MACH Energy Australia Pty Ltd

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14 August 2018

NSW Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Tertius Greyling,
Senior Environmental Assessment Officer, Resource Assessments

Dear Tertius,

RE: MOUNT PLEASANT OPERATION MODIFICATION 4 – REQUEST FOR ADDITIONAL INFORMATION

Further to the letter from the Department of Planning and Environment (DPE) on 19 June 2018 requesting some additional information on air quality and operational noise regarding the Mount Pleasant Operation Rail Modification (Modification 4), and the supplementary request dated 27 July 2018, please find below and attached MACH Energy Australia (MACH Energy) responses.

It is noted that subsequent to receipt of the DPE's initial request of 19 June 2018, MACH Energy has also submitted its Response to Submissions for Modification 4 (MACH Energy, 2018).

It should be noted the *timing* for the construction and operation of the replacement Mount Pleasant Operation rail infrastructure proposed in Modification 4 needs to be considered in any cumulative assessment context.

Should Modification 4 be favourably determined, MACH Energy does not anticipate construction commencing before Q3 2019 (i.e. following conduct of detailed engineering design and procurement), and the duration of rail construction is anticipated to be over 12 months.

It therefore follows that the operation of the proposed Modification 4 infrastructure cannot coincide with the Mount Pleasant Operation Mine Optimisation Modification (Modification 3) air quality and noise modelling Scenario 1 (i.e. the 2018 scenario). MACH Energy anticipates that a number of the DPE's initial concerns may well fall away with this clarification of the practical timing.

Notwithstanding, they are also addressed in turn below.

Air Quality

As informed by subsequent discussions with the DPE, the response below considers the proportional predicted impacts of the Bengalla Mine and Mount Pleasant Operation at private receivers that were predicted to exceed the new NSW Environment Protection Authority annual average PM_{10}[1] criterion of 25 micrograms per cubic metre (µg/m³). This is based on additional advice and analysis completed by Todoroski Air Sciences to remove some inherent assessment conservatism (Enclosure 1). The analysis considers Modification 3 scenario 1 (2018), the Modification 4 operational scenario (2021, also incorporating Modification 3) and Modification 3 scenario 3 (2025).

Consideration has also been given to the potential implications of the Todoroski Air Sciences advice on cumulative PM_{10} predictions for private vacant land holdings in the vicinity of the Bengalla Mine.

Proportional Contributions to Annual Average PM_{10} Criteria Exceedances

The supplementary cumulative PM_{10} assessment prepared by Todoroski Air Sciences (2018) (Enclosure 1) clarifies the predicted annual contribution of the Bengalla Mine as modelled in the cumulative assessments of the Mount Pleasant Operations Modifications 3 and 4.

The disaggregated analysis indicates that in Modification 3 scenario 1 (2018), the Bengalla Mine would be expected to contribute more PM_{10} emissions than the Mount Pleasant Operation to the private receivers of interest adjacent the racecourse (i.e. receivers 20 and 21).

For later scenarios, it is expected that the contributions from each of the two mines would be similar, however the predicted cumulative level would be below the criterion of 25 µg/m³.

The analysis also highlights the conservatism of the contributions from the Bengalla Mine modelled for the Mount Pleasant Operation Modifications 3 and 4 in comparison to that determined by Todoroski Air Sciences as part of modelling conducted on behalf of the Bengalla Mine. When the inherent conservatism was reduced no exceedances of the cumulative annual average PM_{10} criterion are predicted at receivers 20 and 21 in Modification 3 scenario 1 (2018) (Enclosure 1). It is noted this approach still retains the conservatism inherent in the modelling for the emissions of other mines (e.g. Mt Arthur).

Potential for Exceedances of Annual Average PM_{10} Criterion on Private Vacant Land

Modification 3 scenario 1 (2018) is the scenario with the highest predicted cumulative annual average PM_{10} concentrations on private vacant land in the vicinity of the Bengalla Mine (i.e. adjacent the racecourse).

[1] Particulate matter with an equivalent aerodynamic diameter of 10 micrometres or less.

As described above, the Mount Pleasant Operation Modification 3 scenario 1 (2018) is not relevant to Modification 4, due to the practical timing of the construction of the proposed Modification 4 infrastructure (i.e. MACH Energy does not currently anticipate construction commencing before Q3 2019).

In addition, the supplementary cumulative PM_{10} assessment prepared by Todoroski Air Sciences (Enclosure 1) indicates the cumulative levels described in Mount Pleasant Operation Modification 3 over-predict potential cumulative impacts on private vacant land in the vicinity of the Bengalla Mine, due to inherent assessment conservatism for the emissions of other mines. With adjusted cumulative predictions, there is no predicted exceedance of the new annual average PM_{10} criterion (25 µg/m³) on >25% of any private vacant land adjacent to the racecourse.

Even without this adjustment for inherent conservatism, the predicted cumulative annual average PM_{10} concentrations would not result in the application of acquisition upon request rights on any private vacant land in the vicinity of the Bengalla Mine in accordance with the *Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments* (VLAMP) (NSW Government, 2014) as the relevant VLAMP criterion is 30 µg/m³ on more than 25% of relevant vacant land.

Operational Noise

Consideration of the changes in the noise impact profile of the approved Mount Pleasant Operation arising due to Modification 4 is presented below with reference to the Modification 4 Response to Submissions, the Modification 3 and Modification 4 noise assessments conducted by Wilkinson Murray and the proposed timing for the construction of the new rail spur and loop, should Modification 4 be approved.

Implications for Receivers and Vacant Land to the East of the Modification Rail Infrastructure

As noted above, the Modification 3 operational noise scenario 1 (2018) would not coincide with the operation of the proposed Modification 4 rail infrastructure.

While the Modification 4 noise impact assessment does not present noise contours, the assessment concludes the operation of the modified rail loading infrastructure has only minimal implications for any private receiver. Modification 4 noise predictions vary by up to 1 decibel (dB) in comparison to Modification 3 in the absence of operational noise controls under adverse weather conditions. The Modification 4 noise impact assessment concluded there therefore would be no requirement to amend the Mount Pleasant operation Development Consent conditions. Refer to the Modification 4 Response to Submissions for additional detail.

Review of the Modification 3 noise contours (refer Figures C1 to C3 of the Modification 3 noise impact assessment) indicates there would be no additional private vacant land likely to exceed the relevant criterion for the application of acquisition upon request rights (i.e. 45 A-weighted decibels (dBA) $L_{Aeq\ (9hr)}$, or 48 dBA $L_{Aeq\ (15min)}$) in accordance with the VLAMP (NSW Government, 2014), as described in the Modification 3 noise impact assessment.

Given the minimal difference between the predicted noise levels for Modifications 3 and 4, Modification 4 therefore also has no adverse implications for vacant land to the east of the proposed rail infrastructure.

In summary, MACH Energy suggests the above responses confirm the outcomes of the Modification 4 Environmental Assessment remain unchanged.

Vacant Land at Kayuga

While Modification 4 does not result in any change to potential impacts to the north-east of the site (i.e. in the vicinity of Kayuga), MACH Energy understands that the DPE has a concern with respect to the ambiguity of the previous characterisation of vacant land in this locality (i.e. in Modification 1).

Given the ambiguity in the characterisation of land ownership in and surrounding Kayuga and associated previous acquisition upon request rights in Modification 1, MACH Energy is prepared to extend acquisition upon request rights to a number of private vacant landholdings in Kayuga that are not currently included in the Mount Pleasant Operation Development Consent conditions, namely (Enclosure 2, Figure 1):

- 143c, 143b and 143e (JS & NM Lonergan);
- 153b (GM Casey);
- 447 (NM & JS Lonergan);
- 448 (JS Lonergan); and
- 449 (KM Lee).

MACH Energy is prepared to accept the addition of these properties into Table 1 of the Development Consent to address a perceived ambiguity of their previous status, irrespective that these amendments are not specifically related to the Modification 4 proposal.

Surface Water

It is noted that the DPE has sought additional clarification on MACH Energy's plans for future water releases in response to ongoing water supply and water release related concerns of NSW Health.

MACH Energy notes that the concerns of NSW Health appear to be based on a misunderstanding of the various water management systems involved.

The following clarifications are provided to assist the DPE and NSW Health in resolution of these concerns:

- The (Modification 4) relocated water supply pipeline and associated pump station would not be bi-directional.
- MACH Energy has not, at any stage, sought approval to undertake controlled release of site water from the (Modification 4) relocated Hunter River water supply pipeline.
- MACH Energy would use the (Modification 4) relocated water supply pipeline and associated pump station to supply water from the highly regulated Hunter River to the Mount Pleasant Operation in accordance with its water access licence requirements.
- Subject to obtaining the necessary Environment Protection Licence variation under the Hunter River Salinity Trading Scheme, MACH Energy would use the approved Mount Pleasant Discharge Dam 1 and associated pipeline and pumping systems to release water to the Hunter River.
- The approved Mount Pleasant Discharge Dam 1 is located to the west of Bengalla Mine, and is therefore located many kilometres (km) downstream of the Muswellbrook town water supply offtake.
- The approved pipeline and pumping system to the Mount Pleasant Discharge Dam 1 will be bi-directional, so water stored in the discharge dam can potentially be returned to the Mount Pleasant Operation mine water dam (i.e. site supply reclaim, if stored water on-site falls materially before a controlled water release is undertaken).
- In the event that Mount Pleasant Operation site potable water supplies are to be sourced from the Hunter River at some stage in the future (i.e. rather than by direct contractor delivery to site as is currently the case), this water would be sourced from the Hunter River water supply pipeline (i.e. not from the mine water dam), prior to on-site treatment to meet applicable standards. This water would therefore be the same quality as water being sourced for Muswellbrook town water supply.

Rail Lighting Effects

The DPE has requested additional information on the nature of proposed lighting management for potential rail lighting spill on users of Wybong Road.

It is noted that two major railway lines currently join in Muswellbrook (i.e. the Muswellbrook - Ulan Rail Line and the Main North Railway). Both of these NSW network rail lines are elevated above the Hunter River floodplain, do not have any specific night-lighting mitigation (Plate 1), and can carry significant numbers of trains at night. In addition, up to nine Mount Pleasant Operation product train departures per day are currently authorised to operate on the NSW rail network.

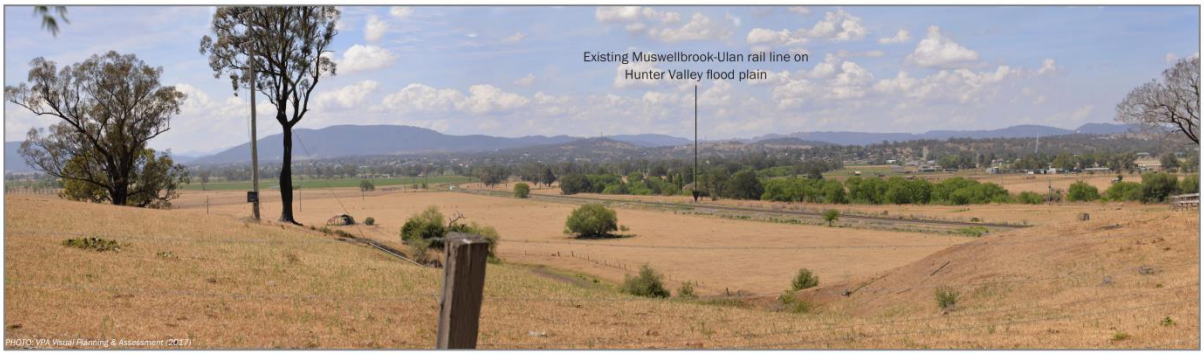

Plate 1 Existing Muswellbrook – Ulan Rail Line on Approach to Muswellbrook.

MACH Energy has constructed visual bunds and planted vegetation screens along significant portions of Wybong Road (refer Plate 2 and Enclosure 2, Figure 2).

Plate 2 Existing Visual Bund and Associated Plantings on the Northern Side Wybong Road

These bunds and vegetation screens would have some effect in reducing the potential for rail night-lighting effects on nearby Wybong Road, with direct screening varying depending on the final design height of the rail track relative to the crest elevation of the existing bunds/screens, adjacent natural topography, the pavement elevation of Wybong Road, and the height of vehicles travelling on the road. As native vegetation becomes established on the visual bunds and planted screens, the additional vegetation growth will add to screening afforded by the bund or natural topography.

Figure 2, Enclosure 2 illustrates the locations of existing and proposed visual bunds and vegetation screening that would progressively reduce the potential for rail lighting effects along Wybong Road (and to a lesser extent in Muswellbrook) over time.

Enclosure 3 provides engineering drawings that illustrate the conceptual physical screening proposed to reduce potential direct rail lighting effects in Muswellbrook from the operation of the Modification 4 rail spur, including the vertical and horizontal screening effects of the proposed mitigation concepts on the rail headlight profile.

This diagram illustrates that the combination of the screens and rail cuttings would significantly restrict the potential for direct rail-lighting impacts in the town of Muswellbrook from trains on the new rail spur, before they join the Muswellbrook – Ulan Railway and proceed to the junction with the Main North Railway in accordance with existing approvals.

Given that potential rail night-lighting effects are generally not screened on the more than 6,000 km of operational rail network in NSW, including potential rail lighting effects on local and major roads where they parallel network lines throughout the State, the mitigation measures proposed by MACH Energy for Modification 4 are considered appropriate.

Geotechnical Investigation

MACH Energy has located the rail spur such that it largely avoids known workings associated with the Overton Colliery. However, the potential for unknown old workings is acknowledged.

MACH Energy concurs with Subsidence Advisory NSW's recommendations that a geotechnical investigation be undertaken to design the rail embankment to a suitable geotechnical factor of safety. This would be undertaken as a component of the detailed engineering design of the rail spur, should the Modification be approved.

Local Land-Owner Negotiations Update

MACH Energy provided a comprehensive update on various negotiations and the status of relationships with private near-neighbours to the Compliance Branch of the Department in Singleton on 27 July 2018. MACH Energy would be happy to provide a similar update to the Assessment Branch at a mutually agreeable time.

Please do not hesitate to contact the undersigned if the Department requires further information.

Yours faithfully

Chris Lauritzen
General Manager, Resource Development
Mount Pleasant Operation

Enclosure 1

Mount Pleasant and Bengalla Cumulative PM_{10} Assessment

TODOROSKI AIR SCIENCES
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20 July 2018

Chris Lauritzen
General Manager – Resource Development
MACH Energy Australia Pty Ltd

RE: Mount Pleasant & Bengalla – Cumulative PM_{10} Assessment

Dear Chris,
Todoroski Air Sciences has conducted an analysis of the incremental and cumulative annual average PM_{10} levels presented in the following documents:

- *Mount Pleasant Operation Mine Optimisation Modification Air Quality and Greenhouse Gas Assessment* (Mount Pleasant MOD3) (**Todoroski Air Sciences, 2017a**);
- *Air Quality Assessment – Mount Pleasant Operation Rail Modification* (Mount Pleasant MOD4) (**Todoroski Air Sciences, 2017c**);
- *Air Quality Impact Assessment and Greenhouse Gas Assessment Continuation of Bengalla Mine* (Bengalla AQIA) (**Todoroski Air Sciences, 2013**);
- *Air Quality Assessment – Bengalla Mine Development Consent Modification 2* (Bengalla MOD2) (**Todoroski Air Sciences 2016**); and,
- *Air Quality Assessment – Bengalla Mine Development Consent Modification 4* (Bengalla MOD4) (**Todoroski Air Sciences 2017b**).

This assessment and analysis utilises the existing modelling predictions prepared for the individual Mount Pleasant (MACH Energy) and Bengalla (BMC) air quality assessments. Further detail regarding the air dispersion model setup can be found in the above relevant documents.

Discussion
There are some key points of difference between the modelling conducted for the most recent Mount Pleasant assessments compared with the most recent Bengalla assessments, particularly in relation to meteorology used and characterisation of emission sources at Bengalla.

Meteorological Data

The Mount Pleasant assessments used meteorological data based on the 2015 calendar year (Year 2015), while the Bengalla assessments used meteorological data based on the 2010 calendar year (Year 2010).

The 2015 meteorological year incorporates data from the Mount Pleasant operated weather station and two new weather stations located between the Mount Pleasant Operation and Muswellbrook, which did not exist in 2010.

The 2010 meteorological year includes the two weather stations operated by Bengalla.

Hence, the different meteorological years and associated datasets result in some differences in the modelling.

The Year 2010 meteorological dataset was representative at the time of preparing the Bengalla AQIA, the Year 2015 meteorological dataset is more contemporary. The 2015 meteorological dataset is also considered likely to be conservative for use in dispersion modelling, as described in Mount Pleasant MOD3.

Characterisation of Bengalla Emission Sources

The other key differentiating factor is that the Mount Pleasant modelling applied conservative assumptions, based on the available data at the time, to represent the Bengalla Mine. These include the emission rates, number and position of sources, mine terrain data, etc. These assumptions were derived from information provided in the air quality assessments available in the public domain at the time of modelling.

Similar to the differences in meteorological datasets used, these assumptions would also lead to differences between the Mount Pleasant predictions of the PM_{10} levels as included in the Bengalla AQIA modelling.

The Mount Pleasant MOD3 and MOD4 modelling applied conservative assumptions using the available information that would overestimate incremental effects from other mines (including Bengalla), as appropriate, to ensure no underestimation in the total predicted cumulative levels.

Analysis

Instead of relying on the conservatively modelled values for the Bengalla increment in the Mount Pleasant MOD3 and MOD4 assessments, this assessment applies results obtained from direct examination of the incremental predictions for Bengalla as presented in the Bengalla MOD4, MOD2 and AQIA assessment reports.

This would reduce any significant inherent overestimation of the Bengalla incremental effect. As a result, some of the cumulative levels are lower in this assessment (for Scenario 1/ Year 2018) than in the Mount Pleasant MOD3 and MOD4 assessments, as set out it the analysis below.

The dust emissions estimates for modelling the Bengalla Mine in Mount Pleasant MOD3 and MOD4 are presented in **Table 1**. Whilst these estimates do not include the slightly greater emissions from the proposed Bengalla MOD4, its effects would be very minor and would not affect the net result.

Table 1: Comparison of modelled dust emissions from Mount Pleasant and Bengalla (kg of TSP)

Operation	Scenario 1	Scenario 2	Scenario 3
Mount Pleasant	1,622,722 [1]	3,070,915 [2]	3,750,801 [1]
Bengalla	7,289,184	7,812,619	8,336,736

[1] Mount Pleasant MOD3.

[2] Mount Pleasant MOD4.

A summary of the estimated incremental (mine alone) and cumulative annual average PM_{10} levels at key selected receptors is presented in **Table 2** to **Table 4**, for three scenarios, corresponding to approximately years 2018, 2021 and 2025. The rightmost column in the tables presents the cumulative result per the current analysis.

The key receptor locations are set out in **Figure 1**.

Table 2 to **Table 4** present the Bengalla mine contribution (as conservatively modelled in the Mount Pleasant assessments), alongside the Bengalla modelling report levels. Similarly, the cumulative totals presented in the Mount Pleasant assessments are shown alongside the revised cumulative total, based on using the Bengalla modelled value for the Bengalla contribution.

The incremental contributions for the Mount Pleasant Operation are based on the predicted levels in the Mount Pleasant MOD3 (for Year 2018 and 2025) and MOD4 (for Year 2021). The incremental contributions for the Mount Pleasant Operation are presented in **Figure 2** to **Figure 4**. The Mount Pleasant modelled Bengalla contributions have been extracted from the Mount Pleasant modelling files.

The incremental contributions for the Bengalla Mine are based on predicted levels in the Bengalla MOD4 (for Year 2018), MOD2 (for Year 2021) and AQIA (for Year 2025) assessments and are presented in **Figure 5** to **Figure 7**.

This analysis provides the most up-to-date assessment of cumulative levels based on consideration of the incremental levels from the most relevant assessments set out above.

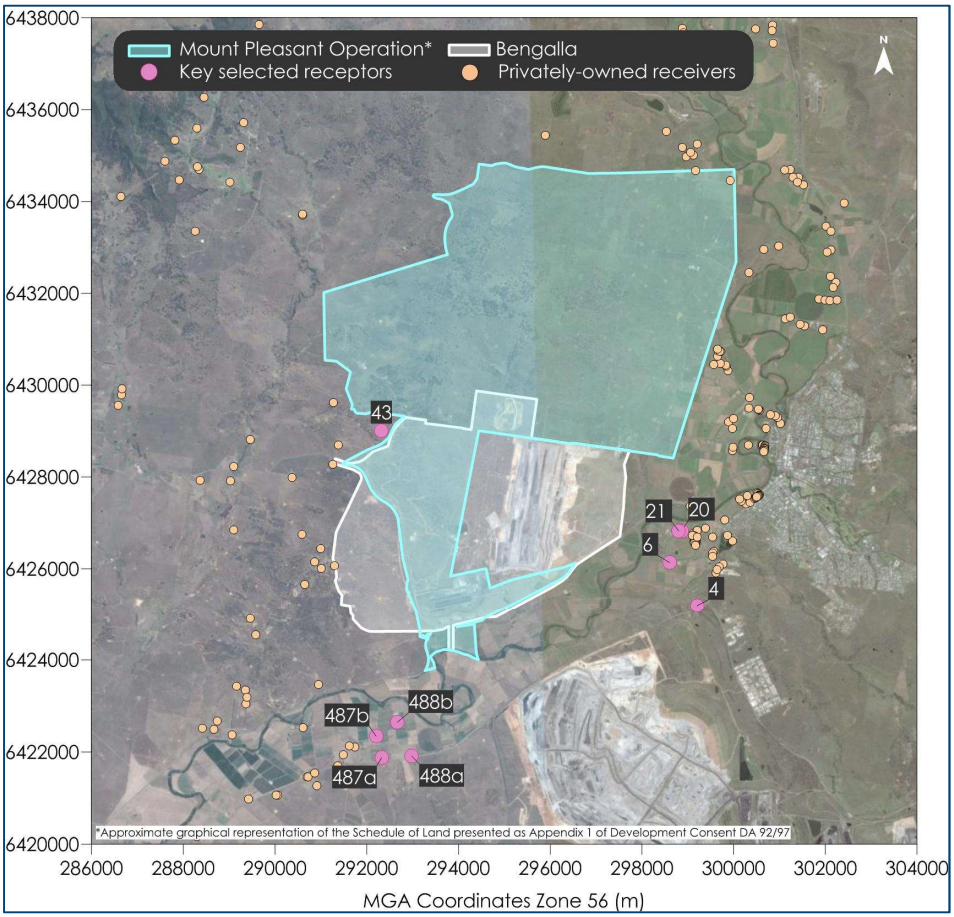


Figure 1: Map of key receptor locations

Table 2: Summary of modelling predictions at selected receptors in Scenario 1 (approx. 2018) (µg/m³)

MACH Energy Receptor ID	Incremental level			Cumulative total level (including other mines [e.g. Mt Arthur] and background)	
	Approved Mount Pleasant Operation incorporating Mount Pleasant MOD3 (Mount Pleasant modelled)	Bengalla Mine			
		Mount Pleasant modelled	Bengalla modelled	Mount Pleasant modelled	Bengalla contribution adjusted to match Bengalla modelled
4	3	11	6	26	22
6	5	13	8	29	24
20	5	10	6	26	23
21	5	11	7	27	23
43	1	12	16	26	30
487a	0	4	3	19	18
487b	0	4	3	18	18
488a	0	5	4	26	25
488b	0	5	5	22	22

Table 3: Summary of modelling predictions at selected receptors in Scenario 2 (approx. 2021) (µg/m³)

MACH Energy Receptor ID	Incremental level			Cumulative total level (including other mines [e.g. Mt Arthur] and background)	
	Approved Mount Pleasant Operation incorporating Mount Pleasant MOD4 (Mount Pleasant modelled)	Bengalla Mine			
		Mount Pleasant modelled	Bengalla modelled	Mount Pleasant modelled	Bengalla contribution adjusted to match Bengalla modelled
4	3	10	6	20	16
6	5	11	7	23	19
20	5	8	5	22	19
21	5	9	5	22	19
43	1	14	21	26	33
487a	0	4	3	22	21
487b	0	5	3	22	21
488a	0	6	4	34	32
488b	0	7	5	29	27

Table 4: Summary of modelling predictions at selected receptors in Scenario 3 (approx. 2025) (µg/m³)

MACH Energy Receptor ID	Incremental level			Cumulative total level (including other mines [e.g. Mt Arthur] and background)	
	Approved Mount Pleasant Operation incorporating Mount Pleasant MOD3 (Mount Pleasant modelled)	Bengalla Mine			
		Mount Pleasant modelled	Bengalla modelled	Mount Pleasant modelled	Bengalla contribution adjusted to match Bengalla modelled
4	3	8	5	17	14
6	5	10	5	21	17
20	5	7	4	21	18
21	5	8	4	21	18
43	1	22	22	32	32
487a	0	5	5	27	27
487b	0	6	6	26	26
488a	0	7	7	42	42
488b	0	8	9	34	35

Summary and Conclusions

This assessment has examined the potential incremental and cumulative annual average PM_{10} levels due to the Mount Pleasant Operation and Bengalla Mine using the available existing information.

The results indicate that if the Mount Pleasant MOD3 and MOD4 dispersion modelling was revised to reduce some of the conservatism, by using less conservative Bengalla modelling results, no cumulative annual average PM_{10} levels above 25µg/m^3 are likely to occur at Receptors 4, 6, 20 and 21 in Scenario 1/Year 2018. There is no change in this regard in the other years.

It is noted the changes to the Mount Pleasant Operation sought in Mount Pleasant MOD4 (i.e. an alternative location for the rail spur and train loading infrastructure) are not relevant to Scenario 1/Year 2018 as construction of the proposed alternative rail spur and infrastructure, if approved, would not occur until later.

If the modelling inputs from each mine were combined and re-modelled, the likely incremental and cumulative levels would be close to and within the ranges of values set out **Table 2** to **Table 4**.

It is therefore reasonable to conclude that for Receptors 20 and 21, the effects of the Bengalla mine would be generally similar to those of the Mount Pleasant Operation, but the relative proportions of their effects would be a little higher or lower at various times over the life of the projects.

Both mines move further from these receptors over time. The overall effects of the Bengalla Mine reduce over time as distance increases and as activity remains relatively steady. The effects from the Mount Pleasant Operation also reduce with increasing distance but increase due to increasing activity, thus overall remain generally similar over time.

Please feel free to contact us if you need to discuss (or require clarification on) any aspect of this assessment.

Yours faithfully,

Todoroski Air Sciences

Aleks Todoroski

Philip Henschke

References

Todoroski Air Sciences (2013)

"Air Quality Impact and Greenhouse Gas Assessment Continuation of Bengalla Mine", prepared by Todoroski Air Sciences for Hansen Bailey, July 2013.

Todoroski Air Sciences (2016)

"Air Quality Assessment – Bengalla Mine Development Consent Modification 2", prepared for Hansen Bailey by Todoroski Air Sciences, April 2016.

Todoroski Air Sciences (2017a)

"Mount Pleasant Operation Mine Optimisation Modification Air Quality and Greenhouse Gas Assessment", prepared for MACH Energy Australia Pty Ltd by Todoroski Air Sciences, May 2017.

Todoroski Air Sciences (2017b)

"Air Quality Assessment – Bengalla Mine Development Consent Modification 4", prepared for Hansen Bailey by Todoroski Air Sciences, December 2017.

Todoroski Air Sciences (2017c)

"Air Quality Assessment – Mount Pleasant Operations Rail Modification", prepared for MACH Energy Australia Pty Ltd by Todoroski Air Sciences, December 2017.

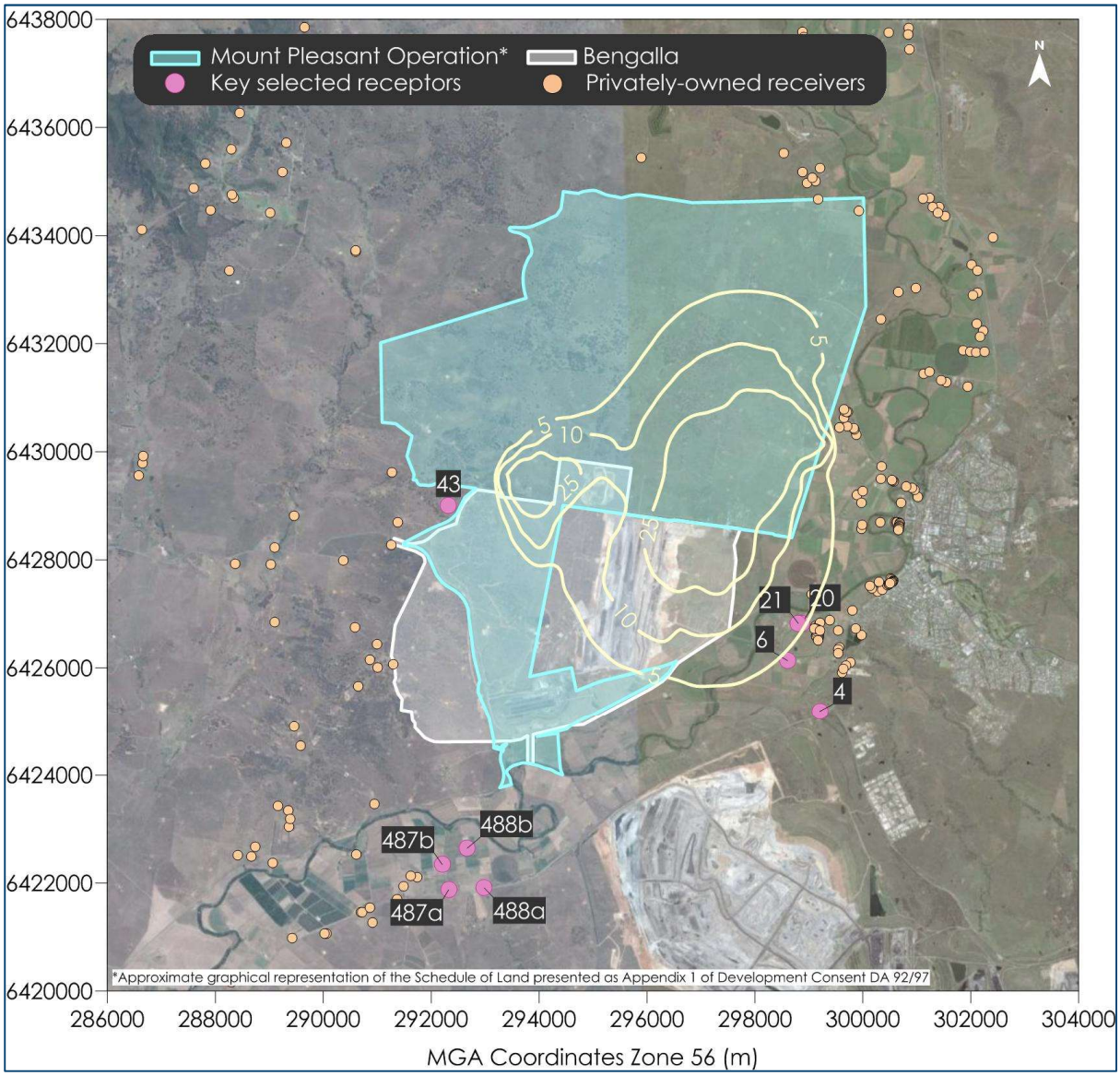


Figure 2: Predicted incremental annual average PM_{10} concentrations for Mount Pleasant in Year 2018 (µg/m³)

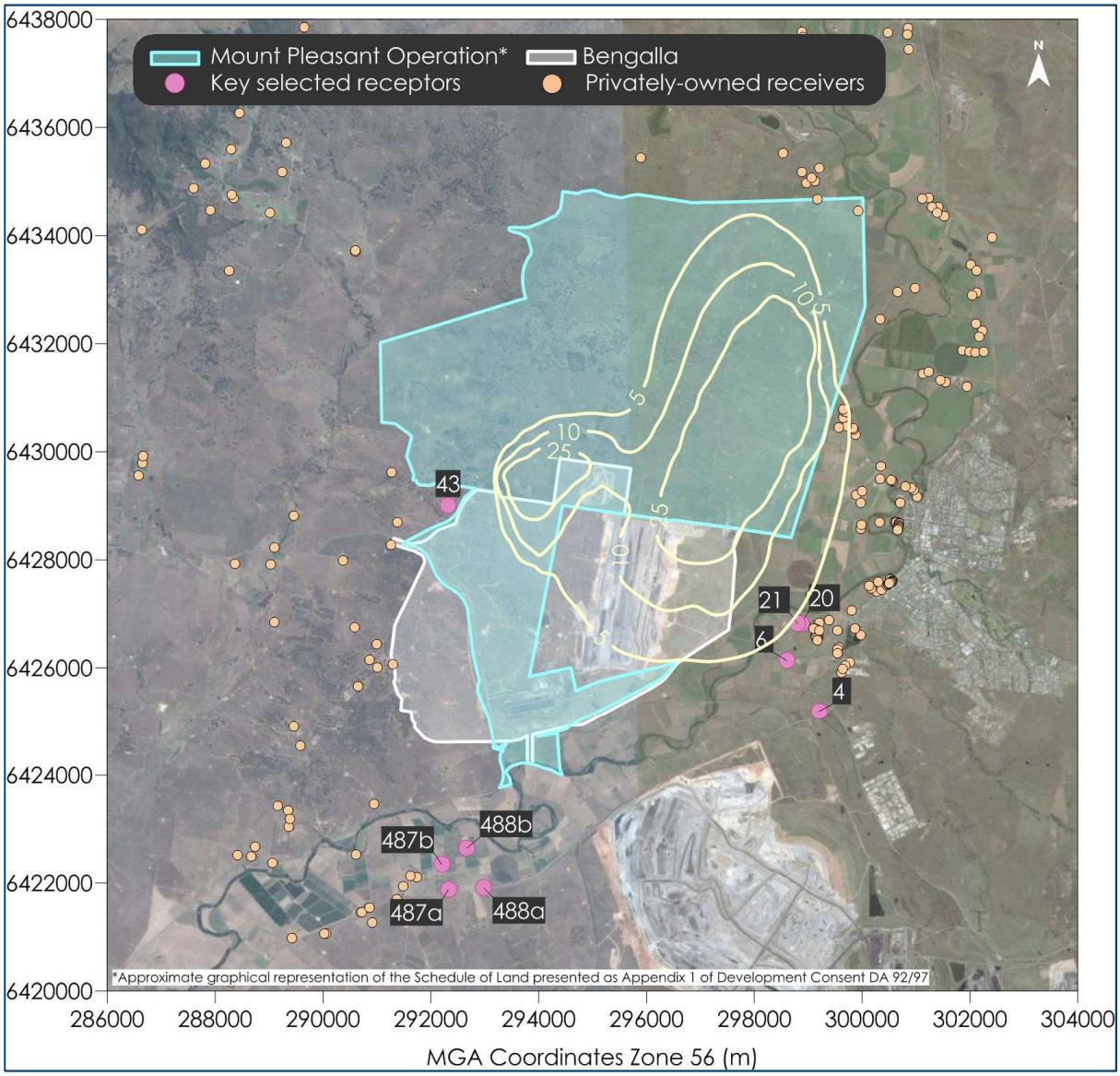


Figure 3: Predicted incremental annual average PM_{10} concentrations for Mount Pleasant in Year 2021 (µg/m³)

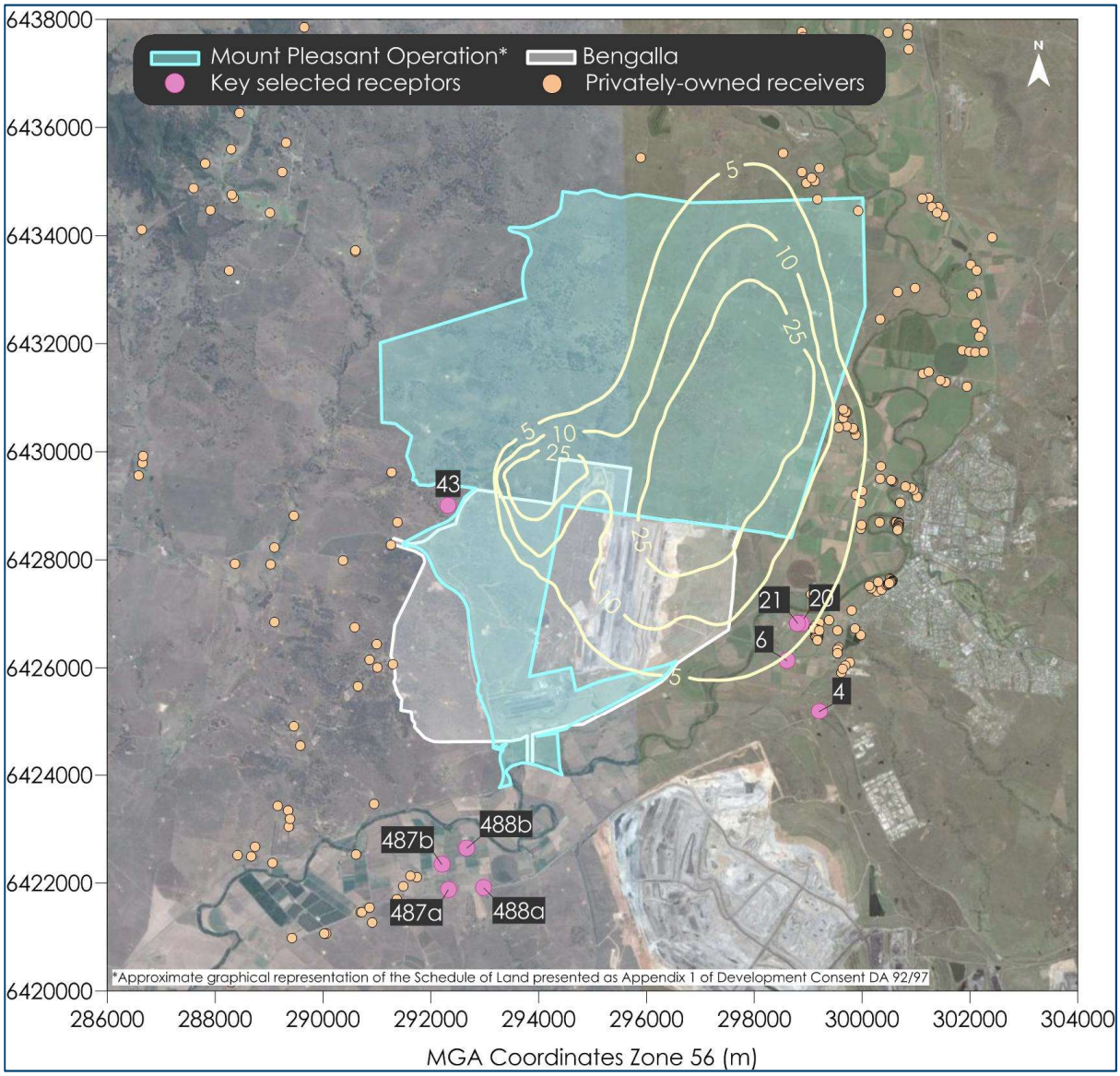


Figure 4: Predicted incremental annual average PM_{10} concentrations for Mount Pleasant in Year 2025 (µg/m³)

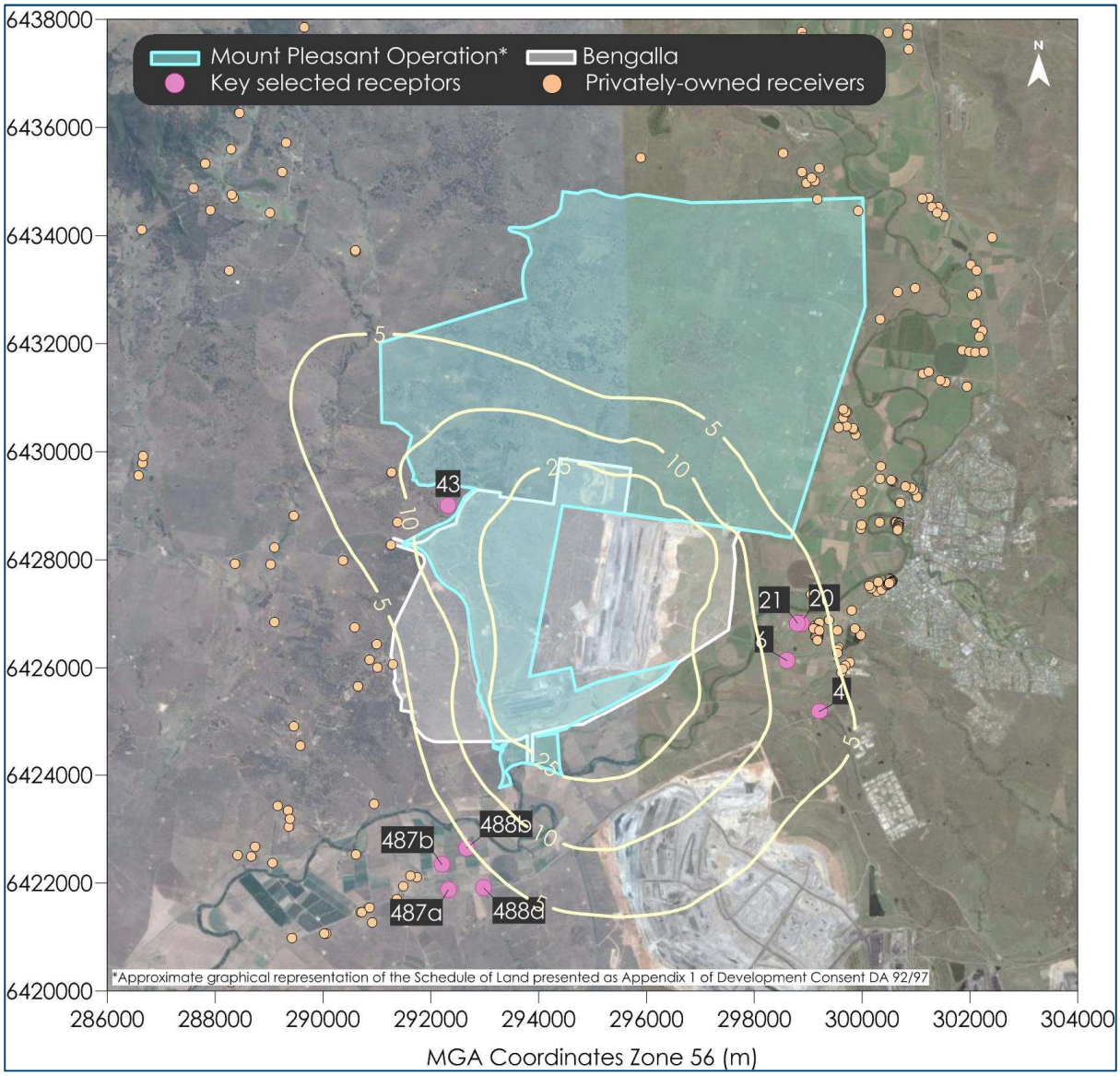


Figure 5: Predicted incremental annual average PM_{10} concentrations for Bengalla in Year 2018 (µg/m³)

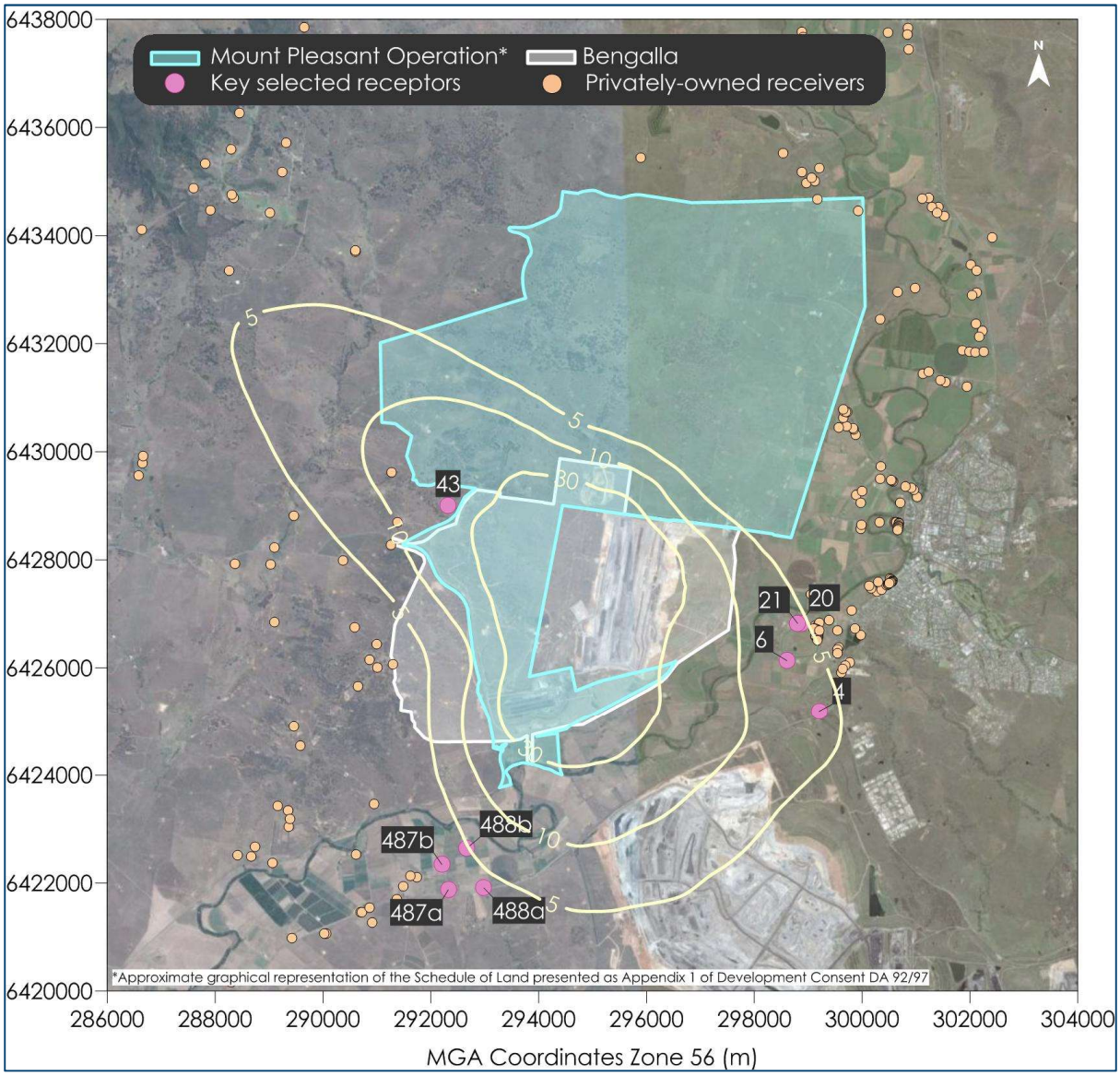


Figure 6: Predicted incremental annual average PM_{10} concentrations for Bengalla in Year 2021 (µg/m³)

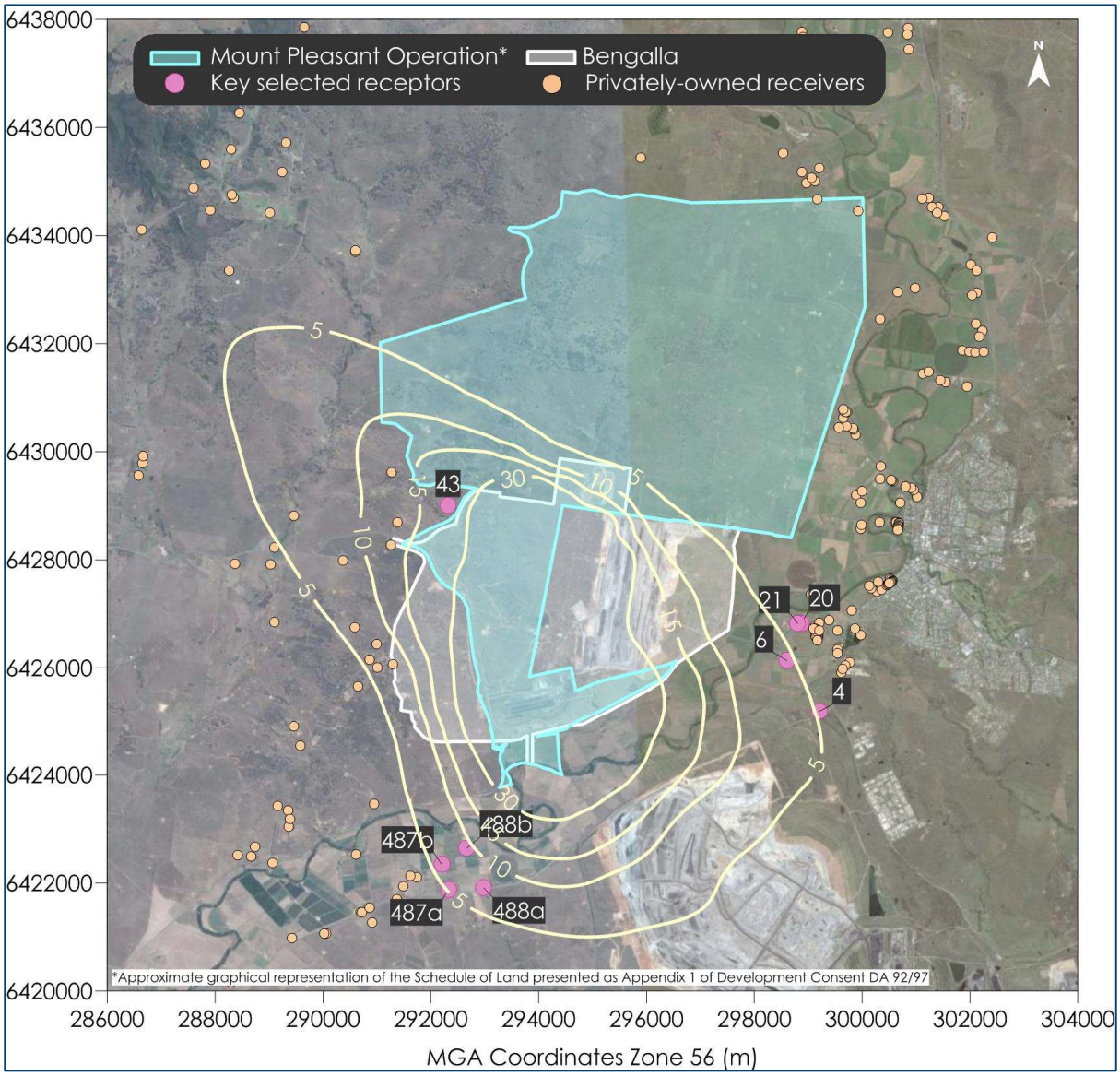
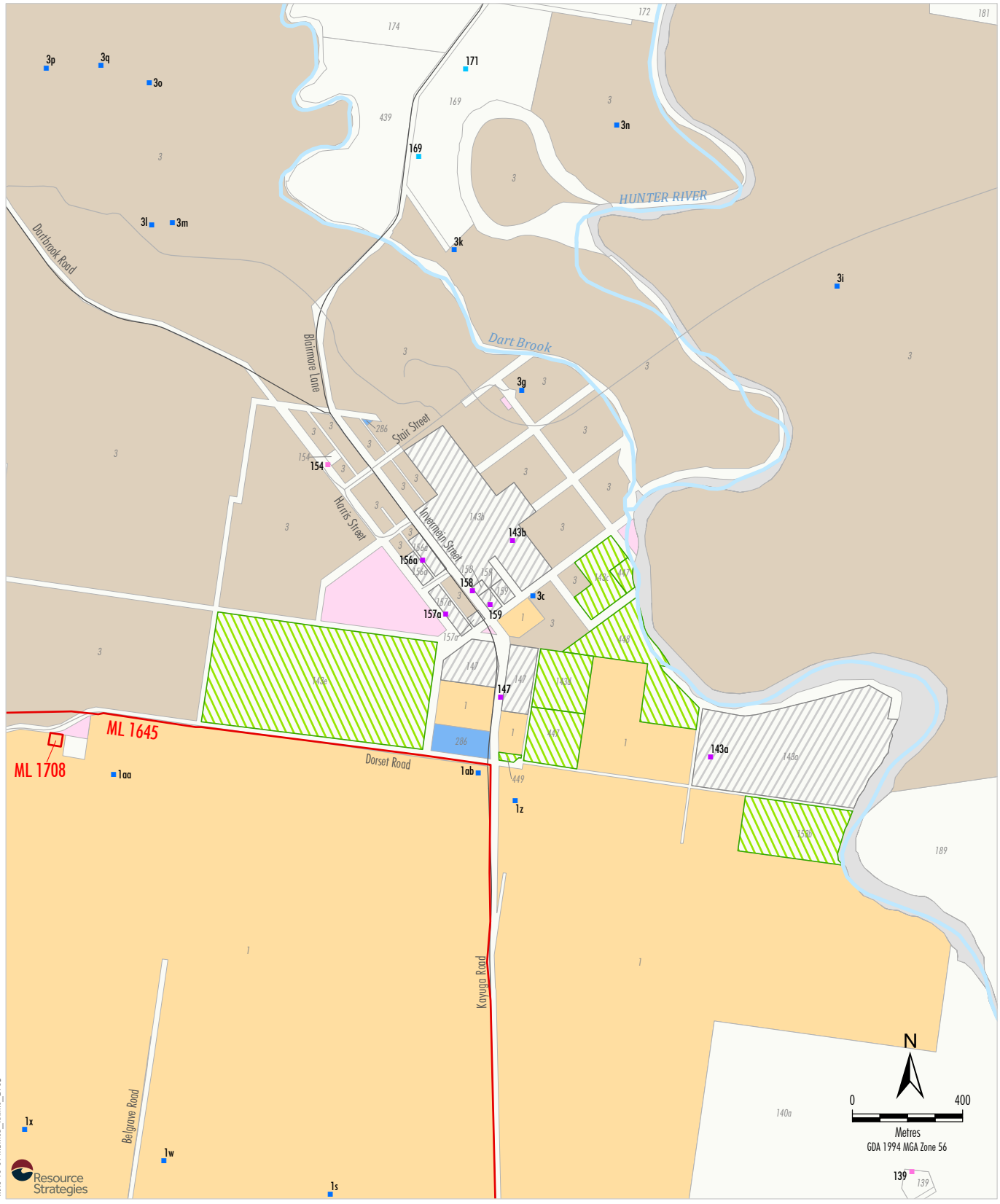


Figure 7: Predicted incremental annual average PM_{10} concentrations for Bengalla in Year 2025 (µg/m³)

Enclosure 2

Figures



MAC-16-01 ML Mod_RAInfo_2138

LEGEND

- Mining Lease Boundary
- Muswellbrook and Upper Hunter LEPs Zones B2, B5, IN1, SP2, R2, R5, RE1, RE2 and W1
- Crown
- Muswellbrook Shire Council
- Mount Pleasant Controlled
- Dartbrook Controlled
- Privately Owned Land
- Relevant Kayuga Land currently in Table 1, Consolidated Consent
- Additional Vacant Land to be added to Table 1, Development Consent
- Mine-owned Dwelling
- Privately-owned Residence - MPO Acquisition on Request
- Privately-owned Residence - MPO Mitigation on Request
- Other Privately-owned Residence

Source: NSW Land & Property Information (2016); NSW Division of Resources & Energy (2016); MACH Energy (2018)

MACHEnergy

MOUNT PLEASANT OPERATION

Land Ownership
Kayuga

Figure 1

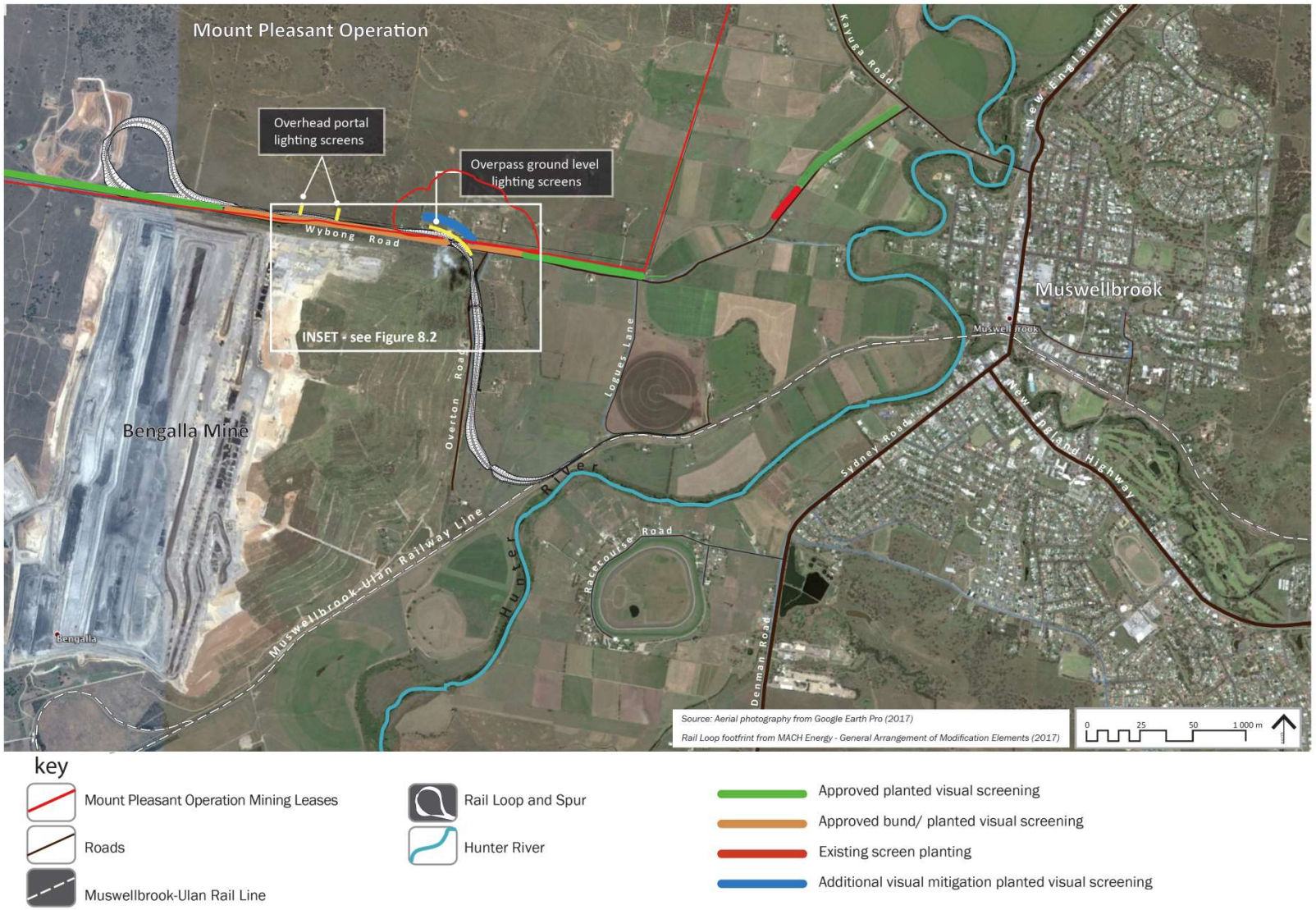


Figure 2 – Locations of Existing and Proposed Visual Screening (After VPA, 2017)

Enclosure 3

Engineering Drawings – Lighting Screens

H355333-00000-224-292-0004

DWG. No.

MOP DESIGN
SEPT. '16 V2

TLO

A

Proposed Pit A Excavation

HV Access Disturbance

Exot. Waste Emplacement

WYBONG ROAD

O/H LIGHT SCREENS

OVERPASS LIGHT SCREENS

EXTENT OF LIGHT
DEFLECTED BY
SCREENS.

Bengalla Mining Company

OPTION C SOLUTION
WYBONG ROAD RAIL
LOOP ALIGNMENT 3B.

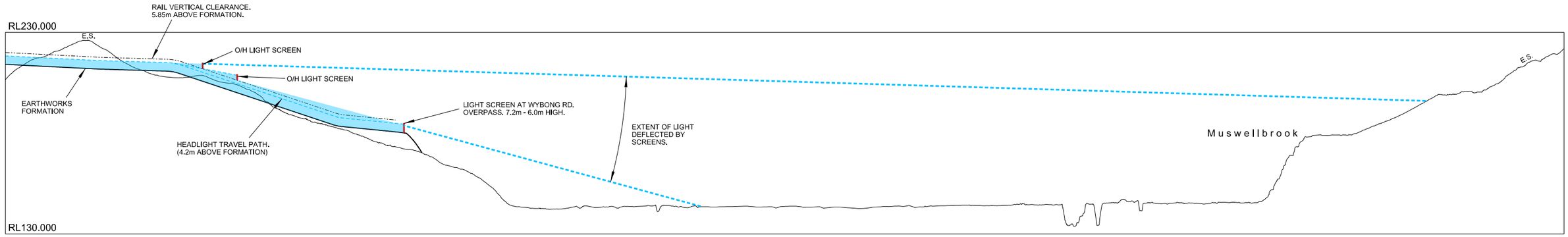
EXTENT OF LIGHT
DEFLECTED BY
RAIL CUTTING.

Muswellbrook

B

N

PLAN
SCALE 1:10,000



PROFILE BETWEEN POINTS A - B
SCALE 1:10,000 (H)
1:1,000 (V)

200 100 0 200 400 600 800 1000 Metres
SCALE 1 : 10000

20 10 0 20 40 60 80 100 Metres
SCALE 1 : 1000

PRELIMINARY
NOT FOR CONSTRUCTION

DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	REGISTERED PROFESSIONAL

No.	DESCRIPTION	BY	CHK'D	DATE
B	PRELIMINARY - UPDATED FOR RAIL ALIGNMENT 3B	ADR		02.11.17
A	PRELIMINARY - FOR INFORMATION ONLY	ADR		16.10.17

REVISIONS

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	A.ROWNEY	NR	16.10.17
DESIGNER	A.ROWNEY	NR	16.10.17
CHECKER			
DESIGN COORD.			
RESP. ENG.			
LEAD DISC. ENG.			
ENG. MANAGER			
PROJ. MANAGER	J.WALSH		

DRAWING APPROVAL STATUS: Preliminary

HATCH

MACHEnergy

MOUNT PLEASANT PROJECT
OPTION C SOLUTION - REFERENCE DESIGN

WYBONG ROAD RAIL LOOP
ALIGNMENT 3
HEADLIGHT PROFILE

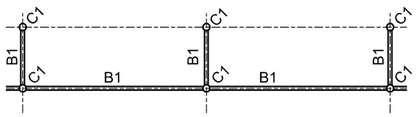
SCALE AS NOTED OR AS NOTED

DWG. No. H355333-00000-224-292-0004

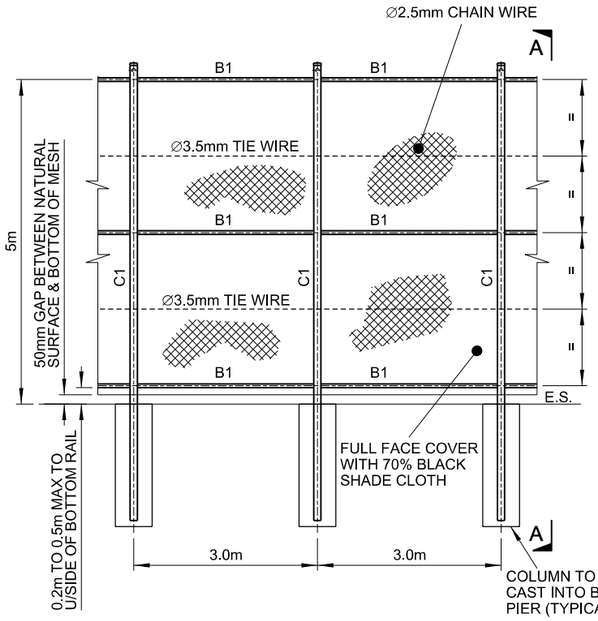
REV B

$USERNAME 2:33:10 PM
21/11/2017
H355333-00000-224-292-0004

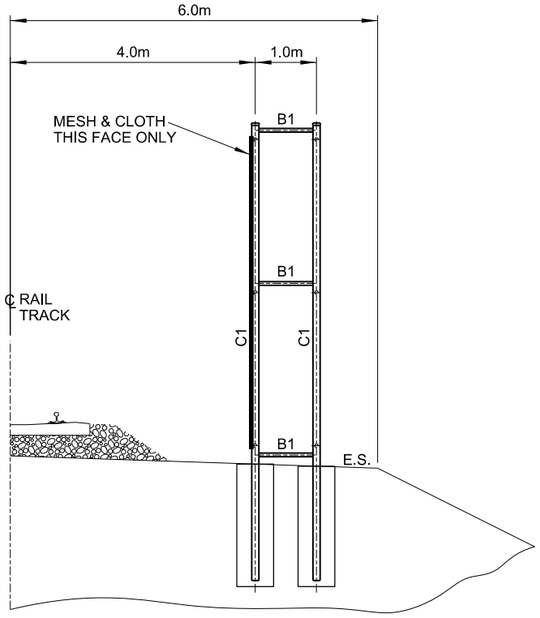
DWG. No. H355333-00000-224-260-0002



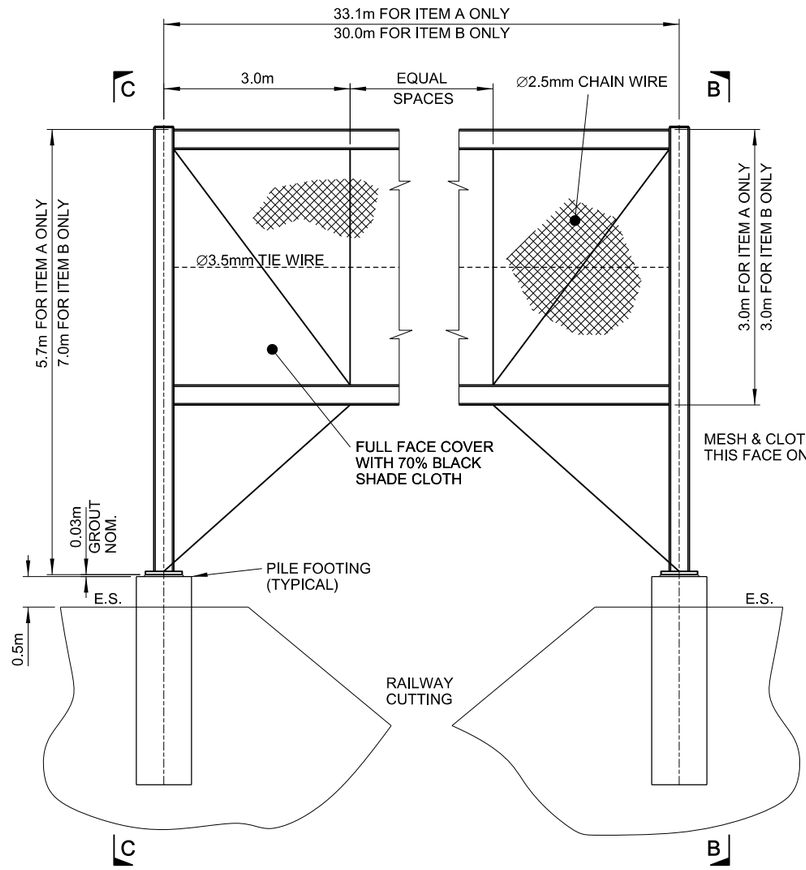
GROUND LEVEL VISUAL SCREEN PLAN
SCALE 1:50



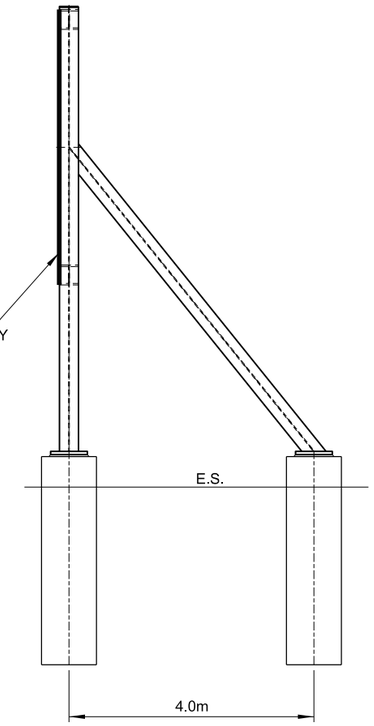
GROUND LEVEL VISUAL SCREEN ELEVATION
SCALE 1:50



GROUND LEVEL VISUAL SCREEN SECTION A - A
SCALE 1:50



PORTAL SCREEN ITEM A
PORTAL SCREEN ITEM B
SCALE 1:50



SECTION B - B - AS DRAWN
SECTION C - C - OPP HAND
SCALE 1:50

MEMBER SCHEDULE		
MARK	DESCRPTION	SIZE
C1	POST	114.3 x 4.5 CHS GRADE 350
B1	BEAM	60.3 x 3.6 CHS GRADE 350

1 0 1 2 3 4 5 Metres
SCALE 1 : 50

PRELIMINARY
NOT FOR CONSTRUCTION

HATCH

MACHEnergy

No.	DESCRIPTION	BY	CHK'D	DATE
B	PRELIMINARY - UPDATED FOR RAIL ALIGNMENT 3B	ADR		02.11.2017
A	PRELIMINARY	DCP		18.10.17

ROLE	NAME	SIGNATURE	DATE
DRAFTSPERSON	D.PRITCHARD	NR	18.10.17
DESIGNER		NR	
CHECKER			
DESIGN COORD.			
RESP. ENG.			
LEAD DISC. ENG.			
ENG. MANAGER			
PROJ. MANAGER	J.WALSH		

DRAWING APPROVAL STATUS: Started

MOUNT PLEASANT PROJECT
OPTION C SOLUTION - REFERENCE DESIGN

WYBONG ROAD RAIL LOOP
VISUAL SCREENS
DETAIL ARRANGEMENT

DRAWING No.	DRAWING TITLE
REFERENCE DRAWINGS	

REGISTERED PROFESSIONAL

SCALE AS NOTED OR AS NOTED

DWG. No. H355333-00000-224-260-0002

REV B

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2017/11/01
H355333-00000-224-260-0002