes are gently inclined at approximately 4%. Elevation is 277 metres above sea level. The lowest elevation occurs to the west.

6.7 Soils and geology

The site is located within The Mount Soil Landscape (King 1998). Soil in The Mount landscape consists of leached sands, yellow podzolic and yellow solodic soils. On-site geology is colluvial- derived deposits of sands from the Hervey Group which form the Jemalong Range.

Soils on the site comprised of red sands and clayey sands. Subsurface soils are known to be dispersive and erodible.

6.8 Water

6.8.1 Surface water

The aspect is west and surface water flows are expected to generally flow to the west. No drainage lines are located nearby.

Wastewater generated by the new emulsion plant will be stored in a dam located approximately 400m south.

6.8.2 Groundwater

No registered water abstraction bores were identified within a 500m radius of the investigation area on the NSW Government Water NSW website (2020). One bore was identified on the site.

No.	Date drilled	Location	SWL (m)	Use	Status
GW003818	1942	1km NNE	34.70	Not known	-

6.9 Evidence of possible naturally occurring contaminants

No natural sources of PAH were identified.

The site is not mapped as an acid sulphate soil risk (eSPADE accessed January 2021).

The site is not mapped as a geological unit with asbestos potential (NSW SEED Portal accessed February 2021).

6.10 Environmentally sensitive features or habitats

No environmentally sensitive features or habitats were identified on the site. Bushland is located to the east and south is mapped in a biodiversity area, terrestrial biodiversity map (Parkes LEP 2012).

6.11 Integrity assessment

The site history was obtained from a site inspection and history review. The information is consistent with the current site condition and to the best of the assessor's knowledge is accurate.

7. Conceptual site model

7.1 Contaminant sources

Potential exists for contaminating activities to have been undertaken on site which may impact on the suitability for the proposed land-use. The historical land-use may have resulted in application of contaminants.

7.2 Contaminants of concern

Based on historical activities and site inspection the contaminants of concern across the site are:

- Heavy metals (arsenic, cadmium, chromium, copper, nickel, lead, zinc and mercury)
- Explosives

7.3 Potential receptors

The proposed land-use of the site is commercial. The site has historically been used as an explosive's storage facility.

Human receptors include:

- Visitors (adults)
- Staff (adults)
- Site workers
- Construction workers
- Intrusive maintenance workers

Ecological receptors include:

- Flora and fauna on the site and adjacent to the site
- Aquatic flora and fauna receptors off-site

7.4 Exposure pathways

Pathways for exposure to contaminants are:

- Dermal contact following soil disturbance
- Ingestion and inhalation after soil disturbance
- Surface water and sediment runoff into waterways
- Leaching of contaminants into the groundwater
- Direct contact of flora and fauna with the soil

7.5 Source receptor linkages

Potential source pathway receptor linkages are identified to enable evaluation of any adverse impact on human health or ecology.

The site is part of an existing explosives reserve storage area. The ongoing land-use of the site is commercial. Human receptors to the investigation area are limited. Proposed users of the site may have a risk of exposure if contaminants are present and the soil is disturbed. Construction workers, visitors, staff and intrusive maintenance workers to the site may potentially be receptors to soil contaminants through direct contact to soil which includes ingestion and dermal contact.

The contaminants of concern are non-volatile and inhalation of soil material is not considered a pathway for exposure. Inhalation may occur as a result of vaporisation, soil disturbance and dust production. Major soil disturbance before and after the development of the site is considered unlikely. Soil disturbance during construction and development of the site is expected to be accompanied by erosion control measures which will reduce the incidence of dust production.

Vegetation surrounding the site may be potential receptors to soil contamination through direct uptake of contaminants. All water flows from the site will be diverted to nearby dams.

The source receptor linkage to aquatic organisms and ecosystems is considered incomplete as the site is well vegetated and movement of sediments from the site is unlikely. During construction work it is expected that erosion control measures will be implemented and movement of sediment off site will be unlikely. Following development of the site it is expected that vegetation will be re-established or hard surfaces constructed which will control sediment movement from the site. The nearest waterway to the site is Gunningbland Creek which is located approximately 2km north and it is not expected that contaminants from the site will be transported to aquatic receptors within Gunningbland Creek.

Groundwater is not identified as a potential receptor to contamination. Groundwater bores are located greater than 500m from the site. Contaminants are expected to originate from the soil surface and groundwater levels in the area are at depths greater than 3m below the soil surface.

Source/contaminant	Transport	Potential exposure pathways	Receptors
<input checked="" type="checkbox"/> Storage of explosives	<input type="checkbox"/> Wind	<input checked="" type="checkbox"/> Direct contact (ingestion and	<input checked="" type="checkbox"/> Construction workers
<input checked="" type="checkbox"/> Heavy metals	<input type="checkbox"/> Sedimentation	absorption) (human and environment)	<input checked="" type="checkbox"/> Workers
	<input type="checkbox"/> Groundwater	<input type="checkbox"/> Inhalation	<input checked="" type="checkbox"/> Visitors
		<input type="checkbox"/> Runoff	<input checked="" type="checkbox"/> Intrusive maintenance workers
		<input type="checkbox"/> Leaching	<input checked="" type="checkbox"/> Vegetation
			<input type="checkbox"/> Aquatic receptors

Potential, unknown/unlikely

8. Data quality objectives (DQO)

8.1 State the problem

A new explosives emulsion plant is proposed for the site. Land-use will remain unchanged and commercial. The property has historically been used as an explosives reserve for the storage of explosives which may have resulted in contaminating activities. The site requires investigation to ensure suitability for the proposed land-use and provide a baseline for future comparison.

8.2 Identify the decision

The land-use proposed is commercial and the levels of contaminants should be less than the thresholds listed in Section 11. The decision problem is, do the levels of potential contaminants exceed the assessment criteria listed in Section 11.

8.3 Identify the inputs decision

Investigations of the site is required to identify any potential contaminants from historical land-use.

8.4 Define the boundaries of the study

The investigation area is a parcel of land located within Lot 2 DP1064474, 3577 Henry Parkes Way, Bogan Gate NSW.

8.5 Develop a decision rule

The decision rule for suitability for commercial land-use is based on the thresholds listed in Schedule B1 of the NEPM (1999) *Guideline on Investigation Levels for Soil and Groundwater*.

8.6 Specify acceptable limits on the decision errors.

The 95% upper confidence limit of average levels of samples collected is less than the threshold levels and the results are less than 250% of relevant thresholds.

8.7 Optimize the design for obtaining data

Soil samples were collected from the site on judgemental pattern from areas where the potential for contamination was identified.

Analytes included heavy metals and explosives residue.

9. Sampling analysis plan and sampling methodology

9.1. Sampling design

A judgmental sampling pattern was adopted to provide a preliminary assessment of the contamination status of the site.

9.1.1 Sampling locations

Four discrete soil samples were collected from across the site (Figure 2). The sampling locations in the proposed facility and around sheds were in lower slope areas expected to have received flows from upslope sources. Sludge from the proposed water discharge dam was undertaken to determine historical baseline levels. A visual inspection was undertaken over the site for evidence of contamination.

9.1.2 Sampling density

The sampling density will enable a preliminary assessment of contamination in the investigation area.

9.1.3 Sampling depth

Sampling depth was 0 to 100mm below the surface.

9.2 Analytes

The discrete soil samples were evaluated for arsenic, cadmium, chromium, copper, lead, nickel, zinc, mercury and explosive residue as these were identified as the contaminants of concern possibly present as a result of previous activities (Table 1).

Table 1. Schedule of samples and analyses

Sample ID	Location	Source	Analysis undertaken
BG 1	Plant area north west	Soil	Arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), nickel (Ni), zinc (Zn), mercury (Hg), explosives screen
BG 2	South western section	Soil	As, Cd, Cr, Cu, Pb, Ni, Zn, Hg, explosives screen
BG 3	South western section	Soil	As, Cd, Cr, Cu, Pb, Ni, Zn, Hg, explosives screen
BG 4	Central section	Sludge	As, Cd, Cr, Cu, Pb, Ni, Zn, Hg, explosives screen

9.3 Sampling methods

Soil samples were taken using a stainless-steel hand shovel. Soil was taken at each individual sampling location below the vegetated and detrital layer. The soil was transferred to a solvent rinsed glass jar with a Teflon lid using clean latex gloves.

Tools were decontaminated between sampling locations to prevent cross contamination by brushing to remove and rinsing with clean tap water and drying with clean towel. Sampling protocols are presented in Appendix 5.

10. Quality assurance and quality control

10.1 Sampling design

The sampling program is intended to provide preliminary data as to the presence and levels of contaminants.

Discrete soil samples were collected on a judgemental pattern across the site. The sampling density is considered sufficient to provide a preliminary assessment of contamination.

10.2 Field

The collection of samples was undertaken in accordance with industry accepted standard protocols (NEPC 1999). The details of the samples collected are presented in Table 1. Discrete samples were collected and analysed.

Sampling equipment was decontaminated between each sampling event. Samples were stored and transported under refrigeration and in insulated containers. Appropriate storage duration was observed. A chain of custody form tracked the samples to the laboratory (Appendix 4).

A single sampler was used to collect the samples using standard methods. Soil collected was a fresh sample from the hand shovel. After collection the samples were immediately placed in new glass sampling jars and placed in a cooler. Sample jars were filled to minimise headspace and maintain sample integrity.

One intra laboratory duplicate sample was analysed to evaluate sample integrity and data comparability. The frequency of field duplicates is greater than the NEPM (1999) recommendation of 5%. Samples from all batches did not contain contaminants which confirm the absence of cross contamination during transport and storage. A field sampling log is presented in Appendix 3.

10.3 Laboratory

Chemical analysis was conducted by ALS, Sydney, which is NATA accredited for the tests undertaken. The laboratories have quality assurance and quality control programs in place, which include internal replication and analysis of spike samples and recoveries.

Method blanks, matrix duplicates and laboratory control samples were within acceptance criteria. The quality assurance and quality control report is presented together with the laboratory report as Appendix 4.

10.4 Data evaluation

The laboratory quality control report indicates the data variability is within acceptable industry limits. The data is considered representative and usable for the purposes of the investigation. Data quality indicators are presented in Appendix 4.

11. Assessment criteria

The proposed land-use of the site is general industry development which will include a explosives emulsion plant. The proposed land-use is considered to be commercial.

The assessment criteria for the soil data in recreational and commercial sites is described in Table 1A(1) of *Guideline on Investigation Levels for Soil and Groundwater* (NEPC 1999). The criteria lists health investigation levels (HIL) for a range of land-uses. Assessment criteria for commercial sites (HIL D) has considered appropriate for the site.

Ecological investigation levels (EIL) have been developed for the protection of terrestrial ecosystems for selected metals and organic substances in the soil in the guideline (NEPC 1999). EILs vary with land-use and apply to contaminants up to 2m depth below the surface. The EIL for arsenic and lead is not dependant on soil type. The EILs were determined using the ASC NEPM Toolbox EIL calculation sheet (accessed January 2021). The EILs for commercial land-use are listed in Tables 2 and 3.

Typical CEC values for soils in the locality are 10cmol(+)/kg. pH values of between 5 to 5.5, organic carbon of 1 to 1.5% and clay content of 15 to 20% (Espade 2016). The contaminants have been identified in the soil for at least two years and are considered aged.

Chromium is analysed as total chromium which is the sum of chromium (III) and chromium (VI). Chromium (VI) is a potential contaminant from industrial processes including ferrochrome production, electroplating, pigment production and tanning (WHO 1998). Chromium (VI) is reduced to chromium (III) when it comes into contact with organic matter in biota, soil and water. Chromium in the environment is present in the trivalent state (WHO 1998).

No thresholds are available for explosives residues and the initial comparison criteria was the level of detection.

Table 2. EIL Calculation sheet, commercial land-use

Analyte	Rationale	ACL (mg/kg)	ABC (mg/kg)	EIL (mg/kg)
		Commercial		Commercial
Arsenic	Aged	160	-	160
Chromium (III)	Clay content 15-20%, aged	840	-	840
Copper	pH 5.5	210	-	210
Lead	Generic	1,800	-	1,800
Nickel	CEC 10cmol/kg	290	-	290
Zinc	CEC 10cmol/kg, pH 5.5	500	-	500

Table 3. Assessment criteria for soil (mg/kg) (NEPC 1999)

Analyte	HIL	EIL
	Commercial /industrial	Commercial and industrial
Arsenic	3,000	160
Cadmium	900	-
Chromium	3,600 ¹	840 ²
Copper	240,000	210
Lead	1,500	1,800
Nickel	6,000	290
Zinc	400,000	500
Mercury	730	-

¹ Threshold for Chromium (VI), ² Threshold for Chromium (III), HIL – health investigation level, EIL – ecological investigation level

12. Results and discussion

The site consisted of native grasses, herbs and weeds. Medium sized cypress pines had been cleared from the site prior to the inspection.

Very low levels of chromium were detected in all soil samples. Low levels of lead, nickel and zinc were detected in the soil samples collected from between building 71 and 72 and sludge from the dam. The levels of chromium, lead, nickel and zinc in soil samples collected was less than the adapted assessment criteria (Table 4).

The levels of heavy metals all other soil samples collected were less than detection limits and less than the adapted assessment criteria (Table 3).

Explosive residue was not detected in the soil or sludge samples analysed.

Table 5. Soil analysis results for metals and PAH (mg/kg)

Sample ID	Location (Figure 2)	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Mercury	Explosives compounds/metabolites
BG 1	Plant area north west	ND	ND	4	ND	ND	ND	ND	ND	ND
BG 2	Plant area south west	ND	ND	5	ND	ND	ND	ND	ND	ND
BG 3	Between building 71 and 72	ND	ND	8	ND	55	2	110	ND	ND
BG 4	Sludge from dam	ND	ND	7	ND	13	3	20	ND	ND
Commercial/industrial land-use thresholds (NEPC 1999)										
HIL		3,000	900	3,600 ¹	240,000	1,500	6,000	400,000	730	-
EIL		160	-	840 ²	210	1,800	290	500	-	-

¹ Threshold for Chromium (VI), ² Threshold for Chromium (III), ³ Chromium (III), HIL – Health investigation levels, EIL – Ecological investigation levels

13. Site characterisation

13.1 Environmental contamination

No soil contamination was identified in the samples collected in the proposed facility, around the shed or in the sludge from the dam.

13.2 Chemical degradation production

Not applicable as no contamination was identified.

13.3 Exposed population

Not applicable as no contamination was identified.

14. Conclusions and recommendations

14.1 Summary

An assessment of the site was made on 18 January 2021 consisting of a site walkover, desktop study and limited soil sampling.

The preliminary contamination assessment comprised a soil sampling and laboratory analysis program. Four soil samples were collected from the investigation area to provide an indicator of potential contamination.

The site has a land-use history as part of an explosive storage facility. No evidence of mines, sheep dips or mixing sheds were identified on the site from the review of site history and site walkover. The site consisted of native grasses, herbs and weeds. Medium sized cypress pines had been cleared from the site.

The levels of all potential contaminants assessed in the soil sampling program were below the commercial land-use thresholds (NEPC 1999).

14.2 Assumptions in reaching the conclusions

It is assumed the sampling sites are representative of the site.

14.3 Extent of uncertainties

The analytical data relate only to the locations sampled. Soil conditions can vary both laterally and vertically and it cannot be excluded that unidentified contaminants may be present.

14.4 Suitability for proposed use of the site

The investigation area is suitable for commercial land-use.

14.5 Limitations and constraints on the use of the site

Nil

14.6 Recommendation for further work

Nil

15. Report limitations and intellectual property

This report has been prepared for the use of the client to achieve the objectives given the clients requirements. The level of confidence of the conclusion reached is governed by the scope of the investigation and the availability and quality of existing data. Where limitations or uncertainties are known, they are identified in the report. No liability can be accepted for failure to identify conditions or issues which arise in the future and which could not reasonably have been predicted using the scope of the investigation and the information obtained.

The investigation identifies the actual subsurface conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing is interpreted by geologists, engineers or scientists who then render an opinion about overall subsurface conditions, the nature and extent of the contamination, its likely impact on the proposed development and appropriate remediation measures. Actual conditions may differ from those inferred to exist, because no professional, no matter how well qualified, and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock or time. The actual interface between materials may be far more gradual or abrupt than a report indicates. Actual conditions in areas not sampled may differ from predictions. It is thus important to understand the limitations of the investigation and recognise that we are not responsible for these limitations.

This report, including data contained and its findings and conclusions, remains the intellectual property of Envirowest Consulting Pty Ltd. A licence to use the report for the specific purpose identified is granted for the persons identified in that section after full payment for the services involved in preparation of the report. This report should not be used by persons or for purposes other than those stated and should not be reproduced without the permission of Envirowest Consulting Pty Ltd.

16. References

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Figures

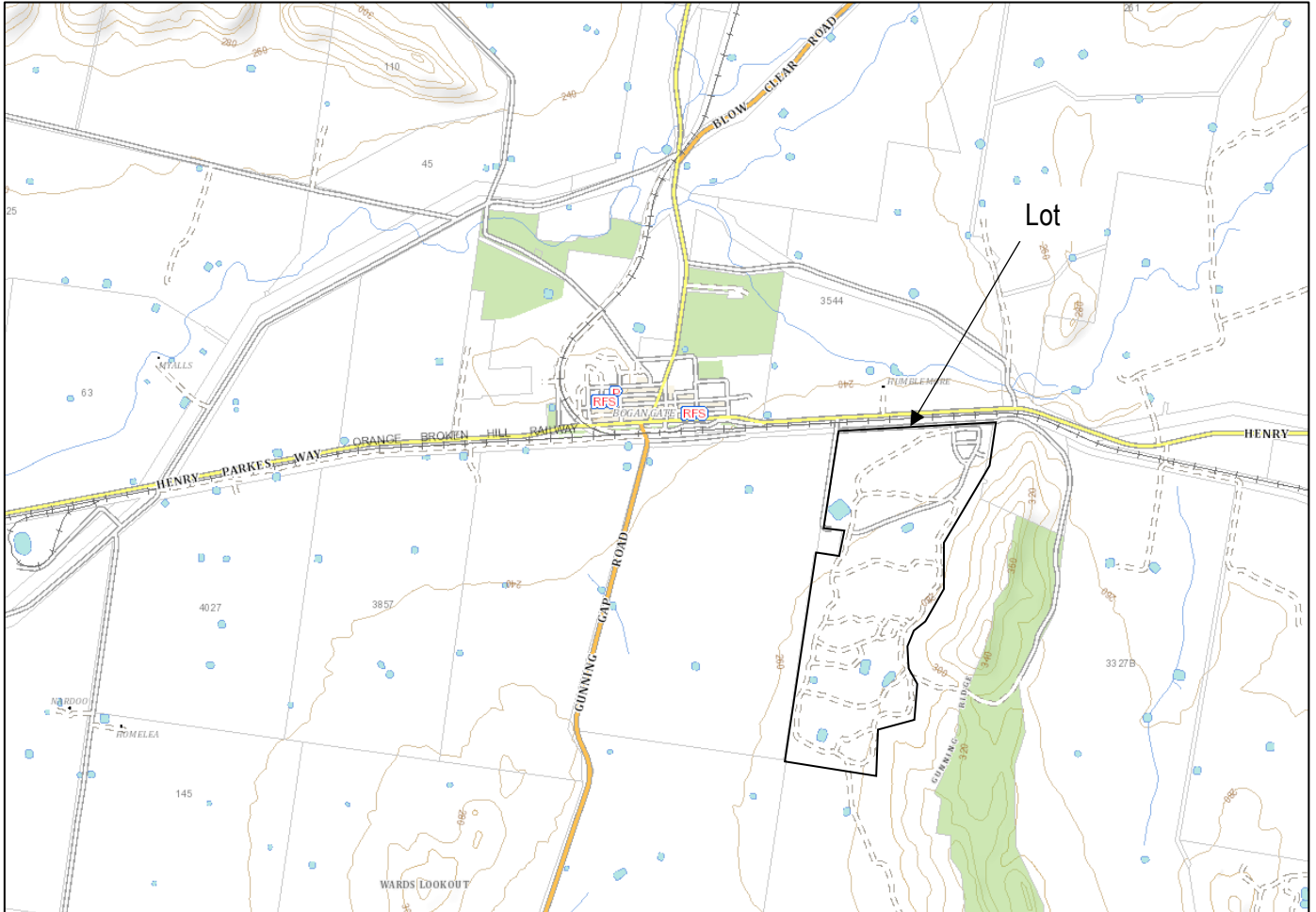
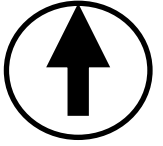


Figure 1. Site locality

Part 3577 Henry Parkes Way, Bogan Gate NSW

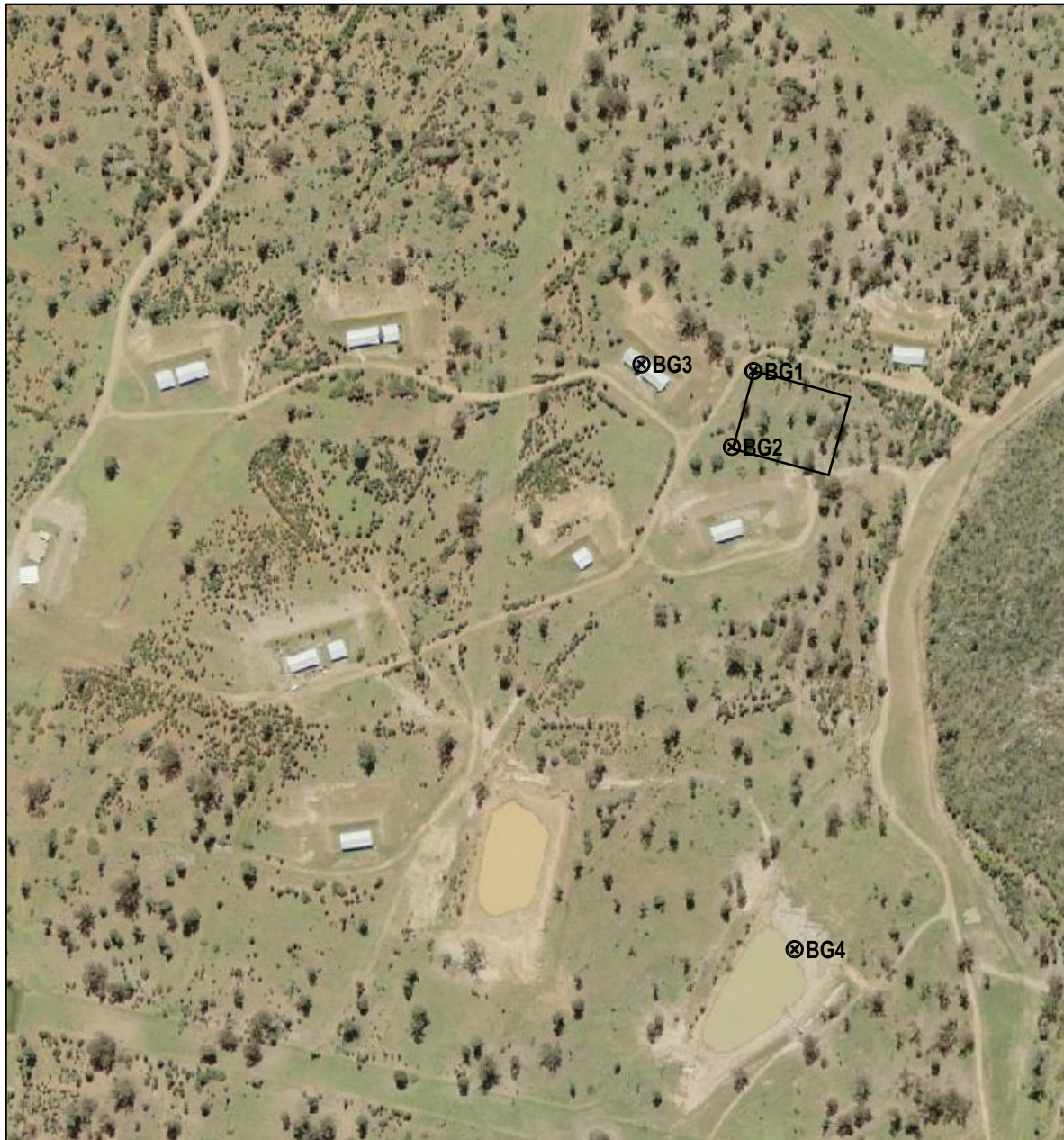
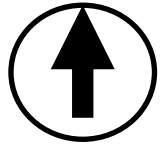


Enviwest Consulting Pty Ltd

Job: R12771c

Drawn by: TS

Date: 25/01/2021



Legend

- Investigation area
- ⊗ Sampling location

Approximate Scale 1: 2,800



Figure 2. Site plan and sampling locations		
Part 3577 Henry Parkes Way, Bogan Gate NSW		
	Envirowest Consulting Pty Ltd	
Job: R12771c	Drawn by: TS	Date: 25/01/2021

Figure 3. Photographs of the site



Appendices

Appendix 1. Sample analysis, quality assurance and quality control (QAQC) report

1. Data quality indicators (DQI) requirements

1.1 Completeness

A measure of the amount of usable data for a data collection activity. Greater than 95% of the data must be reliable based on the quality objectives. Where greater than two quality objectives have less reliability than the acceptance criterion the data may be considered with uncertainty.

1.1.1 Field

Consideration	Requirement
Locations and depths to be sampled	Described in the sampling plan. The acceptance criterion is 95% data retrieved compared with proposed. Acceptance criterion is 100% in crucial areas.
SOP appropriate and compiled	Described in the sampling plan.
Experienced sampler	Sampler or supervisor
Documentation correct	Sampling log and chain of custody completed

1.1.2 Laboratory

Consideration	Requirement
Samples analysed	Number according to sampling and quality plan
Analytes	Number according to sampling and quality plan
Methods	EPA or other recognised methods with suitable PQL
Sample documentation	Complete including chain of custody and sample description
Sample holding times	Metals 6 months, OCP, PAH, TPH, PCB 14 days

1.2 Comparability

The confidence that data may be considered to be equivalent for each sampling and analytical event. The data must show little or no inconsistencies with results and field observations.

1.2.1 Field

Consideration	Requirement
SOP	Same sampling procedures to be used
Experienced sampler	Sampler or supervisor
Climatic conditions	Described as may influence results
Samples collected	Sample medium, size, preparation, storage, transport

1.2.2 Laboratory

Consideration	Requirement
Analytical methods	Same methods, approved methods
PQL	Same
Same laboratory	Justify if different
Same units	Justify if different

1.3 Representativeness

The confidence (expressed qualitatively) that data are representative of each media present on the site.

1.3.1 Field

Consideration	Requirement
Appropriate media sampled	Sampled according to sampling and quality plan or in accordance with the EPA (1995) sampling guidelines.
All media identified	Sampling media identified in the sampling and quality plan. Where surface water bodies on the site sampled.

1.3.2 Laboratory

Consideration	Requirement
Samples analysed	Blanks

1.4 Precision

A quantitative measure of the variability (or reproduced of the data). Is measured by standard deviation or relative percent difference (RPD). A RPD analysis is calculated and compared to the practical quantitation limit (PQL) or absolute difference AD.

- Levels greater than 10 times the PQL the RPD is 50%
- Levels between 5 and 10 times the PQL the RPD is 75%
- Levels between 2 and 5 times the PQL the RPD is 100%
- Levels less than 2 times the PQL, the AD is less than 2.5 times the PQL

Data not conforming to the acceptance criterion will be examined for determination of suitability for the purpose of site characterisation.

1.4.1 Field

Consideration	Requirement
Field duplicates	Frequency of 5%, results to be within RPD or discussion required indicate the appropriateness of SOP

1.4.2 Laboratory

Consideration	Requirement
Laboratory and inter lab duplicates	Frequency of 5%, results to be within RPD or discussion required. Inter laboratory duplicates will be one sample per batch.
Field duplicates	Frequency of 5%, results to be within RPD or discussion required
Laboratory prepared volatile trip spikes	One per sampling batch, results to be within RPD or discussion required

1.5 Accuracy

A quantitative measure of the closeness of the reported data to the true value.

1.5.1 Field

Consideration	Requirement
SOP	Complied
Inter laboratory duplicates	Frequency of 5%. Analysis criterion 60% RPD for levels greater than 10 times the PQL 85% RPD for levels between 5 to 10 times the PQL 100% RPD at levels between 2 to 5 times the PQL Absolute difference, 3.5 times the PQL where levels are, 2 times PQL

1.5.2 Laboratory

Recovery data (surrogates, laboratory control samples and matrix spikes) data subject to the following control limits:

- 60 to 140% acceptable data
- 20-60% discussion required, may be considered acceptable
- 10-20% data should considered as estimates
- 10% data should be rejected

Consideration	Requirement
Field blanks	Frequency of 5%, <5 times the PQL, PQL may be adjusted
Rinsate blanks	Frequency of 5%, <5 times the PQL, PQL may be adjusted
Method blanks	Frequency of 5%, <5 times the PQL, PQL may be adjusted
Matrix spikes	Frequency of 5%, results to be within +/-40% or discussion required
Matrix duplicates	Sample injected with a known concentration of contaminants with tested. Frequency of 5%, results to be within +/-40% or discussion required
Surrogate spikes	QC monitoring spikes to be added to samples at the extraction process in the laboratory where applicable. Surrogates are closely related to the organic target analyte and not normally found in the natural environment. Frequency of 5%, results to be within +/-40% or discussion required
Laboratory control samples	Externally prepared reference material containing representative analytes under investigation. These will be undertaken at one per batch. It is to be within +/-40% or discussion required
Laboratory prepared spikes	Frequency of 5%, results to be within +/-40% or discussion required

2. Laboratory analysis summary

One analysis batch was undertaken over the preliminary investigation program. Samples were collected on 18 January 2021. A total of four samples were submitted for analytical testing. The samples were collected in the field by an environmental scientist from Envirowest Consulting Pty Ltd, placed into laboratory prepared receptacles as recommended in NEPM (1999). The samples preservation and storage was undertaken using standard industry practices (NEPC 1999). A chain of custody form accompanied transport of the samples to the laboratory.

The samples were analysed at the laboratories of ALS Laboratories, Smithfield NSW which is National Association of Testing Authorities (NATA) accredited for the tests undertaken. The analyses undertaken, number of samples tested and methods are presented in the following tables:

Laboratory analysis schedule

Sample id. (sampling location)	Number of samples	Duplicate	Analyses	Date collected	Substrate	Laboratory report
BG1, BG2, BG3, BG4	4	1	As, Cd, Cr, Cu, Pb, Ni, Zn, Hg, explosives	18/01/2021	Soil	ES2101610

Analytical methods

Analyte	Extraction	Laboratory methods
Metals	USEPA 200.2 Mod	APHA USEPA SW846-6010
Chromium (III)	-	APHA 3500 CR-A&B & 3120 and USEPA SW846-3060A
Chromium (VI)	USEPA SW846-3060A	USEPA SW846-3060A
Mercury	USEPA 200.2 Mod	APHA 3112
Explosives	Tumbler extraction of explosives	USEPA8330

3. Field quality assurance and quality control

One intra laboratory duplicate sample was collected for the investigation. The frequency was greater than the recommended frequency of 5%. Table A5.1 outlines the samples collected and differences in replicate analyses. Relative differences were deemed to pass if they were within the acceptance limits of +/- 40% for replicate analyses or less than 5 times the detection limit.

Field duplicate frequency

Sample id.	Number of samples	Duplicate	Frequency (%)	Date collected	Substrate	Laboratory report
BG1, BG2, BG3, BG4	4	1	25	18/01/2021	Soil	ES2101610

Table A5.1. Relative differences for intra laboratory duplicates

BG1 and DA		
	Relative difference (%)	Pass/Fail
Arsenic	NA	Pass
Cadmium	NA	Pass
Chromium	22	Pass
Copper	NA	Pass
Lead	NA	Pass
Nickel	NA	Pass
Zinc	NA	Pass
Mercury	NA	Pass

NA – relative difference unable to be calculated as results are less than laboratory detection limit, *Results less than 5 times laboratory detection limits, ^Variation expected to be due to non-homogenised sample. Does not impact results

No trip blanks or spikes were submitted for analysis. This is not considered to create significant uncertainty in the analysis results because of the following rationale:

- The fieldwork was completed within a short time period and consistent methods were used for soil sampling.
- Soil samples were placed in insulated cooled containers after sampling to ensure preservation during transport and storage.
- The samples were placed in single use jars using clean sampling tools and disposable gloves from material not in contact with other samples. This reduces the likelihood of cross contamination.
- Samples in the analysis batch contain analytes below the level of detection. It is considered unlikely that contamination has occurred as a result of transport and handling.

4. Laboratory quality assurance and quality control

Sample holding times are recommended in NEPC (1999). The time between collection and extraction for all samples was less than the criteria listed below:

Analyte	Maximum holding time
Metals, cyanide	6 months
OCP, TRH, PCB, BTEX, PAH	14 days

The laboratory interpretative reports are presented with individual laboratory report. Assessment is made of holding time, frequency of control samples and quality control samples. No significant outliers exist for the sampling batches. The laboratory report also contains a detailed description of preparation methods and analytical methods.

The results, quality report, interpretative report and chain of custody are presented in the attached appendices. The quality report contains the laboratory duplicates, spikes, laboratory control samples, blanks and where appropriate matrix spike recovery (surrogate).

5. Data quality indicators (DQI) analysis

5.1 Completeness

A measure of the amount of usable data for a data collection activity (total to be greater than 95%).

The data set was found to be complete based on the scope of work. No critical areas of contamination were omitted from the data set.

5.1.1 Field

Consideration	Accepted	Comment
Locations to be sampled	Yes	In accordance with sampling methodology, described in the report. Sampling locations described in figures.
Depth to be sampled	Yes	In accordance with sampling methodology
SOP appropriate and compiled	Yes	In accordance with sampling methodology Sampled with stainless steel spade into lab prepared containers, decontamination between samples, latex gloves worn by sampler
Experienced sampler	Yes	Same soil sampler, environmental scientist
Documentation correct	Yes	Sampling log completed Chain of custody completed

5.1.2 Laboratory

Consideration	Accepted	Comment
Samples analysed	Yes	All critical samples analysed in accordance with chain of custody and analysis plan
Analytes	Yes	All analytes in accordance with chain of custody and analysis plan
Methods	Yes	Analysed in NATA accredited laboratory with recognised methods and suitable PQL
Sample documentation	Yes	Completed including chain of custody and sample results and quality results report for each batch
Sample holding times	Yes	Metals less than 6 months. OCP, TPH, PCB, BTEX less than 14 days

5.2 Comparability

The confidence that data may be considered to be equivalent for each sampling and analytical event.

The data sets were found to be acceptable.

5.2.1 Field

Consideration	Accepted	Comment
SOP	Yes	Same sampling procedures used and sampled on one date
Experienced sampler	Yes	Experienced scientist
Climatic conditions	Yes	Described in field sampling log
Samples collected	Yes	Suitable size, storage and transport

5.2.2 Laboratory

Consideration	Accepted	Comment
Analytical methods	Yes	Same methods all samples, in accordance with NEPC (1999) or USEPA
PQL	Yes	Suitable for analytes
Same laboratory	Yes	SGS is NATA accredited for the test
Same units	Yes	-

5.3 Representativeness

The confidence (expressed qualitatively) that data are representative of each media present on the site.

The data sets were found to be acceptable.

5.3.1 Field

Consideration	Accepted	Comment
Appropriate media sampled	Yes	Sampled according to sampling and quality plan
All media identified	Yes	Soil Sampling media identified in the sampling and quality plan

5.3.2 Laboratory

Consideration	Accepted	Comment
Samples analysed	Yes	Undertaken in NATA accredited laboratory. No blanks analysed. Samples in the analysis batch contain analytes below the level of detection. It is considered unlikely that contamination has occurred as a result of transport and handling.

5.4 Precision

A quantitative measure of the variability (or reproduced of the data).The data sets were found to be acceptable.

5.4.1 Field

Consideration	Accepted	Comment
SOP	Yes	Complied
Field duplicates	Yes	Collected

5.4.2 Laboratory

Consideration	Accepted	Comment
Laboratory and inter lab duplicates	Yes	Frequency of 5%, results to be within +/-40% or discussion required
Field duplicates	Yes	Frequency of 5%, results to be within +/-40% or discussion required
Laboratory prepared volatile trip spikes	NA	Not analysed due to preliminary nature of investigation

5.5 Accuracy

A quantitative measure of the closeness of the reported data to the true value.

The data sets were found to be acceptable.

5.5.1 Field

Consideration	Accepted	Comment
SOP	Yes	Complied
Field blanks	NA	Frequency of 5%, <5 times the PQL, PQL may be adjusted
Rinsate blanks	NA	Frequency of 5%, <5 times the PQL, PQL may be adjusted

5.5.2 Laboratory

Consideration	Accepted	Comment
Method blanks	Yes	Frequency of 5%, <5 times the PQL, PQL may be adjusted
Matrix spikes	Yes	Frequency of 5%, results to be within +/-40% or discussion required.
Matrix duplicates	Yes	Frequency of 5%, results to be within +/-40% or discussion required.
Surrogate spikes	Yes	Frequency of 5%, results to be within +/-40% or discussion required.

Laboratory control samples	Yes	Frequency of 5%, results to be within +/-40% or discussion required
Laboratory prepared spikes	Yes	Frequency of 5%, results to be within +/-40% or discussion required

No trip blanks, field spikes or sample rinsates were submitted for analysis. This is not considered to create significant uncertainty in the analysis results because of the following rationale:

- The fieldwork methods used for soil sampling were consistent throughout the project with all in situ samples collected from material which had not been subject to exposure.
- The fieldwork was completed within a short time period and consistent methods were used for soil sampling.
- Soil samples were placed in insulated cooled containers as quickly as possible, with the containers filled to minimize headspace. The sample containers were sealed immediately after the sample was collected and chilled in an esky containing ice.
- The samples were stored in a refrigerator and transported with ice bricks to ensure preservation during transport and storage.
- The samples were placed in single use jars using clean sampling tools and disposable gloves from material not in contact with other samples. This reduces the likelihood of cross contamination.
- Samples in the analysis batches contained analytes below the level of detection. It is considered unlikely that contamination has occurred as a result of transport and handling.

6. Conclusion

All media appropriate to the objectives of this investigation have been adequately analysed and no area of significant uncertainty exist. It is concluded the data is usable for the purposes of the investigation.

Appendix 3. Soil analysis results – ALS report number ES2101610 and chain of custody form

Appendix 4. Soil sampling protocols

1. Sampling

The samples will be collected from the auger tip, mattock, hand auger or excavator bucket immediately on withdrawal.

The time between retrieval of the sample and sealing of the sample container will be kept to a minimum.

The material will be collected using single use disposal gloves or a stainless-steel spade which represented material which has not been exposed to the atmosphere prior to sampling.

All sampling jars will be filled as close to the top as possible to minimise the available airspace within the jar.

2. Handling, containment and transport

Daily sampling activities will be recorded including sampling locations, numbers, observations, measurements, sampler, date and time and weather condition.

The sampling jars will be new sterile glass jars fitted with plastic lid and airtight Teflon seals, supplied by the laboratories for the purpose of collecting soil samples for analysis. Sample containers will be marked indelibly with the sample ID code to waterproof labels affixed to the body of the container.

All samples will be removed from direct sunlight as soon as possible after sampling and placed in insulated containers. Samples will be stored in a refrigerator at 4°C prior to transportation to the laboratory in insulated containers with ice bricks in accordance with AS4482.1.

Handling and transportation to the laboratory will be accompanied with a chain of custody form to demonstrate the specimens are properly received, documents, processed and stored.

Maximum holding time for extraction (AS4482.1) are:

Analyte	Maximum holding time
Metals	6 months
Mercury	28 days
Sulfate	7 days
Organic carbon	7 days
OCP, OPP, PCB	14 days
TRH, BTEX, PAH, phenols	14 days

3. Decontamination of sampling equipment

Sampling tools will be decontaminated between sampling locations by

- Removing soil adhering to the sampling equipment by scraping, brushing or wiping
- Washing with a phosphate-free detergent
- Rinsing thoroughly with clean water
- Repeating if necessary
- Collect rinsate per sampling time and preserve according to AS 2031.1
- Dry equipment with disposable towels or air



ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: ES2101610	Page	: 1 of 4
Client	: ENVIROWEST CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: MR GREG MADAFIGLIO	Contact	: Customer Services ES
Address	: 9 CAMERON PLACE PO BOX 8158 ORANGE NSW, AUSTRALIA 2800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 63614954	Telephone	: +61-2-8784 8555
Project	: 12771	Date Samples Received	: 19-Jan-2021 08:20
Order number	: 12771	Date Analysis Commenced	: 20-Jan-2021
C-O-C number	: 12771	Issue Date	: 29-Jan-2021 11:54
Sampler	: ----		
Site	: 12771		
Quote number	: EN/222		
No. of samples received	: 5		
No. of samples analysed	: 5		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

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Client : ENVIROWEST CONSULTING
Project : 12771



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

ø = ALS is not NATA accredited for these tests.

~ = Indicates an estimated value.



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	R1 Received as BG1	R2 Received as BG2	R3 Received as BG3	R4 Received as BG4	DA
Sampling date / time					18-Jan-2021 00:00	18-Jan-2021 00:00	18-Jan-2021 00:00	18-Jan-2021 00:00	18-Jan-2021 00:00
Compound	CAS Number	LOR	Unit	ES2101610-001	ES2101610-002	ES2101610-003	ES2101610-004	ES2101610-005	
				Result	Result	Result	Result	Result	
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	---	1.0	%	<1.0	<1.0	1.2	22.7	<1.0	
EG005(ED093): Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	4	5	8	7	5	
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg	<5	<5	55	13	<5	<5
Nickel	7440-02-0	2	mg/kg	<2	<2	2	3	<2	<2
Zinc	7440-66-6	5	mg/kg	<5	<5	110	20	<5	<5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
EP203A: Explosives									
HMX	2691-41-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
RDX	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
1,3,5-Trinitrobenzene	99-35-4	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
1,3-Dinitrobenzene	99-65-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
Tetryl	479-45-8	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
2,4,6-TNT	118-96-7	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
4-Amino-2,6-DNT	19406-51-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
2-Amino-4,6-DNT	35572-78-2	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
^ 4- & 2-AM-DNT(Isomeric Mixture)	----	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
2,4-Dinitrotoluene	121-14-2	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
2,6-Dinitrotoluene	606-20-2	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
^ 2,4- & 2,6-DNT(Isomeric Mixture)	121-14-2/606-20-2	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
Nitrobenzene	98-95-3	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
2-Nitrotoluene	88-72-2	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
3-Nitrotoluene	99-08-1	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
4-Nitrotoluene	99-99-0	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	----
Nitroglycerine	55-63-0	1	mg/kg	<1	<1	<1	<1	<1	----
PETN	78-11-5	1	mg/kg	<1	<1	<1	<1	<1	----
EP203S: Explosives Surrogate									
o-Dinitrobenzene	528-29-0	0.1	%	108	104	108	109	----	----



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP203S: Explosives Surrogate			
o-Dinitrobenzene	528-29-0	50	144

Chain of Custody Form – Ref 12771

Sheet 1 of 1

20.1.21

Ref: 12771 Investigator: Envirowest Consulting 9 Cameron Place PO Box 8158 ORANGE NSW 2800 Telephone: (02) 6361 4954 Email: greg@envirowest.net.au Contact Person: Greg Madafiglio Invoice: accounts@envirowest.net.au		Sample matrix			Sample preservation			Analysis			
Laboratory: Australian Laboratory Services 277 Woodpark Road SMITHFIELD NSW 2164 Quotation #: SYBQ/214/15 Courier/CN:		Water	Soil	Sludge	Cool	HNO ₃ /H Cl	Unpre- served	ALS Method Code			
Sample ID	Container*	Sampling Date/Time						S-2	EP203		
R1 <i>Received as B61 A</i>	A	18/1/2021	X		X		X	8 Metals	Explosives		
R2	B62 A	18/1/2021	X		X		X				
R3	B63 A	18/1/2021	X		X		X				
R4	B64 A	18/1/2021	X		X		X				
DA	A	18/1/2021	X		X		X		No		
Investigator: I attest that the proper field sampling procedures were used during the collection of these samples.											
Relinquished by: Greg Madafiglio (print and signature)		Date: 18/1/21	Time: 16:00	Sampler name: Greg Madafiglio Date: 18/1/21		Received by: HS (print and signature)	Date: 19.1.21	Time: 8:20am	Time: 10:00		

Please return completed form to Envirowest Consulting, *A = Solvent rinsed glass jar with Teflon lined lid and green label, B = Plastic with green label, C = Amber with green label, D = Vial with white label, E = Plastic with red label

Environmental Division
 Sydney
 Work Order Reference
ES2101610

 telephone + 61-2-8784 8555



QUALITY CONTROL REPORT

Work Order	: ES2101610	Page	: 1 of 5
Client	: ENVIROWEST CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: MR GREG MADAFIGLIO	Contact	: Customer Services ES
Address	: 9 CAMERON PLACE PO BOX 8158 ORANGE NSW, AUSTRALIA 2800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 63614954	Telephone	: +61-2-8784 8555
Project	: 12771	Date Samples Received	: 19-Jan-2021
Order number	: 12771	Date Analysis Commenced	: 20-Jan-2021
C-O-C number	: 12771	Issue Date	: 29-Jan-2021
Sampler	: ----		
Site	: 12771		
Quote number	: EN/222		
No. of samples received	: 5		
No. of samples analysed	: 5		



Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Franco Lentini	LCMS Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis. Where the LOR of a reported result differs from standard LOR, this may be due to high

- Key :
- Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 - CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 - LOR = Limit of reporting
 - RPD = Relative Percentage Difference
 - # = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3471500)									
ES2101614-009	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	7	6	0.00	No Limit
ES2101610-001	R1 Received as BG1	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	4	0.00	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3471503)									
ES2101610-003	R3 Received as BG3	EA055: Moisture Content	---	0.1	%	1.2	1.1	10.3	No Limit
ES2101614-013	Anonymous	EA055: Moisture Content	---	0.1	%	4.1	3.9	4.88	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3471501)									
ES2101610-001	R1 Received as BG1	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP203A: Explosives (QC Lot: 3469652)									
ES2101610-001	R1 Received as BG1	EP203: HMX	2691-41-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: RDX	---	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 1,3,5-Trinitrobenzene	99-35-4	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 1,3-Dinitrobenzene	99-65-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit

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 Work Order : ES2101610
 Client : ENVIROWEST CONSULTING
 Project : 12771



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP203A: Explosives (QC Lot: 3469652) - continued									
ES2101610-001	R1 Received as BG1	EP203: Tetryl	479-45-8	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2,4,6-TNT	118-96-7	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 4-Amino-2,6-DNT	19406-51-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2-Amino-4,6-DNT	35572-78-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 4- & 2-AM-DNT(Isomeric Mixture)	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2,4-Dinitrotoluene	121-14-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2,6-Dinitrotoluene	606-20-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2,4- & 2,6-DNT(Isomeric Mixture)	121-14-2/606-20-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: Nitrobenzene	98-95-3	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 2-Nitrotoluene	88-72-2	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 3-Nitrotoluene	99-08-1	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: 4-Nitrotoluene	99-99-0	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
		EP203: Nitrolycerine	55-63-0	1	mg/kg	<1	<1	0.00	No Limit
		EP203: PETN	78-11-5	1	mg/kg	<1	<1	0.00	No Limit



Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3471500)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	89.1	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	108	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	94.5	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	92.2	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	92.6	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	89.5	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	74.2	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3471501)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	102	70.0	130
EP203A: Explosives (QCLot: 3469652)								
EP203: HMX	2691-41-0	0.1	mg/kg	<0.1	1 mg/kg	93.5	54.0	122
EP203: RDX	----	0.1	mg/kg	<0.1	----	----	----	----
EP203: 1,3,5-Trinitrobenzene	99-35-4	0.1	mg/kg	<0.1	----	----	----	----
EP203: 1,3-Dinitrobenzene	99-65-0	0.1	mg/kg	<0.1	----	----	----	----
EP203: Tetryl	479-45-8	0.1	mg/kg	<0.1	----	----	----	----
EP203: 2,4,6-TNT	118-96-7	0.1	mg/kg	<0.1	1 mg/kg	118	61.0	1220
EP203: 4-Amino-2,6-DNT	19406-51-0	0.1	mg/kg	<0.1	1 mg/kg	112	53.0	127
EP203: 2-Amino-4,6-DNT	35572-78-2	0.1	mg/kg	<0.1	----	----	----	----
EP203: 2,4-Dinitrotoluene	121-14-2	0.1	mg/kg	<0.1	1 mg/kg	103	56.0	126
EP203: 2,6-Dinitrotoluene	606-20-2	0.1	mg/kg	<0.1	----	----	----	----
EP203: Nitrobenzene	98-95-3	0.1	mg/kg	<0.1	1 mg/kg	84.8	60.0	132
EP203: 2-Nitrotoluene	88-72-2	0.1	mg/kg	<0.1	----	----	----	----
EP203: 3-Nitrotoluene	99-08-1	0.1	mg/kg	<0.1	----	----	----	----
EP203: 4-Nitrotoluene	99-99-0	0.1	mg/kg	<0.1	----	----	----	----
EP203: Nitroglycerine	55-63-0	1	mg/kg	<1	----	----	----	----
EP203: PETN	78-11-5	1	mg/kg	<1	1 mg/kg	93.7	71.0	147

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report				
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	Spike Recovery (%)	Recovery Limits (%)		
						MS	Low	High



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%)	
						Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3471500)							
ES2101610-001	R1 Received as BG1	EG005T: Arsenic	7440-38-2	50 mg/kg	90.7	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	93.4	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	94.1	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	92.3	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	95.4	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	91.3	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	92.6	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3471501)							
ES2101610-001	R1 Received as BG1	EG035T: Mercury	7439-97-6	5 mg/kg	88.8	70.0	130
EP203A: Explosives (QCLot: 3469652)							
ES2101610-001	R1 Received as BG1	EP203: HMX	2691-41-0	1 mg/kg	89.4	58.0	141
		EP203: 2,4,6-TNT	118-96-7	1 mg/kg	119	58.0	139
		EP203: 4-Amino.2,6-DNT	19406-51-0	1 mg/kg	114	56.0	140
		EP203: 2,4-Dinitrotoluene	121-14-2	1 mg/kg	103	59.0	139
		EP203: Nitrobenzene	98-95-3	1 mg/kg	84.6	60.0	132
		EP203: PETN	78-11-5	1 mg/kg	96.0	59.0	136



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2101610	Page	: 1 of 4
Client	: ENVIROWEST CONSULTING	Laboratory	: Environmental Division Sydney
Contact	: MR GREG MADAFIOLIO	Telephone	: +61-2-8784 8555
Project	: 12771	Date Samples Received	: 19-Jan-2021
Site	: 12771	Issue Date	: 29-Jan-2021
Sampler	: ---	No. of samples received	: 5
Order number	: 12771	No. of samples analysed	: 5

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO** Method Blank value outliers occur.
- **NO** Duplicate outliers occur.
- **NO** Laboratory Control outliers occur.
- **NO** Matrix Spike outliers occur.
- For all regular sample matrices, **NO** surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- **NO** Quality Control Sample Frequency Outliers exist.



Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for VOC in soils vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: SOIL

Evaluation: * = Holding time breach ; ✓ = Within holding time.

Method Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis			
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content (Dried @ 105-110°C)								
Soil Glass Jar - Unpreserved (EA055) R1 - Received as BG1, R3 - Received as BG3, DA	R2 - Received as BG2, R4 - Received as BG4,	18-Jan-2021	---	---	---	20-Jan-2021	01-Feb-2021	✓
EG005(ED093)T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) R1 - Received as BG1, R3 - Received as BG3, DA	R2 - Received as BG2, R4 - Received as BG4,	18-Jan-2021	20-Jan-2021	17-Jul-2021	✓	22-Jan-2021	17-Jul-2021	✓
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) R1 - Received as BG1, R3 - Received as BG3, DA	R2 - Received as BG2, R4 - Received as BG4,	18-Jan-2021	20-Jan-2021	15-Feb-2021	✓	25-Jan-2021	15-Feb-2021	✓
EP203A: Explosives								
Soil Glass Jar - Unpreserved (EP203) R1 - Received as BG1, R3 - Received as BG3,	R2 - Received as BG2, R4 - Received as BG4	18-Jan-2021	20-Jan-2021	01-Feb-2021	✓	20-Jan-2021	01-Mar-2021	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL** Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

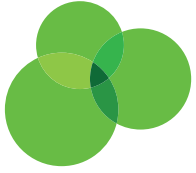
Quality Control Sample Type	Method	Count		Rate (%)			Quality Control Specification
		QC	Regular	Actual	Expected	Evaluation	
Analytical Methods							
Laboratory Duplicates (DUP)							
Explosives	EP203	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Explosives	EP203	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Explosives	EP203	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Explosives	EP203	1	4	25.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	20.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl ₂) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3)
Explosives	EP203	SOIL	In house: Referenced to USEPA 8330 UV-DAD, LCMS (APCI in negative mode). Residues of explosives are extracted from air-dried soil samples with acetonitrile. An aliquot of the organic phase is taken and diluted with water for LC/MS determination.
Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Tumbler Extraction for Explosives.	EP203-PR	SOIL	In house: Referenced to USEPA8330. Sample extractions are performed using end over end tumbling in place of sonic bath extraction.



Appendix N. Water Quality Management Plan, prepared by
SMS

Water Quality Management Plan

Document Number: SMS-HSQ-EXX.X11

Status: working

Version: 05 (02 May 2023)

Owner: Manager Compliance

Review: 3 years



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1 Introduction

- 1-1 The purpose of this document is to highlight the various water flows requiring management at the Solar Mining Services (SMS) Ammonium Nitrate Emulsion (ANE) manufacturing facility at the Bogan Gate Explosives Reserve (BGER).
- 1-2 The water quality management system involves management of stormwater, wastewater and roof water storage tanks to ensure operations at the SMS ANE Facility incorporates best practice standards in full compliance with Commonwealth, State and local regulations.
- 1-3 The water quality management plan follows the requirements of the SMS Integrated Management System (IMS), particularly **SMS-IMS-B00.L10 Environment Policy** and supports **SMS-HSQ-000.X01 - HSEQS Management Plan** to identify and control hazards that may arise at SMS workplaces.
- 1-4 The EPA Ammonium Nitrate – Storage and Handling Environmental Management and Controls – AESIG Code of Practice, dated February 2021 have also been referenced in the development of the water quality management plan.

2 Scope

- 2-1 This water quality management plan is applicable to all SMS personnel and contractors conducting activities on the SMS lease area within the BGER.
- 2-2 This plan is to be used for all circumstances where operational activities occur within SMS / BGER work area, including:
 - a) Materials handling (storage, processing, re-work, unloading and loading and dispatch).
 - b) Water reticulation (supply storage, plant demand and maintenance).
 - c) Stormwater management (from upslope / surrounds and from within the SMS plant site).
 - d) Wastewater management (refuelling and washdown areas and blown from the boiler and cooling tower).
 - e) Sewerage (domestic waste management).

3 Purpose of this Plan

- 3-1 The purpose of this plan is to provide the background to the various water quality management systems that are required to be managed at the SMS ANE Facility to ensure no impacts on water resources.
- 3-2 The NSW EPA Ammonium Nitrate – Storage and Handling Environmental Management and Controls – AEISG Code of Practice, dated February 2021 have been used as a guide to the design and operation of appropriate control measures at the SMS ANE plant.

4 Water Quality Management System

Materials Handling

- 4-1 The SMS ANE Facility has an objective to not release any chemicals into the environment through the following management and controls:
- All material deliveries being suitably contained in accordance with dangerous goods regulations.
 - All chemicals being appropriately stored in containers that are undercover within modern buildings that are secured from stormwater ingress, unauthorised access and vermin.
 - All loading and unloading of chemicals on the impervious (concrete) hardstands to be provided at each storage shed and at the manufacturing plant.
 - Any spills being immediately cleaned up in accordance with the SMS Spills Management Procedure.
 - Where practical spillages being recycled through the rework tank or suitably disposed of at a waste facility licenced to handling such chemicals / materials.
 - Processing of ANE as per the SMS PLC.
 - ANE product dispatch being suitably contained in accordance with the dangerous goods regulations.
- 4-2 A copy of the SMS Spills Management Procedure is included in the SMS Integrated Management System.

Water Supply

- 4-3 The SMS ANE Facility has an objective to be a responsible and sustainable user of available water resources, by capturing roof water for storage in tanks, adopting water wise and recycling strategies and through careful consumption of available reticulated water supply available at the BGER from the Parkes Shire Council B-Section Pipeline.
- 4-4 The water tank supply at the SMS ANE Facility currently consists of 100,000 litres in two metal tanks each of 50,000 litres. The water tanks supply water to the manufacturing processing lines and to storage sheds and a reserve for firewater.
- 4-5 All fire water storage tank is fitted with a suitable Storz fitting and RFS identification requirements.
- 4-6 Water supply is also provided from a 40mm pressurised water service from the BGER reticulated water supply, which is connected to the B-Section Pipeline maintained by Parkes Shire Council.
- 4-7 Water pipes line are to be installed to every storage shed used at the SMS ANE Facility to supply water to fire hose reels.
- 4-8 No water is to be extracted from groundwater resources for any activities related to the SMS ANE Facility.
- 4-9 No water is extracted from the holding pond for any activities related to the SMS ANE Facility.
- 4-10 Any increases in ANE production will require a review of water supply and demand calculations.
- 4-11 A Water Services Plan has been developed for the SMS ANE Facility which is available in the SMS Integrated Management System.

Stormwater Management

- 4-12 The SMS ANE Facility has an objective to have Zero Liquid Discharge (ZLD) from the manufacturing plant and overall, a neutral impact on stormwater flows at the BGER and the wider Gunningbland Creek catchment.
- 4-13 The SMS ANE Facility sits in the context of the BGER stormwater management system which is robust and long established by the Australian defence force since WWII.
- 4-14 The stormwater system designed for the SMS ANE Facility serves a number of different purposes to deal with a number of different water runoff sources, as follows:
- Stormwater from upslope areas of the BGER and surrounds.
 - Stormwater management from concrete hardstand areas in front of AN sheds.
- 4-15 The design principles applied to the establishment of the SMS stormwater management are as follows:
- Diversion of upslope stormwater flows around the SMS manufacturing plant via established table drains, swale drains and culverts to the BGER storage ponds.
 - Collection of roof water from the SMS manufacturing plant into water tanks for supply of process water to the ANE manufacturing plant, and discharge of overflow to the SMS swale drain connecting to the BGER drainage corridor and holding ponds.
 - Stormwater from concrete hardstand areas at the SMS manufacturing plant that might contain traces of chemical from spills / washdown and blown water from the Boiler and Cooling Tower to be directed to the holding pond.
Note: any chemical spills onto the concrete hardstands are required to be cleaned up immediately in accordance with the SMS Spills Management Procedure.
 - Stormwater from hardstand areas at the SMS diesel fuel area that might contain traces of fuel spills to be directed to the oil plate separator and then into the holding pond.
Note: any fuel spills onto the concrete hardstands are required to be cleaned up immediately in accordance with the SMS Spills Management Procedure.
 - Discharge of roof water from storage sheds to drain overland to the BGER drainage corridor and holding ponds.
 - Overland flows from vacant areas and roads to the BGER drainage corridor and holding ponds.
 - Maintenance of vacant areas with a grass ground cover to prevent soil erosion and sedimentation. Grass is to be maintained at a manageable cover using slasher equipment and suitable chemical spray to control weeds.
 - Minimisation of soil erosion and sedimentation during construction through implementation of silt fences, hay bales and the like, and the establishment of grass ground cover as soon as possible post construction.
- 4-16 A Stormwater Management Plan has been developed for the SMS ANE Facility (see Appendix A).

Wastewater Management

- 4-17 The SMS ANE Facility has an objective to have Zero Liquid Discharge (ZLD) from the manufacturing plant and overall, a neutral impact on stormwater flows at the BGER and the wider Gunningbland Creek catchment.

- 4-18 The wastewater management system designed for the SMS ANE Facility deals with two main sources of wastewater, as follows:
- Wastewater from management from potentially chemical impacted concrete hardstand areas in and around the ANE manufacturing plant.
 - Wastewater from the diesel refuelling area and washdown area.
 - Domestic sewage from the crib room, toilets and other plumbing facilities at the ANE manufacturing plant.
- 4-19 Wastewater from concrete hardstand areas at the ANE manufacturing plant, plate oil separator and washdown areas all drain to the evaporation pond. The evaporation pond has been suitably designed by Barnson in accordance with industry guidelines, including EPA Ammonium Nitrate – Storage and Handling Environmental Management and Controls – AESIG Code of Practice, dated February 2021.
- 4-20 Wastewater from the crib room and ablution facilities is treated in the on-site septic system approved and operational at the SMS ANE Facility by Parkes Shire Council in accordance with the Local Government Act 1993. The septic system is operating satisfactorily and is designed to cope with existing / future projected staff numbers at the SMS ANE Facility.
- 4-21 Details of the Barnson Evaporation Pond design are provided in Appendix B.
- 4-22 Details of the onsite wastewater management system established at the SMS ANE Facility are provided in Appendix C.

5 Management system

- 5-1 The design of the SMS ANE Facility Water Quality Management Plan is supported by SMS staff who are trained to deal with the operation of the PLC system and other procedures adopted by SMS, as follows:

Site Manager

- 5-2 The Site Manager is responsible for:
- Identification of hazards likely to cause environmental harm on the site.
 - Provision of resources to maintain control of hazards likely to cause environmental harm on the project and maintain risk to workers and the environment to acceptable levels.
 - Seek support to assess materials, tasks or equipment to be used on the site, likely to cause environmental harm.
 - Implement this plan.
 - Monitor site activities to ensure conformance to this plan.

Site Employees and Contractors

- 5-3 Any SMS employee or contractor on site is responsible for the following requirements of this plan.
- Maintaining systems.
 - Monitoring of water supplies and any breakages, leaks or the like in water supply system.
 - Maintaining access to firefighting reserves.

- d) Monitoring waste management systems so that are functioning to their intended design specifications.
- e) Responding to any spills in accordance with the SMS Spills Management Procedure.
- f) Note to cause pollution of the environment.

Manager Compliance

- 5-4 The Manager Compliance is responsible to:
- a) Identify the legislative requirements relevant to the facility.
 - b) Assist the Site Manager to identify suitable specialist personnel to provide inspection and audit processes.
 - c) Provide an audit schedule and adequate resources to conduct audits and inspections for timely rectification of non-conformances to this plan.'

6 Document Information

- 6-1 Relevant legislation, standards and codes are regularly reviewed and monitored for updates and are included in the **SMS-IMS-B00.R01 – National Legislation Register** for tracking and management. Related documents and reference information in this section provides the linkage and source to develop and maintain the site compliance register and document management system.

Terms and Definitions

- 6-2 Terms and definitions are listed in a single definitions document, refer to the **SMS-IMS-000.G01 - Glossary of terms and definitions** on SharePoint.

Related Documents

- 6-3 Related documents, listed in **Table 6-**, are internal documents directly related to or referenced from this document.

Number	Document Type	Title
SMS-IMS-B00.L10	Policy	Environment Policy
SMS-IMS-B00.R01	Register	National Legislation Register
SMS-HSQ-E00.S01	Standard	Emergency Preparedness and Response
SMS-MAN-A01.R03	Register	Operational aspects & impacts register
SMS-IMS-000.G01	Guideline	Glossary of terms and definitions
SMS-HSQ-000.X01	Management Plan	HSEQS Management Plan
SMS-ENG-000.G01	Engineering	Water Services Plan
SMS-ENV-A00.P01	Environment Policy	Spill Management

Table 6-3 – Related documents

Reference Information

6-4 Reference information, listed in **Table 6-**, is information that is directly related to the development of this document or referenced from within this document.

Reference	Title
NSW EPA	Ammonium Nitrate – Storage and Handling Environmental Management and Controls - AEISG Code of Practice

Table 6-4 – Reference information

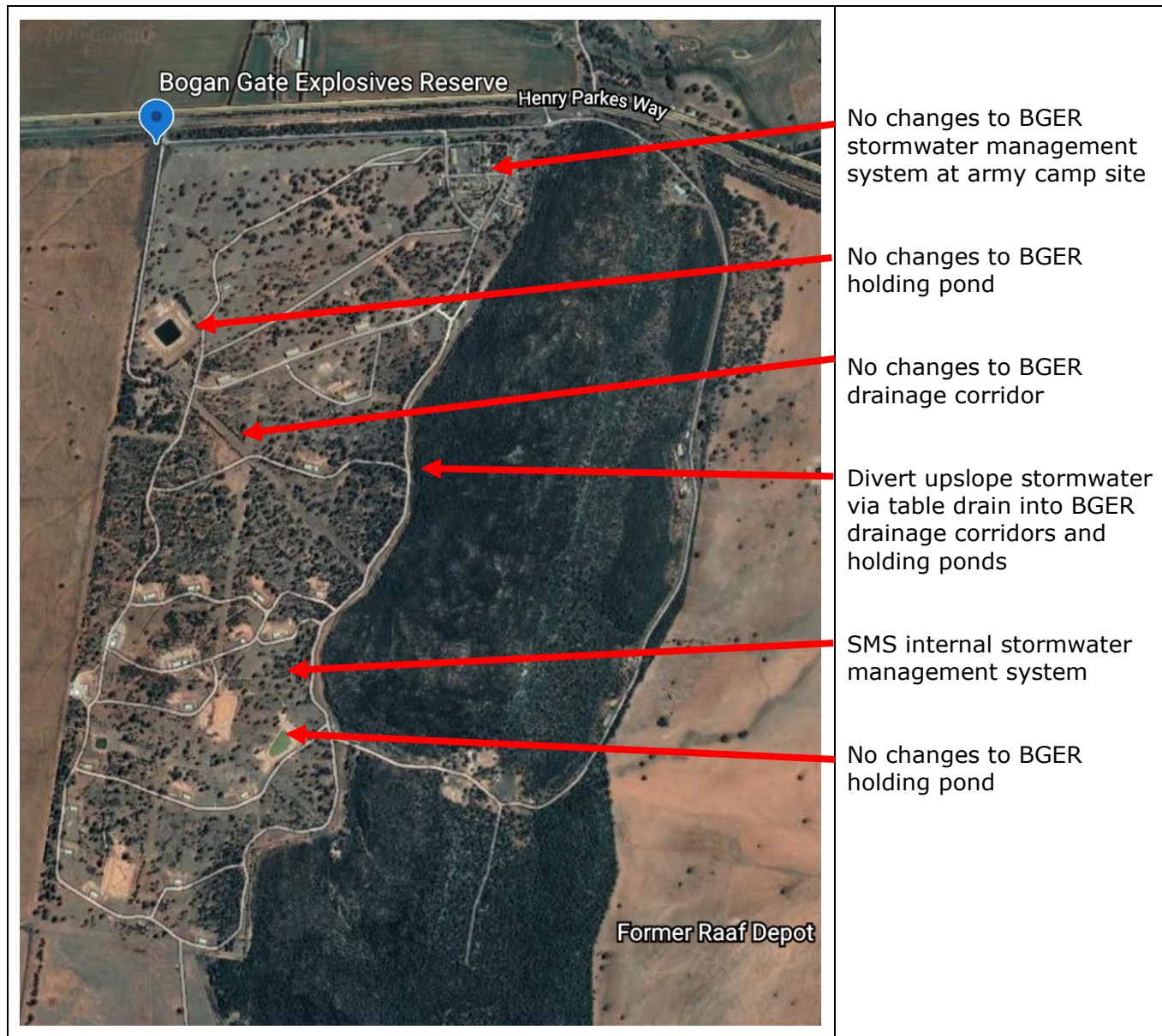
Change Information

6-5 Full details of the document history are recorded in the document control register, by version. A summary of the current change is provided in **Table 6-**.

Version	Date	Change Summary

Table 6-5 – Change information

Appendix A – SMS Stormwater Management Plan

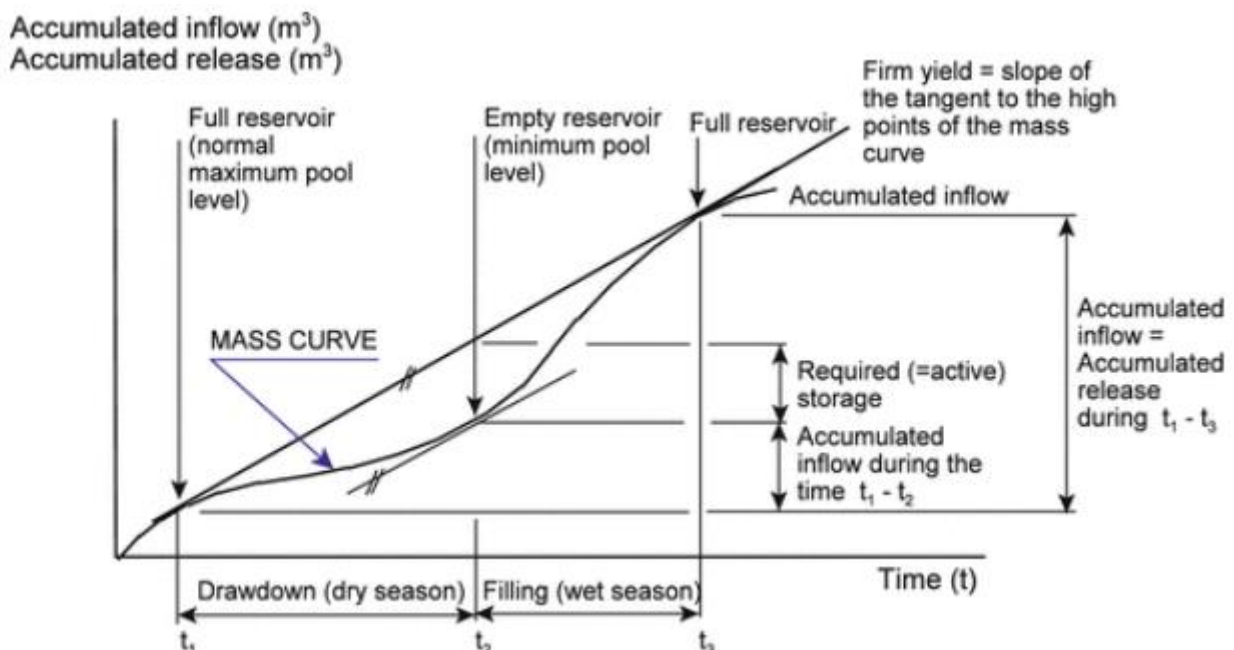


Appendix B – SMS Evaporation Pond

Evaporation ponds are a suitable means of managing treated water if no alternative method is available. Evaporation ponds refer to lined retention facilities designed to hold treated water whilst allowing evaporation to take place. Successful use of evaporation for treated water management requires that evaporation is equal to or exceeds the total water input to the system, including precipitation. The net evaporation may be defined as the difference between the evaporation and precipitation during any time period – usually an annual cycle.

Evaporation rates are largely dependent upon the characteristics of the water body. Evaporation from relatively small shallow ponds, (as covered by this guideline) is usually considered to be quite different from that of large lakes mainly due to different rates of heating and cooling because of size and depth differences. In semi-arid regions, hot dry air moving from a land surface over a water body will result in higher evaporation rates for smaller water bodies. The West Australian Water DESIGN GUIDELINE DS231 provides the calculation basis for holding ponds. This guideline recommends that designers of evaporation ponds should size the ponds for average conditions as a base case. With a base case established consideration must be given to dealing with flows from wet events (typically a 10% AEP 72-hour event) which includes rainfall on the evaporation ponds as well as upstream processes and increased flows from the sewer collection system, all of which end up in the evaporation pond. Pan evaporation data is the most common means for defining free water evaporation and is the most commonly available data to use as a basis for design. Unfortunately, the density of evaporation pan stations is much less than that of weather stations, so the designer needs to make judgement calls based on isopleths.

The Rippl diagram is an industry recognised approach to sizing of balancing storages of various types. The objective is to size a balancing storage which will reduce variations in an influent flow pattern to provide a constant outflow. Flow equalisation is achieved by storing influent flows above the average daily flow and discharging the stored volume during periods of low flow. Various methods can be employed to achieve this, but the Rippl mass flow diagram is simple to use, and eminently suitable for this requirement.



BARNSON engineers were consulted for the design of the evaporation pond. BARNSON used their internal design process for the evaporation Pond design. Calculated inputs and outputs for the Holding Pond are overleaf.

Barnson Job No	33063
Location :	3577 Henry Parkes Way Bogan Gate

Design Wastewater Flow	Q	l/day	720
Design Loading Rate	R	mm/day	3

Climate Zone	Parkes Highest Rainfall	As per Soil Landscapes of Dubbo 1:250 000 Dropbox
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1	2	3	4	5	6	7	8	9.00	
Month	Pan Evap E (mm)	Evapo Transpiration Et (ET=0.75E)mm	Rainfall R (mm)	Retained Rainfall Rr (Rr=0.75R) mm	DLR per Month mm	Disposal Rate (3-5+6) mm	Effluent applied per month L	Size of Area (8/7) m ²	Days in Month
Jan	229.4	172.05	251.9	188.925	93	76.125	22320	293.20	31
Feb	184.8	138.6	218.3	163.725	87	61.875	20880	337.45	29
Mar	161.2	120.9	197.7	148.275	93	65.625	22320	340.11	31
Apr	102	76.5	299	224.25	90	-57.75	21600	- 374.03	30
May	62	46.5	205	153.75	93	-14.25	22320	- 1,566.32	31
Jun	42	31.5	165.1	123.825	90	-2.325	21600	- 9,290.32	30
Jul	46.5	34.875	132.9	99.675	93	28.2	22320	791.49	31
Aug	65.1	48.825	116.2	87.15	93	54.675	22320	408.23	31
Sep	96	72	127.8	95.85	90	66.15	21600	326.53	30
Oct	142.6	106.95	191.4	143.55	93	56.4	22320	395.74	31
Nov	177	132.75	189	141.75	90	81	21600	266.67	30
Dec	244.9	183.675	212.8	159.6	93	117.075	22320	190.65	31
							Mean area	- 656.70	

Month	First Trial Area	Application Rate	Disposal Rate	mm	Increase in Depth of Stored Effluent	Depth of effluent for Month	Increase In Depth of Effluent	Computed	Reset if Et<0	Equiv Storage
Dec	58.9m ²	378.9473684	117.075	261.8723684	872.91	0.00	872.91	872.91	872.90789	0.000
Jan		378.9473684	76.125	302.8223684	1009.41	0.00	1009.41	1,009.41	1009.40789	0.000
Feb		354.4991511	61.875	292.6241511	975.41	0.00	975.41	975.41	975.41384	0.000
Mar		378.9473684	65.625	313.3223684	1044.41	0.00	1044.41	1,044.41	1044.40789	0.000
Apr		366.7232598	-57.75	424.4732598	1414.91	0.00	1414.91	1,414.91	1414.91087	83338.250
May		378.9473684	-14.25	393.1973684	1310.66	1414.91	2725.57	2,725.57	2725.56876	160536.000
Jun		366.7232598	-2.325	369.0482598	1230.16	2725.57	3955.73	3,955.73	3955.72963	232992.475

Barnson Job No	33063		
Location :	3577 Henry Parkes Way Bogan Gate		
Catchment Area	meters square	1100	
Extra Water (Wash down water)	Q	l/month	1000

RainFall Data (BOM)	Parkes Average Rainfall	Dropbox
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Proposed Pond Size (m x m)	30	15	450
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1	2	3	4	5	6	Days In Month
Month	Pan evap E (mm)	Rainfall R (mm)	Monthly Catchment Water (Litres/Month)	Evaporation Rate Litres/month	Water applied per month (L)	
Jan	229.4	57.6	63360	103230	64360	31
Feb	184.8	49.1	54010	83160	55010	29
Mar	161.2	47.4	52140	72540	53140	31
Apr	102	41.4	45540	45900	46540	30
May	62	47.2	51920	27900	52920	31
Jun	42	49.5	54450	18900	55450	30
Jul	46.5	49.1	54010	20925	55010	31
Aug	65.1	49.2	54120	29295	55120	31
Sep	96	41.8	45980	43200	46980	30
Oct	142.6	52.4	57640	64170	58640	31
Nov	177	49.5	54450	79650	55450	30
Dec	244.9	53	58300	110205	59300	31

Month	Pond Area	Application rate (Litres)	Evaporation Rate (Litres)	Litres Added to Storage	Computed	Accumulative Storage
Dec	450m ²	59300	110205	-50905	0	0.000
Jan		64360	103230	-38870	0	0.000
Feb		55010	83160	-28150	0	0.000
Mar		53140	72540	-19400	0	0.000
Apr		46540	45900	640	640	640.000
May		52920	27900	25020	25020	25020.000
Jun		55450	18900	36550	61570	61570.000

Minimum Area Method Water Balance an Wet Weather Storage Calculations

Barnson Job No	33063
Location :	3577 Henry Parkes Way Bogan Gate
Catchment Area	m ² 890
Additional Water (eg wash down)	Q L/day 50 L/month 1500
Design Percolation Rate	R mm/wk 0

Climate Zone **Parkes Decile 9 Rainfall** As per Soil Landscapes of Dubbo 1:250 000

Parameter	Symbol	Formule	Units	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Days in Month	(D)	n/a	days	31	28	31	30	31	30	31	31	30	31	30	31	365
Precipitation	(P)	n/a	mm/month	137.1	108.2	107.8	86.5	97.5	93.7	86.3	87.7	78.2	97.5	118.1	111.6	831.4
Evaporation	(E)	n/a	mm/month	229.4	184.8	161.2	102	62	42	46.5	65.1	96	142.6	177	244.9	1569.5
Design Waterflow Flow (Catchment)			L/month	1220190	971880	959420	769850	867750	833930	768070	780530	695980	867750	1051090	993240	7399460
Outputs (Evaporation)		(E +B)	mm/month	229.4	184.8	161.2	102.0	62.0	42.0	46.5	65.1	96.0	142.6	177.0	244.9	1569.5
Inputs																
Precipitation	(P)	n/a	mm/month	137.1	109.2	107.8	86.5	97.5	93.7	86.3	87.7	78.2	97.5	118.1	111.6	1211.2
Possible Water	(W)	(E + B) - P	mm/month	92.3	75.6	53.4	15.5	-35.5	-51.7	-39.8	-22.6	17.8	45.1	58.9	133.3	358.3
Actual Water Production	(I)	H/12	mm/month	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9	29.9
Inputs		(P +I)	mm/month	167.0	139.1	137.7	116.4	127.4	123.6	116.2	117.6	108.1	127.4	148.0	141.5	1241.1
Storage	(S)	(P+I) - (ET+B)	mm/month	-62.4	-45.7	-23.5	14.4	65.4	81.6	69.7	52.5	12.1	-15.2	-29.0	-103.4	
Cumulative Storage	(M)	n/a	mm	0.0	0.0	0.0	14.4	79.7	161.3	230.9	283.4	295.5	280.2	251.2	147.7	

Note - H = sum of W

Irrigation Area	(I)	365 x Q/H	m ²	50.9
Storage	(v)	Largest M	mm	295.5
		(V xI)/1000	m ²	15.0

Appendix C – SMS Septic System

Overhead photograph of the site with a basic layout.

