Galong - MOD4 Kiln Coal Stockpile

Submissions Report

07 March 2023

Project No.: 0662616

GRAYMONT

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Document details	
Document title	Galong - MOD4 Kiln Coal Stockpile
Document subtitle	Submissions Report
Project No.	0662616
Date	07 March 2023
Version	1
Author	Catherine Timbrell
Client Name	Graymont (NSW) Pty Ltd

** Photo page 1 courtesy of TTPP Transport Planning*

Document history

				ERM approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
Final	1.0	Catherine Timbrell	Karie Bradfield	Karie Bradfield	07 March 2023	For client review

Signature Page

07 March 2023

Galong - MOD4 Kiln Coal Stockpile

Submissions Report

Catherine Timbrell
Planner

Karie Bradfield
Partner

Environmental Resources Management Australia Pty Ltd
Level 14 207 Kent Street
Sydney NSW 2000

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1. INTRODUCTION

1.1 Overview

Environmental Resources Management Australia Pty Ltd (ERM) on behalf of Graymont (NSW) Pty Ltd (Graymont) has prepared this Submissions Report to respond to matters raised by the NSW Department of Planning and Environment (DPE) in reference to Modification (MOD) 4 of Project Approval (DA 317-7-2003) for the Galong Limestone Mine and (&) Kiln, located at 342 Eubindal Road, Galong, NSW.

The Modification Report (ERM, Nov 2022) was prepared under Section 4.55(1A) of the *Environmental Planning & Assessment Act 1979* (EP&A Act).

A request for additional information was made by the DPE in a letter dated 13 February 2023, as provided in Appendix A.

In response to the DPE request for additional information, further information has been prepared to support the application and assess the impacts of MOD4, as follows:

- Air quality: update to the Air Quality Assessment (ERM, 2022) provided as Appendix A of the Modification Report to further assess the emission factor of utilising a dozer;
- Noise: update to the Noise Impact Assessment (ERM, 2022) provided as Appendix B of the Modification Report to further assess the noise impacts of utilising a dozer, in addition to increased truck movements on local roads in accordance with the *NSW Road Noise Policy* (DECCW, 2011); and
- Traffic and transport: letter assessment prepared by the Transport Planning Partnership (TTPP) to further assess the safety and crash history, and the geometry and sight distance of several intersections on the local road network proposed to be utilised for the haulage route.

1.2 Applicant

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

1.3 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 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) DPE issued DA 317-7-2003 (as modified).

DA 317-7-2003 (as modified) was granted under the EP&A Act on 11 December 2003 by the (now) DPE for the construction and operation of a limestone kiln to produce 150,000 tonnes per annum (tpa) of quicklime at Galong Limestone Mine.

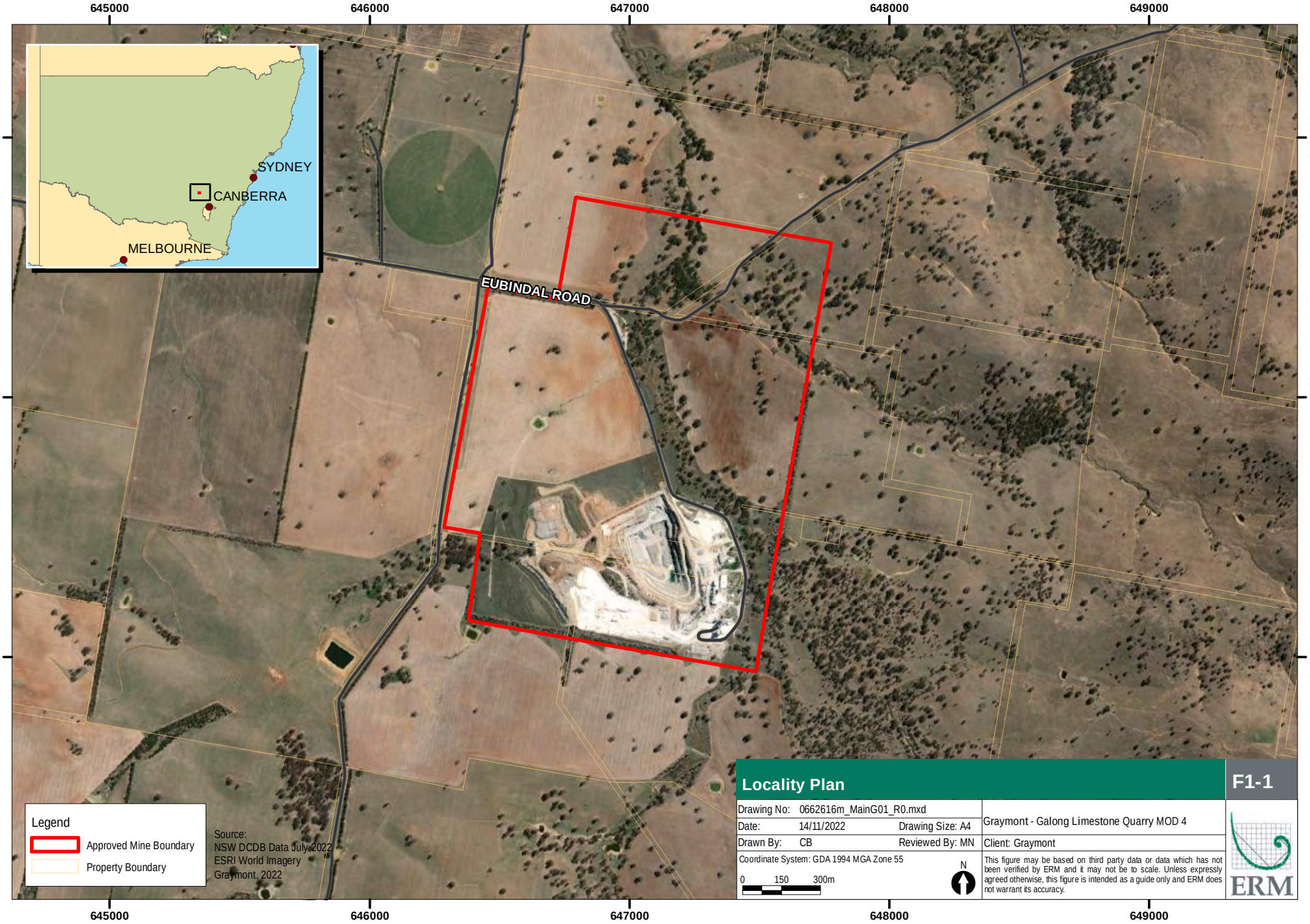
1.4 MOD Description and Need

MOD4 is comprised of the following elements as generally shown in Figure 3-1 of Appendix C (Updated Modification Description):

- Storage pad and associated works;
- Temporary, new 10,000 t uncovered coal storage stockpile; and
- Increase in associated truck movements to up to 12 per day.

MOD4 will allow Graymont with an ability to temporarily store additional coal at its stockpile and as such, take advantage of favourable coal prices from its supplier. Haulage of coal to the site will extend until the end of July 2023, and the coal stockpile will be depleted by end of June 2024.

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 of Appendix C.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Legend
Approved Mine Boundary
Property Boundary
Source:
NSW DCDB Data July 2022
ESRI World Imagery
Graymont, 2022
Locality Plan
F1-1
Drawing No: 0662616m_MainG01_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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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

2. RESPONSE TO MATTERS RAISED

The below table addresses the request for additional information made by the DPE letter provided in Appendix A.

Table 2-1 DPE Submission Responses

Reference #	Matter Raised	Response	Refer to
DPE_1	Please provide a copy of: · the latest version of the site's Operational Environmental Management Plan (including date of last revision); · the most recent Annual Environmental Management Report; and · Council development consents for the site.	Provided to DPE via email correspondence on 13 February 2023.	Appendix B, Email Correspondence
DPE_2	The Modification Report states that DA 317-7-2003 authorises production of 200,000 tonnes per annum of quicklime. Condition 1.3 of DA 317-7-2003 states that the Applicant must ensure that the Lime Kiln generates generally no more than 150,000 tonnes per annum of quicklime. Please clarify this discrepancy.	Email correspondence via Applicant and DPE on 13 February 2023 confirmed that reference to a production rate of 200,000 tonnes per annum of quicklime was in error.	Appendix B, Email Correspondence
DPE_3	Section 3.2 of the Modification Report states that the proposed stockpile would drain to the SW corner, whereas Figure 3.2 suggests that the stockpile drains to the SE corner. Please clarify this discrepancy.	Email correspondence via Applicant and DPE on 13 February 2023 confirmed that the storage pad area will drain to the south-east corner, as shown in Figure 3.2 of the Modification Report. The reference to drainage to the south-west corner in section 3.2 was in error.	Appendix B, Email Correspondence
DPE_4	Section 6.4.1 of the Modification Report states that a dozer is proposed to be used for stockpile compaction, however a dozer has not been included as a noise or emissions source in the noise or air quality assessments. Please provide additional information on the potential noise and air quality impacts of dozer use if this is to be used on site.	<u>Air Quality</u> Table 4-2 (Estimated dust emissions from proposed activities and comparison to previous emissions) of the Air Quality Assessment (Appendix C) has been updated to consider the emission factor for the front end loader (FEL) / dozer working on the coal stockpile. Although this update increased the estimated FEL / dozer emission, the overall dust emissions from MOD4 activities remain 1% of the site-wide emissions and are still considered non-material in terms of dust emissions. <u>Noise</u> The Noise Assessment (Appendix E), has been updated to consider dozer as noise source, with an assumed Sound Power level of $L_{eq(15\ min)}$ 116 dB(A). The assessment concluded that the addition of a dozer presents a negligible increase in predicted noise levels.	Appendix D, Updated Air Quality Assessment Appendix E, Updated Noise Assessment

Reference #	Matter Raised	Response	Refer to
DPE_5	The Noise Assessment presented in the Modification Report provides an assessment of on-site operational noise. No assessment of the increase in off-site road traffic noise associated with the proposed modification has been provided. Please undertake an assessment of road traffic noise impacts associated with the proposed increased truck movements on local roads in accordance with the NSW Road Noise Policy (RNP).	Section 5.2.3 of the Updated Noise Assessment (Appendix E) provides a traffic noise assessment. The assessment found that there is compliance of the RNP criteria at all the sensitive receivers except for receivers which are setback 10 m - 15 m from Ryan Street. It should be noted that this exceedance was identified in the previous noise assessment prepared by Sibelco (May 2015) and MOD4 does not contribute to this exceedance. Implementation of the following mitigation measures proposed in the Sibelco report would maintain a negligible increase in noise: ■ localised property treatments for residences where exceedances of criteria are predicted; ■ noise monitoring within affected properties along Ryan Street to confirm compliance with RNP traffic noise criteria after implementation of property treatments; ■ routine monitoring along the southern haulage route to ensure compliance with RNP traffic noise criteria; and ■ localised property treatments offered to all existing residences along Ryan Street and affected properties adjoining Crescent Street.	Appendix E, Updated Noise Assessment
DPE_6	Please provide a summary of the results of any historical noise monitoring undertaken at the site.	Email correspondence via Applicant and DPE on 13 February 2023 Graymont does not have any records of historical noise monitoring of operational noise undertaken at the Site. During Graymont's ownership of the site (since August 2019), no Site noise-related complaints have been received. For the period five years prior, as reported in the annual environmental management reports (2014-2019), the Galong facility has not received any site noise-related complaints.	Appendix B, Email Correspondence
DPE_7	The Traffic and Transport Assessment presented in the Modification Report provides an assessment of intersections that connect the haulage route to the State Road network. Please provide an assessment of the intersections along the haulage route that are located on the local road network.	The Modification proposes an increase in truck movements for the purpose of coal transportation from 6 truck movements a day to 12 truck movements (i.e. an additional 3 truck movements per day in each direction). Truck movements currently use a route from Burley Griffin Way via Bouyeo Road, Kalangan Road and Galong Road. A secondary route from Lachlan Valley Way is also being considered upon completion of the Galong Road upgrades. In response to DPE_7, an assessment of the following key intersections has been completed by TTPP (2023) and is provided in Appendix C: ■ Galong Road and Eubindal Road;	Appendix C, Traffic and Transport TTPP Letter

Reference #	Matter Raised	Response	Refer to
		■ Galong Road and Kalangan Road; ■ Cunningar Road and Galong Road; and ■ Cunningar Road and Hughstonia Road. The assessment found that while in some instances the site distance is restricted, there are a number of existing mitigation measures at each of these intersections (e.g. intersection warning signs, raised rumble bars etc.) which reduce potential risk. One moderate injury crash was reported in the 5-year period at the intersection of Cunningar Road and Hughstonia Road. There were no serious injury crashes reported and mitigation measures have since been installed at the intersection. The local roads are therefore considered appropriate for the volume of traffic being proposed as: ■ This is a minor modification to an existing use and there has not been a significant crash history reported; and ■ The subject intersections have mitigation measures installed.	

3. 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 the Modification Report (ERM, Nov 2022) will mitigate any residual environmental risks and impacts associated with MOD4.

Therefore, MOD4 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.

4. REFERENCES

DECCW. (2011). *NSW Road Noise Policy*. Retrieved from https://www.epa.nsw.gov.au/publications/noise/2011236-nsw-road-noise-policy

ERM. (Nov 2022). *Modification Report: Galong - MOD4 Kiln Coal Stockpile*. Retrieved from https://www.planningportal.nsw.gov.au/major-projects/projects/mod-4-coal-stockpile

Sibelco. (May 2015). *Galong Project 320 Statement of Environmental Effects.*

APPENDIX A DPE LETTER – REQUEST FOR ADDITIONAL INFORMATION

Department of Planning and Environment

Our ref: Galong Lime Kiln Mod-4 (DA317-7-2003-I-Mod-4)

Mr Donald Cheong
Environment Manager
GRAYMONT (NSW) PTY LTD

Via: NSW Major Project portal (RFI-54770721)

13/02/2023

Subject: Request for Additional Information

Dear Mr Cheong

I refer to the Department of Planning and Environment's assessment for the Galong Lime Kiln Mod-4 (DA317-7-2003-I-Mod-4). After careful consideration, the department is requesting that you provide additional information.

You are requested to provide additional information in relation the following matters:

1. Please provide a copy of:
   - the latest version of the site's Operational Environmental Management Plan (including date of last revision);
   - the most recent Annual Environmental Management Report; and
   - Council development consents for the site.
2. The Modification Report states that DA 317-7-2003 authorises production of 200,000 tonnes per annum of quicklime. Condition 1.3 of DA 317-7-2003 states that the Applicant must ensure that the Lime Kiln generates generally no more than 150,000 tonnes per annum of quicklime. Please clarify this discrepancy.
3. Section 3.2 of the Modification Report states that the proposed stockpile would drain to the SW corner, whereas Figure 3.2 suggests that the stockpile drains to the SE corner. Please clarify this discrepancy.
4. Section 6.4.1 of the Modification Report states that a dozer is proposed to be used for stockpile compaction, however a dozer has not been included as a noise or emissions source in the noise or air quality assessments. Please provide additional information on the potential noise and air quality impacts of dozer use if this is to be used on site.
5. The Noise Assessment presented in the Modification Report provides an assessment of on-site operational noise. No assessment of the increase in off-site road traffic noise associated with the proposed modification has been provided. Please undertake an assessment of road traffic noise

impacts associated with the proposed increased truck movements on local roads in accordance with the NSW Road Noise Policy.

6. Please provide a summary of the results of any historical noise monitoring undertaken at the site.
7. The Traffic and Transport Assessment presented in the Modification Report provides an assessment of intersections that connect the haulage route to the State Road network. Please provide an assessment of the intersections along the haulage route that are located on the local road network.

You are requested to provide the information, or notification that the information will not be provided, to the department by Friday 10 March 2023. If you cannot meet this deadline or do not intend to provide the additional information, please advise the department via the NSW planning portal.

If you have any questions, please contact Gabrielle Allan on 02 9585 6078 or via email at gabrielle.allan@dpie.nsw.gov.au.

Yours sincerely,

JEvans

Jessie Evans
Director, Resource Assessments
Resource Assessments

APPENDIX B EMAIL CORRESPONDENCE

From: Donald Cheong <donald.cheong@graymont.com>
Sent: Monday, February 13, 2023 12:50 PM
To: Gabrielle Allan <gabrielle.allan@dpie.nsw.gov.au>
Cc: Alan Harris <alan.harris@graymont.com>
Subject: RE: Fees for MOD 4 - Coal Stockpile project has been received

Hi Gabrielle,

Thanks for your time to discuss our application last Friday afternoon. Please find attached the following site documents you requested:

1. Operation Environmental Management Plan (OEMP), Nov 2022
2. Annual Rehabilitation Report – 2022
    a. These reports were previously titled the Annual Environmental Management Report, as per the development consent, however were changed some years ago to the Annual Rehabilitation Report to align with the Resources Regulator annual reporting requirements.
3. Hilltops Council development consent 03-025 MOD4

You also raised the discrepancy between the 150,000 tonnes quicklime per annum approved production rate and the 200,000 tonnes pa stated in the Modification Report. I can confirm that the production rate stated in the Modification Report was an error and should have referred to the production rate as stated in the development consent. I apologise for any concerns inadvertently raised.

With the support of our consultants, we are preparing a Submissions Report, including further assessments to address the requests in your email below, and any further requests we receive. I note we have not received any further requests for information via the portal/email this morning.

I spoke with Scott Anson from MEG and he advised they have provided their response to Department of Planning with no issues raised. I have not been able to contact Bill Vanry from Council, however note Council's last update last Thursday that they are reviewing our application.

If there is any additional information we can assist you with, please let me know.

Regards,
Don

Donald Cheong
Environment Manager, Asia Pacific Northern
GRAYMONT

Level 9 118 Mount Street
North Sydney NSW 2060
Australia

From: Donald Cheong
Sent: Monday, 13 February 2023 3:15 PM
To: gabrielle.allan@dpie.nsw.gov.au
Cc: Alan Harris <alan.harris@graymont.com>
Subject: FW: MOD 4 - Coal Stockpile DA317-7-2003-I-Mod-4 - Request for Additional Information

Good afternoon Gabrielle,

In relation to information request item (6) in the Department's letter attached, Graymont does not have any records of historical noise monitoring of operational noise undertaken at the Galong site. During Graymont's ownership of the site (since August 2019), no site noise-related complaints have been received. For the period five years prior, as reported in the annual environmental management reports (2014-2019), the Galong facility has not received any site noise-related complaints.

We have records of noise monitoring undertaken at residences in the Galong township, to assess façade transmission loss, relating to road traffic noise. Could you please advise if this noise monitoring is of relevance to your assessment and we can provide a summary of results in our Submissions Report.

Regarding information request item (3), we confirm that the storage pad area will drain to the south-east corner, as shown in Figure 3.2 of the Modification Report. The reference to drainage to the south-west corner in section 3.2 is an error.

I note we have responded to information request items (1) and (2) via email. Items (4), (5) and (7) will be addressed in our Submissions Report, along with our updated Modification Description.

If I can assist with anything further, please don't hesitate to contact me.

Regards,
Don

Donald Cheong
Environment Manager, Asia Pacific Northern
GRAYMONT

Level 9 118 Mount Street
North Sydney NSW 2060
Australia

From: no-reply@majorprojects.planning.nsw.gov.au <no-reply@majorprojects.planning.nsw.gov.au>
Sent: Monday, 13 February 2023 12:08 PM
To: Donald Cheong <donald.cheong@graymont.com>
Cc: gabrielle.allan@dpie.nsw.gov.au
Subject: MOD 4 - Coal Stockpile DA317-7-2003-I-Mod-4 - Request for Additional Information

[EXTERNAL EMAIL]

Dear Donald Cheong,

The Department is requesting that you provide additional information in relation to the MOD 4 - Coal Stockpile.

Please access your profile for details of this request and to upload your response. You are requested to provide this response by 10/03/2023 .

If you have any enquiries, please contact Gabrielle Allan on [redacted] /at gabrielle.allan@dpie.nsw.gov.au .

To sign in to your account click here or visit the Major Projects Website.

Please do not reply to this email.

Kind regards

The Department of Planning and Environment

NSW GOVERNMENT

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APPENDIX C UPDATED MODIFICATION DESCRIPTION

GRAYMONT

Galong - MOD4 Kiln Coal Stockpile

Submissions Report

APP C Updated Modification Description

02 March 2023

Project No.: 0662616

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Document details	
Document title	Galong - MOD4 Kiln Coal Stockpile
Document subtitle	Submissions Report APP C Updated Modification Description
Project No.	0662616
Date	02 March 2023
Version	2.0
Author	Catherine Timbrell
Client Name	Graymont (NSW) Pty Ltd

** Photo page 1 courtesy of TTPP Transport Planning*

Document history

				ERM approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
Draft	1.0	Callista Harris, Dianne Munro	Dianne Munro	Karie Bradfield	15 November 2022	Draft for client review (Modification Report)
Draft	1.1	Dianne Munro	Dianne Munro	Karie Bradfield	22 November 2022	For submission (Modification Report)
Final	2.0	Catherine Timbrell	Karie Bradfield	Karie Bradfield	02 March 2023	Final for Submissions Report (amended text underlined)

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[1]

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 temporarily store additional coal at its stockpile and as such, take advantage of favourable coal prices from its supplier. Haulage of coal to the site will extend until the end of July 2023, and the coal stockpile will be depleted by end of June 2024.

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 detailed in **Section 6.4.1** of the Modification Report).

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.

[1] Revision 2.0 amendments underlined

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.

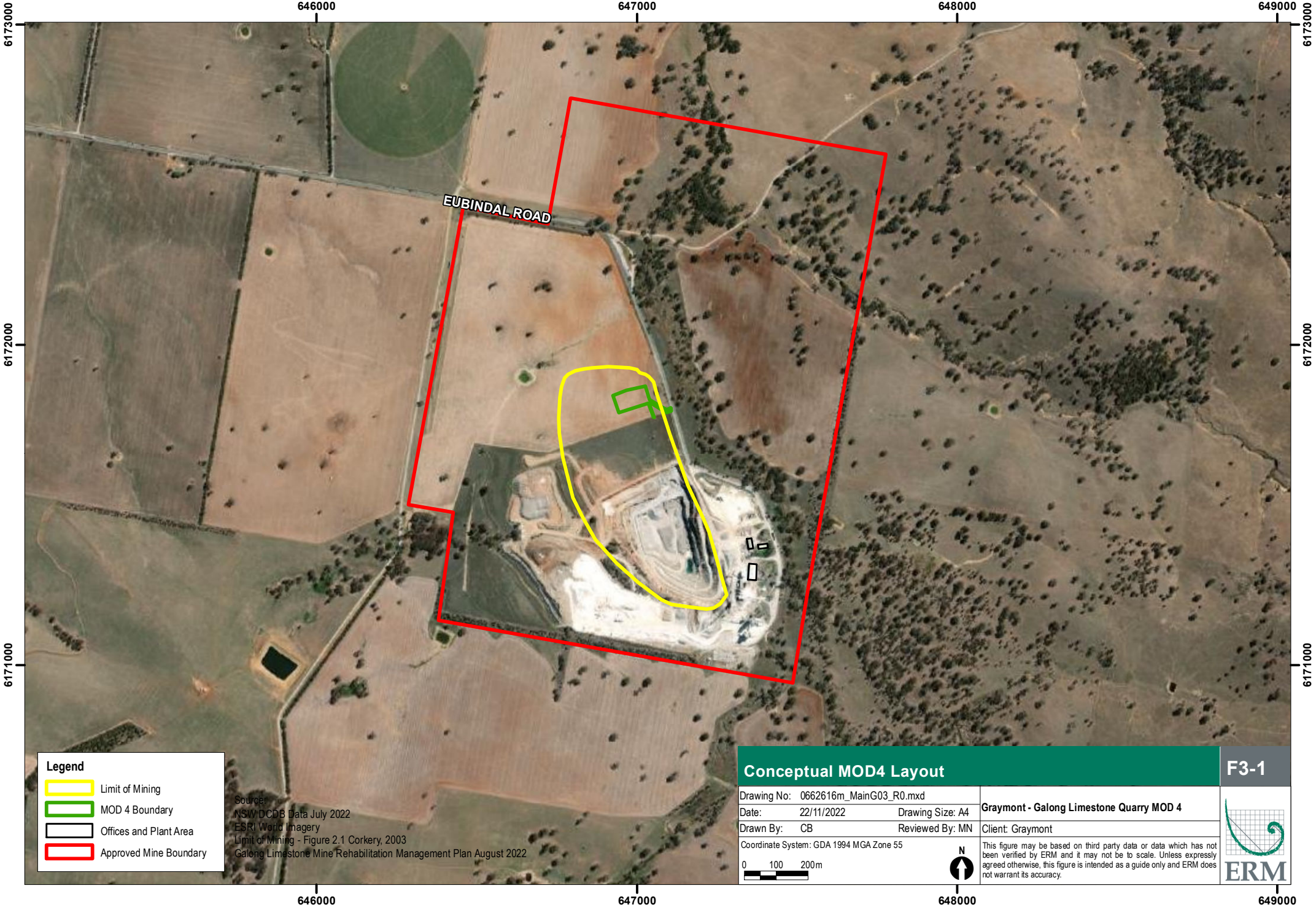
Operation hours would be the same as kiln operating hours which are 24 hours per day, 7 days per week.

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.
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
Conceptual MOD4 Layout
F3-1
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Date: 22/11/2022
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Drawn By: CB
Reviewed By: MN
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Graymont - Galong Limestone Quarry MOD 4
Client: Graymont
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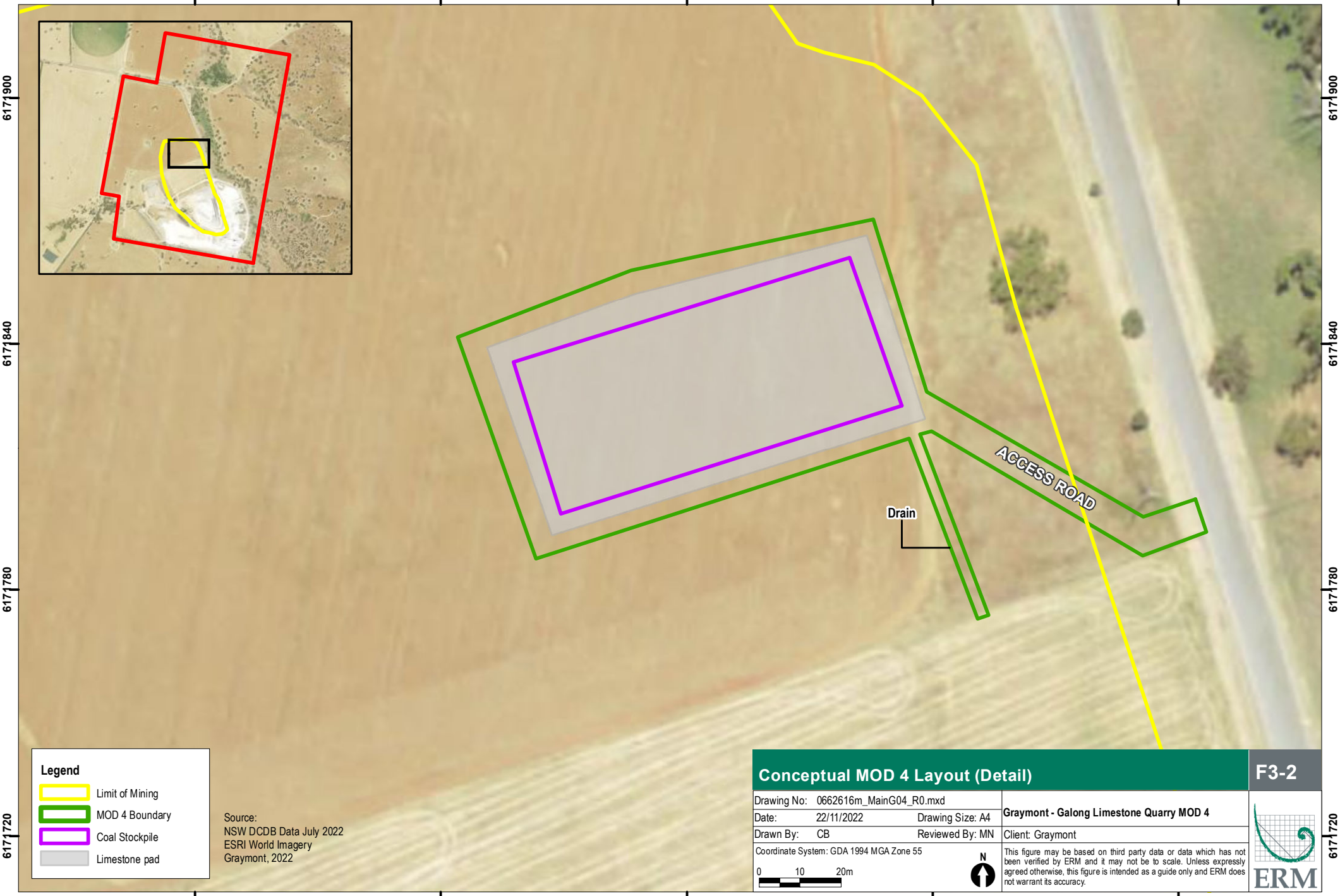
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Limit of Mining
MOD 4 Boundary
Coal Stockpile
Limestone pad
Source:
NSW DCDB Data July 2022
ESRI World Imagery
Graymont, 2022
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Drawing Size: A4
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Reviewed By: MN
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Graymont - Galong Limestone Quarry MOD 4
Client: Graymont
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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** of the Modification Report.

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 the 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.

APPENDIX D UPDATED AIR QUALITY ASSESSMENT

ERM

Level 14 207 Kent Street
Sydney NSW 2000
Locked Bag 3012
Australia Square NSW 1215

Telephone: +61 2 8584 8888
Fax: +61 2 9299 7502

www.erm.com

Alan Harris
HSE Manager - North
Graymont NSW Pty Ltd

2 March 2023

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 150,000 tonnes per annum (tpa) of quicklime at Galong Limestone Mine (Approved Project).

This air quality 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.

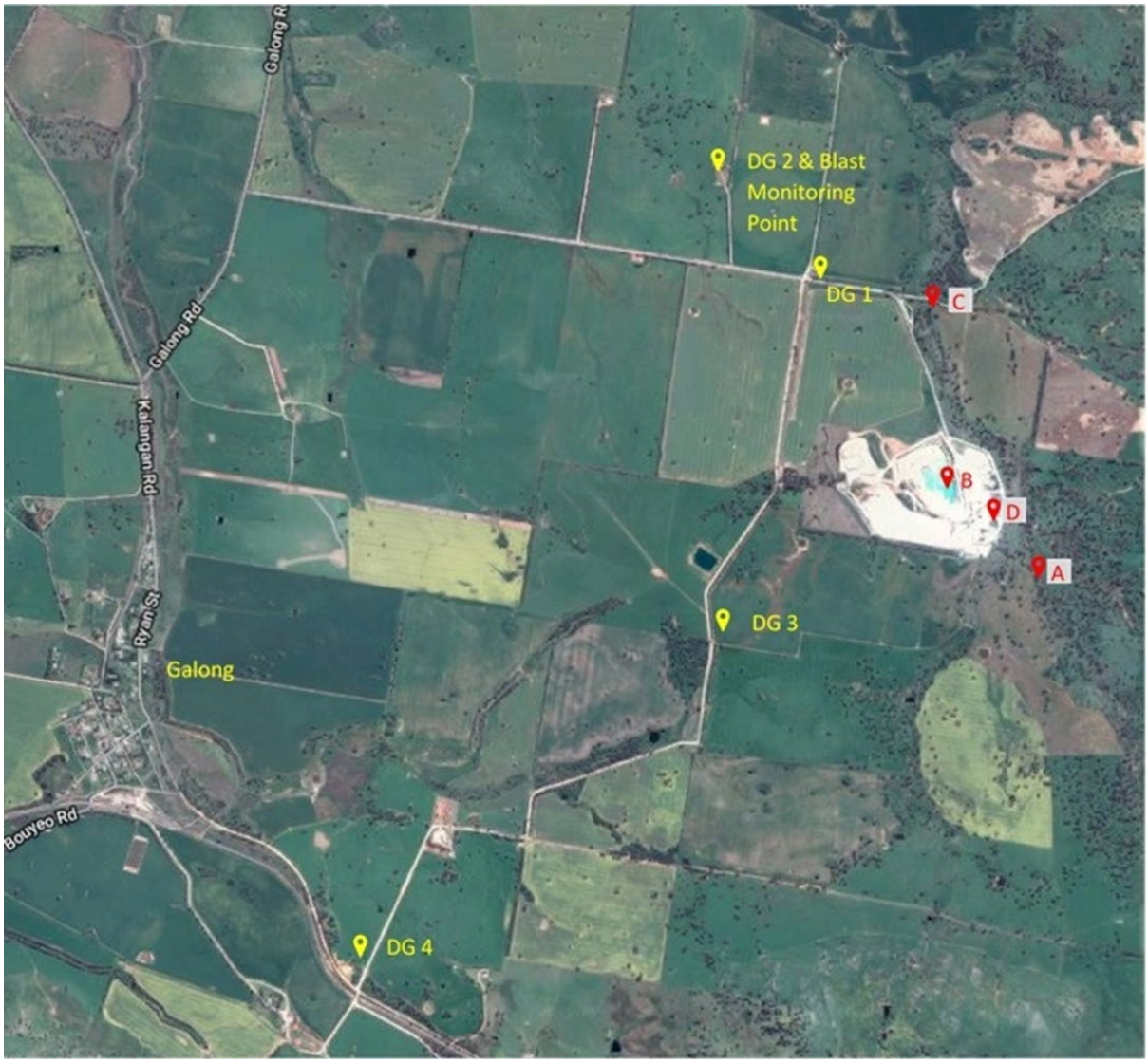

Figure 3-1: Locations of dust deposition gauges

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.

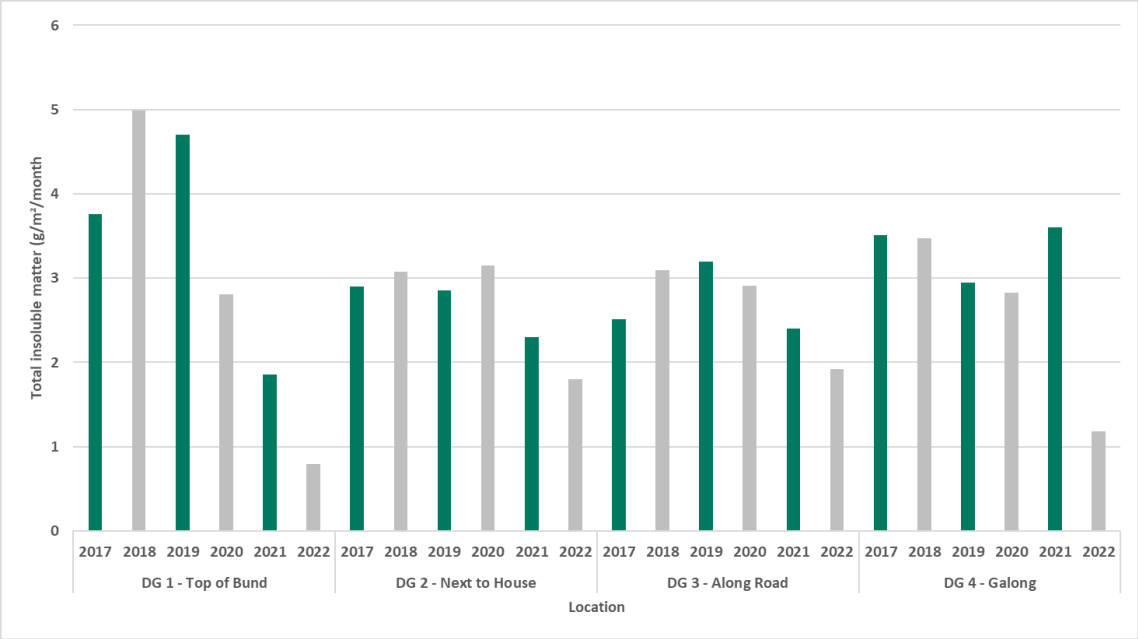

Figure 3-2: Dust deposition monitoring results

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.

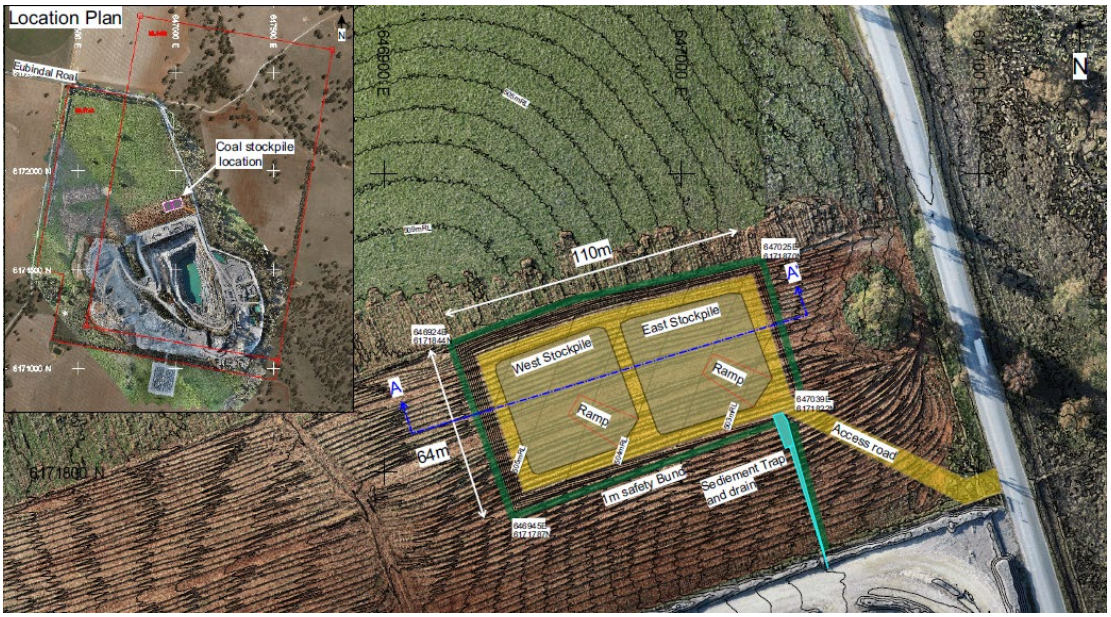

Figure 4-1: Location of proposed coal stockpiles and access road

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 (or Bulldozer) moving coal	1,108	292	24
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	**2,100**	**580**	**57**
Total emissions from 2003 AQIA	**211,040**	**58,859**[a]	**8,357**[b]
Emissions from proposed activities as a % of 2003 AQIA	**1.0**	**1.0**	**0.7**

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 1.0%, 1.0% and 0.7% of total emissions from all operational activities for TSP, PM_{10} and $PM_{2.5}$, respectively. A percentage of 1% 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 2,100kg/year of TSP emissions, 580 kg/year of PM_{10} emissions and 57 kg/year of $PM_{2.5}$ emissions. Compared to the 2003 AQIA, these emissions are only 0.7-1.0% 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,

Ashraf Rahman
Consultant – Air Quality

Karie Bradfield
Partner

REFERENCES

Graymont (2022). Environmental Management Plan, Galong, NSW. Procedure 642-P3.300, Issue date June 2022.

NSW EPA (2022). Approved Methods for the Modelling and Assessment of Air Pollutants in NSW. NSW Environment Protection Authority, Sydney. Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (nsw.gov.au)

US EPA (1998) Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I, Chapter 11: Mineral Products Industry, Section 17 Lime Manufacturing https://www3.epa.gov/ttn/chief/ap42/ch11/final/c11s17.pdf

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 coal	kg/hr	$35.6 \times \frac{s^{1.2}}{M^{1.4}}$	$6.33 \times \frac{s^{1.5}}{M^{1.4}}$	0.022 * 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	$u^* = 0.053 u_{10}^+$ 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	1,108	119	h/y	9.310	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	2,100																		

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	292	119	h/y	2.451	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	580																		

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	24	119	h/y	0.2048	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	57																		

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

APPENDIX E UPDATED NOISE ASSESSMENT

ERM

Level 14 207 Kent Street
Sydney NSW 2000
Locked Bag 3012
Australia Square NSW 1215

Telephone: +61 2 8584 8888
Fax: +61 2 9299 7502

www.erm.com

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

6 March 2023

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**.

Registered office
Environmental Resources Management Australia Pty Ltd
Level 14, 207 Kent Street
Sydney NSW 2000 Australia

ABN: 12 002 773 248
ACN: 002 773 248

Offices worldwide

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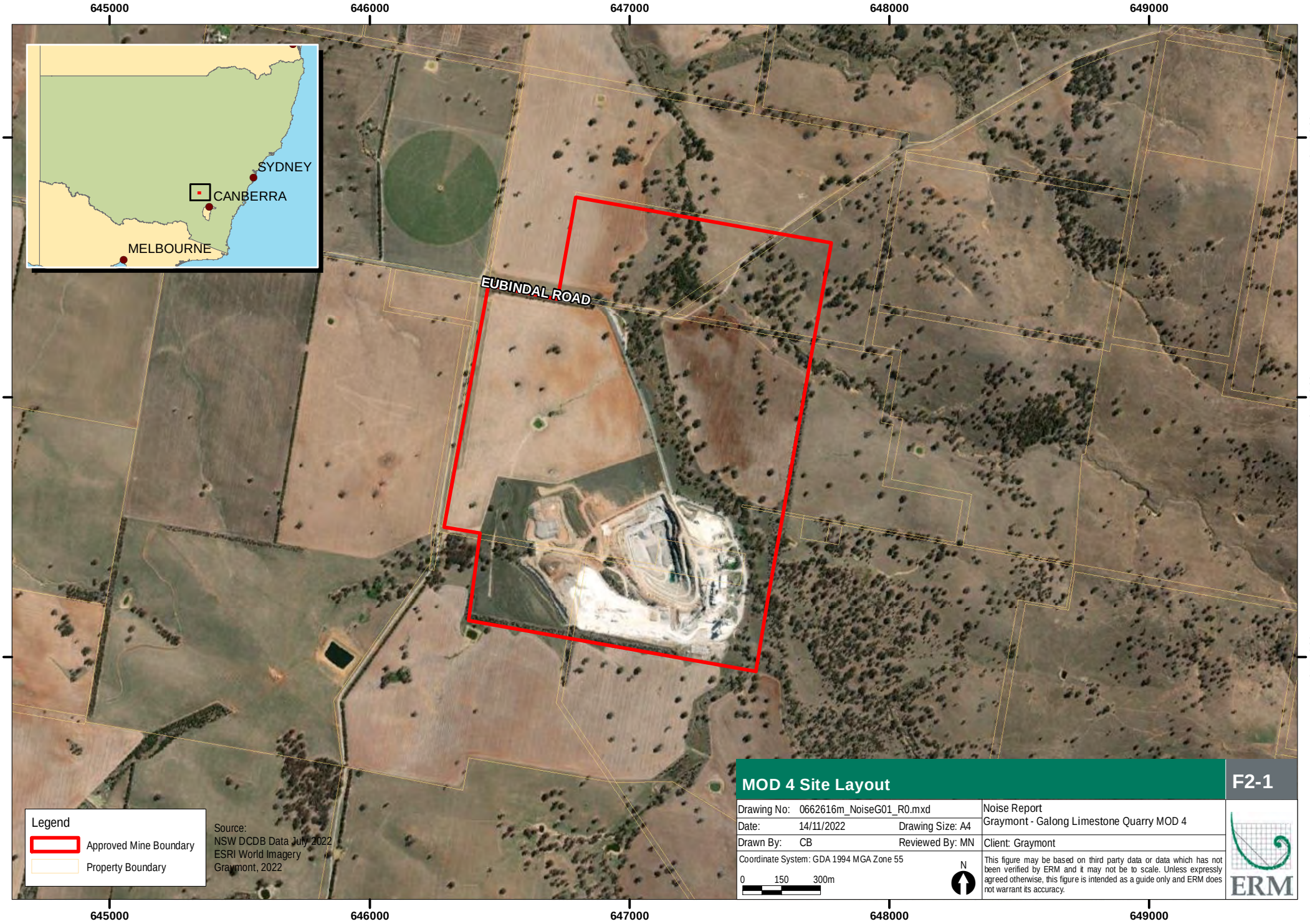
Increase in Truck Movements during Operations

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.


645000
646000
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6173000
6172000
6171000
SYDNEY
CANBERRA
MELBOURNE
EUBINDAL ROAD
Legend
Approved Mine Boundary
Property Boundary
Source:
NSW DCDB Data July 2022
ESRI World Imagery
Graymont, 2022
MOD 4 Site Layout
F2-1
Drawing No: 0662616m_NoiseG01_R0.mxd
Date: 14/11/2022
Drawing Size: A4
Drawn By: CB
Reviewed By: MN
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0 150 300m
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.
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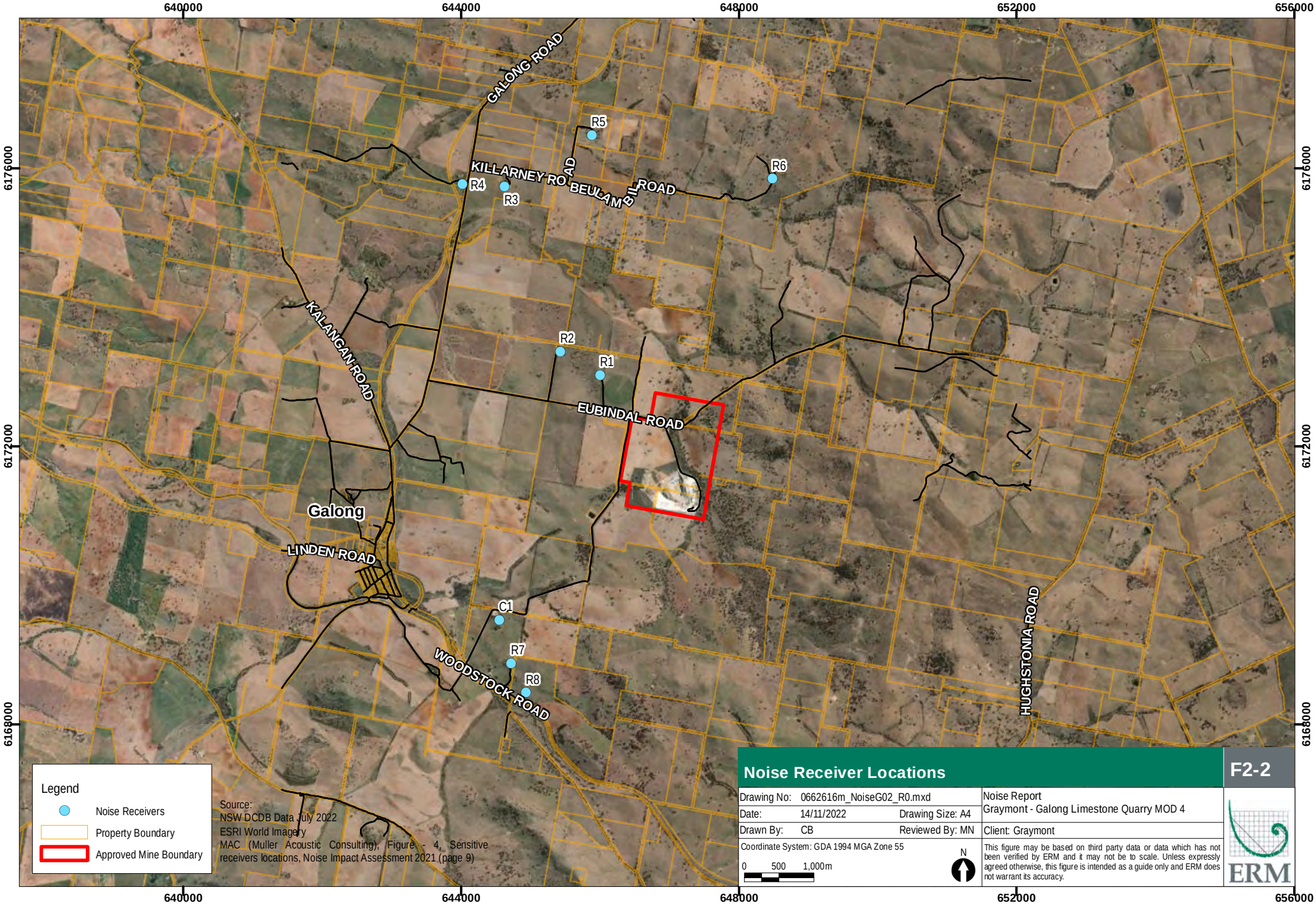
3. NOISE SENSITIVE RECEIVERS

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


640000
644000
648000
652000
656000
6176000
6172000
6168000
GALONG ROAD
KILLARNEY ROAD
BEULAM BIL 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
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Noise Report
Graymont - Galong Limestone Quarry MOD 4
Client: Graymont
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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 Project. 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.

4.5 NSW Road Noise Policy

4.5.1 Road Traffic Noise Criteria

The NSW Government has approved the NSW Road Noise Policy (RNP) (DECCW, 2011) to minimise road traffic noise and its impacts. The RNP will help the above individuals and agencies to assess and mitigate the impacts of traffic noise from new and redeveloped road projects, and traffic-generating developments on residential and other sensitive lands. Table 3 of the RNP sets out the assessment criteria for residences to be applied to particular types of project, road category and land use. The relevant criteria for this assessment have been summarised in **Table 3-4**.

Table 3-4 Road Traffic Noise Assessment Criteria for Residential Land Uses

Road category	Type of Project/Land Use	Assessment Criteria – dB(A)	
		Day (7 a.m.–10 p.m.)	Night (10 p.m.–7 a.m.)
Freeway / arterial / sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	$L_{Aeq(15hr)}$ 60 dB(A)	$L_{Aeq(9hr)}$ 55 dB(A)
Local Roads	Existing residences affected by additional traffic on existing local road generated by land use developments	$L_{Aeq(1hr)}$ 55 dB(A)	$L_{Aeq(1hr)}$ 50 dB(A)

4.5.2 Relative Increase Criteria

The traffic noise impact from the 'land use development with potential to generate additional traffic on existing road' would need to also comply with the 'Relative Increase Criteria' as discussed in Section 2.4 of the RNP. The relative increase criteria are to be applied to the external areas of existing residential and sensitive land uses impacted upon by traffic noise.

The relative increase criteria as set out in the RNP applicable to the Project are summarised in **Table 3-5** below.

Table 3-5 Relative Increase Criteria for Residential Land Uses

Road Category	Type of Project/Land Use	Assessment Criteria – dB(A)	
		Day (7 a.m.–10 p.m.)	Night (10 p.m.–7 a.m.)
Freeway/arterial/ sub-arterial roads and transitways	New road corridor/ redevelopment of existing road/land use development with the potential to generate additional traffic on existing road	Existing traffic $L_{Aeq(15hr)}$ + 12 dB (external)	Existing traffic $L_{Aeq(9hr)}$ + 12 dB (external)

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.**

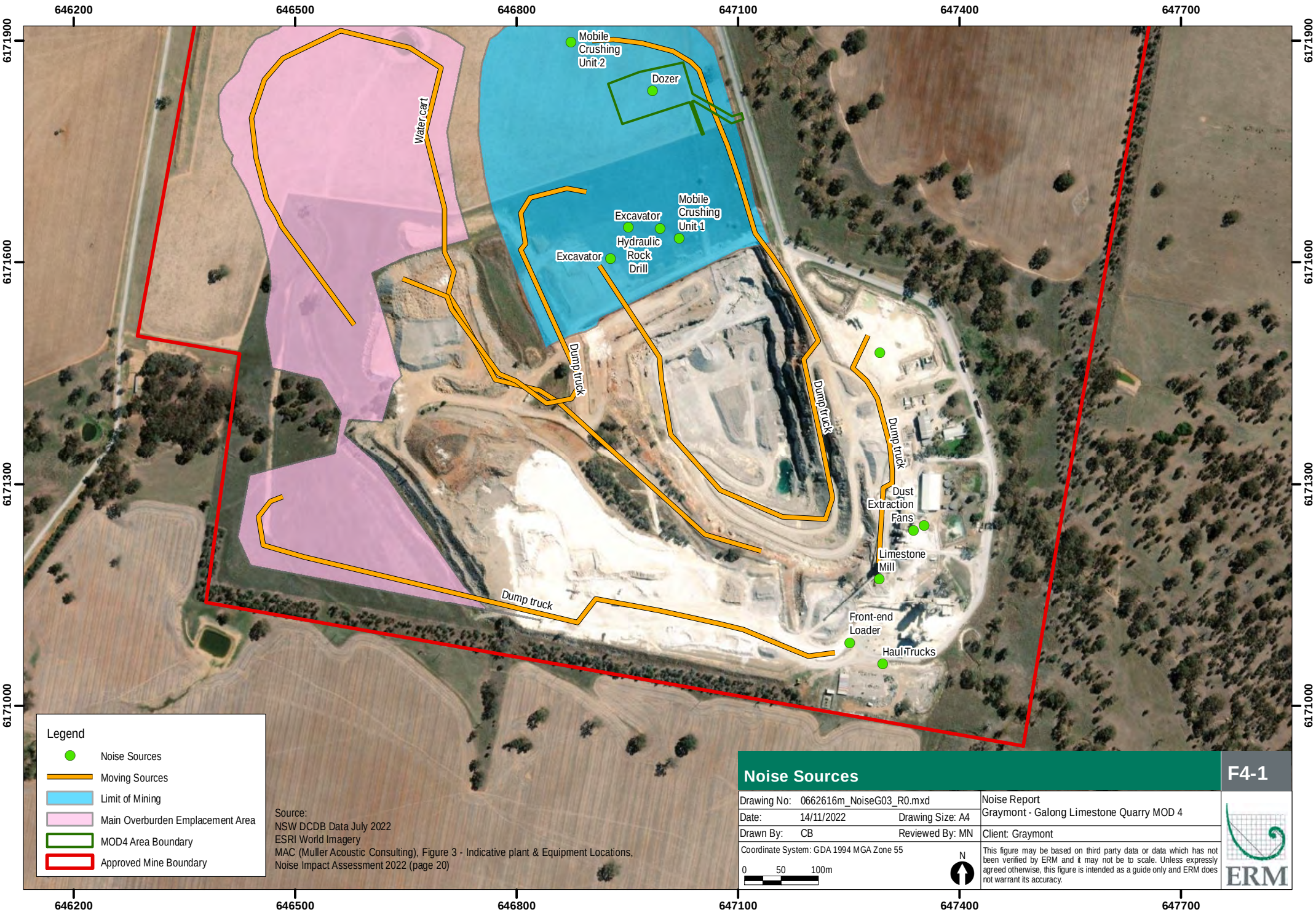
In addition to the above-mentioned noise sources, a dozer in the MOD4 area has also been included in this assessment, with its assumed Sound Power level being $L_{eq(15\ min)}$ 116 dB(A). The location of the dozer is shown in **Figure 4–1.**

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. An extra dozer is proposed to be operating at the new stockpile.


646200
646500
646800
647100
647400
647700
6171900
6171600
6171300
6171000
Mobile Crushing Unit 2
Dozer
Water cart
Excavator
Mobile Crushing Unit 1
Hydraulic Rock Drill
Excavator
Dump truck
Dump truck
Dump truck
Dust Extraction Fans
Limestone Mill
Front-end Loader
Haul Trucks
Dump truck
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
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Date: 14/11/2022
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Drawn By: CB
Reviewed By: MN
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Noise Report
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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.
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5.2.1 Assessment against Project 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. With the addition of a dozer in the MOD4 area, the increase in noise emissions presents a negligible increase in predicted noise levels at Receiver R1 is expected due to the proposed modification.

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.

5.2.3 Traffic Noise Assessment

The nearest noise sensitive receivers affected by the truck haulage routes associated with the proposed modification are located in the Galong township along Ryan Street, Bobbara Road and Crescent Street which are arterial roads.

It is noted from the previous noise assessment - *Galong Limestone Mine Proposed Change in Product Dispatch Traffic Noise Impact Assessment (SLR, 8 April 2015)* attached in the *Galong Project 320 Statement of Environmental Effects (SEE)* (Sibelco, May 2015) that the typical vehicle traffic volume associated with the Galong project are as follows:

- 64 trucks movement per day along southern route (Galong Road, Kalangan Road, Ryan Street, Bobbara Road and Crescent Street, as identified in the SEE (Sibelco, May 2015)) including 2 trucks for coal delivery (i.e., 4 trucks movements).

It is noted that dispatch of trucks from the quarry will occur from 7.00 am to 7.00 pm only, which is entirely within the daytime period as defined in the Road Noise Policy (DECCW, 2011).

From the SEE (Sibelco, May 2015), it was concluded that:

- Traffic noise levels are predicted to comply with the RNP relative increase criteria at all properties along the southern route.

- Traffic noise levels are predicted to exceed the RNP assessment criteria at only four properties along Ryan Street;
- Mitigation measures proposed at the four affected properties will bring noise levels within compliance of the RNP assessment criteria;

In this proposed modification assessment, the Project is proposed to have up to 6 additional truck movements per day. The results of the future noise predictions because of the proposed modification are described in **Table 5-4**.

Table 5-4 Predicted Traffic Noise Levels

Scenario / residence	Existing Noise $L_{Aeq,15hr}$ (Sibelco, May 2015)	Previously Predicted Noise $L_{Aeq,15hr}$ (Sibelco, May 2015)	Proposed Modification Assessment Predicted Noise $L_{Aeq,15hr}$	RNP Criteria $_{Aeq,15hrs}$ dB(A)		Compliance with RNP Criteria?	
				Assessment Criteria	Relative Increase Criteria	Assessment Criteria	Relative Increase Criteria
Receivers at 10-15m setback from Ryan Street	58	64	64	60	70	No (exceedance by 4dBA)	Yes
Receivers at 15-20m setback from Ryan Street	55	60	60	60	67	Yes	Yes
Receivers at > 20m setback from Ryan Street, Bobbara Road and Crescent Street	53	57	57	60	65	Yes	Yes

There is compliance of the RNP criteria at all the sensitive receivers except for receivers which are 10m-15m setback from Ryan Street. It should be noted that this exceedance was identified in the previous noise assessment in the SEE (Sibelco, May 2015) and the proposed modification does not contribute to this exceedance.

It can be seen in the results that the proposed modification would result in negligible noise increase. Regardless, mitigation measures have been proposed in the Sibelco report (Sibelco, May 2015) and are reproduced below:

- Localised property treatments for residences where exceedances of criteria are predicted;
- Noise monitoring within affected properties along Ryan Street to confirm compliance with RNP traffic noise criteria after implementation of property treatments;
- Routine monitoring along the southern haulage route to ensure compliance with RNP traffic noise criteria; and
- Localised property treatments offered to all existing residences along Ryan Street and affected properties adjoining Crescent Street.

6. CONCLUSION

The predicted noise levels at the NSRs due to the modification (increase from 6 truck movements to 12 movements, proposed truck route accessing the new stockpile being closer to Receiver R1) comply with the NPfI Criteria, the DA 317-7-2003 Noise Limits, EPL Noise Limits and the RNP criteria. 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.

ERM is not engaged in environmental consulting and reporting for the purpose of advertising, sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity or investment purposes.

ERM prepared this report for the sole and exclusive benefit and use of Graymont. Notwithstanding delivery of this report by ERM or Graymont to any third party, unless otherwise expressly agreed, any copy of this report provided to a third party is provided for informational purposes only, without the right to rely on and ERM disclaims all liability to such third party to the extent permitted by law. Any use of this report by a third party is deemed to constitute acceptance of this limitation.

8. REFERENCES

Muller Acoustic Consulting. (2021). *Noise Impact Assessment Galong Lime Mine Site Modification MAC211417-01RP1V2.*
NSW DECCW. (2011). *Road Noise Policy.*
NSW EPA. (2017). *Noise Policy for Industry.*
NSW EPA. (2020). *Licence Variation - Licence No. 4660.*
NSW EPA. (2021). *Environment Protection License - Tallwarra Power Station - License 555.*

Yours sincerely,

Magaesh Naidu
Principal Acoustics Consultant

Karie Bradfield
Partner

APPENDIX F TRAFFIC AND TRANSPORT TTPP LETTER

Our Ref: 22288

2 March 2023

ERM
Level 1
Watt Street Commercial Centre
45 Watt Street
Newcastle NSW 2300

Attention: Karie Bradfield

Dear Karie,

RE: GRAYMONT GALONG LIMESTONE QUARRY MOD 4
TRAFFIC AND TRANSPORT RESPONSE TO RFI

As requested, please find herein The Transport Planning Partnership (TTPP)'s response to the request for information regarding the Graymont Galong Limestone Quarry project.

Background

The Transport Planning Partnership has undertaken a traffic and transport assessment for the Graymont Galong Limestone Quarry MOD application also referred to as the Coal Stockpile Expansions project.

The assessment specifically addressed the proposed increase in number of coal-transporting trucks by 3 per day in each direction. Comments were received from the Department of Planning and Environment (DPE) as follows:

> "The Traffic and Transport Assessment presented in the Modification Report provides an assessment of intersections that connect the haulage route to the State Road network. Please provide an assessment of the intersections along the haulage route that are located on the local road network"

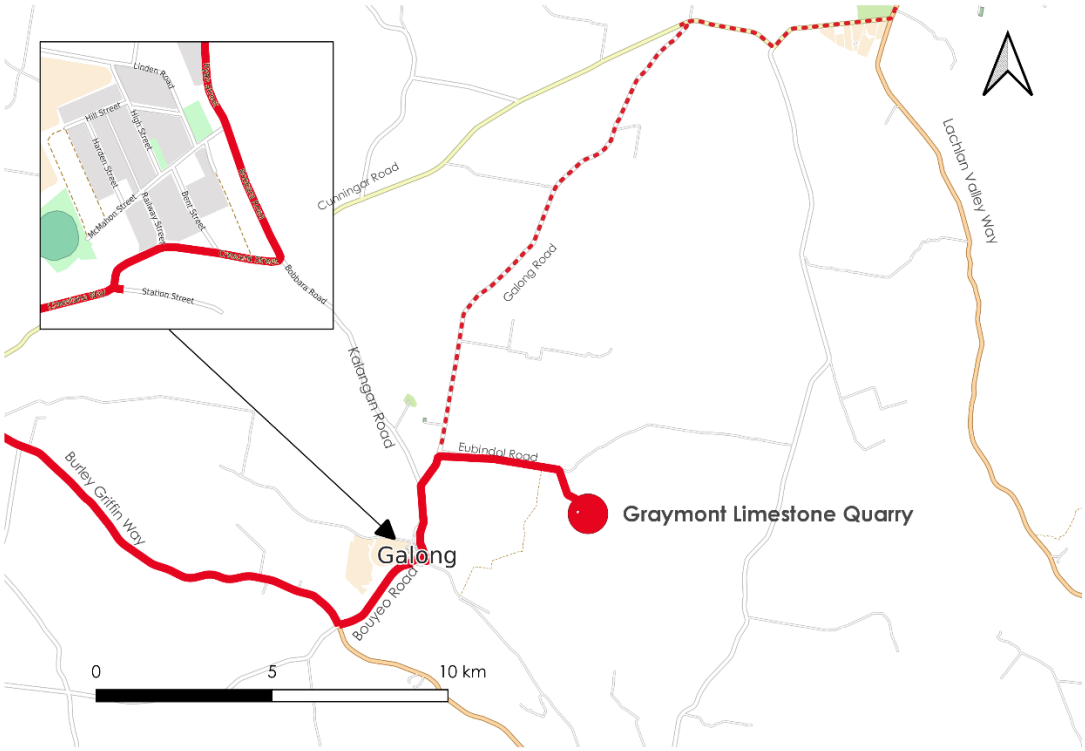
The Galong Limestone Quarry currently generates up to 6 trucks trips per day (3 in 3 out) for this purpose. A trip is defined as a movement to or from the site. The total forecast trips would be up to 12 per day, that is 6 in and 6 out. This would equate to an additional truck in each direction every two hours.

The quarry also has approval for heavy vehicle trips associated with the transporting of limestone products from the quarry this makes up the majority of heavy vehicle trips and does not change.

Assessment

The local routes that were presented in the transport assessment are shown in Figure 1

Figure 1: Local Roads to Site



The primary route is from Burley Griffin Way via Bouyeo Road, Kalangan Road and Galong Road. This route uses a sign posted heavy vehicle route to bypass the Galong town centre and is therefore considered appropriate for heavy vehicles.

An alternative route shown in the broken line would be considered once Galong Road is upgraded as this would reduce the distance to site.

Road Safety and Crash History

The traffic assessment took into account the crash history on the local roads. This did not identify any significant crash clusters. In the five-year crash history, there were 3 crashes with moderate injury and 1 with a minor injury. The location of the crashes were along Cunningar Road as shown in Figure 2. There were no crashes recorded along the existing primary route except those associated with the intersection of Bouyeo Road and Burley Griffin Way which has also been discussed in the traffic report.

Figure 2: Crash History

Intersection Geometry

The existing routes are used by heavy vehicles without any issues being reported. Further, the route uses a signposted heavy vehicle route and is therefore considered suitable for heavy vehicles. The forecast traffic volumes are a modest increase from the existing and therefore intersection upgrades such as channelised right and left turns are not warranted.

Intersection Sight Distance

Sight distances were assessed based on Austroads Guide to Road Design Part 4A and assuming that the key intersections have a speed limit of 100km/h and a design speed of 110km/h.

Specifically, the assessment is based on the Approach Sight Distance and Safe Intersection Sight Distance.

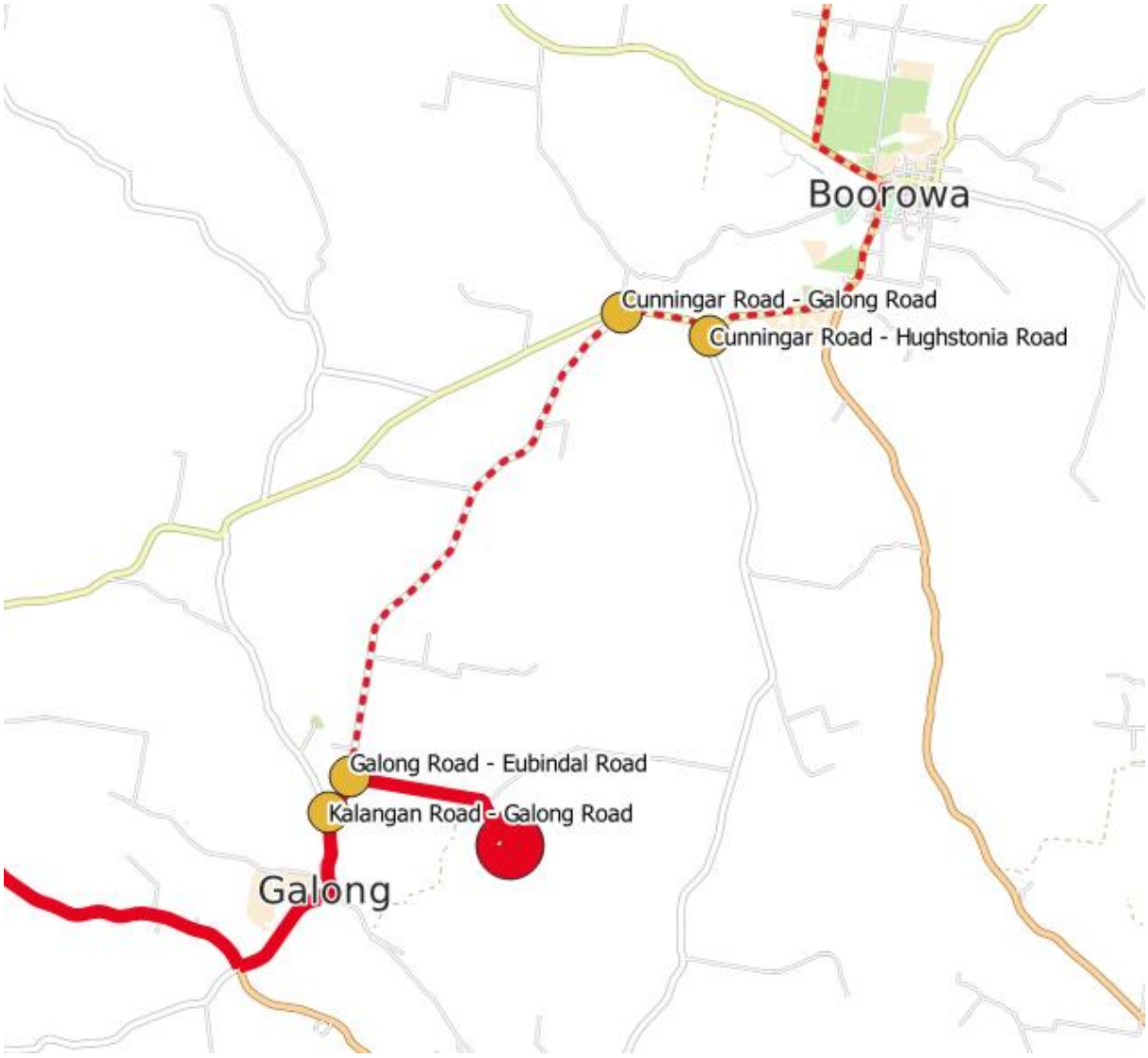
- ASD – (design speed 110km/h) 193m
- SISD (Design Speed 110km/h) 285m

The key intersections that have been assessed are:

- Galong Road and Eubindal Road
- Galong Road and Kalangan Road
- Cunningar Road and Galong Road
- Cunningar Road and Hughstonia Road

There are intersections where the trucks would turn. These locations are shown in Figure 3.

Figure 3: Intersection Locations



Galong Road and Eubindal Road

The intersection Galong Road and Eubindal is a T intersection of two rural roads. The speed limit is the default 100km/h for rural roads and the assumed design speed limit is 110 km/h. This intersection is the primary access road for the limestone quarry.

The relevant sight distances are shown in Figure 5.

Figure 4: Galong Road and Eubindal Road

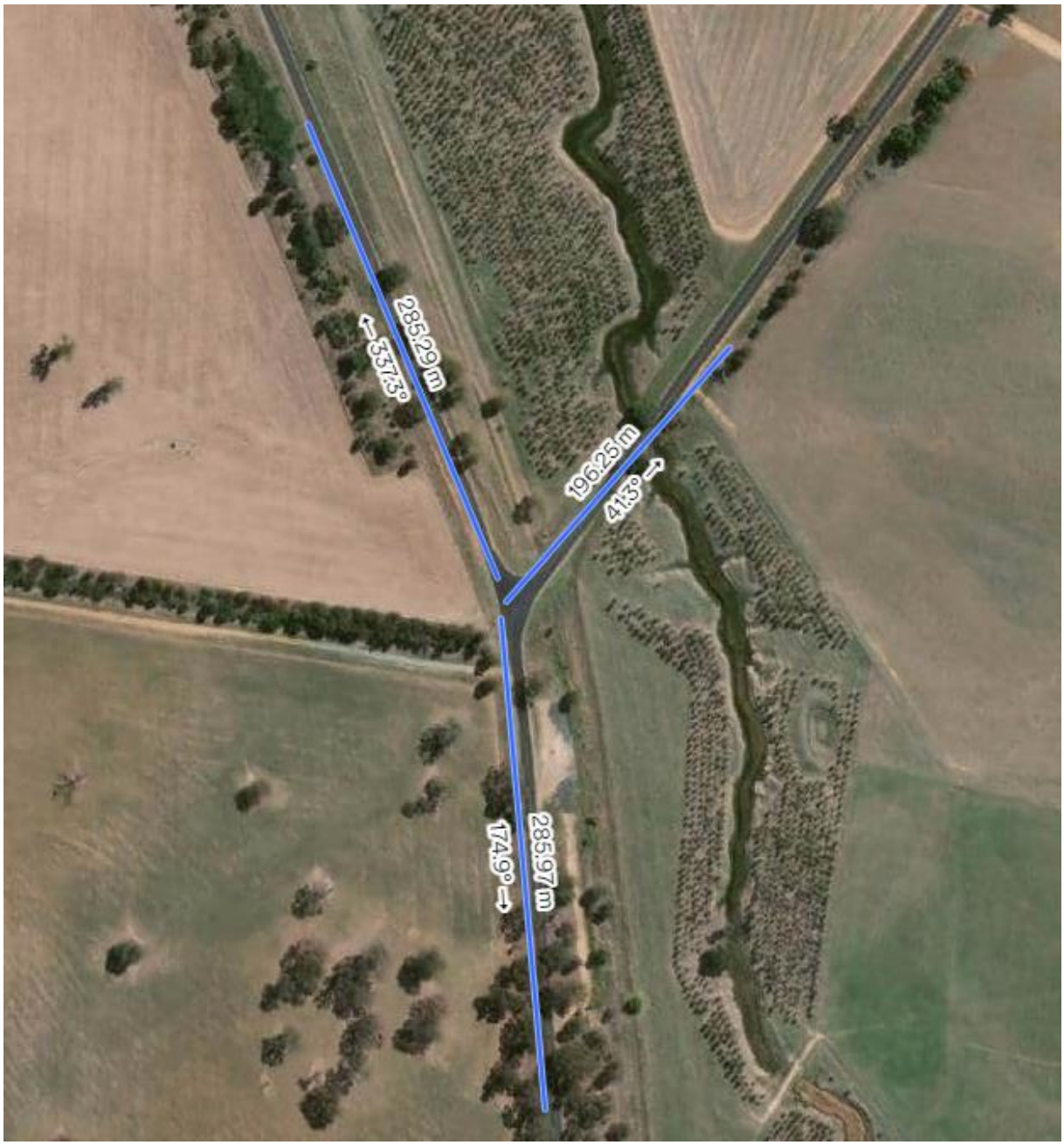
The intersection is located on a relatively straight and flat section of road, sight distances are achieved on all approaches.

Galong Road and Kalangan Road

The intersection Galong Road and Kalangan Road is a T intersection of two rural roads. The speed limit is the default 100km/h for rural roads and the assumed design speed limit is 110 km/h.

The relevant sight distances are shown in Figure 5.

Figure 5: Kalangan Road and Galong Road



The sight distance from the southern and eastern approaches is adequate. However, the sight distance from the northern approach is restricted by the horizontal and vertical alignment.

Traffic volumes along these roads are low and measures have been implemented to mitigate the risk by providing intersection and truck turning warning signs on the northern approach as shown in Figure 6.

Figure 6: Existing Mitigation Measures

Cunningar Road and Galong Road

The intersection Galong Road and Cunningar Road is a T intersection of two rural roads. The speed limit is default 100km/h for rural roads and the assumed design speed limit is 110 km/h.

The relevant sight distances are shown in Figure 7.

Figure 7: Galong Road and Cunningar Road

Sight distance is restricted on all approaches. However, mitigation measures have been implemented using intersection warning signs on all approaches. Further this intersection was being upgraded as part of works along Galong Road undertaken in 2022.

Figure 8: Existing Mitigation Measures

Figure 9: Cunningar Road and Hughstonia Road

Sight distance from the southern approach is restricted. However, mitigation measures have been installed on the western Cunningar Road approach in the form of raised rumble bars and signage as shown in Figure 10.

Figure 10: Cunningar Road at Hughstonia Road

Summary and Conclusion

The Galong Lime Quarry MOD 4 proposes an increase in truck movements for the purpose of coal transportation from 6 truck movements a day to 12 truck movements or an additional 3 truck movements per day in each direction. This does not affect the existing movement of trucks for transportation of lime products from the site.

The trucks currently use a route from Burley Griffin Way via Bouyeo Road, Kalangan Road and Galong Road. A secondary route from Lachlan Valley Way is also being considered after the upgrade of Galong Road as part of a federally funded road project.

An assessment of key intersections long these routes has found that the intersections have sight distance deficiencies when compared to the Austroads guidelines. However, mitigation measures have been implemented at each of the intersections.

One crash was reported in the 5-year period at the intersection of Cunningar Road and Hughstonia Road, this was a moderate injury crash and mitigation measures have been installed at the intersection. There were no serious injury crashes reported.

The local roads are therefore considered appropriate for the volume of traffic being proposed as:

- This is a minor modification to an existing use and there has not been a significant crash history reported.
- The subject intersections have mitigation measures installed.

We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,

Stephen Read
Associate

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ERM's Newcastle Office
Level 1, 45 Watt Street
Newcastle NSW 2300

T: +61 2 4903 5500

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