Galong - MOD4 Kiln Coal Stockpile

Modification Report

22 November 2022

Project No.: 0662616

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** Photo page 1 courtesy of TTPP Transport Planning*

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Signature Page

22 November 2022

Galong - MOD4 Kiln Coal Stockpile

Modification Report

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Acronyms and Abbreviations

Name	Description
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
Applicant	Graymont (NSW) Pty Ltd
AQA	Air Quality Assessment
BC Act	*Biodiversity Conservation Act 2016*
DA	Development Application
DCP	Development Control Plan
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	Environment Protection Authority
EPBC Act	*Environment Protection and Biodiversity Act 1999*
EPL	Environment Protection Licence
ERM	Environmental Resources Management Australia Pty Ltd
Galong Limestone & Kiln	Galong Limestone Mine & Kiln combined project - the Approved Project (as modified prior to this Application)
Graymont	Graymont (NSW) Pty Ltd
Harden LEP 2011	*Harden Local Environmental Plan 2011*
LEP	Local Environmental Plan
MDG28	MDG 28 Safety requirements for Coal Stockpiles and Reclaim Tunnels
MOD4	The Modification to which this Modification Report applies as generally described in **Section 3**
NIA	Noise Impact Assessment
NSW	New South Wales
Project	The development to which the Application applies generally as described in **Section 3.1**
PA	Project Approval
Project Site	The land area to which MOD4 applies generally as described in **Section 3.1**
RMP	Rehabilitation Management Plan
SEPP	State Environmental Planning Policy
tpa	tonnes per annum
TTA	Traffic and Transport Assessment

1. INTRODUCTION

1.1 Existing Operation

Galong Limestone Mine & Kiln is located at 342 Eubindal Road, Galong, NSW as generally shown **Figure 1-1**.

Galong Limestone Mine & Kiln has operated since the 1900's and produces limestone and quicklime.

Graymont (NSW) Pty Ltd (Graymont) operates Galong Limestone Mine & Kiln generally within the Project Boundary (combined Mining Leases 1496 & 1745 issued under the *Mining Act 1992*).

Galong is operated generally in accordance with Hilltops Council approvals (DAT2003/025, DA 07-033, DA 2020/0208 and DA 2020/0033) and (the now) department of Planning and Environment (DPE) issued DA 317-7-2003 (as modified).

DA 317-7-2003 (as modified) was granted under the *Environmental Planning and Assessment Act 1979* (EP&A Act) on 11 December 2003 by the (now) Department of Planning and Environment (DPE) for the construction and operation of a limestone kiln to produce 200,000 tonnes per annum (tpa) of quicklime at Galong Limestone Mine.

1.2 MOD Description and Need

Modification (MOD) 4 is comprised of the following elements: storage pad and associated works, new 10,000 t coal storage stockpile, and increase in truck movements from six to up to 12 per day. MOD4 is located entirely within the area approved to be disturbed under DA T2003/025 (as modified).

No other changes are proposed to the existing enclosed 200 t coal stockpile building or any other approved elements or existing activities.

MOD4 will allow Graymont with an ability to store additional coal at its stockpile and as such, take advantage of favourable coal prices from its supplier.

1.3 Applicant

The applicant is Graymont (NSW) Pty Ltd, ABN 34 004 776 989, Level 9, 118 Mount Street, North Sydney NSW 2060.

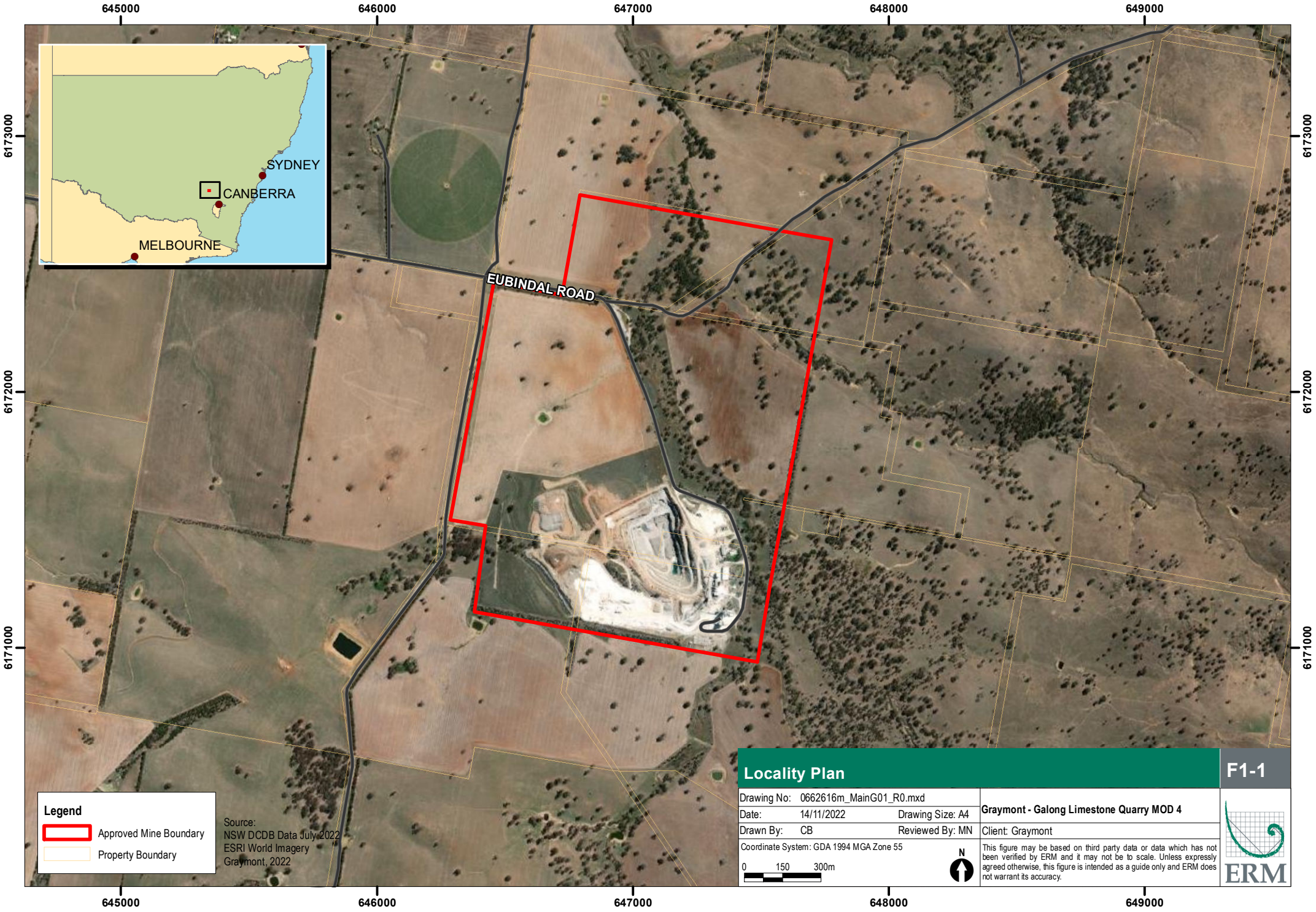
1.4 Purpose

On behalf of Graymont (NSW) Pty Ltd (Graymont), Environmental Resources Management Australia Pty Ltd (ERM) has prepared this Modification Report to support a modification to Project Approval (PA) DA317-7-2003 (MOD4) under Section 4.55(1A) of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

This Modification Report supports the Application and assesses the economic, environmental and social impacts of MOD4 and is supported by the following:

- Air Quality Assessment (**Appendix A**);
- Noise Impact Assessment (**Appendix B**); and
- Traffic Impact Assessment (**Appendix C**).

This Modification Report has generally been prepared in accordance with 'State Significant Development Guidelines – preparing a Modification Report Appendix E to the state significant Development Guidelines December 2021' (MOD Report Guidelines). It also considers the issues raised during stakeholder engagement as described in **Section 5**.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Approved Mine Boundary
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Graymont - Galong Limestone Quarry MOD 4
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1.5 Structure

This Modification Report is structured as follows:

- **Section 1**: introduces MOD4, the applicant and document's purpose;
- **Section 2**: provides the strategic context;
- **Section 3**: describes the construction and operational activities for which MOD4 is sought, as well as alternatives considered;
- **Section 4**: provides the statutory context;
- **Section 5**: describes stakeholder engagement activities;
- **Section 6**: assesses the impacts and lists any required mitigation or management measures; and
- **Section 7**: provides a MOD4 justification and conclusion.

Appendix A contains a relevant Air Quality Impact Assessment, **Appendix B** contains a Noise Impact Assessment and **Appendix C** contains a Traffic and Transport Assessment.

2. STRATEGIC CONTEXT

This section provides a description of the strategic context of MOD4 including the existing Galong Limestone Mine & Kiln, key features, surrounding land use, natural and built features land ownership, cumulative considerations, and government strategies and programs. It also describes alternatives considered relevant to MOD4.

2.1 Galong

2.1.1 DA 317-7-2003

DA 317-7-2003 was granted under the EP&A Act on 11 December 2003 by the (now) Department of Planning and Environment (DPE) for the construction and operation of a limestone kiln to produce 200,000 tpa of quicklime at Galong.

Condition 1.2(b) of DA 317-7-2003 states that development shall be carried out in accordance with the Environmental Impact Statement (EIS) titled *'Environmental Impact Statement Galong Lime Kiln Project'* (Olsen Environmental Consulting, June 2003).

Section 2.7 of the EIS describes the existing site operations and Section 4 describes the approved Project. Section 4 contains the following information relating to the existing coal stockpile and associated transport process:

- "It is proposed that the Kiln will be coal-fired. Coal will be delivered by truck and stored in a fully enclosed, 200 t capacity building. Once or twice each day, coal will be reclaimed by front end loader and delivered by an elevator to a 50 t capacity surge bin. Coal will be fed from the surge bin to the mill by a short conveyor. The kiln will consume between 60 and 70 tonnes per day of coal."
- "It is proposed that one of the existing agricultural limestone grinding mills will be converted to a Coal Mill. The milling system will incorporate a bag filter and fan to maintain it under suction and to collect coal fines."
- "Pulverised coal will be pneumatically conveyed from the coal milling system to the coal dust storage. The pulverized coal is then metered carefully and transported pneumatically to a total of 60 burner lances in the Kiln."
- "It is most likely that coal will be delivered from either the Illawarra or Lithgow region via Galong Road. From Lithgow, the route will be from the northwest side of Galong Road and will avoid the village of Galong. The coal route from Illawarra will probably involve vehicles passing through Galong."
- "The Kiln will use between 60-70t of coal per day. The coal will be delivered by truck, resulting in up to two (2) B Doubles or three (3) semi trailer deliveries per day. These vehicles will arrive and depart the Mine via Burley Griffin Way through the town of Galong. Transportation hours will be the same as for the expanded mine which is 7am to 7pm Monday to Saturday."
- "Vehicle access to the proposed Lime Kiln will be via the Mine's access road which is located in Eubindal Road at the end of the formed section of that road."
- "All product and delivery vehicles associated with the Kiln will use the route from Burley Griffin Way (MR84) via the town of Galong. This route includes Galong Road (Crescent Street, Bobbara Road, Ryan Street through Galong town) and Eubindal Road. These vehicles will arrive from and depart to the east along Burley Griffin Way (MR84)."
- "The operating workforce for the Lime Kiln will consist of an average of 4 people per day working over three shifts during a 24 hour day".

2.1.2 DA 317-7-2003 MOD1

Modification (MOD) 1 relates to Sunday construction work hours.

2.1.3 DA 317-7-2003 MOD2

MOD 2 increased LPG storage capacity.

2.1.4 DA 317-7-2003 MOD3

MOD3 was to align with the requirements of the NSW Environmental Protection Agency.

2.1.5 Other Approvals

The following additional development consents have been issued for Galong Limestone Mine & Kiln:

- DA T2003/025 (as modified) from Hilltops Council provides approval for a limestone mine and processing and provides approval to alter the existing area of mining operations to 16 December 2043. DA T2003/025 approves the expansion of the mine and increased production for a period of 40 years with production of up to 500,000 tpa of limestone. DA T2003/025 has been modified on five occasions with the latest modification being approved on 27 September 2022 (Hilltops Council, 2022);
- DA 07-033 is provides approval for the construction of an alternative transport route around Galong and to increase the annual rate of limestone extraction and transportation of product to 665,000 tpa (Hilltops Council, 2022);
- DA 2020/0208 was approved on 27 April 2021 for construction and operation of a solar energy system with a 1 megawatt capacity (Hilltops Council, 2022); and
- DA 2020/0033 was approved on 23 April 2020 for a two-lot subdivision (Hilltops Council, 2022)

No changes to these development consents are required for MOD4.

2.2 Key Features

2.2.1 Local and Regional Community

MOD4 is in Galong, 22 km east of Harden and 20km south of Boorowa; and is 93 km north-west of Canberra.

2.2.2 Surrounding Land Uses

MOD4 is surrounded by land zoned RU1 Primary Production under *Harden Local Environmental Plan 2011* (Harden LEP, 2011). The surrounding land is used for sheep and cattle grazing and/or cropping.

2.2.3 Natural Features

MOD4 is in the north-eastern part of the Murrumbidgee River Basin in an area of undulating to hilly topography where relief varies from 450 m AHD to 750 m Australian Height Datum (AHD). Galong Limestone Mine and Kiln is in the upper part of Limestone Creek catchment in a broad open valley that faces northwest. The natural topography has been altered by development of the limestone mine and kiln in addition to extensive land clearing and agricultural land use in the surrounding area.

MOD4 will be developed in the catchment of Limestone Creek. This is an ephemeral tributary of Rocky Ponds Creek which enters Jugiong Creek. Jugiong Creek eventually enters the Murrumbidgee River 300 km south-west of Galong Limestone Mine and Kiln as generally described in **Section 3**. Limestone Creek has a catchment of 38 km^2 of which approximately 7.6 km^2 is located upstream.

The natural drainage has been altered by the development of the Galong Limestone Mine and Kiln, in addition to extensive land clearing and agricultural land use in the surrounding area.

2.2.4 Built Features

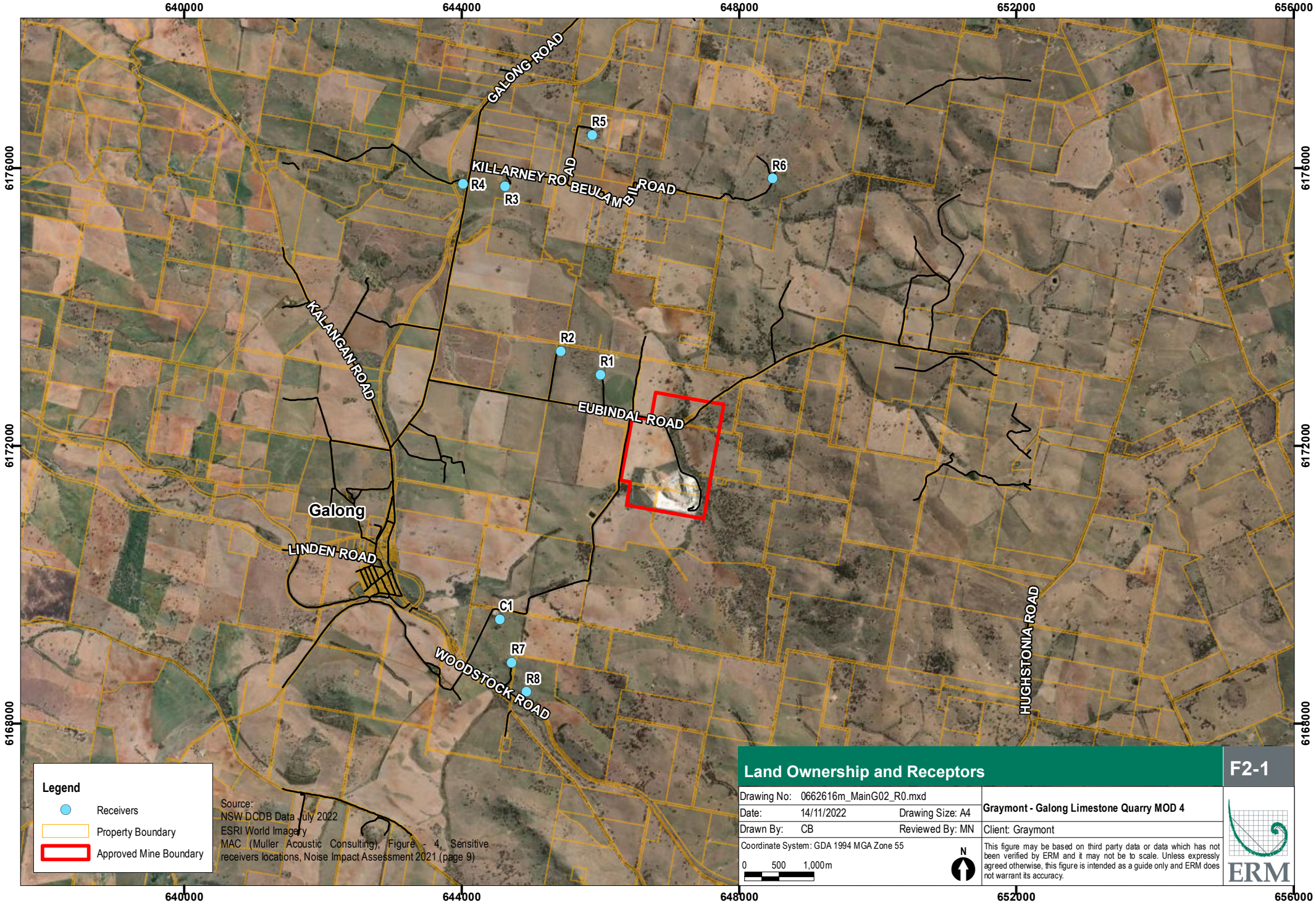
The Galong Limestone Mine and Kiln generally contains the following buildings and machinery (see further detail at **Section 2.1**):

- Limestone mine: crushing circuit, limestone mill building, product storage hoppers and tanks, weighbridge, five transportable office and storage buildings, bunded LPG and fuel tanks and an equipment laydown area; and
- Lime kiln: including kiln, coal mill, coal storage shed and a lime silo.

2.2.5 Land Ownership

The land the subject of MOD4 is entirely within land owned by Graymont.

The nearest private receivers to Galong Limestone Mine and Kiln are illustrated **Figure 2-1**.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2.3 Cumulative Impacts

The Galong Limestone Mine and Kiln is the only major project operating in Galong (DPE, 2022f) with MOD4 expected to have negligible cumulative impacts (see **Section 6**).

2.4 Government Strategies, Policies and Plans

DA 317-7-2003 was granted under the 'Harden Interim Development Order Number 1', with the concurrence of the Director-General of the Department of Infrastructure, Planning and Natural Resources (constituted under the EP&A Act). 'Harden Interim Development Order Number 1' has been superseded by the Harden LEP 2011.

The following government plans and strategies are also relevant to MOD4.:

2.4.1 South East and Tablelands Regional Plan 2036

Galong Limestone Mine and Kiln is within the south-east and Tablelands Region. The 'South East and Tablelands Regional Plan 2036' outlines the State Government's land use planning priorities for the South East and Tablelands Region.

The plan defines four broad goals, each comprised of more specific directions. Goal 1 is for a connected and prosperous community. MOD4 is consistent with Goal 1 of the plan as it continues the prosperity of Galong and the flow-on effects to the community.

The other goals are not relevant to MOD4.

2.4.2 Hilltops 2040

Hilltops 2040 is the name of the 'Hilltops Local Strategic Planning Statement 2020-2040' (LSPS). The plan has five strategic policies, each comprised of more specific objectives. Strategic policy three is "Economic Development" which contains the following objective:

> *"5. Intensive agricultural and mining activities are supported subject to the full consideration of topography, soil types, and environmental impact."*

MOD4 aligns with this objective as it related to continued mining activities and this Modification Report considers environmental impact.

2.5 Regional and Local Planning Context

Section 4 discusses the regional and local planning context.

2.6 Environmental Constraints

Environmental constraints and appropriate mitigation measures are described in detail in **Section 6**.

3. MODIFICATION

This section describes the construction and operational activities for which the modification is sought, as well as considering alternatives considered.

3.1 Description

- MOD4 is comprised of the following elements as generally shown in **Figure 3-1**:
- Storage pad and associated works;
- New 10,000 t uncovered coal storage stockpile; and
- Increase in associated truck movements to up to 12 per day.

No changes are proposed to the existing enclosed 200 t coal stockpile building or any other approved project elements as summarised in **Section 3**, unless stated in this section.

MOD4 will allow Graymont with an ability to store additional coal at its stockpile and as such, take advantage of favourable coal prices from its supplier.

The storage pad and all associated works are proposed within a previously disturbed area and within the approved mining area under DA T2003/025 as shown in **Figure 3-1** and **Figure 3-2**.

Each of the construction and operational phases are conceptually described below.

3.2 Construction

The stockpile will be constructed within an area approved to be disturbed under DA T2003/025.

A storage pad will be constructed in a previously disturbed area to accommodate the new coal stockpile. Approximately 13,000 m^3 of clay-material would be removed from the pad area and deposited in-pit at the overburden dump. The pad would have an approximate grade of 1:40 from west to east and batters at approximately 35 degrees. A 30 cm thick limestone base will be established on the pad.

A drainage system and associated bunding will be constructed to ensure that water flows to the south-west corner and is retained within the site's existing water management system.

A short increase in the existing haul road would also be required to access the pad. MOD4 is entirely within an area approved to be disturbed under DA T2003/025. The access road will be approximately 8 m wide (plus additional bunding and associated drainage).

All plant and materials for pad construction are available onsite and as such no offsite truck movements are required to construct the pad.

The pad will be constructed to ensure compliance with 'MDG 28 Safety requirements for coal stockpiles and reclaim tunnels' (NSW T&I, 2013) (as further detail at **Section 6.4.1**).

Equipment utilised for the stockpile construction would remain within that onsite over six weeks and generally require the use of:

- Grader;
- Dozer (CAT D10 or equivalent);
- 30 t articulated dump truck; and
- Compactor and container truck.

3.3 Operations

Coal will generally be sourced from coal mines in Boggabri NSW and arrive by truck. The trucks have a gross vehicle mass of up to 50 t.

Trucks will access the stockpile via the access road prepared during construction.

The coal storage shed near the coal mill would be retained with its 200 t capacity. Coal may continue to be transported from the 200 t enclosed building stockpile. Coal would typically be loaded from either the shed or the new stockpile into an articulated mining truck with a Front End Loader.

The stockpile will be open and store up to 10,000 t in up to two separate areas over an area of approximately 110 m x 65 m (with additional drainage works back to the existing mine and related bunding), and generally within the MOD4 boundary as shown in **Figure 3-2**. The stockpile will include ramps to allow watering to reduce dust and provide access. The maximum height of the stockpile will be 2.5 m.

The number of coal deliveries would increase from up to six heavy vehicle movements per day (three in, three out) to 12 heavy vehicle movements per day (six in, six out). Coal will be delivered up to five days per week.

Coal will continue to be transported generally via the currently utilised transport route.

No change to the approved operating workforce of up to four people per day is required.

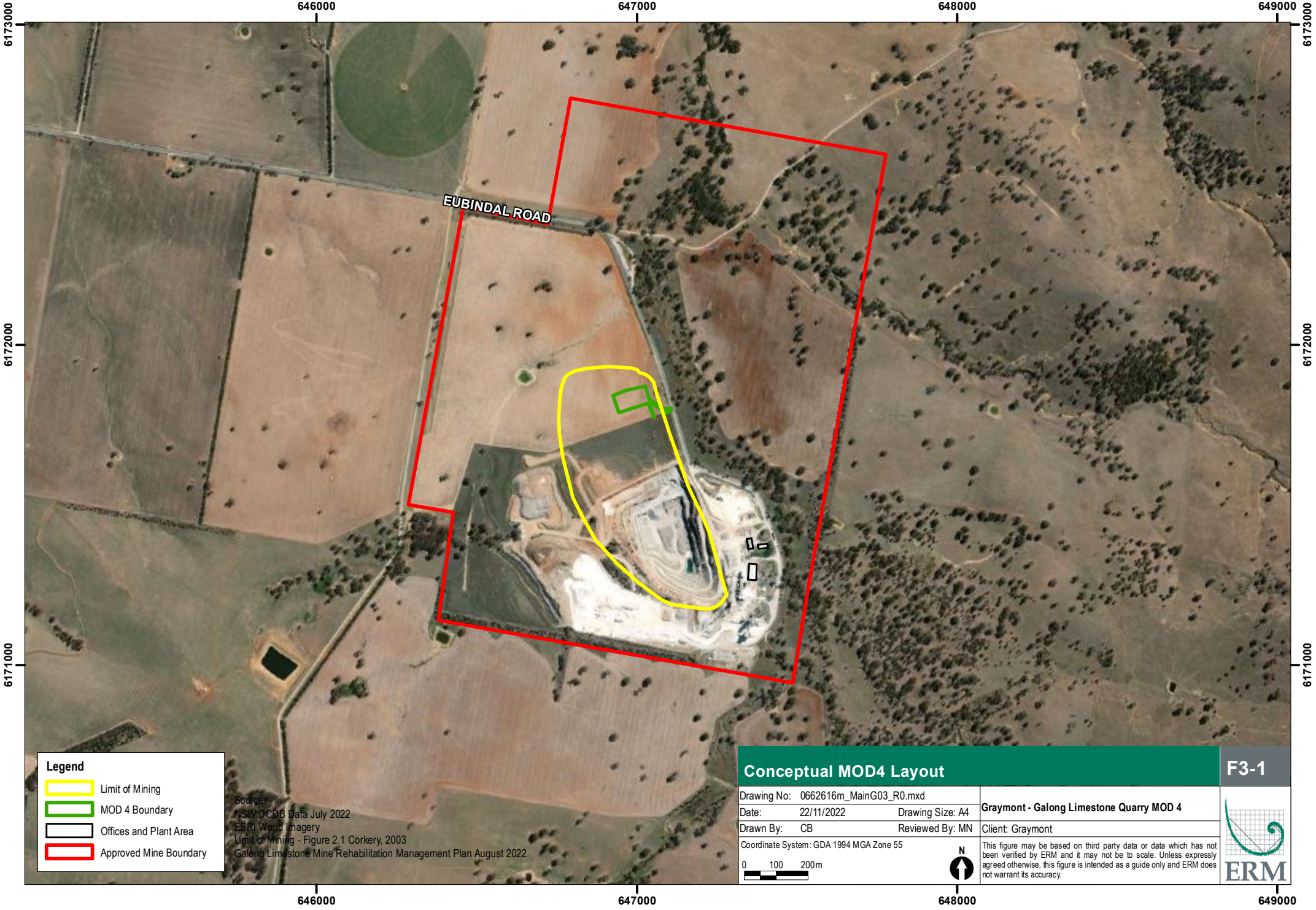
Operation hours would be the same as kiln operating hours which are 24 hours per day, 7 days per week.

3.4 MOD4 Conditions Requiring Amendment

DA317-7-2003 contains several conditions relevant to MOD4. Should MOD4 application be successful, key amendments are shown in red and strikethrough in **Table 3-1**.

Table 3-1 MOD4 Relevant Conditions of Consent

Condition	Detail
3.25	The Applicant is permitted a maximum of ~~6~~12 heavy vehicle movements (6~~3~~ in / 6~~3~~ out) per day for the purposes of hauling coal to the site. Any coal haulage above this limit requires the prior approval of the Director-General.
1. 3.26	The Applicant shall ensure that drivers of heavy vehicles, whether associated with kiln construction works or hauling coal to the site during operations of the development, are subject to the same protocols as determined for the heavy vehicle driver associated with any operating consent applicable to the adjacent Galong Limestone Mine.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Limit of Mining
MOD 4 Boundary
Offices and Plant Area
Approved Mine Boundary
Source:
NSW DCDB Data July 2022
ESRI World Imagery
Limit of Mining - Figure 2.1 Corkery, 2003
Galong Limestone Mine Rehabilitation Management Plan August 2022
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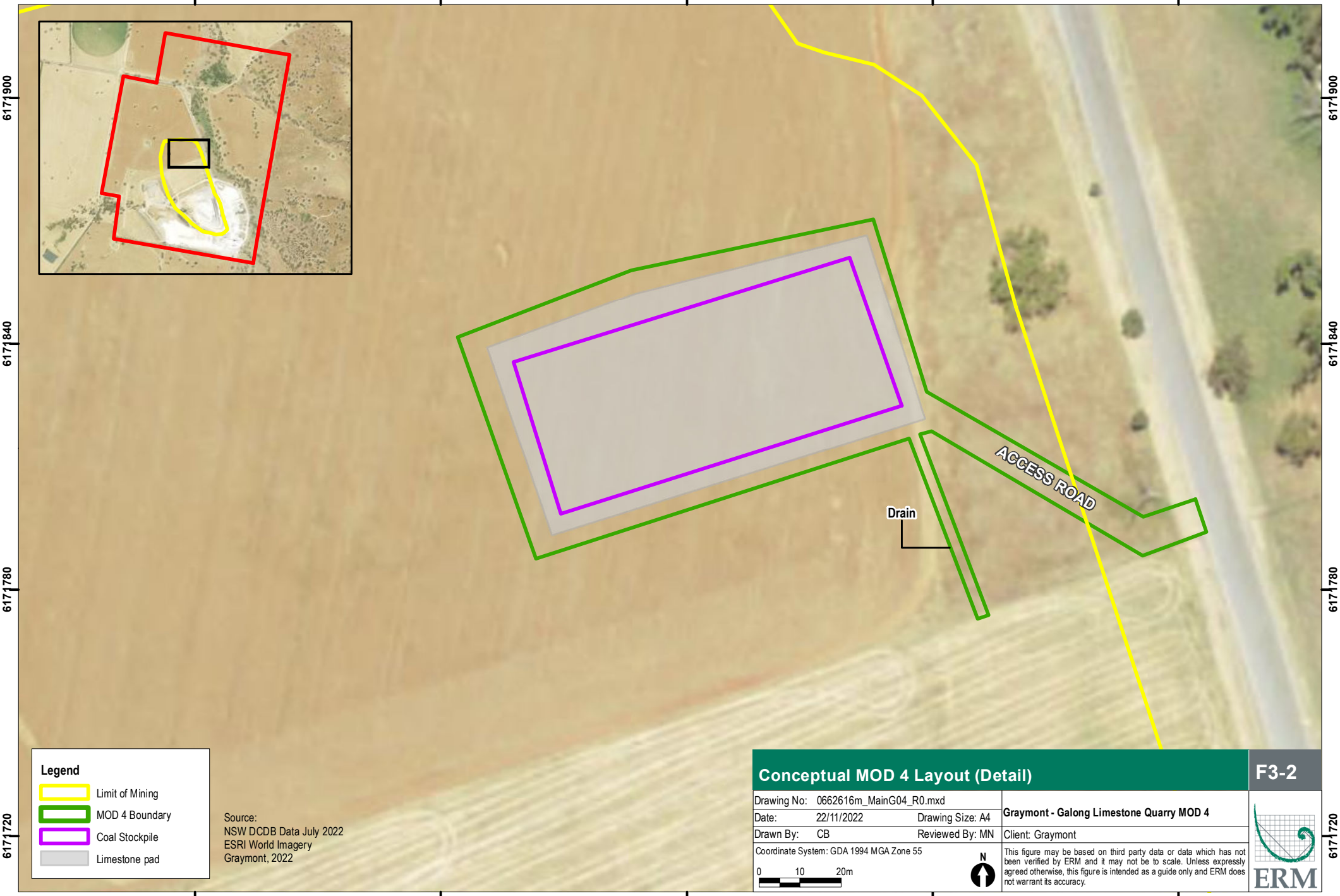
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MOD 4 Boundary
Coal Stockpile
Limestone pad
Source:
NSW DCDB Data July 2022
ESRI World Imagery
Graymont, 2022
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3.5 Alternatives Considered

The 'do nothing' option was not appropriate as it would not provide flexibility for Graymont to store additional coal when favourable coal prices from its supplier occur.

Various locations were considered however the "preferred project" was chosen as it has the following benefits:

- Located within a previously disturbed area;
- Stormwater may be directed into an existing a sediment trap which drains toward the open pit sump which remains onsite being pumped to a sediment pond;
- Trucks transporting coal will not be required to interact with office or plant areas and will not interact with mine trucks);
- The topography lends itself for the purpose being a flat area cut into a hill providing a suitable maximum gradient;
- The cut will assist with providing wind prevention with predominant winds from the north-west; and
- Minimal additional environmental impacts as described in **Section 6**.

3.6 Substantially the Same Development

MOD4 seeks to modify under Section 4.55 (1A) of the EP&A Act, which states:

> *"A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if—*
>
> *(a) it is satisfied that the proposed modification is of minimal environmental impact, and*
>
> *(b) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which the consent was originally granted and before that consent as originally granted was modified (if at all), and ...."*

In relation to Clause (a), MOD4 is considered to involve "minimal environmental impact", which is demonstrated in **Section 6** of this Modification Report.

In relation to Clause (b), the consent authority must be satisfied that the modified Project would remain "substantially the same development" as the approved Project. DA 317-7-2003 has been subject to three modifications. Therefore, the appropriate comparison is between MOD3 and the Project.

MOD4 is "substantially the same development" as that approved under DA 317-7-2003 MOD3 as the following aspects of the Project will remain consistent:

- The lime kiln consuming less than 70 t of coal per day;
- Adjacent haul routes;
- Size of the existing 200 t enclosed coal stockpile;
- Duration of the limestone mine and kiln operation; and
- Operating hours and size of the workforce.

4. STATUTORY CONTEXT

This section outlines the key statutory requirements for Galong Limestone Mine and Kiln under the EP&A Act and other relevant NSW and Commonwealth legislation. It describes the power to grant approval, permissibility, the any post approvals required under other relevant acts.

The statutory framework including relevant legislative requirements is outlined in **Table 4-1**.

Table 4-1 Statutory Framework

Reference	Discussion
Considerations under the EP&A Act – Mandatory	
Section 1.3 - Objects of the Act	The relevant planning legislation in New South Wales is the EP&A Act. Pursuant to Section 1.3, the Objects of the 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."* Objects a, b, c and e are potentially relevant to MOD4. As demonstrated in this Modification report, MOD4 will promote the continued development of natural resources, and is proposed in an area approved to be disturbed and therefore includes environmental consideration and conservation of threatened species.
Section 4.15 - Evaluation	Pursuant to Section 4.15, the consent authority is required to take the following matters into consideration in determining a development application: ■ Relevant environmental planning instruments including: - Harden LEP 2011 - *State Environmental Planning Policy (Resilience and Hazards) 2021* ■ Any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (DPE, 2022g), including: - *(Draft) Hilltops Local Environmental Plan 2021* ■ Relevant development control plans; ■ The likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality; ■ The suitability of the site for the development; ■ Any submissions made in accordance with this Act or the regulations; and ■ The public interest. There is no Development Control Plan for the former Harden Shire council area and therefore no relevant Development Control Plan for MOD4. Mitigation measures to reduce hazards are detailed in **Section 6.4.1**.
Considerations under NSW legislation (Section 4.42) – cannot be refused	

Reference	Discussion
*Fisheries Management Act 1994 (*FM Act)	MOD4 will not require an aquaculture permit under Section 144 of the FM Act.
Coal Mine Subsidence Compensation Act 2017 (CMS Act)	MOD4 is not within a mine subsidence district. Therefore, it will not require approval under Part 3 of the CMS Act.
Mining Act 1992	The *Mining Act 1992* aims to encourage and facilitate the discovery and development of mineral resources in NSW, having regard to the need to encourage ecologically sustainable development (ESD). Mining Leases 1496 & 1745 will continue to apply to MOD4.
Petroleum (Onshore) Act 1991	The *Petroleum (Onshore) Act 1991 aims to* encourage and facilitate the discovery and development of petroleum resources in NSW, having regard to the need to encourage ESD. There are no existing petroleum or coal leases or exploration licences to the Project Site.
Protection of the Environment Operations Act 1997 (POEO Act)	Under the provisions of Schedule 1, Clause 6 of the POEO Act, lime production of more than 150 tonnes per day or 30,000 tonnes per year is classified as a Scheduled activity and requires an Environment Protection Licence (EPL). EPL4660 licences the Project Site to produce 100,000-250,000 t of limestone or cement per year. No changes to EPL4660 are required due to MOD4.
Roads Act 1993	Consent from the appropriate roads' authority under Section 138 of the Roads Act is required for any works undertaken on or under public roads. No work is proposed on or under a public road.
Pipelines Act 1967	The *Pipeline Act 1967* controls pipeline construction, operation, and licensing in NSW. Considering the Project will not involve the construction and operation of water pipelines, licensing under this Act will not be required.
Considerations under NSW legislation (Section 4.41) – are not required	
Fisheries Management Act 1994	The Project will not require a permit under section 201, 205 or 219 of the FM Act.
Heritage Act 1977	The Project will not require approval under Part 4, or an excavation permit under section 139 of the *Heritage Act 1977*.
National Parks and Wildlife Act 1979 (NPW Act)	The Project will not require an Aboriginal heritage impact permit under section 90 of the NPW Act.
Rural Fires Act 1997 (RF Act)	The RF Act aims to prevent, mitigate and suppress bush and other fires in local government areas of the NSW. Section 63(2) of the RF Act requires the owners of land to prevent the ignition and spread of bushfires on their land. The Project will not require a bush fire safety authority under section 100B of the *Rural Fires Act 1997*.
Water Management Act 2000	The Project will not require a water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*.
Considerations under other NSW legislation	
Biodiversity Conservation Act 2016 (BC Act) – Section 7.14	The BC Act establishes mechanisms for: ■ The management and protection of listed threatened species of native flora and fauna (excluding fish and marine vegetation) and TECs; ■ The listing of threatened species, TECs and key threatening processes; ■ The development and implementation of recovery and threat abatement plans; ■ The declaration of critical habitat; ■ The consideration and assessment of threatened species impacts in development assessment process; and

Reference	Discussion
	■ Biodiversity Offsets Scheme, including the Biodiversity Values Map and method to identify serious and irreversible impacts. The MOD4 area is approved to be disturbed under DA T2003/025 (as modified).. No assessment under the BC Act is required.
Considerations under Federal Legislation	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	The EPBC Act focuses on a Project's impact on Matters of National Environmental Significance (MNES). If the Project has a potential to impact any MNES, an EPBC self-assessment should be undertaken. Based on the self-assessment, a decision can be made if an EPBC should be referred or not. If a Referral is lodged, the Federal Minister for the Environment DCCEEW will make one of three decisions: ■ The matter is considered a "Controlled Action"; or ■ The matter is not considered a "Controlled Action" if undertaken in a particular manner; or ■ The matter is not considered a "Controlled Action". If the matter is considered a Controlled Action, a decision will be made on what level of information is required. This will require either additional information, or a decision can be made on the Referral information provided. The MOD4 area is approved to be disturbed under DA T2003/025 (as modified). No assessment under the EPBC Act is required.
Considerations under relevant EPIs (Permissibility)	
Harden Local Environmental Plan 2011 (Harden LEP 2011)	The Project Site is zoned RU1 Primary Production under the Harden LEP 2011 and "mining" is permitted with consent.
State Environmental Planning Policy (Resilience and *Hazards) 2021* (Hazards SEPP)	Hazards SEPP assesses the potential hazards associated with the proposed development by providing definitions and guidelines for hazardous industry, offensive industry, hazardous storage establishments, and offensive storage establishments. Under Section 4.6 of the Hazards SEPP, a consent authority is required to consider whether a development is affected by soil or other contaminants before granting consent. Mitigation measures to reduce hazards are detailed in **Section 6.4.1**.
Considerations under Development Control Plans	
	No Development Control Plan applies to the Project Site.

5. STAKEHOLDER ENGAGEMENT

Graymont provided an email describing MOD4 to each of MEG, EPA, and Hilltops Council in October 2022.

The Galong Community Liaison Committee (CLC) will be consulted at the next meeting in early December 2022.

A summary of any issues identified by stakeholders is outlined in **Table 5-1**.

Table 5-1 Stakeholder Engagement Summary

Stakeholder	Engagement Details	Issues Raised
EPA	Email response received October 2022	None. Requested copy of MOD4 when available.
DPE (MEG)	Email response received October 2022	None. Copy of MOD4 will be provided to MEG
Hilltops Council	Email response received October 2022	None. Requested copy of MOD4 when available

6. IMPACT ASSESSMENT

This Modification Report and the accompanying documentation detail the likely impacts of the Project upon the natural and built environments and the locality. The potential impacts and mitigation measures are summarised within this section.

The environmental factors considered within this Modification Report are:

- Air quality (**Section 6.1**);
- Noise (**Section 6.2**);
- Traffic (**Section 6.3**); and
- Other environmental factors (**Section 6.4**).

6.1 Air Quality

An Air Quality Letter Report (AQLR) has been prepared to support the Modification Report, which is attached at **Appendix A** and summarised within this section.

6.1.1 Background

The 2003 lime kiln EIS included an Air Quality Impact Assessment (Holmes Air Sciences, 2003). Dust emissions (total suspended particulates (TSP)) were estimated based on the proposed activities for the quarry operations. The assessment assumed that 500,000 tpa of material was mined and 200,000 tpa of material was milled (with the remaining 300,000 tpa being processed in the lime kiln). The emissions inventory estimated total TSP emissions of 211,040 kg per year.

6.1.2 Impact Assessment

The AQLR concluded that the particulate matter emissions that will be generated by the Project are not significant compared to the estimated emissions from previously approved activities at the limestone kiln.

The current Environmental Management Plan will adequately manage the potential emissions from the increased stockpile activities.

6.1.3 Mitigation and Management

No mitigation and/or management measures in addition to the existing measures in place for the limestone mine and kiln are required.

6.2 Noise

A Noise Impact Assessment (NIA) has been prepared to support the Modification Report, which is attached at **Appendix B** and summarised within this section.

6.2.1 Background

Assessed sensitive noise receivers (Residential - R1-8 and Commercial - C1) are shown in **Figure 2-1**. Contemporary assumptions were utilised from the 'Mine Noise Impact Assessment' (MNIA) of the addition of two mobile crusher units (Muller Acoustic Consulting, 2021) for a modification to DA T2003/025 for Galong Mine with relevant amendments made for MOD4 (e.g. onsite truck route to the stockpile).

Noise criteria and other key assumptions are stipulated in DA317-7-2003 and are generally consistent with EPL4660 as shown in **Table 6-1**.

Table 6-1 Noise Criteria

Day - $L_{Aeq(15\ min)}$, dB(A)	Evening - $L_{eq(15\ min)}$, dB(A)	Night - $L_{eq(15\ min)}$, dB(A)	Night - $L_{1(1\ min)}$, dB(A)
35	35	35	45

6.2.2 Impact Assessment

Predicted $L_{eq(15\ min)}$ noise levels were assessed against relevant criteria and the predictions in the most recent MNIA and are shown in **Table 6-2**.

Full compliance with all criteria at all receivers is predicted including the closest R1, where no increase in predicted noise levels is expected.

Table 6-2 Noise Assessment Summary

Receiver ID	MNIA Predicted Noise Level, $L_{eq(\ 15\ min)}$, dB(A)	MOD4 NIA Predicted Noise Level, $L_{eq(\ 15\ min)}$, dB(A)	PTNL $L_{eq(\ 15\ min)}$, dB(A)	EPL Noise Limit, $L_{eq(\ 15\ min)}$, dB(A)	Compliance?
Day Period					
R1	35	35	40	35	Yes
R2	30	30	40	35	Yes
R3	<30	<30	40	35	Yes
R4	<30	<30	40	35	Yes
R5	<30	<30	40	35	Yes
R6	<30	<30	40	35	Yes
R7	<30	<30	40	35	Yes
R8	<30	<30	40	35	Yes
Evening and Night Period					
R1	35	35	40	35	Yes
R2	30	30	40	35	Yes
R3	<30	<30	40	35	Yes
R4	<30	<30	40	35	Yes
R5	<30	<30	40	35	Yes
R6	<30	<30	40	35	Yes
R7	<30	<30	40	35	Yes
R8	<30	<30	40	35	Yes

6.2.3 Mitigation and Management

No mitigation and/or management measures in addition to the existing measures in place for the limestone mine and kiln are required.

6.3 Traffic

A Traffic and Transport Assessment (TTA) was prepared in 2022 to support the Modification Report, which is attached at Appendix C and summarised within this section.

6.3.1 Background

The 2003 lime kiln EIS included a TTA (Transport & Urban Planning, 2003). In relation to coal deliveries, the TTA states:

> *"The Kiln will use between 60-70 tonnes of coal per day. The coal will be delivered by truck, resulting in up to two (2) B Doubles or three (3) semi trailer deliveries per day. These vehicles will arrive and depart the Mine via Burley Griffin Way through the town of Galong.*
>
> *"All product and delivery vehicles associated with the Kiln will use the route from Burley Griffin Way (MR84) via the town of Galong. This route includes Galong Road (Crescent Street, Bobbara Road, Ryan Street through Galong town) and Eubindal Road. These vehicles will arrive from and depart to the east along Burley Griffin Way (MR84)."*

Development Consent DA 317-7-2003 includes the following condition:

> *"3.25 The Applicant is permitted a maximum of 6 heavy vehicle movements (3 in / 3 out) per day for the purposes of hauling coal to the site. Any coal haulage above this limit requires the prior approval of the Director-General."*

Coal is currently sourced from coal mines near Boggabri NSW. The MOD4 route is consistent with current activities, with haul trucks travelling to the Project site via Burley Griffin Way through the town of Galong.

6.3.2 Impact Assessment

6.3.2.1 Construction

No off-site truck movements are required to construct the storage pad, drainage system and associated bunding, and no negative traffic impacts are expected.

6.3.2.2 Operation

The increase in coal deliveries to 12 heavy vehicle movements per day (six in and six out). Coal will be sourced from Tarrawonga coal mine near Boggabri NSW and transported to site using standard 19 m truck and dog vehicles.

The proposed southern route is the same as that described in the 2003 TTA, with haul trucks travelling to the Project site via Burley Griffin Way through the town of Galong. The proposed northern route from Lachlan Valley Way will use the Cunningar Road and Galong Road once the Galong Road upgrade is completed.

The 2023 TTA assessed the impacts of the proposal. All of the intersections on the proposed haul route were found to be suitable to accommodate the proposed increase in truck movements. The TTA concluded that the proposed increase in truck movements would have minimal impact on the road network.

The TTA recommended that the pavement condition between Burley Griffin Way and the Project site be monitored to assess the potential impact of heavy vehicles on the road surface and remediate as needed.

6.3.3 Mitigation and Management

The TTA did not recommend any mitigation and/or management measures in addition to the existing measures in place.

6.4 Other Environmental Factors

Other potential environmental factors have been considered below.

6.4.1 Hazard – Coal Stockpile

The coal stockpile was designed by a suitably qualified professional, Kon Van Kessel – Senior Mining Engineer Graymont. As advised by Mr Van Kessel, Graymont will undertake the following mitigation measures to ensure MOD4 complies with 'MDG 28 Safety requirements for Coal Stockpiles and Reclaim Tunnels' (MDG28) (NSW T&I, 2013).

To address the requirements for MDG28 the existing Galong Site Hazard Management Plan (HMP) will be updated in consideration of the following measures.

Graymont advises that to address Section 2 of MDG28 the following controls will be in place:

- Management of risks that include safe work systems;
- Fit-for-purpose equipment; and
- Trained and competent people.

Graymont advises that to address Section 3 of MDG28, the coal stockpile was designed as follows:

- For 10,000 t capacity and considers the coal material characteristics for a stable size and shape;
- Stockpile height will be limited to a nominal 2.5m;
- No coal placement structures are planned;
- Stockpiles have a ramp designed to access the top level;
- Spontaneous combustion and fire risks will be mitigated by wind protection, low stockpile height, construction method, good drainage, and access to top and sides. The stockpile will be inspected daily;
- Coal stockpile work will be limited to times of good visibility;
- Operators working on the coal stockpile will be trained and competent;
- All equipment will have a UHF radio for communication;
- Equipment used in the coal stockpile area will be assessed for suitability prior to use; and
- No hot work will be permitted on the coal stockpile.

Sections 3.1.3 and 3.1.4, and 3.2.1 of MDG28 are not applicable as there are no draw-down points or reclaim tunnel.

Section 3.2 of MDG28 has been considered by Graymont as follows:

- 3.2.2 - The relevant sections were considered in the coal stockpile design in particular: drainage, stockpile volume, stockpile footprint, maximum height, compaction, stockpile equipment, and clearance to structures near the stockpile;
- 3.2.3 - The coal stockpile will be compacted to a level where there is minimal deformation below a loaded truck. Ramps and edges of the stockpile will be compacted with a dozer. No reclaim tunnel is planned, and no controls are considered;
- 3.2.4 - Bridging in the planned coal stockpile is unlikely, and no controls are considered;
- 3.2.5 - Dozer engulfment is unlikely in the planned coal stockpile, and no controls are considered;
- 3.2.6 - Coal stockpile height will be limited to 2.5 m;

- 3.2.7 - No coal placement structures are planned;
- 3.2.8 - No unauthorised signs will be installed, and the coal stockpile area will be included in the site induction. Only trained personnel are permitted to enter the coal stockpile area. Emergency procedures will include the coal stockpile area;
- 3.2.9 - Open pit supervisor will plan work in the coal stockpile area. No reclaim tunnel and no controls considered;
- 3.2.10 - No reclaim tunnel and no controls considered;
- 3.2.11 - Stockpile footprint will be surveyed and clearly marked. Ramps will be clearly marked;
- 3.2.12 - Spontaneous combustion and fire risks are mitigated by wind protection, low stockpile height, construction method, good drainage, and access to the top and sides. The stockpile will be inspected daily.
- 3.2.13 - No hot work permitted in coal stockpile area;
- 3.2.14 - The stockpile will be inspected daily; and
- 3.2.15 - No coal placement infrastructure will be built.

The following sections of MDG28 are not relevant: 3.2.1 and 3.2.15.

6.4.2 Heritage and Biodiversity

The MOD4 area is approved to be disturbed under DA T2003/025 (as modified) as generally shown in **Figure 3-1**. No further consideration of heritage or biodiversity to that assessed for DA T2003/025; is therefore required for MOD4. Scraping of topsoil within the area proposed for MOD4 was undertaken in 2022 as part of ongoing mine development, with Registered Aboriginal Parties (including the Onerwal Local Aboriginal Land Council) present to monitor for items of significance, as required by DA T2003/025.

6.4.3 Visual

The 2003 lime kiln EIS contains an Aesthetics Report (Maurice Hayter & Associates Architects, 2003). The report concluded that because of the height and industrial nature of the lime kiln, it would normally be an intrusive element in the rural landscape. However, because of its valley location, remote from public viewing, the proposal will have little visual or aesthetic impact on the surrounding countryside, especially if the colour treatment guidelines and landscaping recommendations are implemented.

The coal stockpile will have a maximum height of 2.5 m. The closest sensitive receiver to the boundary of the Project Site is 753 m as shown on **Figure 2-1**.

Due to the rural nature of the surrounding area, the locality within an existing area approved to be mined and adjacent to existing mining; when combined with the small height of the stockpile and the distance to sensitive receivers, MOD4 is not expected to cause any negative visual impacts.

6.4.4 Social and Economic

The Project would not result in a change to the workforce at the Project Site. The Project is not expected to cause any negative socio-economic impacts.

This project will enhance socio economic outcomes in the local area by contributing to the ongoing financial viability and robustness of the Graymont operation. Sediment and Erosion Control

MOD4 is located within the disturbance area for the limestone mine, approved under DA T2003/025 (as modified). Therefore, sediment and erosion for the proposed coal stockpile be managed in accordance with the existing Soil and Water Management Plan. New drainage from the coal stockpile shall be directed into existing water management footprint.

6.4.5 Rehabilitation

The MOD4 area will be considered with the larger rehabilitation of the Galong limestone mine in accordance with the 2022 Rehabilitation Management Plan (RMP) (and/or subsequent versions). The Project is not expected to cause any negative impacts in relation to rehabilitation.

6.5 Mitigation Measures Summary

The majority of impacts associated with MOD 4 as described at **Section 3** will be managed in accordance with existing management plans in place at Galong Limestone Kiln and Mine (air, noise and traffic) with no additional measures required.

Additional hazard measures associated with the coal stockpile will be adopted as summarised in **Section 3** and incorporated into relevant management plans and future RMPs.

7. JUSTIFICATION AND CONCLUSION

Graymont is seeking MOD4 to DA 317-7-2003 under Section 4.55 (1A) of the EP&A Act to undertake the construction and operation of a 10,000 t coal stockpile.

The Project is considered to be “substantially the same development” as that originally approved under DA 317-7-2003 MOD3 as it does not involve changes to the:

- The lime kiln consuming less than 70t of coal per day;
- Adjacent haul routes;
- Size of the existing 200 t enclosed coal stockpile;
- Duration of the limestone mine and kiln operation; and
- Operating hours and size of the workforce.

A detailed assessment of the following key environmental factors determined that the Project is considered to involve “minimal environmental impact” when compared to the existing operation:

- Air quality impacts;
- Noise impacts; and
- Traffic impacts.

Justification is provided for MOD4 as it will allow Graymont to take advantage of favourable coal prices by stockpiling additional coal with minimal resulting environmental impacts.

Implementation of mitigation and management measures in accordance with this Modification Report will mitigate any residual environmental risks and impacts associated with the Project.

Therefore, the Project is considered to be substantially the same development as that originally approved under DA 317-7-2003, involves minimal environmental impact, and is available for the determining authority to approve MOD4.

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APPENDIX A AIR QUALITY IMPACT ASSESSMENT

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Alan Harris
HSE Manager - North
Graymont NSW Pty Ltd

9 November 2022

ERM Reference: 0662616

Dear Alan,

Subject: Graymont – Galong Coal Stockpile MOD – Air Quality

1. INTRODUCTION

Graymont (Australia) Pty Ltd (Graymont) engaged Environmental Resources Management Australia Pty Ltd (ERM) to provide an air quality assessment to support its approval to increase its coal stockpile capacity to a maximum of 10,000 tonnes at Galong Limestone Mine and Kiln, Galong, NSW.

The Project is located at Galong Limestone Mine and Kiln (Galong) at 342 Eubindal Road, Galong, NSW. The site has operated since the 1900's and produces limestone and quicklime. Graymont (NSW) Pty Ltd (Graymont) operates the Approved Project. The site comprises the limestone quarry, kiln and a stockpile of coal for use in the kiln.

Galong operates under several development approvals namely Hilltops Council approvals (DAT2003/025, DA 07-033, DA 2020/0208 and DA 2020/0033) and (the now) department of Planning and Environment (DPE) issued DA 317/7-2003 (as modified).

DA 317-7-2003 (as modified) was granted under the Environmental Planning and Assessment Act 1979 (EP&A Act) on 11 December 2003 by the (now) Department of Planning and Environment (DPE) for the construction and operation of a limestone kiln to produce 200,000 tonnes per annum (tpa) of quicklime at Galong Limestone Mine (Approved Project).

This traffic and transport impact assessment supports an application under Section 4.55 of the EP&A Act for Modification (MOD4) to DA 317-7-2003 to facilitate:

- Coal storage pad and associated works;
- New 10,000 tonnes coal storage stockpile; and
- Increase in truck movements to delivery coal from six (6) to up to 12 movements per day.

No other changes are proposed to the existing enclosed 200 tonne coal stockpile building or any other approved Project elements.

This letter report focuses on particulate matter emissions generated by activities associated with the coal stockpile, including haulage of material at the site, loading and unloading of material, and wind erosion from stockpile(s).

To provide context to the magnitude of the proposed change in regard to particulate matter emissions, the estimated emissions from the additional coal stockpile activities are compared with an emissions inventory developed for the previous expansion approval that is representative of typical annual operations of the mine.

This assessment has also reviewed historical dust deposition monitoring to establish if the existing typical operations are compliant with relevant guidelines.

2. PREVIOUS AIR QUALITY ASSESSMENT FOR GALONG LIMESTONE MINE

In June 2003, Holmes Air Sciences prepared an air quality impact assessment (AQIA) for the Galong Lime Kiln Project. The AQIA was for the proposed expansion of the Galong Limestone Mine and the installation of a lime kiln.

Dust emissions (total suspended particulates (TSP)) were estimated based on the proposed activities for the quarry operations. The assessment assumed that 500,000 tonnes per annum (tpa) of material was mined and 200,000 tpa of material was milled (with the remaining 300,000 tpa being processed in the lime kiln). The emissions inventory estimated total TSP emissions of 211,040 kg per year and this is presented in Table 2-1.

The dispersion modelling showed compliance with NSW EPA air quality criteria.

Table 2-1: Estimated dust emissions from proposed activities

Activity	TSP emission rate (kg per year)
Excavator working/loading overburden	194
Scraper working on overburden	6,451
Excavator working/loading limestone	2,500
Blasting	141
Drilling	660
Transporting to overburden emplacement	7,430
Truck dumping to overburden emplacement	194
Transporting to limestone stockpile	48,000
Truck dumping to limestone stockpile	2,500
Loading material to feed bin of crusher	2,500
Primary crushing	750
Milling	1,840
Loading to transport truck	1,750
Transporting material off-site	56,940
Wind erosion from excavation and stockpile areas	79,190
Total	**211,040**

Source: Holmes Air Science, 2003. Notes: TSP = total suspended particulates, kg = kilograms

3. DUST DEPOSITION MONITORING

As per the Graymont Environmental Management Plan (Graymont, 2022), dust deposition monitoring is undertaken at the Galong Mine site at four locations and commenced in June 2010. The four locations are presented in Figure 3-1. A summary of dust deposition monitoring results from 2017 to 2022 is presented in Table 3-1 and Figure 3-2.

The NSW EPA maximum total dust deposition criteria is 4 g/m^2/month, assessed as insoluble solids as defined by AS 3580.10.1. Except for location DG 4, the other locations show a reduction from 2020 to 2022. At DG 4, there is a reduction from 2021 to 2022. At all locations, the lowest dust deposition monitoring results were recorded during 2022.

For DG 1, there was an exceedance of the NSW EPA criteria during 2018 and 2019. For all other years considered at DG 1, there was compliance with the NSW EPA criteria.

For DG 2, 3 and 4, there was compliance with the criteria for all years considered.

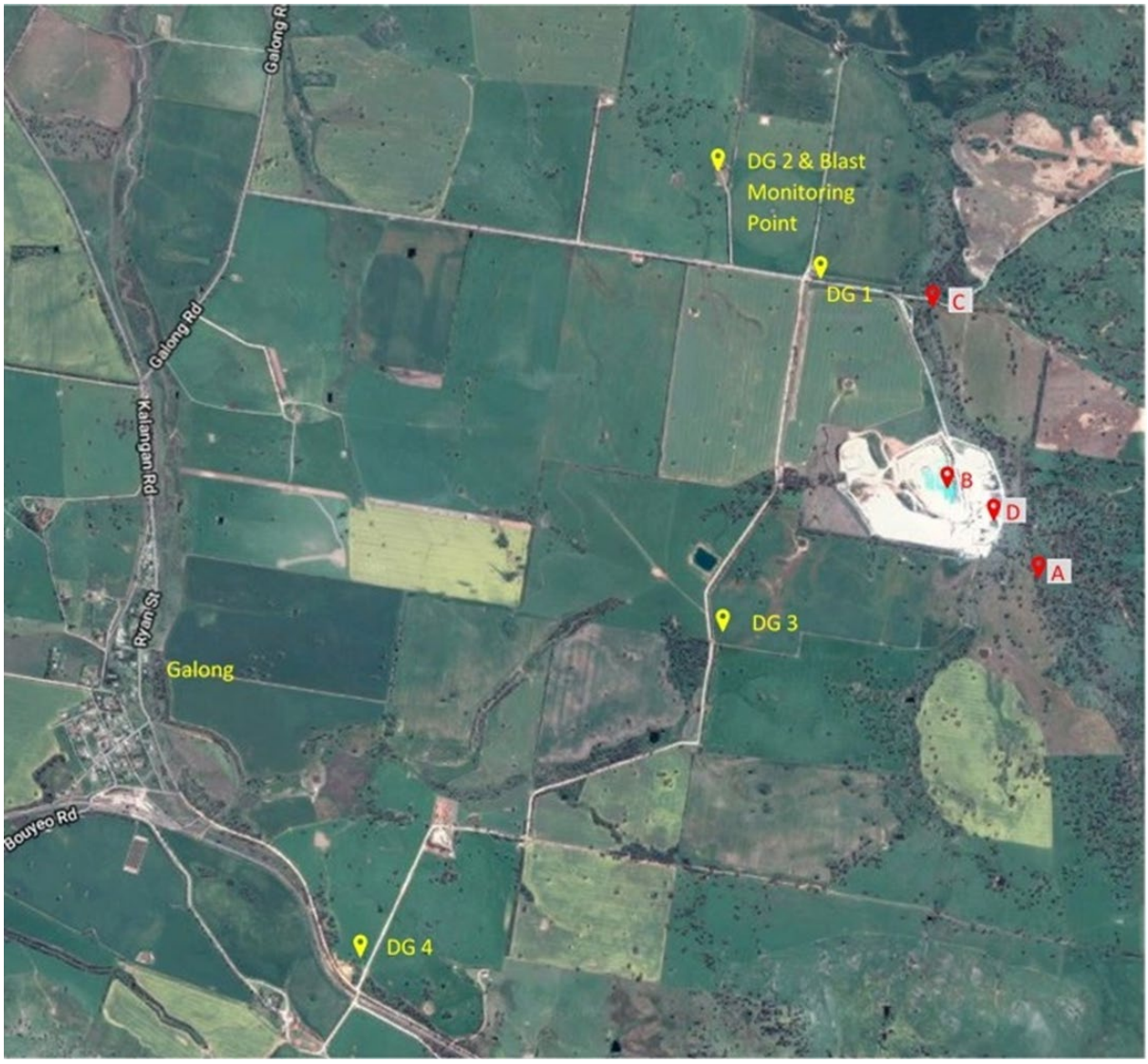

Figure 3-1: Locations of dust deposition gauges

Table 3-1: Dust Deposition Monitoring Result Annual Average

Sample Point & Sample ID	Year	Total Insoluble Matter (g/m²/month)
DG 1 - Top of Bund	2017	3.76
	2018	**4.99**
	2019	**4.70**
	2020	2.81
	2021	1.86
	2022	0.79
DG 2 - Next to House	2017	2.90
	2018	3.08
	2019	2.85
	2020	3.15
	2021	2.30
	2022	1.80
DG 3 - Along Road	2017	2.51
	2018	3.09
	2019	3.20
	2020	2.91
	2021	2.40
	2022	1.92
DG 4 - Galong	2017	3.51
	2018	3.47
	2019	2.95
	2020	2.83
	2021	3.60
	2022	1.18

Notes: bold represents an exceedance of the criteria.

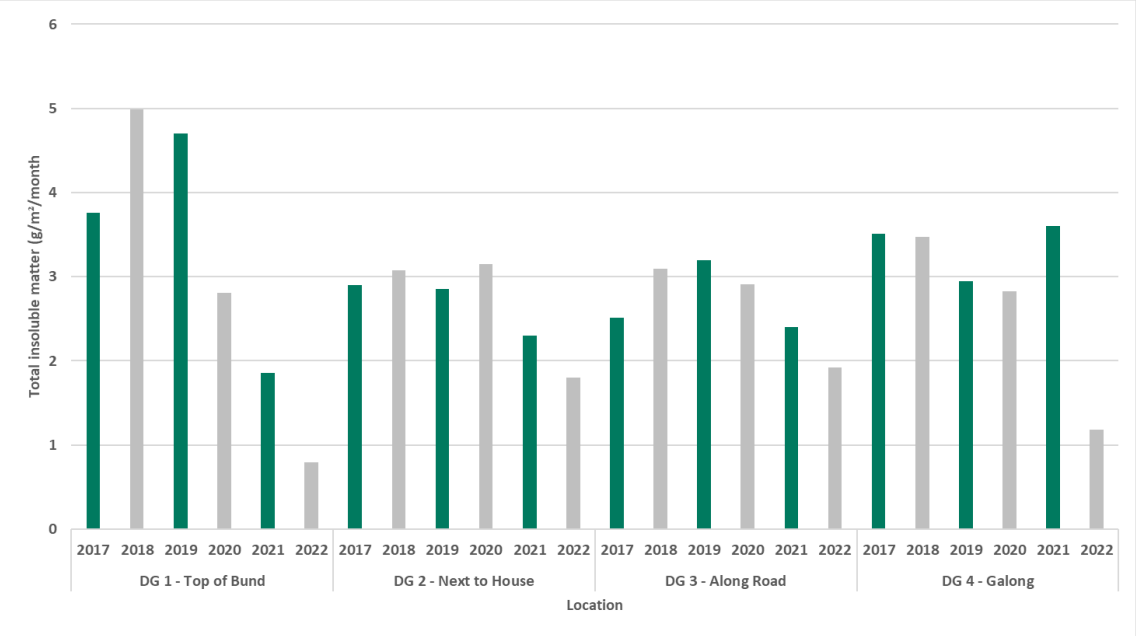

Figure 3-2: Dust deposition monitoring results

4. EMISSIONS ESTIMATION

4.1 Overview

This report section presents the emissions estimation for proposed activities associated with the coal stockpile. Emissions have been calculated for TSP, PM_{10} and $PM_{2.5}$ for the following activities:

- Haulage (on sealed and unsealed roads);
- Loading/unloading;
- Front end loader; and
- Wind erosion.

4.2 Calculations and assumptions

Based on the information available for the assessment, several assumptions and measurements have been made by ERM to assist in the estimation of emissions. These are presented in Table 4-1.

Table 4-1: Information and assumptions used in emissions estimation

Parameter	Value	Units	Source of information
Haulage distance from the site entrance to the access road (sealed road)	0.6	Km (one way)	Measured based on plans provided by Graymont
Haulage distance along access road (unsealed road)	0.2	Km (one way)	
Haulage distance from the access road to the kiln (unsealed road)	0.35	Km (one way)	
Silt content of unsealed roads	4.6	%	ERM assumption based on ACARP average
Silt content of material	3.7	%	ERM assumption based on ACARP average
Moisture content of material	8	%	ERM assumption based on typical moisture content

The location of the proposed coal stockpiles and the access road to the coal stockpile is shown in Figure 4-1.

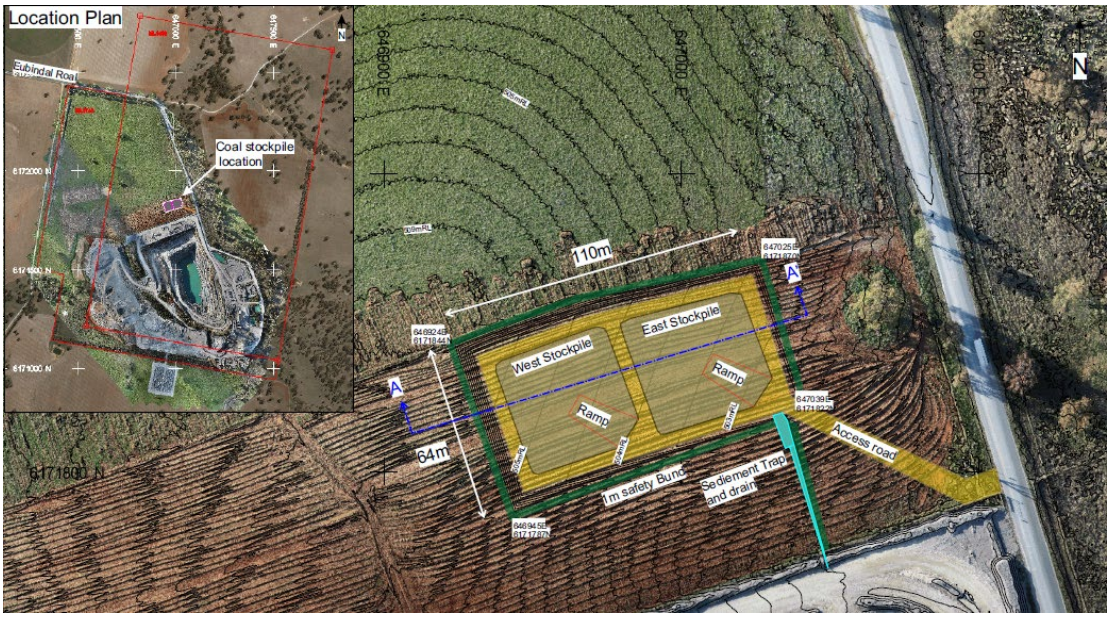

Figure 4-1: Location of proposed coal stockpiles and access road

Emission rates of TSP, PM_{10} and $PM_{2.5}$ have been calculated using emission factors developed by the National Pollutant Inventory (NPI) and the United States Environment Protection Authority (US EPA) for AP-42. Table 4-2 presents the estimated dust emissions (TSP, PM_{10} and $PM_{2.5}$) from the proposed activities and a comparison against the total emissions from the 2003 AQIA. In the 2003 AQIA report, activities and emissions rates were provided for TSP only.

To determine PM_{10} and $PM_{2.5}$ total emissions for the 2003 AQIA, a factor has been applied based on the ratio between TSP, PM_{10} and $PM_{2.5}$ emissions established in this assessment. This is considered reasonable due to the similar types of dust-generating activities. The relationships between the particle sizes established in this assessment are a PM_{10}:TSP ratio of 28%, and a $PM_{2.5}$:PM_{10} ratio of 14%. These calculated emissions have been included in the table below. These emissions are not to be used in isolation but to guide the percentage of emissions in this assessment against the total operational emissions.

Included in the emissions estimation are dust control measures. The measures relevant to the activities for this project are:

- Application of water on unsealed roads – level 1 watering and 50% control applied; and
- Water sprays on coal stockpiles – 50% control applied.

The emission equations are provided in full in Appendix A. Emissions inventories are provided in Appendix B.

Table 4-2: Estimated dust emissions from proposed activities and comparison to previous emissions

Activity	TSP emission rate (kg per year)	PM_{10} emission rate (kg per year)	$PM_{2.5}$ emission rate (kg per year)
Hauling of coal from the entrance to stockpile (sealed roads)	110	28	2.8
Hauling of coal from the entrance to stockpile (unsealed roads)	184	46	4.6
Unloading of coal from trucks to coal stockpile	2.8	1.3	0.20
Front end loader moving coal	100	16	10
Loading of coal from the stockpile to trucks	2.8	1.3	0.20
Haulage of coal from the stockpile to the kiln (unsealed roads) – at stockpile	184	46	4.6
Hauling of coal from the stockpile to kiln (sealed roads)	37	9.3	0.93
Hauling of coal from the stockpile to the kiln (unsealed roads) - after sealed section	322	81	8.1
Wind erosion from stockpiles	150	75	11
Total emissions from proposed activities	**1,091**	**304**	**43**
Total emissions from 2003 AQIA	**211,040**	**58,859**[a]	**8,357**[b]
Emissions from proposed activities as a % of 2003 AQIA	**0.5**	**0.5**	**0.5**

Notes: kg = kilograms. [a] Calculated based on 28% of TSP emissions. [b] Calculated based on 14% of PM_{10} emissions.

Table 4-2 shows that the dust emissions related to the coal stockpile activities represent 0.5% of total emissions from all operational activities for TSP, PM_{10} and $PM_{2.5}$. A percentage of 0.5% is considered a small percentage change compared to the total emissions from the 2003 AQIA report. On that basis, additional dispersion modelling is not considered to be required.

5. CONCLUSIONS

An air quality assessment has been undertaken to support Graymont in obtaining approval to increase its coal stockpile capacity to 10,000 tonnes at Galong Limestone Mine and Kiln, Galong, NSW.

In June 2003, Holmes Air Sciences prepared an air quality impact assessment (AQIA) for the Galong Lime Kiln Project. According to the 2003 AQIA, the dispersion modelling showed compliance with NSW EPA air quality criteria.

As per the Graymont Environmental Management Plan (Graymont, 2022), dust deposition monitoring is undertaken at the Galong Mine site at four locations and commenced in June 2010. The dust deposition monitoring showed compliance with NSW EPA criteria at DG 1, 2, 3 and 4 during 2020, 2021 and 2022.

This assessment has shown that particulate matter emissions will be generated by activities associated with the coal stockpile, which includes haulage of material at the site, loading and unloading of material and wind erosion from stockpile(s). These activities are anticipated to generate 1,091 kg/year of TSP emissions, 304 kg/year of PM_{10} emissions and 43 kg/year of $PM_{2.5}$ emissions. Compared to the 2003 AQIA, these emissions are only 0.5% of the previously estimated typical annual dust emissions.

The proposed changes can be considered a non-material change as the recent dust deposition monitoring results comply with NSW EPA maximum total dust deposition criteria, and the particulate matter emissions generated are not significant compared to the estimated emissions from previously approved activities.

The above indicates that the current Environmental Management Plan will adequately manage the potential emissions from the increased stockpile activities.

6. LIMITATIONS

1. This report is based solely on the scope of work described in proposal '220718 Graymont Coal Stockpile MOD Proposal.pdf' prepared by Environmental Resources Management Australia Pacific Pty Ltd (**ERM**) for Graymont (the **Client**). The Scope of Work was governed by a contract between ERM and the Client (**Contract**).

2. No limitation, qualification or caveat set out below is intended to derogate from the rights and obligations of ERM and the Client under the Contract.

3. The findings of this report are solely based on, and the information provided in this report is strictly limited to that required by the Scope of Work. Except to the extent stated otherwise, in preparing this report ERM has not considered any question, nor provides any information, beyond that required by the Scope of Work.

4. This report was prepared between September 2022 and November 2022 and is based on conditions encountered and information reviewed at the time of preparation. The report does not, and cannot, take into account changes in law, factual circumstances, applicable regulatory instruments or any other future matter. ERM does not, and will not, provide any on-going advice on the impact of any future matters unless it has agreed with the Client to amend the Scope of Work or has entered into a new engagement to provide a further report.

5. This report is based on analyses described in the report, and information provided by the Client or third parties (including regulatory agencies). All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved. Whilst normal checking of data accuracy was undertaken, except to the extent expressly set out in this report ERM:

   a. did not, nor was able to, make further enquiries to assess the reliability of the information or independently verify information provided by;

   b. assumes no responsibility or liability for errors in data obtained from, the Client, any third parties or external sources (including regulatory agencies).

6. Although the data that has been used in compiling this report is generally based on actual circumstances, if the report refers to hypothetical examples those examples may, or may not, represent actual existing circumstances.

7. Only the environmental conditions and or potential contaminants specifically referred to in this report have been considered. To the extent permitted by law and except as is specifically stated in this report, ERM makes no warranty or representation about:

   a. the suitability of the site(s) for any purpose or the permissibility of any use;

   b. the presence, absence or otherwise of any environmental conditions or contaminants at the site(s) or elsewhere; or

   c. the presence, absence or otherwise of asbestos, asbestos containing materials or any hazardous materials on the site(s).

8. Use of the site for any purpose may require planning and other approvals and, in some cases, environmental regulator and accredited site auditor approvals. ERM offers no opinion as to the likelihood of obtaining any such approvals, or the conditions and obligations which such approvals may impose, which may include the requirement for additional environment works.

9. The ongoing use of the site or use of the site for a different purpose may require the management of or remediation of site conditions, such as contamination and other conditions, including but not limited to conditions referred to in this report.

10. This report should be read in full and no excerpts are to be taken as representative of the whole report. To ensure its contextual integrity, the report is not to be copied, distributed or referred to in part only. No responsibility or liability is accepted by ERM for use of any part of this report in any other context.
11. Except to the extent that ERM has agreed otherwise with the Client in the Scope of Work or the Contract, this report:
    a. has been prepared and is intended only for the exclusive use of the Client;
    b. must not to be relied upon or used by any other party;
    c. has not been prepared nor is intended for the purpose of advertising, sales, promoting or endorsing any Client interests including raising investment capital, recommending investment decisions, or other publicity purposes;
    d. does not purport to recommend or induce a decision to make (or not make) any purchase, disposal, investment, divestment, financial commitment or otherwise in or in relation to the site(s); and
    e. does not purport to provide, nor should be construed as, legal advice.

Yours sincerely,

Russ Francis
Senior Consultant – Air Quality

Karie Bradfield
Partner

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APPENDIX A: EMISSION FACTORS AND EQUATIONS

Inventory Activity	Units	TSP Emission Factor	PM_{10} Emission Factor	$PM_{2.5}$ Emission Factor	Source
Coal Activities					
Loading/unloading overburden to/from trucks/front end loader, excavator, or shovel NB: dozers use equation below	kg/t	$0.74 \times 0.0016 \times \left(\frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}\right)$	$0.35 \times 0.0016 \times \left(\frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}\right)$	$0.053 \times 0.0016 \times \left(\frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}\right)$	AP42 13.2.4 and NPI Table 2
Bulldozers/front end loaders on overburden i.e. dozers FEL pushing material around	kg/hr	$2.6 \times \frac{s^{1.2}}{M^{1.3}}$	$0.3375 \times \frac{s^{1.5}}{M^{1.4}}$	0.105 * TSP	AP42 11.9 Table 11.9-2 and NPI Table 2
Hauling					
Hauling on unsealed roads	kg/VKT	$\left(\frac{0.4536}{1.6093}\right) \times 4.9 * \left(\frac{s}{12}\right)^{0.7} \times \left(\frac{W \times 1.1023}{3}\right)^{0.45}$	$\left(\frac{0.4536}{1.6093}\right) \times 1.5 * \left(\frac{s}{12}\right)^{0.9} \times \left(\frac{W \times 1.1023}{3}\right)^{0.45}$	$\left(\frac{0.4536}{1.6093}\right) \times 0.15 * \left(\frac{s}{12}\right)^{0.9} \times \left(\frac{W \times 1.1023}{3}\right)^{0.45}$	AP42 13.2.2 and NPI Table 2
Wind erosion					
Wind erosion of exposed areas including stockpiles	kg/ha/h	$u^* = 0.053u_{10}^+$ and $P = 58(u^* - u_t^*)^2 + 25(u^* - u_t^*)$	0.5 * TSP	0.075 * TSP	AP42 13.2.5

APPENDIX B: EMISSIONS INVENTORIES

Activity	TSP (kg/y)	Intensity	Units	Emission factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Control	Units	Control assumed	Type
Coal																			
Hauling of coal from entrance to access road (sealed roads)	110	10,000	t/y	0.110	kg/t	25	t/load	37.5	Vehicle gross mass (t)	1.2	km/return trip	2.30	kg/VKT	4.6	% silt content	90	% control	Sealed	1
Hauling of coal on access road (unsealed roads)	184	10,000	t/y	0.037	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.4	km/return trip	2.30	kg/VKT	4.6	% silt content	50	% control	Level 1 watering	1
Unloading of coal to coal stockpile	2.8	10,000	t/y	0.000	kg/t	1.6	average of (wind speed/2.2)^1.3 in m/s	8	moisture content in %							0	% control		2
Front end loader moving coal	100	119	h/y	0.837	kg/t	3.7	% silt content	8	moisture content in %							0	% control		1
Loading of coal for trip to the kiln	2.8	10,000	t/y	0.000	kg/t	1.6	average of (wind speed/2.2)^1.3 in m/s	8	moisture content in %							0	% control		2
Hauling of coal from stockpile to kiln (unsealed roads) - at stockpile	184	10,000	t/y	0.037	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.4	km/one way	2.30	kg/VKT	4.6	% silt content	50	% control	Level 1 watering	1
Hauling of coal from stockpile to kiln (sealed roads)	37	10,000	t/y	0.037	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.4	km/one way	2.30	kg/VKT	4.6	% silt content	90	% control	Sealed	1
Hauling of coal from stockpile to kiln (unsealed roads) - after sealed section	322	10,000	t/y	0.064	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.7	km/one way	2.30	kg/VKT	4.6	% silt content	50	% control	Level 1 watering	1
Wind Erosion (WE) at the site																			
WE - ROM stockpile	150	0.70	ha	850	kg/ha/y											50	% control	Watering	3
TOTAL TSP EMISSIONS	**1,091**																		

Figure B-1: TSP emission inventory

Activity	PM10 (kg/y)	Intensity	Units	Emission factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Control	Units	Control assumed	Type
Coal																			
Hauling of coal from entrance to stockpile (sealed roads)	28	10,000	t/y	0.028	kg/t	25	t/load	37.5	Vehicle gross mass (t)	1.2	km/return trip	0.58	kg/VKT	4.6	% silt content	90	% control	Sealed	1
Hauling of coal from entrance to stockpile (unsealed roads)	46	10,000	t/y	0.009	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.4	km/return trip	0.58	kg/VKT	4.6	% silt content	50	% control	Level 1 watering	1
Unloading of coal to coal stockpile	1.3	10,000	t/y	0.000	kg/t	1.6	average of (wind speed/2.2)^1.3 in m/s	8	moisture content in %							0	% control		2
Front end loader moving coal	16	119	h/y	0.131	kg/t	3.7	% silt content	8	moisture content in %							0	% control		1
Loading of coal for trip to the kiln	1.3	10,000	t/y	0.000	kg/t	1.6	average of (wind speed/2.2)^1.3 in m/s	8	moisture content in %							0	% control		2
Hauling of coal from stockpile to kiln (unsealed roads) - at stockpile	46	10,000	t/y	0.009	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.4	km/one way	0.58	kg/VKT	4.6	% silt content	50	% control	Level 1 watering	1
Hauling of coal from stockpile to kiln (sealed roads)	9.3	10,000	t/y	0.009	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.4	km/one way	0.58	kg/VKT	4.6	% silt content	90	% control	Sealed	1
Hauling of coal from stockpile to kiln (unsealed roads) - after sealed section	81	10,000	t/y	0.016	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.7	km/one way	0.58	kg/VKT	4.6	% silt content	50	% control	Level 1 watering	1
Wind Erosion (WE) at the site																			
WE - ROM stockpile	75	0.70	ha	425	kg/ha/y											50	% control	Watering	3
TOTAL PM10 EMISSIONS	**304**																		

Figure B-2: PM_{10} emission inventory

Activity	PM2.5 (kg/y)	Intensity	Units	Emission factor	Units	Variable 1	Units	Variable 2	Units	Variable 3	Units	Variable 4	Units	Variable 5	Units	Control	Units	Control assumed	Type
Coal																			
Hauling of coal from entrance to stockpile (sealed roads)	2.8	10,000	t/y	0.003	kg/t	25	t/load	37.5	Vehicle gross mass (t)	1.2	km/return trip	0.06	kg/VKT	4.6	% silt content	90	% control	Sealed	1
Hauling of coal from entrance to stockpile (unsealed roads)	4.6	10,000	t/y	0.001	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.4	km/return trip	0.06	kg/VKT	4.6	% silt content	50	% control	Level 1 watering	1
Unloading of coal to coal stockpile	0.20	10,000	t/y	0.000	kg/t	1.6	average of (wind speed/2.2)^1.3 in m/s	8	moisture content in %							0	% control	No control	2
Front end loader moving coal	10	119	h/y	0.0879	kg/t	3.7	% silt content	8	moisture content in %							0	% control	No control	1
Loading of coal for trip to the kiln	0.20	10,000	t/y	0.000	kg/t	1.6	average of (wind speed/2.2)^1.3 in m/s	8	moisture content in %							0	% control	No control	2
Hauling of coal from stockpile to kiln (unsealed roads) - at stockpile	4.6	10,000	t/y	0.001	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.4	km/one way	0.06	kg/VKT	4.6	% silt content	50	% control	Level 1 watering	1
Hauling of coal from stockpile to kiln (sealed roads)	0.93	10,000	t/y	0.001	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.4	km/one way	0.06	kg/VKT	4.6	% silt content	90	% control	Sealed	1
Hauling of coal from stockpile to kiln (unsealed roads) - after sealed section	8.1	10,000	t/y	0.002	kg/t	25	t/load	37.5	Vehicle gross mass (t)	0.7	km/one way	0.06	kg/VKT	4.6	% silt content	50	% control	Level 1 watering	1
Wind Erosion (WE) at the site																			
WE - ROM stockpile	11	0.70	ha	64	kg/ha/y											50	% control	Watering	3
TOTAL PM2.5 EMISSIONS	**43**																		

Figure B-3: $PM_{2.5}$ emission inventory

APPENDIX B NOISE IMPACT ASSESSMENT

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Alan Harris
HSE Manager - North
Graymont NSW Pty Ltd
Level 16, 111 Pacific Highway
North Sydney
NSW 2060

14 November 2022

Reference: 0662616

Dear Alan,

Subject: Graymont Galong Coal Stockpile Modification 4 – Noise Impact Assessment

1. INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) has prepared this Noise Impact Assessment (NIA) to support a modification to Project Approval (PA) DA317-7-2003 (MOD4) under Section 4.55(1) of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

The assessment evaluates the potential noise impact of the proposed modification on surrounding noise sensitive receivers and identifies any potential criteria compliance issues in accordance with the Noise Policy for Industry (NSW EPA, 2017) and the existing Environmental Protection Licence (EPL) No.4660 (NSW EPA, 2020) noise requirements applicable to the Project.

A modification Noise Impact Assessment (NIA) of the addition of two mobile crusher units at the Galong Limestone Mine has been conducted in November 2021 (Muller Acoustic Consulting, 2021) for Development Consent No. T2003/025 for Galong Mine. The worst-case noise scenario in this previous modification NIA with respect to the assumed noise source sound power levels and the noise source positions are relevant to the current NIA . As such, the current assessment relies on the findings of the previous modification NIA and considers only the changes associated with the current modification.

2. MODIFICATION 4 DESCRIPTION

The Modification (MOD4) is comprised of the following elements:

- Coal storage pad and associated works;
- New 10,000 t coal storage stockpile; and
- Increase in truck movements from six to up to 12 per day.

No other changes are proposed to the existing enclosed 200t coal stockpile building or any other approved Project elements, including equipment type and quantity. The site layout of the proposed modification is displayed in **Figure 2-1**.

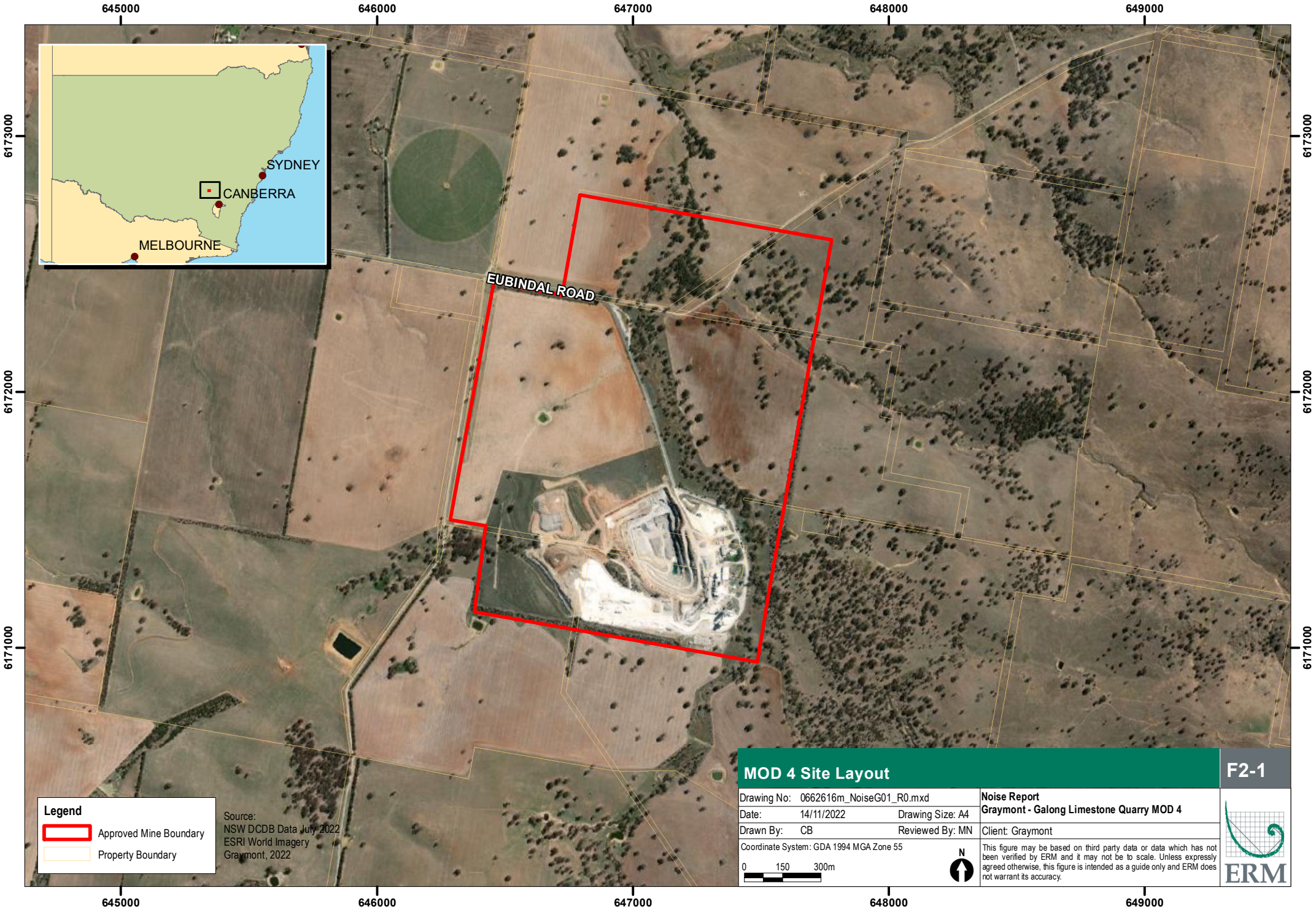
Increase in Truck Movements during Operations

With respect to operational noise impacts, only the increase in truck movements has the propensity to generate a noise impact.

Coal will continue to be sourced from coal mines in Boggabri, NSW and arrive by truck. The trucks have a gross vehicle mass of up to 50 t will access the stockpile via the access road prepared during construction.

The number of coal deliveries would increase from up to six heavy vehicle movements per day (three in, three out) to 12 heavy vehicle movements per day (six in, six out). Coal will be delivered to the site up to five days per week. It is assumed that in a worst-case 15-minute period during any part of the day, there will be 4 truck movements on-site (two in, two out).

Coal will continue to be transported generally via the previously approved transport route.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Property Boundary
Source:
NSW DCDB Data July 2022
ESRI World Imagery
Graymont, 2022
MOD 4 Site Layout
F2-1
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Drawing Size: A4
Drawn By: CB
Reviewed By: MN
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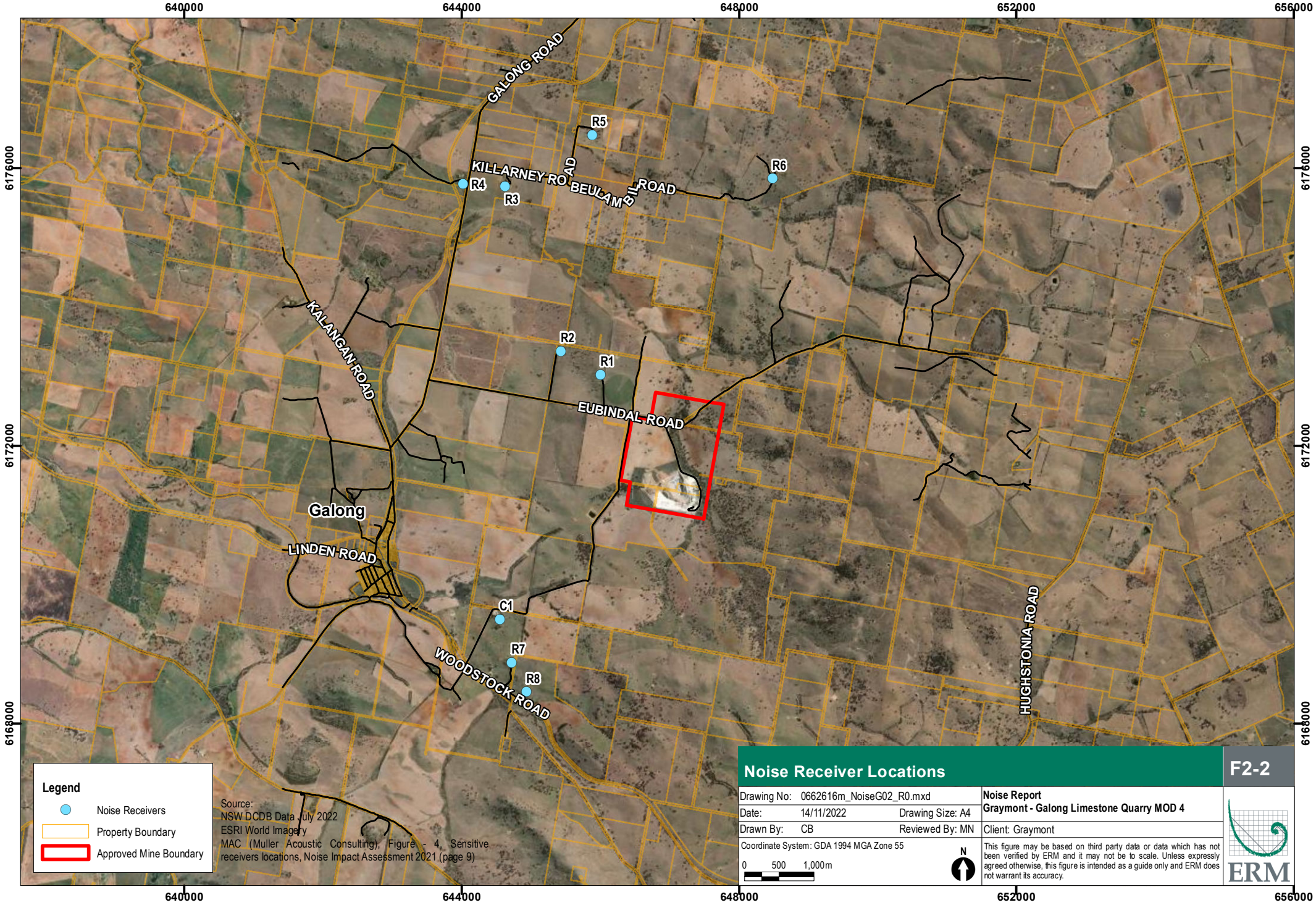
Noise Report
Graymont - Galong Limestone Quarry MOD 4
Client: Graymont
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
ERM

3. NOISE SENSITIVE RECEIVERS

The Noise Sensitive Receivers (NSRs) considered have been obtained from the modification Noise Impact Assessment (NIA) of the addition of two mobile crusher units at the Galong Limestone Mine which has been conducted in November 2021 (Muller Acoustic Consulting, 2021) for Development Consent No. T2003/025 for Galong Mine. They are summarized in **Table 2-1** and shown in **Figure 2-2.**

Table 2-1 Noise Sensitive Receivers

Receiver Name	Coordinates		Type	Distance to Project Site Boundary, m
	Easting	Northing		
R1	645996	6173026	Residential Rural	753
R2	645425	6173370	Residential Rural	1396
R3	644625	6175747	Residential Rural	3682
R4	644012	6175777	Residential Rural	4095
R5	645877	6176486	Residential Rural	3827
R6	648483	6175857	Residential Rural	3338
R7	644719	6168879	Residential Rural	2805
R8	644926	6168454	Residential Rural	3054
C1	644548	6169505	Commercial	2455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KILLARNEY ROAD
BEULAMBIL ROAD
KALANGAN ROAD
EUBINDAL ROAD
LINDEN ROAD
WOODSTOCK ROAD
HUGHSTONIA ROAD
Galong
R1
R2
R3
R4
R5
R6
R7
R8
C1
Legend
Noise Receivers
Property Boundary
Approved Mine Boundary
Source:
NSW DCDB Data July 2022
ESRI World Imagery
MAC (Muller Acoustic Consulting), Figure - 4, Sensitive receivers locations, Noise Impact Assessment 2021 (page 9)
Noise Receiver Locations
F2-2
Drawing No: 0662616m_NoiseG02_R0.mxd
Date: 14/11/2022
Drawing Size: A4
Drawn By: CB
Reviewed By: MN
Coordinate System: GDA 1994 MGA Zone 55
0 500 1,000m
N
Noise Report
Graymont - Galong Limestone Quarry MOD 4
Client: Graymont
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
ERM

4. NOISE CRITERIA

4.1 Development Application 317-7-2003

Operational noise limits are stipulated at Conditions 3.12 and 3.13 of Development Application (DA) 317-7-2003 and are set at $L_{Aeq\ (15\ min)}$) 35 dB(A) for the day, evening periods and $L_{A1\ (1\ min)}$ 45 dB(A) during the night period.

4.2 Existing Environmental Protection Licence

The existing Environmental Protection Licence (EPL) conditions are consistent with DA 317-7-2003.

The Site is required by NSW EPA to comply with the EPL No. 4660 dated 25 Sep 2020 (NSW EPA, 2020). Condition L4.1 from the EPL provides noise limits for the most affected noise sensitive locations and they are reproduced in **Table 3-1**.

Table 3-1 EPL 4660 Noise Limits

Day - $L_{Aeq(15\ min)}$, dB(A)	Evening - $L_{eq(15\ min)}$, dB(A)	Night - $L_{eq(15\ min)}$, dB(A)	Night - $L_{1(1\ min)}$, dB(A)
35	35	35	45

Note:
1. Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods

4.3 NSW Noise Policy for Industry

The Noise Policy for Industry (NPfI) (NSW EPA, 2017) sets out the procedure to determine the relevant Project Noise Trigger Levels (PNTLs) to assess operational noise from industrial developments. The PNTLs applies to existing NSRs.

The PNTLs provides quantitative objectives for assessing a proposal or site. It is not intended for use as a mandatory requirement. The PNTL is a level that, if exceeded, would indicate a potential noise impact on the community, and so 'trigger' a management response; for example, further investigation of mitigation measures.

The PNTL is the lower (i.e., the more stringent) value of the project intrusiveness noise level and project amenity noise level determined in sections 2.3 and 2.4 of the NPfI as determined below.

4.3.1 Project Intrusiveness Noise Level

The NPfI states:

> "The intrusiveness of an industrial noise source may generally be considered acceptable if the level of noise from the source (represented by the LAeq descriptor), measured over a 15-minute period, does not exceed the background noise level by more than 5 dB when beyond a minimum threshold. This intrusiveness noise level seeks to limit the degree of change a new noise source introduces to an existing environment."

The intrusiveness noise level is determined as follows:

$$L_{Aeq,\ 15min} \leq \text{Rating Background Noise Level} + 5\ dB$$

4.3.2 Minimum Rating Background Noise Level and Intrusive Noise Levels

The Rating Background Level (RBL) is the overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period (as opposed to over each 24-hour period used for the assessment background level). The rating background noise level is the level used for assessment purposes.

However, for this assessment, noise monitoring was not conducted and instead the minimum RBLs as stated in the policy have been applied. This results in the minimum intrusiveness noise level being adopted, which provides a conservative assessment to the operational noise of the Proposal. The project intrusiveness noise levels are summarised in **Table 3-2**.

Table 3-2: Minimum assumed RBLs and Project Intrusiveness Noise Levels

Time of day	Minimum assumed rating background noise level, in dB(A)	Minimum project intrusiveness noise levels, in $L_{Aeq,15min}$ dB(A)
Day	35	40
Evening	30	35
Night	30	35

4.3.3 Amenity Noise Levels and Project Amenity Noise Levels

To limit continuing increases in noise levels from application of the intrusiveness level alone, the ambient noise level within an area from all industrial noise sources combined should remain below the recommended amenity noise levels specified in Table 2.2 of the NPfI where feasible and reasonable. The recommended amenity noise levels will protect against noise impacts such as speech interference, community annoyance and sleep disturbance. The noise amenity area is defined as residential rural and the relevant noise amenity levels are given in **Table 3-3**.

Table 3-3 Amenity Noise Levels

Receiver/ Noise Amenity Area	Assessment Period[1]	Recommended Amenity Noise Level, L_{eq} dB(A)	Project Amenity Noise Level, $L_{Aeq(15\ min)}$ [2]
Residential/ Rural	Day	50	53
	Evening	45	48
	Night	40	43

Notes:

1. *Day-time period is from 0700 to 1800 (Monday to Saturday) and 0800 to 1800 (Sundays and Public Holidays); Evening period is from 1800 to 2200 and Night-time period is from 2200 to 0700 (Monday to Saturday) and 2200 to 0800h (Sundays and Public Holidays)*

2. *A +3dB adjustment is made to the Recommended Amenity Noise Level for each period to convert it to a 15-minute assessment period as per Section 2.2 of the NPfI.*

4.3.4 Maximum Noise Level Event Assessment – Sleep Disturbance

The potential for sleep disturbance from maximum noise level events from the development during the night-time period needs to be considered. Sleep disturbance is considered to be both awakenings and disturbance to sleep stages.

A detailed maximum noise level event assessment should be undertaken where the subject development night-time noise levels at a residential location exceed:

- $L_{Aeq,15min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is the greater; and/or
- L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB, whichever is the greater.

The night-time noise levels subject to a detailed maximum noise level event assessment are therefore $L_{Aeq,15min}$ 40 dB(A) and/or L_{AFmax} 52 dB(A).

The detailed assessment should cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background noise level, and the number of times this happens during the night-time period.

Other factors that may be important in assessing the extent of impacts on sleep include:

- How often high noise events will occur;
- The distribution of likely events across the night-time period and the existing ambient maximum events in the absence of the subject development;
- Whether there are times of day when there is a clear change in the noise environment (such as during early-morning shoulder periods); and
- Current scientific literature available at the time of the assessment regarding the impact of maximum noise level events at night.

4.4 NPfI Project Noise Trigger Level

The NPfI PNTL is the more stringent of the intrusiveness and amenity noise criteria of NPfI provided in Table 3-2 and Table 3-3 respectively. The PNTLs are therefore set by the Project Intrusiveness Noise Levels for all assessment periods as per **Table 3-2** and is applicable to the NSRs in this assessment.

5. NOISE ASSESSMENT

5.1 Noise Sources

A modification Noise Impact Assessment (NIA) of the addition of two mobile crusher units at the Galong Limestone Mine has been conducted in November 2021 (Muller Acoustic Consulting, 2021) for Development Consent No. T2003/025 for Galong Mine. The noise source sound power levels and positions assumed in this previous NIA indicate a worst-case noise situation at the mine and are relevant to the current assessment.

Table 4-1 summarises the noise sources used in the NIA (Muller Acoustic Consulting, 2021) applicable to this assessment.

Table 4-1 Noise Sources (Muller Acoustic Consulting, 2021)

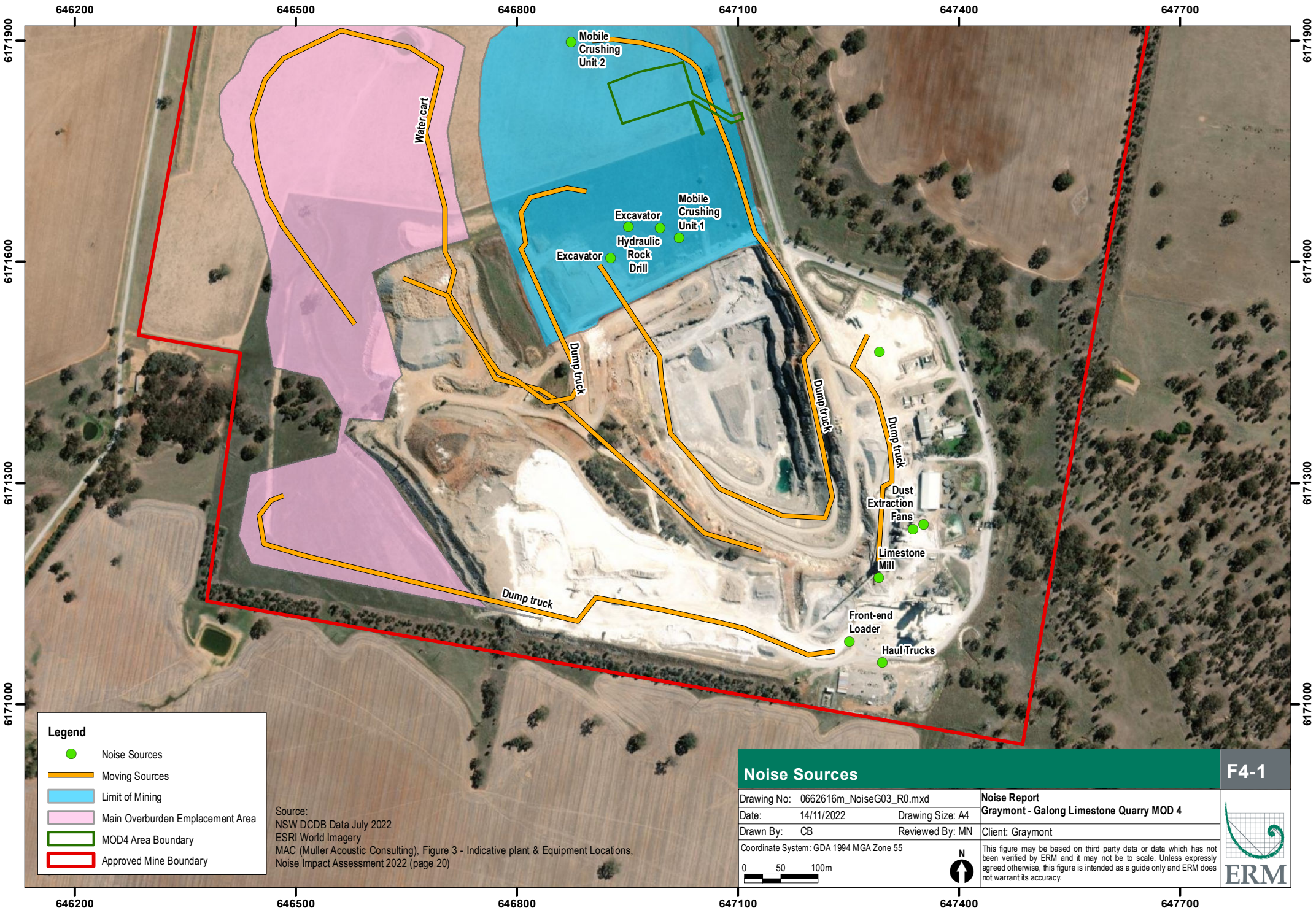
Item	Sound Power Level dB(A) per Item	Noise Descriptor
Limestone Mill	102	$L_{eq(15\ min)}$
Mobile Crushing Unit (x2)	114	$L_{eq(15\ min)}$
Front-end loader (FEL)	110	$L_{eq(15\ min)}$
FEL loading semi-trailer	115	$L_{eq(15\ min)}$
Excavator with hydraulic hammer	126	$L_{eq(15\ min)}$
Excavator	104	$L_{eq(15\ min)}$
Dump truck (x4)	110	$L_{eq(15\ min)}$
Hydraulic rock drill	118	$L_{eq(15\ min)}$
Dust extraction fans (x2)	110	$L_{eq(15\ min)}$
Semi-trailer	107	$L_{eq(15\ min)}$
Water cart	105	$L_{eq(15\ min)}$
Mobile Crushing Unit	118	L_{max}

The assumed positions of the previous modification NIA (Muller Acoustic Consulting, 2021) noise sources in **Table 4-1** are graphically shown in **Figure 4–1.** The assumed dump truck routes to access the new stockpile for this modification are also shown in the figure.

5.2 Assessment of Modification

The number of coal deliveries would increase from up to six heavy vehicle movements per day (three in, three out) to 12 heavy vehicle movements per day (six in, six out). It is assumed that in a worst-case 15-minute period during any part of the day, there will be 4 heavy vehicle movements on-site (two in, two out).

In the previous modification NIA (Muller Acoustic Consulting, 2021), 4 heavy vehicle (dump truck) movements were considered. The number of dump truck movements in a 15-minute period and the dump truck route to access the new stockpile (shown as MOD 4 Area Boundary in **Figure 4–1)** are the same as in the current assessment.


646200
646500
646800
647100
647400
647700
6171900
6171600
6171300
6171000
Mobile Crushing Unit 2
Water cart
Excavator
Mobile Crushing Unit 1
Hydraulic Rock Drill
Excavator
Dump truck
Dump truck
Dump truck
Dust Extraction Fans
Limestone Mill
Dump truck
Front-end Loader
Haul Trucks
Legend
Noise Sources
Moving Sources
Limit of Mining
Main Overburden Emplacement Area
MOD4 Area Boundary
Approved Mine Boundary
Source:
NSW DCDB Data July 2022
ESRI World Imagery
MAC (Muller Acoustic Consulting), Figure 3 - Indicative plant & Equipment Locations, Noise Impact Assessment 2022 (page 20)
Noise Sources
F4-1
Drawing No: 0662616m_NoiseG03_R0.mxd
Date: 14/11/2022
Drawing Size: A4
Drawn By: CB
Reviewed By: MN
Coordinate System: GDA 1994 MGA Zone 55
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Noise Report
Graymont - Galong Limestone Quarry MOD 4
Client: Graymont
This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
ERM

5.2.1 Assessment against Criteria

Predicted cumulative $L_{eq(15\ min)}$ noise levels have been assessed against NPFI PTNLs, DA 317-7-2003 and the EPL Noise Limits in Table 4-2.

Table 4-2 Predicted Operational Noise Levels

Receiver Name	Previous Modification NIA (Muller Acoustic Consulting, 2021) Predicted Noise Level, $L_{eq(15\ min)}$, dB(A)	Current Modification NIA Predicted Noise Level, $L_{eq(15\ min)}$, dB(A)	PTNL $L_{eq(15\ min)}$, dB(A)	DA 317-7-2003 and EPL Noise Limit, $L_{eq(15\ min)}$, dB(A)	Compliance?
Day Period					
R1	35	35	40	35	Yes
R2	31	31	40	35	Yes
R3	<30	<30	40	35	Yes
R4	<30	<30	40	35	Yes
R5	<30	<30	40	35	Yes
R6	<30	<30	40	35	Yes
R7	<30	<30	40	35	Yes
R8	<30	<30	40	35	Yes
C1	30			63	Yes
Evening and Night Period					
R1	35	35	40	35	Yes
R2	31	31	40	35	Yes
R3	<30	<30	40	35	Yes
R4	<30	<30	40	35	Yes
R5	<30	<30	40	35	Yes
R6	<30	<30	40	35	Yes
R7	<30	<30	40	35	Yes
R8	<30	<30	40	35	Yes

This NIA predicts compliance with the NPfI PTNLs and applicable criteria at all the receivers for all periods, as shown in Table 4-2.

Receiver R1 is the closest receiver to the new stockpile in the MOD4 area and had the potential to be affected by the modification. However, the dump truck routes from the previous modification NIA (Muller Acoustic Consulting, 2021) have not shifted with no change in dump truck volume in a 15-minute worst-affected period . Therefore, no increase in predicted noise levels at Receiver R1 is expected.

5.2.2 Maximum Noise Level Assessment

Maximum noise levels generated by operating noise have the potential to cause disturbance to sleep. The predicted maximum noise levels for each scenario are shown in **Table 4-3.**

Table 4-3 Predicted Maximum Noise Levels

Receiver Name	Previous Modification NIA (Muller Acoustic Consulting, 2021) Predicted Noise Level, L_{max}, dB(A)	Current Modification NIA Predicted Noise Level, $L_{eq(15\ min)}$, dB(A)	NPfI Maximum Noise Level Criterion, L_{max}, dB(A)	DA 317-7-2003 and EPL Noise Limit, $L_{1(1\ min)}$, dB(A) [1]	Compliance?
R1	35	35	52	45	Yes
R2	30	30	52	45	Yes
R3	<30	<30	52	45	Yes
R4	<30	<30	52	45	Yes
R5	<30	<30	52	45	Yes
R6	<30	<30	52	45	Yes
R7	<30	<30	52	45	Yes
R8	<30	<30	52	45	Yes

Note:

1. *The $L_{1(1\ min)}$ noise descriptor is closely related to L_{max} and is deemed to be the same for assessment purposes.*

Compliance is predicted with the NPfI Maximum Noise Criterion and relevant criteria at all the receivers.

6. CONCLUSION

The predicted noise levels at the NSRs due to the modification (increase from 6 truck movements to 12 movements and the truck route accessing the new stockpile being closer to Receiver R1) comply with the NPfI Criteria, the DA 317-7-2003 Noise Limits and the EPL Noise Limits. No specific noise mitigation measures are recommended for the modification.

7. STATEMENT OF LIMITATIONS

This report was prepared in accordance with the scope of work outlined within this report and subject to the applicable cost, time and other constraints. ERM performed the services in a manner consistent with the normal level of care and expertise exercised by members of the environmental profession. ERM makes no warranty concerning the suitability of the site for any purpose or the permissibility of any use, development or re-development of the site. Except as otherwise stated, ERM's assessment is limited strictly to an environmental noise assessment.

This assessment is based on information provided by Graymont NSW Pty Ltd (Graymont) or other people with knowledge of the site conditions. All conclusions and recommendations made in the report are the professional opinions of the ERM personnel involved with the project and, while normal checking of the accuracy of data has been conducted, ERM assumes no responsibility or liability for errors in data obtained from such sources, regulatory agencies or any other external sources, nor from occurrences outside the scope of this project.

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8. REFERENCES

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Yours sincerely,

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Principal Acoustics Consultant

Karie Bradfield
Partner

APPENDIX C TRAFFIC AND TRANSPORT IMPACT ASSESSMENT

Graymont – Galong Limestone Quarry MOD 4

Traffic and Transport Assessment

Prepared for:

ERM

21 November 2022

The Transport Planning Partnership

Graymont – Galong Limestone Quarry MOD 4

Traffic and Transport Assessment

Client: ERM

Version: V03

Date: 21 November 2022

TTPP Reference: 22288

Quality Record

Version	Date	Prepared by	Reviewed by	Approved by	Signature
V01	9/11/22	S. Read	J. Rudd	J. Rudd	
V02	14/11/22	S. Read	J. Rudd	J. Rudd	
V03	21/11/22	S. Read	J. Rudd	J. Rudd	

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Figures

1 Introduction

The Transport Planning Partnership (TTPP) has been commissioned by ERM to prepare a traffic and transport assessment for the Graymont Galong Limestone Quarry MOD 4 proposal. The proposal is to increase the coal stockpile and the number of daily truck loads used in the importing of coal to the site.

The purpose of this document is to assess the traffic related impacts of the proposed development on the operation and safety of the surrounding road network.

1.1 Background

The Project is located at Galong Limestone Mine and Kiln (Galong) at 342 Eubindal Road, Galong, NSW. The site has operated since the 1900's and produces limestone and quicklime. Graymont (NSW) Pty Ltd (Graymont) operates the Approved Project. The site comprises the limestone quarry, kiln and a stockpile of coal for use in the kiln.

Galong operates under several development approvals namely Hilltops Council approvals (DAT2003/025, DA 07-033, DA 2020/0208 and DA 2020/0033) and (the now) department of Planning and Environment (DPE) issued DA 317/7-2003 (as modified).

DA 317-7-2003 (as modified) was granted under the Environmental Planning and Assessment Act 1979 (EP&A Act) on 11 December 2003 by the (now) Department of Planning and Environment (DPE) for the construction and operation of a limestone kiln to produce 200,000 tonnes per annum (tpa) of quicklime at Galong Limestone Mine (Approved Project).

This traffic and transport impact assessment supports an application under Section 4.55 of the EP&A Act for Modification (MOD4) to DA 317-7-2003 to facilitate:

- Coal storage pad and associated works;
- New 10,000 tonnes coal storage stockpile; and
- Increase in truck movements to delivery coal from six (6) to up to 12 movements per day.

No other changes are proposed to the existing enclosed 200 tonne coal stockpile building or any other approved Project elements.

1.2 Report Structure

This report is structured as follows:

- Section 2 – Existing Conditions, reviews the existing transport conditions.
- Section 3 – Proposed Modification, outlines the proposal and traffic generation.
- Section 4 – Traffic Impacts – Assessment of the traffic and transport impacts of the proposal.
- Section 5 – Conclusions.

1.3 Limitations and Exclusions

This assessment is focused on the access of heavy vehicles transporting coal to the site via the surrounding local road network. It is assumed that the State Road network has been designed to sufficient standard to accommodate the type of vehicles proposed to transport coal. The volume of vehicles forecast would also be well within the daily variation expected on these roads.

2 Existing Conditions

2.1 Overview

The site is located at Galong which is 22 km east of Harden and 20km south of Boorowa as shown in Figure 2.1.

Figure 2.1: Site Location

The limestone quarry has been in operation since 1994 but there has been a history of limestone quarry's in the area since 1885. The site has approval for up to 6 truck movements per day for the purpose of transporting coal as assessed in the 2003 Environmental Impact Statement (Olsen Environmental Consulting June 2003).

2.2 Road Network

The local Road network is shown in Figure 2.1.

Figure 2.2: Site Location

The key roads are:

Burley Griffin Way – Burley Griffin Way is a state road that connects the Hume Highway south of Bowning to Griffth as the route B94. The rural highway is two-way two lane highway with a speed limit of 100 km/h.

Lachlan Valley Way – Lachlan Valley Way is a State road that connects Yass to Cowra and part of the route B81. It is a rural highway that is two-way two lane highway with a speed limit of 100 km/h.

Cunningar Road – Cunningar Road is a regional road that connects Burley Griffin Way. It is a two lane two-way rural road with a speed limit of 100 km/h.

Limestone Way, Ryan Street and Kalangan Road – Is a line of rural roads that connect from Burley Griffin Way. The road is a two way two-lane road that is some 8 m wide with centre with line marking.

Galong Road – Galong Road is a local rural road with a speed limit of 100 km/h. The road is currently being upgraded to include a sealed pavement and has a restriction on heavy vehicle movements on the northern access of the road. The Graymont – Galong Quarry has access from Galong Road via Eubindal Road and the section between Eurindal Road and Kalangan Road is sealed. Once the upgrade has been completed the northern section of Galong Road will be available for use by heavy vehicles.

2.3 Quarry Activities

The quarry is currently operating sourcing coal from Boggabri. A 2003 approval was granted for the facility to include a lime kiln.

3 Proposed Modification

3.1 Overview

The proposal is to modify the current conditions of consent (DA 317-7-2003 (as modified)) to allow for the delivery of up to 12 heavy vehicle movements for the purpose of transporting coal. That is 6 trips to site and 6 trips from site. This is an increase from the current six (6) movements per day (3 in and 3 out). In context this is a small increase considering the total site truck movements including the total mine production movements.

3.2 Construction

A storage pad will be constructed in a previously disturbed area to accommodate the new coal stockpile.

All materials for pad construction are available onsite and as such no off site truck movements are required to construct the pad.

The pad will be constructed to ensure compliance with 'MDG 28 Safety requirements for coal stockpiles and reclaim tunnels' (NSW T&I, 2013) .

Equipment utilised for the stockpile construction would remain within that onsite and generally require the use of:

- Grader
- Dozer (CAT D10 or equivalent)
- 30-ton articulated dump truck
- Compactor and container truck.

3.3 Operation

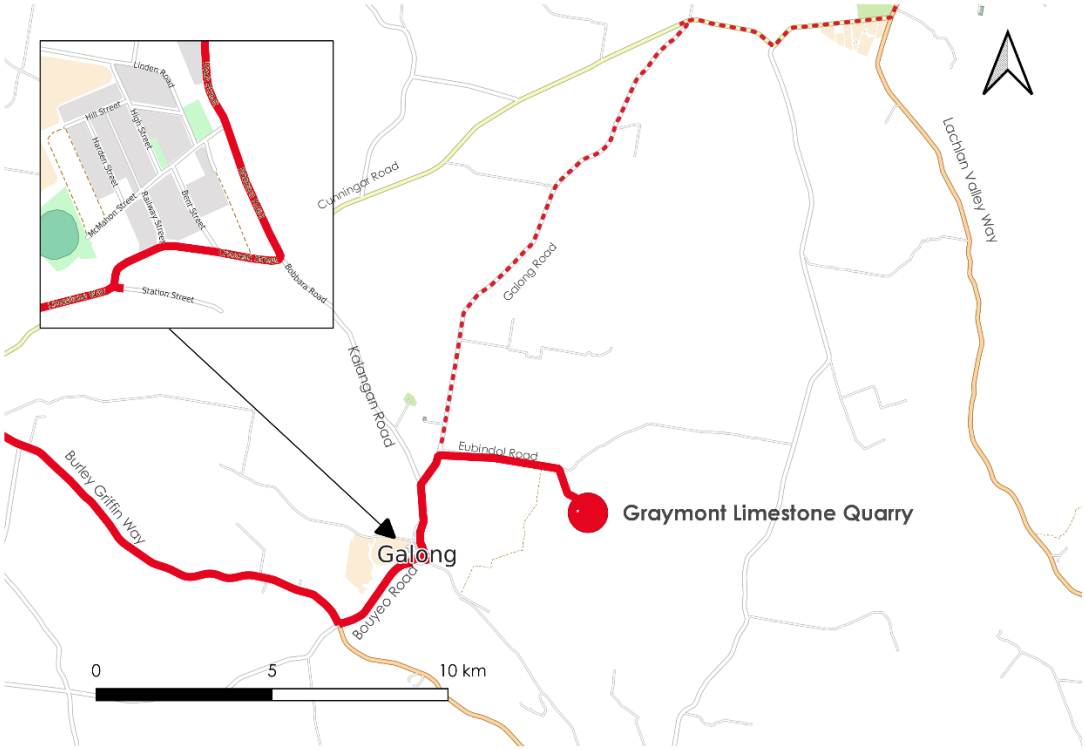
The proposal is to allow for up to 12 truck movements per day for the purpose of transporting coal to the site. That is an increase of up to three (3) trucks in and three (3) trucks out per day.

The coal is to be sourced from the Tarrawonga Coal Mine near Bogabri NSW and will be transported to site using standard 19m truck and dog vehicles. The route from Tarrawonga Coal Mine to site is generally shown in Figure 3.1. The proposed route will use state roads via Harden and from Burley Griffin Way local rural roads to site. As Galong Road is currently being upgraded and once complete would allow heavy vehicles to use a more direct route via Boorrawa.

Figure 3.1: Coal Transport Route

The route on local roads is shown in Figure 3.2. The southern route would use the existing heavy vehicle route to bypass the Galong town. The northern route from Lachlan Valley Way will use the Cunningah Road and Galong Road once the Galong Road upgrade is completed.

Figure 3.2: Local Haulage Route



4 Traffic and Transport Impacts

4.1 Overview

Traffic implications of the proposed development have been assessed in terms of the impacts of the increase in volumes of heavy vehicles, access to the State Road network and the suitability of the intersections and a review of the crash history and potential effects on road safety.

During construction there would be four (4) additional workers on site and the minimal additional plant and equipment.

4.2 Operational Impacts of Heavy Vehicle Volumes

The proposal will result in a relatively modest increase in traffic volumes on the local roads. There will be 6 truck and dog vehicles in and 6 truck and dog vehicles out per day. The routes proposed to be used are currently used by heavy vehicles and the route from Burley Griffin Way to site will use the heavy vehicle route to bypass Galong town As shown in the inset on Figure 3.2. The impact on amenity for local residents would be minimal.

The additional 3 truck movements in each direction per day would not have an appreciable impact on the road network performance.

As one of the main users of the local roads from Burley Griffin Way to site it is recommended that the pavement condition is monitored to assess the potential impact of heavy vehicles on the road surface and remediate when needed.

4.3 Connections to the State Road Network

Intersections that connect the haulage routes from the state road network to the local roads have been assessed for safety. It was found that the intersections have been designed with turn lane facilities and are considered suitable for the increase in truck movements.

The intersection of Burley Griffin Way and Limestone Way has been constructed with auxiliary right turn lanes and is considered suitable for heavy vehicles to turn left into Limestone Way and right turn from Limestone Way. The intersection is shown in Figure 4.1.

Figure 4.1: Intersection of Burley Griffin Way, Bouyeo Road and Limestone Way

Once the Galong Road has been upgraded and the route via Boorowa is available vehicles would use the intersection of Lachlan Valley Way and Cunningar Road to turn to and from the State Road network.

The intersection of Lachlan Valley Way and Cunningar Road has a channelised right turn and the left turn from Cunningar Road has an acceleration lane. The intersection is shown in Figure 4.2.

Figure 4.2: Intersection of Lachlan Valley Way and Cunningar Road

4.4 Crash History

The crash history for the years 2017 to 2021 inclusively was reviewed. The data indicates that there were five (5) crashes recorded near the intersection of Limestone Way and Burley Griffin Way. Four (4) of these crashes were non-casualty crashes and one (1) minor injury crash. All the crashes were single vehicle crashes. The crash locations are shown in Figure 4.2.

Figure 4.3: Crashes Intersection of Burley Griffin Way and Limestone Way

There were no crashes recorded at the intersection of Cunningar Road and Lachlan Valley Way. Four (4) crashes were recorded along Cunningar Road from Lachlan Valley Way to Galong Road. Three (3) of the crashes were Moderate injury crashes and one (1) minor crash. All crashes involved single vehicle crashes. The crash locations are shown in Figure 4.4.

Figure 4.4: Crashes on Cunningar Road (Lachlan Valley Way to Galong Road)

There were no crashes recorded on Galong Road or Ryan Street.

All of the crashes involved single vehicles and none of the crashes were serious or fatal. There were no clear crash clusters. It is unlikely that the increase in heavy vehicle movements would have an effect on the number of crashes or that there is an issue with using the roads.

5 Conclusion

TTPP has undertaken a traffic assessment for the proposed modification of the conditions at the Graymont Galong Limestone Quarry and Kiln. The project will increase the number of coal trucks delivering to site from 3 per day to 6 per day. This will increase the number of heavy vehicle movements for the purpose of transporting coal by up to 3 movements to site and 3 movements from site.

The assessment of the proposal has found that:

- The proposed increase in truck movements for the purpose of transporting coal would have minimal impact on the road network. The routes from the state road network to site are currently used by heavy vehicles and bypass the Galong township.
- A review of the 5 year crash history indicates that there no crash clusters and all of the crashes recorded were single vehicle crashes.

It was noted that Galong Road is currently being upgraded and once completed would be suitable for heavy vehicles with vehicles using the northern route via Lachlan Valley Road.

It is recommended that local rural roads used by the haulage route should continue to be monitored for impacts as a result of the increase in heavy vehicles.

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