



23 October 2020

Stephen O'Donoghue
Director Resource Assessments
NSW Department of Planning, Industry and Environment
12 Darcy Street
Parramatta NSW 2124
Email: Stephen.O'Donoghue@planning.nsw.gov.au

Dear Stephen,

Tahmoor South Project: Response to Request for Information No. 2

1. Introduction

This letter provides a response to the Request for Information No. 2 for the Tahmoor South Project (the Project). Each request is reproduced in the box and the response below.

2. Existing consents

1. Provide a copy of each existing Tahmoor mine consent.
2. Provide a tabulated summary of the approved activities under each existing consent (including any relevant figures that outline the relevant project boundaries).

Each consent for the existing Tahmoor Mine (i.e. Tahmoor North) is listed on the SIMEC web via the following link:

<http://www.simec.com/mining/tahmoor-coking-coal-operations/publications/approvals/consents-and-licences/>

A tabulated summary of the approved activities under each existing consent is provided in Attachment A. The relevant boundaries are illustrated on Figure 1.2 of the EIS (AECOM 2018).

3. Subsidence

Provide a break-up of the predicted impacts and associated repair categories for houses in the subsidence study area (Table 11.4 of SIA) and Tahmoor North LWs 22 to 29 (Table 11.5 of SIA); ie. split the no claim and R0, R1 and R2, R3 and R4 categories into individual categories.

R0 relates to very minor adjustments, such as a sticky door or a door that swings open or closed, movement of cornices or movement at external or internal expansion joints. Very few R0 claims have been recorded historically. This is as expected for the following reasons:

- Being minor in nature, they may not be noticed.
- There are plenty of other potential causes that may result in R0 impacts (changes in moisture and temperature, root jacking, high winds), so it is understandable that R0 impacts may not have been

attributed to mine subsidence. In some cases, it may not be possible to determine if the actual cause was mine subsidence or another cause.

- Residents may repair the impact themselves and not lodge a formal claim.

It would be expected that more R0 impacts have actually occurred than the statistics indicate and that some houses that have not made a claim may have experienced R0 impacts. For this reason, the probabilities of “No claim” and R0 cannot be confidently separated, and have, therefore, been included together.

Additionally, there is limited data available to confidently provide probabilities of R1 separately from R2 impacts, and similarly R3 separately from R4 impacts. Notwithstanding, further information is provided below following discussion with DPIE.

The total number of houses where there could be a potential offer of acquisition, if R3 and R4 are considered together, is 28. In addition, the number of houses in the R5 category is 7. This totals 35 potential offer of acquisitions.

As explained above, there is limited data available to confidently provide probabilities of R3 separately from R4 impacts. An estimate of the total number of houses in the R3 category is 15. Therefore, the potential offer of acquisitions when a house reaches damage category R4 or R5 is 20 (based on R4 of 13 plus R5 of seven). An estimate of the number of potential acquisition offers when a house reaches damage category R3, and has been impacted by more than two longwalls, is two.

4. Groundwater

Provide further information on water supply bores which are predicted to be impacted by cumulative groundwater drawdowns, particularly in relation to allocating responsibility for any potential make good provisions. This information should include a comparative analysis of predicted impacts from the proposed Tahmoor South and the existing Bulli Seam Operations (BSOs) in relation to:

1. timing of mining of longwalls which are most likely to result in cumulative impacts;
2. level of predicted impacts to the bores between the two operations (this may include considering any updated groundwater modelling publicly available for the BSOs since the original EIS;
3. analysis of predicted verses actual impacts and currently enacted make good arrangements for the BSOs.

The below response has been provided by HydroSimulations, who prepared the groundwater model and assessment for the Project.

Background

In relation to BSO groundwater modelling, the most relevant publicly available information is from Heritage Computing (2010)¹. HydroSimulations also reviewed other publicly available documentation, e.g. IMC (2014)²; however that focusses on Appin Area 9 (or Area 7), which are greater than 6 km east or north-east of Tahmoor North and 12 km north of the Tahmoor South Project (the BSO areas are labelled on Figure 1. Appin Area 8 is the BSO mining domain closest to Tahmoor Mine and most relevant to cumulative impacts (BSO plus Tahmoor South) at registered bores (see red polygon on Figure 1.

¹ Heritage Computing, 2010. Bulli Seam Operations (BSO – ‘Appin’) Groundwater Assessment. Report HC2010/7 for Illawarra Coal / BHP.

² Illawarra Coal, 2014. Appin Area 9 Annex C Water Management Plan, September 2014.

Timing

According to Heritage Computing (2010) and the associated BSO EIS documents, the Appin Area 8 longwalls are proposed to be extracted in 2028-2039. This is essentially coincident with the latter half of the Tahmoor South Project which is proposed to operate in the period from 2022-2032, and the most north-easterly panels at Tahmoor South (101B, 102B) are proposed to be extracted in 2025. Based on this, it is likely that any effects from Tahmoor South at bores between Tahmoor South and BSO would probably precede effects from BSO (this would likely affect the attribution of effects, and responsibility for 'make good', for any effects on bores in this area prior to Appin Area 8 being extracted).

Level of predicted impacts

Publicly available groundwater modelling for BSO (Heritage Computing, 2010) did not incorporate or simulate the Tahmoor South Project because it pre-dated the Project. Therefore, cumulative impact assessment of drawdown at bores does not include Tahmoor South. However, HydroSimulations reviewed the BSO-specific drawdown estimates for registered bores, and these are presented in Table 1, and are compared against the previously reported drawdowns from the Tahmoor South Groundwater Assessment (HydroSimulations, 2020). Table 1 is focussed on registered bores located between BSO and Tahmoor, as shown on Figure 1.

The predicted effects for BSO from the BSO EIS in Table 1 are from Table 24 of Heritage Computing (2010), augmented by estimates (for bores where predicted maximum drawdown was <2 m) taken from visual inspection of Figures 56-59 of that document.

There are a number of registered bores in Table 1 for which an estimate of drawdown due to BSO were not available from the BSO EIS. These are all 4 km or more distant from BSO mine workings, and based on HydroSimulations review of the drawdown contours in Heritage Computing (2010), are likely to have a BSO-specific drawdown 0-0.5 m.

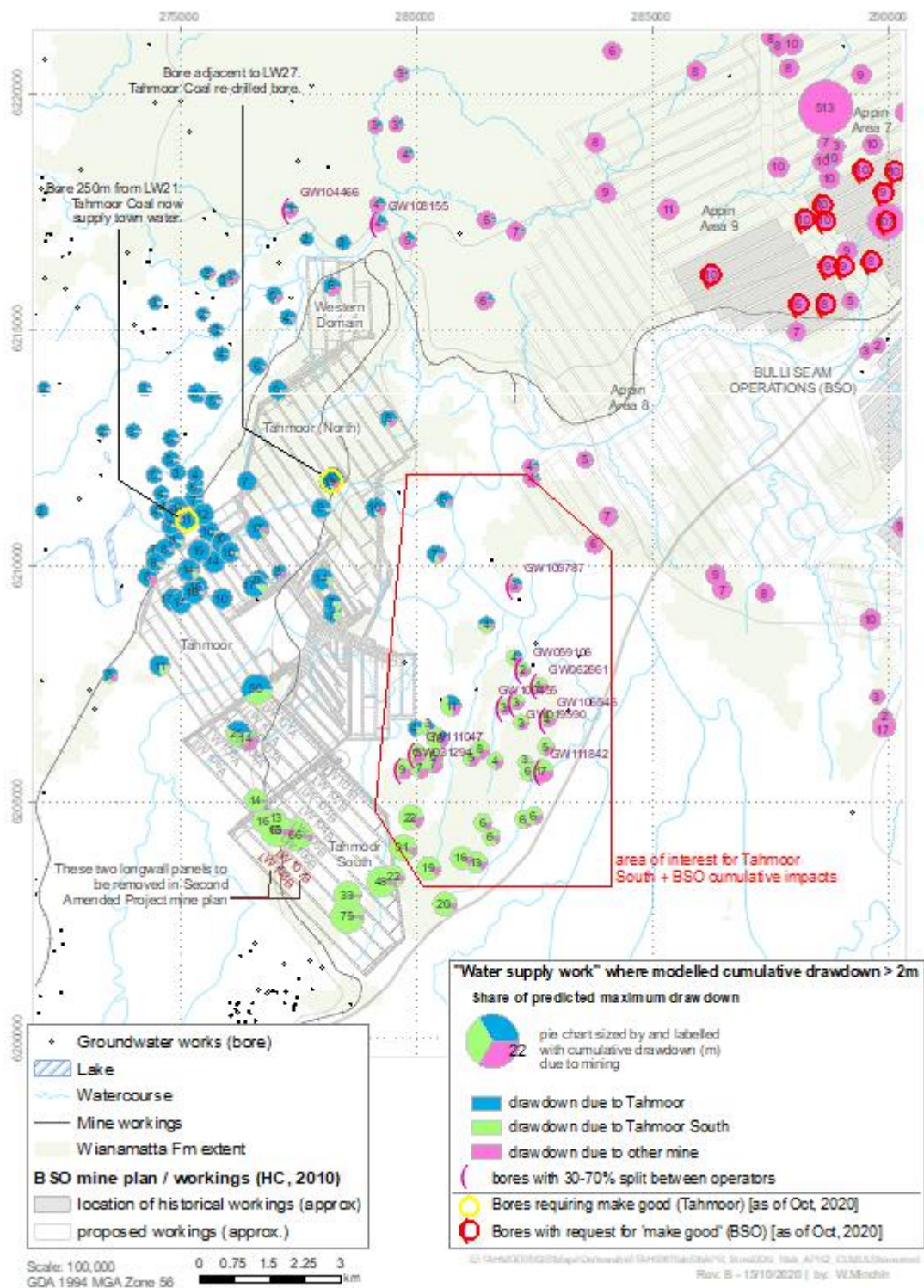


Figure 1 Share of bore drawdown due to cumulative mining effects

Table 1 Predicted drawdown and risk assessment for impacts at registered bores

Work no	X	Y	Purpose	Aquifer Unit	Tahmoor Nth DDN (m)	Tahmoor Sth DDN (m)	Tahmoor total DDN (m)	Cumulative Minimum DDN (m)	Other mines DDN (m)	BSO DDN	Distance to workings (m)			Risk	Closest workings	Responsibility for maximum drawdown (if >2m)	Tahmoor total DDN as %cumul.
											Tah Sth_	Tah Nth	Other mine				
(from HydroSimulations, 2020)											HC, 2010	(from HydroSimulations, 2020)					
GW104558	282447	6211841	Domestic	HBSS	0.65	0.1	0.8	4.4	3.7	4	7247	2531	0	High	other	Other (BSO)	17%
GW067606	282421	6212095	Irrigation	HBSS	0.66	0.1	0.8	4.3	3.5	4	7401	2441	55	Low	other	Other (BSO)	18%
GW109159	280600	6211398	Domestic	HBSS	3.68	0.4	4.1	4.8	0.7	2	5608	1230	1615	Low	Tah Nth	Tahmoor	85%
GW042788	280420	6210244	Irrigation	HBSS	5.10	0.7	5.8	6.9	1.1	1.5	4722	1268	2222	Low	Tah Nth	Tahmoor	84%
GW105884	281588	6210112	Unknown	HBSS	0.73	0.0	0.7	0.7	0.0	2	5438	2401	1447	Negl	other		100%
GW105787	282092	6209593	Domestic	HBSS	0.93	0.3	1.2	2.8	1.6	2.5	5437	2667	1396	Low	other	shared	44%
GW105944	282182	6209287	Unknown	HBSS	0.23	0.0	0.2	0.4	0.2	2.5	5299	2565	1575	Negl	other		57%
GW103235	281482	6208754	Domestic	HBSS	1.97	1.6	3.6	4.0	0.4	0.5	4240	1661	2468	Low	Tah Nth	Tahmoor	89%
GW105860	282520	6208359	Unknown	HBSS	0.07	0.1	0.2	0.17	0.0	1	4896	2558	2293	Negl	other		100%
GW107692	283455	6208096	Unknown	HBSS	0.04	0.1	0.1	0.2	0.06	1	5396	3462	2455	Negl	other		70%
GW059106	282268	6207800	Irrigation	HBSS	0.00	1.4	1.4	2.2	0.8	0.5	4326	2272	2899	Low	Tah Nth	Tahmoor	64%
GW107886	281276	6207377	Domestic	HBSS	0.34	0.1	0.4	0.4	0.0	0.5	3220	1279	3677	Negl	Tah Nth		100%
GW062661	282609	6207469	Domestic	HBSS	0.04	2.3	2.3	3.8	1.5	0.5	4250	2612	3150	Low	Tah Nth	Tahmoor	62%
GW105802	280547	6207174	Domestic	HBSS	0.11	0.7	0.8	1.3	0.5	0.5	2630	642	4192	Negl	Tah Nth		62%
GW105577	280728	6207041	Irrigation	HBSS	3.69	5.3	9.0	11.3	2.3	0.5	2600	731	4250	Mod	Tah Nth	Tahmoor	80%
GW072226	280704	6206868	Domestic	HBSS	0.07	0.8	0.9	1.3	0.4	#N/A	2440	696	4431	Negl	Tah Nth		67%
GW019590	282131	6207118	Water	HBSS	0.00	1.9	1.9	2.8	0.9	0.2	3660	2134	3592	Low	Tah Nth	Tahmoor	68%
GW056750	283210	6206928	Livestock	HBSS	0.00	1.3	1.3	1.9	0.6	0.25	4511	3213	3648	Negl	Tah Nth		68%
GW106546	282785	6206765	Domestic	HBSS	0.00	2.8	2.8	4.2	1.4	0.5	3990	2788	3830	Low	Tah Nth	Tahmoor	67%
GW045404	282217	6206689	Water	HBSS	0.00	2.2	2.2	3.1	0.9	0.25	3470	2221	3988	Low	Tah Nth	Tahmoor	71%
GW072482	281952	6206909	Domestic	HBSS	0.34	0.1	0.4	0.4	0.0	0.2	3390	1955	3843	Negl	Tah Nth		100%

Work no	X	Y	Purpose	Aquifer Unit	Tahmoor Nth DDN (m)	Tahmor Sth DDN (m)	Tahmoor total DDN (m)	Cumul. Mining DDN (m)	Other mines DDN (m)	BSO DDN	Distance to workings (m)			Risk	Closest workings	Responsibility for maximum drawdown (if >2m)	Tahmoor total DDN as %cumul.
											Tah Sth_	Tah Nth	Other mine				
(from HydroSimulations, 2020)										HC, 2010	(from HydroSimulations, 2020)						
GW100455	281877	6207020	Livestock	HBSS	0.00	2.0	2.0	3.0	1.0	0.2	3400	1880	3760	Low	Tah Nth	Tahmoor	67%
GW073018	279979	6206567	Domestic	HBSS	3.09	0.8	3.9	3.9	0.0	0.2	1824	132	5072	Low	Tah Nth	Tahmoor	100%
GW102344	280248	6206553	Irrigation	HBSS	0.61	1.3	1.9	2.7	0.8	0.2	1900	233	4931	Low	Tah Nth	Tahmoor	71%
GW106590	280442	6206344	Domestic	HBSS	2.17	8.6	10.8	12.9	2.1	0.5	1910	569	4991	Mod	Tah Nth	Tahmoor	84%
GW111047	280015	6206037	Domestic	HBSS	0.00	4.7	4.7	7.1	2.4	#N/A	1390	661	5481	Low	Tah Nth	Tahmoor	66%
GW104008	280368	6205982	Domestic	HBSS	0.00	4.7	4.7	6.4	1.7	#N/A	1570	1105	5457	Low	Tah Nth	Tahmoor	73%
GW031294	279732	6205706	Irrigation	HBSS	0.00	6.2	6.2	9.3	3.1	#N/A	950	851	5914	Low	Tah Nth	Tahmoor	67%
GW070245	280090	6205714	Domestic	HBSS	0.00	5.2	5.2	7.3	2.1	#N/A	1210	988	5712	Low	Tah Nth	Tahmoor	71%
GW057969	281350	6206116	Irrigation	HBSS	0.00	5.9	5.9	8.0	2.1	0.25	2450	1471	4759	Low	Tah Nth	Tahmoor	74%
GW108538	281155	6205941	Domestic	HBSS	0.00	3.7	3.7	5.0	1.3	#N/A	2170	1384	5024	Low	Tah Nth	Tahmoor	74%
GW051877	281673	6205875	Livestock	HBSS	0.00	3.2	3.2	4.2	1.0	0.25	2590	1868	4913	Low	Tah Nth	Tahmoor	76%
GW104860	282745	6206178	Commerc. /Indust.	HBSS	0.00	3.4	3.4	4.8	1.4	0.5	3690	2798	4418	Low	Tah Nth	Tahmoor	71%
GW053450	282303	6205837	Irrigation	HBSS	0.00	2.6	2.6	3.4	0.8	0.25	3180	2453	4756	Low	Tah Nth	Tahmoor	76%
GW111842	282654	6205664	Irrigation	BGSS	0.00	10.8	10.8	16.7	5.9	#N/A	3430	2851	4938	Mod-	Tah Nth	Tahmoor	65%
GW111828	282391	6205638	Irrigation	HBSS	0.00	4.5	4.5	5.9	1.4	#N/A	3170	2618	4993	Low	Tah Nth	Tahmoor	76%
GW108842	282500	6204716	Irrigation	HBSS	0.00	4.4	4.4	5.6	1.2	#N/A	3150	3193	5896	Low	Tah Sth	Tahmoor	79%
GW105803	282278	6204644	Domestic	HBSS	0.00	5.2	5.2	6.5	1.3	#N/A	2930	3069	5993	Low	Tah Sth	Tahmoor	80%
GW104454	281410	6204568	Domestic	HBSS	0.00	4.9	4.9	5.9	1.0	#N/A	2070	2556	6242	Low	Tah Sth	Tahmoor	83%
GW059618	281587	6204277	Domestic	HBSS	0.00	5.1	5.1	6.0	0.9	#N/A	2200	2966	6584	Low	Tah Sth	Tahmoor	85%
GW102045	281266	6203733	Domestic	HBSS	0.00	11.1	11.1	12.8	1.7	#N/A	1830	3225	7085	Mod-	Tah Sth	Tahmoor	87%
GW102179	280953	6203826	Irrigation	HBSS	0.00	13.7	13.7	15.5	1.8	#N/A	1370	3230	7368	Mod-	Tah Sth	Tahmoor	88%
GW052016	280259	6203604	Livestock	HBSS	0.00	17.0	17.0	19.0	2.0	#N/A	930	2993	7438	Mod	Tah Sth	Tahmoor	89%

Work no	X	Y	Purpose	Aquifer Unit	Tahmoor Nth DDN (m)	Tah-mor Sth DDN (m)	Tah-moor total DDN (m)	Cumul . Minin g DDN (m)	Other mines DDN (m)	BSO DDN	Distance to workings (m)			Risk	Closest workings	Responsibility for maximum drawdown (if >2m)	Tahmoor total DDN as %cumul.
											Tah Sth_	Tah Nth	Other mine				
(from HydroSimulations, 2020)										HC, 2010	(from HydroSimulations, 2020)						
GW054146	279886	6204676	Domestic	HBSS	0.00	18.5	18.5	22.0	3.5	#N/A	490	1845	6726	Mod	Tah Sth	Tahmoor	84%
GW101936	280604	6202851	Domestic	HBSS	0.00	18.3	18.3	19.9	1.6	#N/A	1000	3809	8127	Mod	Tah Sth	Tahmoor	92%
GW103615	279720	6204034	Domestic	HBSS	0.00	28.4	28.4	31.3	2.9	#N/A	390	2468	7359	Mod	Tah Sth	Tahmoor	91%

Predicted vs actual impacts for BSO

HydroSimulations have not found a comparison of actual effects versus predicted drawdown for BSO. However, Table 2 presents the predicted maximum drawdown (from Heritage Computing, 2010) and the distance to extracted workings (completed longwalls as of 2020) for bores where an impact has been claimed and 'make good' arrangements have been requested by landowners. More discussion of this is presented below.

Record of 'make good' at BSO

Tahmoor Coal requested records of make good at BSO from Illawarra Metallurgical Coal (IMC). These are summarised in Table 2. There are 17 bores where a potential impact was raised by a landowner, of which:

- **7-10** bores where make good is required:
 - **7** bores where IMC has acknowledged the impact and enacted make good arrangements.
 - **3** where the make good process is still in progress (likely to make good in at least 1 of those).
- and a further **7** where historical effects of mining are not evident:
 - **1** where IMC has refused, i.e. no impact from mining (but IMC still assisted the owner by servicing pump electricals).
 - **2** where other factors were identified (bacteria on intakes - unlikely related to mining), but IMC serviced the pump anyway.
 - **2** where 'future impacts' are likely, but some issue has arisen already, unlikely associated with mining (but IMC is planning to re-optimize the system to maximise yield).
 - **2** more where 'future impacts' are likely (but IMC is currently planning to proactively re-optimize the system to maximise yield).

The distance between extracted longwall panels at BSO and each of the bores where make good has been required or where the assessment is in progress has been analysed, and the maximum distance to extracted longwalls was approximately 400 m.

The distance is related to the type of effect at each bore. Information from IMC was that *"Nearly all are subject to direct longwall impact (bar one located on the Douglas Mains between AA7 and AA9)"* and *"only one has been impacted by direct reduction in SWL"* (water level). That is, subsidence effects are the main mechanism by which bore yield or water quality are affected, rather than reduction in available drawdown at distance.

These findings are consistent with the risk classification adopted for bores predicted to be affected by the Tahmoor South Project and cumulatively, where a distance of 1,000 m was used as a conservative threshold for bores at a moderate risk of requiring make good (HydroSimulations, 2020).

Table 2 BSO 'make good' records

Mine area	Bore ID	Bore Depth	Mining	Predicted max. DDN (HC, 2010)	Distance to workings (m)	Status / Mining Impact	Contributing Issues	Make Good Solutions
West Cliff	k10bh01 10WA119395 GW115533	30 m	Westcliff LW38	1 m	67	- impact acknowledged. - possible reduced yield	- oversized pump - electrical defects - pump intakes blocked iron/manganese	- IMC re-optimised pumping arrangement which met 90% of agreed pre-mining yield. - IMC made small perpetuity payment made to cover remaining 10% shortfall.
West Cliff	GW072454 10BL156136	162 m	Westcliff LW38	3 m	0 (mined under)	- impact acknowledged. - sheared - iron staining	N/A	- Subsidence Advisory provided monetary compensation to redrill an equivalent borehole under former MSC Act 1961. - IMC provided monetary compensation for water tanks (& associated infrastructure).
Appin Area 9	10WA121956	18 m	Appin Area 9 LW901/902	~1-2 m (estimate)	0 (mined under)	- make-good in progress. reduced SWL making pump inoperable.	- potentially drilled to Mittagong Formation. - highly rainfall dependant. - unable apportion drought / mining effects.	- IMC currently planning to drill new bore of 150 m to upper Hawkesbury Sandstone. - Works will include ancillary infrastructure to existing water distribution network.
Appin Area 9	GW072249 10BL154468	112 m	Appin Area 9 LW901/902	2-3 m	0 (mined under)	- impact acknowledged. - possible reduced yield	- pump excessively worn (cavitation). - electrical defects. - oversized pump. - pumped directly to irrigation system.	- IMC provided new pump with subsequent testing indicating sufficient yield can be produced relative to agreed pre-mining yield. - IMC to provide additional ancillary infrastructure following LW903.
Appin Area 9	GW112437	156 m	Appin Area 9 LW902	~4-6 m (estimate)	0	- impact refused	- electrical defects.	- IMC serviced pump and fixed electrical issues.

Mine area	Bore ID	Bore Depth	Mining	Predicted max. DDN (HC, 2010)	Distance to workings (m)	Status / Mining Impact	Contributing Issues	Make Good Solutions
Appin Area 9	GW104602	231 m	Douglas Mains (AA7/AA9)	10 m	390	- impact acknowledged. - reduced yield (i.e. longer recovery time) <i>(will be 220 m from future LW903)</i>	- pump showing signs of wear (cavitation). - electrical defects. - oversized pump. - pumped directly to irrigation system.	- IMC re-optimised pumping arrangement to maximise yield.
Appin Area 9	GW110671	240 m	Appin Area 9 LW903/904	4 m	580	<i>future impact (will be 280 m from future LW903)</i>	- bacteria blockage on pump intakes.	- IMC serviced pump and provided automated pumping arrangement.
Appin Area 9	GW100673	104 m	Appin Area 9	~6 m (estimate)	490	<i>future impact (will be 390 m from future LW904)</i>	- bacteria blockage on pump intakes.	- IMC serviced pump.
Appin Area 7	GW102584 10BL159372	186 m	Appin Area 7 LW706	12 m	<50	- impact acknowledged. - sheared - strata gas release	N/A	- IMC grouted borehole. - Subsidence Advisory acquired property under former MSC Act 1961.
Appin Area 7	GW112441 10BL603580	294 m	Appin Area 7 LW707A	2 m	0	- impact acknowledged. - strata gas release	- drilled to Bulgo Sandstone	- IMC grouted borehole. - IMC provided monetary compensation to redrill a new borehole.
Appin Area 7	GW108312		Appin Area 7 LW707B	12 m	0	- assessment in progress - proactive grouting	N/A	- IMC to redrill following LW708B in consultation with RMS.
Appin Area 7	GW106574	238 m	Appin Area 7 LW709	14 m	380	- impact acknowledged. - proactive grouting <i>(will be 10 m from future LW709)</i>	- potentially drilled to Bulgo Sandstone	- IMC proactively grouted borehole. - IMC provided monetary compensation to redrill a new borehole.
Appin Area 7	GW105388 10BL160998	230 m	Appin Area 7 LW708	14 m	117	- assessment in progress - reduced yield (claimed during LW706) <i>(will be mined under by future LW709)</i>	- landholder currently arranging inspections.	- DPIE Secretary Review - IMC to determine strategy once inspection outcomes are known.
Appin Area 7	GW105376	218 m	Appin Area 7 LW709	14 m	760	<i>future impact (will be mined under by future LW710)</i>	- iron staining - pumped directly to irrigation system	- IMC currently planning to proactively re-optimize system to maximise yield.

Mine area	Bore ID	Bore Depth	Mining	Predicted max. DDN (HC, 2010)	Distance to workings (m)	Status / Mining Impact	Contributing Issues	Make Good Solutions
Appin Area 7	GW105534	207 m	Appin Area 7 LW709	14 m	120	<i>future impact (will be mined under by future LW709)</i>	- shale debris in borehole - pumped directly to irrigation system	- IMC currently planning to proactively re-optimize system to maximise yield.
Appin Area 7	GW072874	189 m	Appin Area 7 LW709		410	<i>future impact (will be 490 m from future LW709)</i>	- no issues found	- IMC currently planning to proactively re-optimize system to maximise yield.
Appin Area 7	GW101986	210 m	Appin Area 7 LW709		550	<i>(future impact (will be 330 m from future LW709)</i>	TBA	- IMC currently planning to proactively re-optimize system to maximise yield.

A strategy for determining which mining operation should carry responsibility for make good provisions for cumulative impacts should be provided, with consideration of DPIE-Water's in principle approach that the responsibility for impact is placed in the latest applicant.

A strategy for determining which mining operation should carry responsibility for make good provisions for cumulative impacts to registered private bores was provided to DPIE as part of the response to the Department's first RFI. This strategy involves Tahmoor Coal and adjacent mines establishing a committee and protocols for managing cumulative impacts to bores. As per the response to the first RFI, it is envisaged that these protocols would involve Tahmoor Coal and the adjacent mines resolving:

- which bores are monitored by which company based on the contribution of the modelled degree of impact on the bore; and
- the proportion of costs borne by each company for implementing make good options if required based on modelled degree of impact.

This strategy was developed by Tahmoor Coal at the request of DPIE in lieu of any policy or policy direction from DPIE-Water on make good for privately registered bores either solely or cumulatively impacted by mining operations.

The term 'in principle' is commonly understood to involve a general or preliminary agreement between two or more parties based on general or preliminary negotiations, with the details of the formal agreement to be worked out at a later stage based on further negotiations. Tahmoor Coal and its advisors are not aware of, or had any communication with DPIE-Water, on an approach where the responsibility for impact is borne solely by the latest applicant to a development. Further, there has not been any agreement, general or otherwise, between Tahmoor Coal and DPIE-Water on an approach where the responsibility for impact is borne by the latest applicant to a development. Tahmoor Coal reiterates its strategy for make good provisions for cumulative impacts. The strategy is considered to be fair and equitable for all mines.

Furthermore, Tahmoor Coal does not consider it to be equitable and fair that the responsibility for impact is placed on the latest applicant to cause an impact. Tahmoor considers that it is imperative that landholders who have bores impacted by mining are made good. However, where the impact is caused by more than one mining operation the cost of doing so should be borne by each mine based on their contribution. Clearly, if a mine is already subject to a compensable impact it would be unreasonable to then make a later mine, who contributes to such impact, but not significantly, liable for the entire impact. Doing so could also lead to perverse outcomes i.e. there would be no driver for the first mine to minimise its impacts if it knows a later mine will be liable for them.

5. Surface water

Confirm whether previous water quality monitoring or field observations associated with Tahmoor North have identified any iron staining along watercourses as a result of ferruginous springs.

Iron staining has been identified in previous visual inspections of Redbank Creek.

Confirm the predicted volume of overflows from dam S11 into Bargo River and dam S12 into Tea Tree Hollow as a result of the second amended development (note: Section 3.2.1 provides changes in the volume of the dams as a result of reduction in REA area, but does not quantify overflow volumes).

The second amendment report qualitatively assessed the impacts on surface water as a result of the second amended development. As reported, a reduced catchment area will report to S11 and S12 as a result of the smaller REA footprint associated with the amended development. Notwithstanding that S11 and S12 will also have a smaller capacity to reflect the reduced catchment area, it is likely that the discharge volumes from S11 and S12 will also be less than that reported in the first amendment report.

Confirm the timing for the upgrade and commissioning of the new Waste Water Treatment Plant and the pit top Sewage Treatment Plant

The commissioning of the new Water Treatment Plant and the pit top Sewage Treatment Plant is planned to occur prior to the commencement of secondary extraction in Tahmoor South. Additionally, Tahmoor Coal is investigating options for the utilisation of the treated water on site.

Updated Figure 4 of the Surface Water Baseline Assessment showing both the nature (ie. water quality, streamflow and /or water level) and location of all surface water monitoring sites, including the additional water level monitoring sites described in Section 12.1 of the Water Management System and Site Water Balance Report.

An updated Figure 4 of the Surface Water Baseline Assessment, showing surface water monitoring sites, is provided below. The additional sites installed for Tahmoor South are monitored for both water level and water quality, as shown by the red and green circles. It is noted that two of the additional sites proposed for Tea Tree Hollow were not able to be installed due to access issues.

Consolidate Figures 1 and 2 of the RFI 1 response (Quantitative Risk to Pools in Tea Tree Hollow and Dog Trap Creek) into one figure.

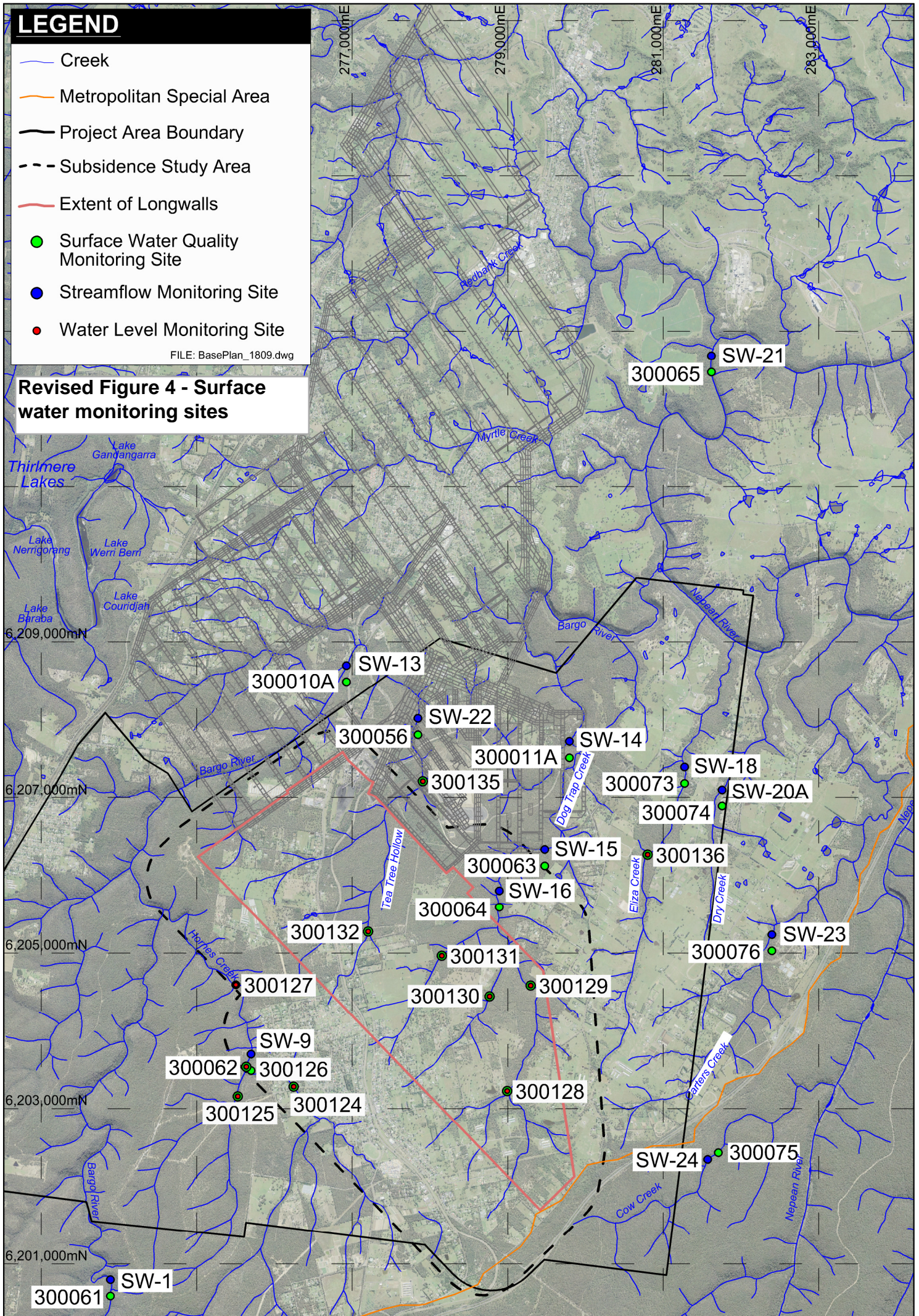
A consolidated figure is provided below.

LEGEND

- Creek
- Metropolitan Special Area
- Project Area Boundary
- Subsidence Study Area
- Extent of Longwalls
- Surface Water Quality Monitoring Site
- Streamflow Monitoring Site
- Water Level Monitoring Site

FILE: BasePlan_1809.dwg

Revised Figure 4 - Surface water monitoring sites



Confirm the accuracy of the information contained in the following table

The values in the table have been confirmed, and edited values are in bold.

Likelihood of Subsidence induced Fracturing to Pools

Watercourse	Number of pools above or near longwalls**	Likelihood of "Type 3" Impact				
		<10% (<210mm*)	<20% (210-290mm*)	<30% (290-420mm*)	<40% (420-475mm*)	>40% (>475mm*)
Tea Tree Hollow	4	3	1	0	0	0
Teatree Hollow Tributary 1	5	2	1	2	0	0
Dog Trap Creek	41	6	13	18	4	0
Dog Trap Creek Tributary 1	9	0	1		1	7
Dog Trap Creek Tributary 2	3		1		2	

* millimetres of predicted valley closure

** includes all pools except those more than 200m north-east of LW101A & B

6. Economics

Provide an approximate cost of repairs to built features (including houses) associated with the subsidence impacts for Tahmoor North.

Subsidence Advisory NSW (SA NSW) is better placed to provide this information as the vast majority of compensation claims have been dealt with under the previous compensation act solely by SA NSW. Compensation claims under the new act, where mining companies are responsible for the claims, are just commencing.

Provide an approximate cost of remedial works for Pool 23 of Myrtle Creek, Pool 26 of Redbank Creek and other remedial works implemented along these watercourses.

The approximate cost of repairs for Myrtle Creek and Redbank Creek is around \$10 M.

7. Mine Plan

Provide an analysis of the implications (economic and environmental) of reducing the length of LWs 101B, 103B and 104B to avoid impacts to 3rd order sections of Dog Trap Creek, as recommended by BCD. In particular, provide information on the:

- viability of mining LW101B if the longwall was shortened to avoid mining directly beneath Dog Trap Creek;
- volume and value of coal that would be sterilised if LW103B was shortened to avoid mining directly beneath Dog Trap Creek;
- level of reduced risk of impact to pools (9), cliffs and Aboriginal heritage sites (9) if LW103B was shortened to avoid mining directly beneath Dog Trap Creek; and
- volume and value of coal that would be sterilised if LW104B was shortened to avoid mining directly beneath Dog Trap Creek.

Stream order is just one consideration when assessing the potential impacts of mining under streams. Each stream should be, and has been, assessed on its merits. With reference to third order streams, the *Report of the Independent Expert Panel for Mining in the Catchment: Part 2 – Coal Mining Impacts in the Special Areas of the Greater Sydney Water Catchment* noted “the Southern Coalfield Inquiry (SCI) stated that the identification of risk management zones (RMZs) was not intended to represent either a determination of ‘significance’ or to suggest or require the exclusion of mining. Rather, the purpose was to flag that proposed mining within the zone requires careful assessment, and potentially careful management. Management outcomes may potentially be threefold. If the feature within the RMZ is not highly significant and/or not highly sensitive, then a standard subsidence management regime may apply.”

Dog Trap Creek includes urban areas of Bargo, small farms, a poultry farm and a landfill within its catchment. It has also been directly mined beneath in the past. As described in the EIS (AECOM 2018), as part of the initial constraints analysis of mine planning design options for the Project, some cliffs were identified as significant due to their archaeological heritage value and the mine plan was adjusted accordingly.

Answers to the specific points raised by DPIE are provided below.

- a) LW101B would be reduced by approximately 450 m if it were to be shortened to avoid mining directly beneath Dog Trap Creek. The cost of the development load compared to longwall extraction would result in this longwall becoming economically unviable.
- b) LW103B would be reduced by approximately 400 m if it were to be shortened to avoid mining directly beneath Dog Trap Creek, resulting in approximately 350,000 tonnes of product coal becoming sterilised with revenue of approximately US\$45 million.
- c) The likelihood of pools losing water would reduce substantially for the pools that are located directly above LW103B if the longwall is shortened to avoid directly undermining Dog Trap Creek. The amount the likelihood reduces would depend on the offset distance from the stream. The pools immediately downstream of LW103B (DTC-P16 to DTC-P19) would also have a reduced likelihood of losing water. It is noted that many of these pools are ephemeral and do not contain permanent water.

In relation to cliffs and Aboriginal heritage sites, one cliff has been identified above LW103B. 3% to 5% of clifflines undermined in the Southern Coalfields have historically experienced instabilities due to mining directly beneath them. The probability of instability would reduce if mining did not occur directly beneath it; however, given there is one single cliff above LW103B and that is 10 m high and 55 m long, the risks are relatively low to start with. Risks to safety or environment are very low already, so avoiding directly undermining the cliff would result in a very small reduction in risk. The likelihood of instability for cliffs and associated archaeological sites outside the footprint of LW103B is already low, so reducing the footprint would reduce the likelihood of instability but by only a small amount.

- d) LW104B would be reduced by approximately 700 m if it were to be shortened to avoid mining directly beneath Dog Trap Creek, resulting in approximately 600,000 t of product coal becoming sterilised with revenue of approximately US\$75 million.

8. Noise

Confirm if the currently approved footprint and height of the REA will be maintained until secondary extraction commences at Tahmoor South.

No extension to the approved REA footprint is proposed.

The increase in the final landform height of the REA is proposed as part of the Tahmoor South Project and will therefore occur once the Project commences.

Confirm the scheduling of construction of the two vent shafts. Will the construction of the sites occur simultaneously or consecutively?

The construction of the two ventilation shafts will occur consecutively. The upcast shaft will occur first followed by the downcast shaft.

Provide an update of status of purchase negotiations for the residence at 185 Charlies Point Road, and any other residences.

185 Charlies Point Road: Exchange has occurred with settlement forecast to be completed in February 2021.

220 Charlies Point Road: Settlement is forecasted to be completed in October 2020.

The Department is carefully considering the application of noise limits under the Tahmoor South Coal Project. Further information is required to assist in this process, including tables providing:

- worst-case existing noise levels in comparison to existing noise levels + predicted worst case construction noise associated with the vent shafts. Predictions can be provided for only those receivers that would experience an exceedance of the PNTL.
- predicted worst-case operational noise emissions under all stages of the project, for the mitigated scenario. Predictions can be provided for only those receivers that would experience an exceedance of the PNTL.

The predictions as requested are provided in Tables 3 and 4 over the page.

Provide a receiver number that corresponds with a figure for any receiver predicted to experience an exceedance of the PNTL. Specific requests relating to figures is provided below.

Refer to Figure 7 below.

Table 3 - Existing mine noise compared to Existing+Construction

														None					2546																														
														Meets PNTL			2721		2634		2546		Negligible			103		Meets PNTL			2704		2632		2545														
														0-2			28		78		103		Marginal			72		0-2			28		80		103														
														3-5			5		24		73		Moderate			1		3-5			18		24		74														
														>5			1		19		33		Significant			33		>5			5		19		33														
														PNTL						PANL						Existing												Existing + Worst case construction											
														Predicted			Compare to PNTL			Compare to PANL			Noise impact category			Predicted			Compare to PNTL			Compared to Existing																	
X	Y	NCA	Rec_ID	Lot	DP	Mod Factor Eve+Nt (pre mit)	Mod Factor Day (pre mit)	Mod factor Eve+Nt (post mit)	Mod factor Day (post mit)	Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt																
276540.76	6205264.94	6a	546	111	DP130878					45	39	35	53	48	43	37	37	37	-8	-2	2	-16	-11	-6	Negligible	41	37	37	-4	-2	2	4	0	0															
276574.63	6205366.72	6	960	110	DP130878					49	42	35	58	48	43	38	38	38	-11	-4	3	-20	-10	-5	Marginal	41	38	38	-8	-4	3	4	0	0															
276554.16	6206318.87	6	966	14	DP656820					49	42	35	58	48	43	41	41	41	-8	-1	6	-17	-7	-2	Significant	41	41	41	-8	-1	6	0	0	0															
277084.51	6205176.35	5	968	207	DP751250					40	39	35	53	48	43	36	36	36	-4	-3	1	-17	-12	-7	Negligible	38	36	36	-2	-3	1	2	0	0															
277407.49	6204949.06	5	970	2	DP208944					40	39	35	53	48	43	36	36	36	-4	-3	1	-17	-12	-7	Negligible	42	36	36	2	-3	1	6	0	0															
276877.46	6205084.03	6	971	1	DP708194					49	42	35	58	48	43	36	36	36	-13	-6	1	-22	-12	-7	Negligible	40	36	36	-9	-6	1	3	0	0															
276934.21	6205134.47	6a	972	179	DP751250					45	39	35	53	48	43	36	36	36	-9	-3	1	-17	-12	-7	Negligible	40	36	36	-5	-3	1	3	0	0															
276540.18	6206361.10	6	973	15	DP656821					49	42	35	58	48	43	43	43	43	-6	1	8	-15	-5	0	Significant	44	43	43	-5	1	8	1	0	0															
277768.02	6205157.72	5	975	228	DP751250					40	39	35	53	48	43	37	37	37	-3	-2	2	-16	-11	-6	Negligible	49	37	37	9	-2	2	12	0	0															
276281.71	6206353.88	7	979	10	DP25735					40	35	35	53	48	43	42	42	42	2	7	7	-11	-6	-1	Significant	43	42	42	3	7	7	1	0	0															
276907.53	6205006.51	6a	980	2	DP606784					45	39	35	53	48	43	36	36	36	-9	-3	1	-17	-12	-7	Negligible	39	36	36	-6	-3	1	3	0	0															
276475.08	6205171.47	7	981	6	DP23602					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	40	36	36	0	1	1	3	0	0															
276024.68	6206230.22	7	982	26	DP25735					40	35	35	53	48	43	41	41	41	1	6	6	-12	-7	-2	Significant	42	41	41	2	6	6	1	0	0															
276202.83	6206248.45	7	984	28	DP25735					40	35	35	53	48	43	41	41	41	1	6	6	-12	-7	-2	Significant	42	41	41	2	6	6	1	0	0															
275649.57	6206272.70	7	986	21	DP25735					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	38	37	37	-2	2	2	1	0	0															
275960.44	6206209.52	7	987	25	DP25735					40	35	35	53	48	43	40	40	40	0	5	5	-13	-8	-3	Marginal	42	40	40	2	5	5	1	0	0															
275817.12	6206313.51	7	988	23	DP25735					40	35	35	53	48	43	40	40	40	0	5	5	-13	-8	-3	Marginal	41	40	40	1	5	5	1	0	0															
276442.77	6206304.84	6a	989	12	DP25735					45	39	35	53	48	43	41	41	41	-4	2	6	-12	-7	-2	Significant	43	41	41	-2	2	6	2	0	0															
275717.04	6206243.38	7	990	22	DP25735					40	35	35	53	48	43	39	39	39	-1	4	4	-14	-9	-4	Marginal	40	39	39	0	4	4	1	0	0															
276561.79	6206399.85	6	991	16	DP656825					49	42	35	58	48	43	43	43	43	-6	1	8	-15	-5	0	Significant	44	43	43	-5	1	8	1	0	0															
276535.41	6206093.17	6	992	1	DP799384					49	42	35	58	48	43	40	40	40	-9	-2	5	-18	-8	-3	Marginal	41	40	40	-8	-2	5	0	0	0															
276513.34	6205179.25	7	993	5	DP23602					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	40	37	37	0	2	2	3	0	0															
276489.02	6205579.91	6	999	1	DP391070					49	42	35	58	48	43	39	39	39	-11	-4	4	-20	-10	-5	Marginal	42	39	39	-7	-3	4	4	0	0															
276761.10	6204984.38	6	1003	100	DP1069449					49	42	35	58	48	43	36	36	36	-13	-6	1	-22	-12	-7	Negligible	40	36	36	-9	-6	1	4	0	0															
276565.95	6206440.69	6	1004	17	DP656824					49	42	35	58	48	43	43	43	43	-6	1	8	-15	-5	0	Significant	44	43	43	-5	1	8	1	0	0															
276502.90	6206283.45	6a	1007	131	DP130186					45	39	35	53	48	43	42	42	42	-3	3	7	-11	-6	-1	Significant	42	42	42	-3	3	7	1	0	0															
276547.80	6206179.42	6	1008	360	DP130185					49	42	35	58	48	43	40	40	40	-9	-2	5	-18	-8	-3	Marginal	40	40	40	-9	-2	5	0	0	0															
276964.37	6205064.04	6a	1009	A	DP156857					45	39	35	53	48	43	36	36	36	-9	-3	1	-17	-12	-7	Negligible	39	36	36	-6	-3	1	3	0	0															
276352.83	6205239.70	7	1013	9	DP29287					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	39	36	36	-1	1	1	3	0	0															
276577.54	6206476.13	6	1017	18	DP656823					49	42	35	58	48	43	43	43	43	-6	1	8	-15	-5	0	Significant	44	43	43	-5	1	8	1	0	0															
276234.37	6206331.08	7	1020	9	DP25735					40	35	35	53	48	43	42	42	42	2	7	7	-11	-6	-1	Significant	43	42	42	3	7	7	1	0	0															
275460.33	6206458.81	7	1021	1	DP25735					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	1	0	0															
275683.64	6206589.96	7	1022	2	DP25735					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	38	38	38	-2	3	3	1	0	0															
275911.35	6206428.06	7	1023	5	DP25735					40	35	35	53	48	43	42	42	42	2	7	7	-11	-6	-1	Significant	42	42	42	2	7	7	1	0	0															
275826.86	6206461.97	7	1024	4	DP25735					40	35	35	53	48	43	41	41	41	1	6	6	-12	-7	-2	Significant	42	41	41	2	6	6	1	0	0															
276147.95	6206424.82	7	1025	8	DP25735					40	35	35	53	48	43	43	43	43	3	8	8	-10	-5	0	Significant	44	43	43	4	8	8	1	0	0															
276069.33	6206374.70	7	1026	7	DP25735					40	35	35	53	48	43	42	42	42	2	7	7	-11	-6	-1	Significant	43	42	42	3	7	7	1	0	0															
279143.25	6205635.37	7	1028	10	DP605241					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	48	36	36	8	1	1	12	0	0															
276478.98	6206065.66	6	1058	33	DP654702					49	42	35	58	48	43	40	40	40	-9	-2	5	-18	-8	-3	Marginal	42	40	40	-7	-2	5	2	0	0															
276445.15	6206028.06	6a	1060	1011	DP867593					45	39	35	53	48	43	40	40	40	-5	1	5	-13	-8	-3	Marginal	42	40	40	-3	1	5	2	0	0															
276482.71	6205928.58	6	1061	1013	DP867593					49	42	35	58	48	43	40	40	40	-9	-2	5	-18	-8	-3	Marginal	43	40	40	-6	-2	5	3	0	0															
276336.06	6206195.50	7	1062	30	DP25735					40	35	35	53	48	43	40	40	40	0	5	5	-13	-8	-3	Marginal	41	40	40	1	5	5	1	0	0															
276511.18	6205677.95	6	1399	21	DP130183					49	42	35	58	48	43	39	39	39	-10	-3	4	-19	-9	-4	Marginal	43	39	39	-6	-3	4	3	0	0															
276411.52	6206117.85	6a	1404	31	DP25735					45	39	35	53	48	43	40	40	40	-5	1	5	-13	-8	-3	Marginal	40	40	40	-5	1	5	0	0	0															
276393.23	6206314.59	7	1405	11	DP25735					40	35	35	53	48	43	42	42	42	2	7	7	-11	-6	-1	Significant	43	42	42	3	7	7	1	0	0															

Table 3 - Existing mine noise compared to Existing+Construction

X	Y	NCA	Rec_ID	Lot	DP	Mod Factor Eve+Nt (pre mit)	Mod Factor Day (pre mit)	Mod factor Eve+Nt (post mit)	Mod factor Day (post mit)	PNTL			PANL			Existing							Existing + Worst case construction											
										Day	Eve	Nt	Day	Eve	Nt	Predicted			Compare to PNTL			Compare to PANL			Noise impact category	Predicted			Compare to PNTL			Compared to Existing		
																Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt		Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt
276285.90	6206234.89	7	1406	29	DP25735					40	35	35	53	48	43	41	41	41	1	6	6	-12	-7	-2	Significant	42	41	41	2	6	6	2	0	0
276098.01	6206262.26	7	1408	27	DP25735					40	35	35	53	48	43	41	41	41	1	6	6	-12	-7	-2	Significant	43	41	41	3	6	6	1	0	0
276718.80	6205089.64	6	1409	11	DP130182					49	42	35	58	48	43	36	36	36	-13	-6	1	-22	-12	-7	Negligible	40	36	36	-9	-6	1	3	0	0
275881.61	6206268.09	7	1411	24	DP25735					40	35	35	53	48	43	40	40	40	0	5	5	-13	-8	-3	Marginal	41	40	40	1	5	5	1	0	0
276580.93	6205199.09	6a	1412	3	DP23602					45	39	35	53	48	43	37	37	37	-8	-2	2	-16	-11	-6	Negligible	40	37	37	-5	-2	2	3	0	0
276436.02	6205167.64	7	1413	7	DP23602					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	40	36	36	0	1	1	3	0	0
276770.16	6204937.61	6	1416	101	DP1069449					49	42	35	58	48	43	36	36	36	-13	-6	1	-22	-12	-7	Negligible	40	36	36	-9	-6	1	4	0	0
276678.38	6206498.52	6	1417	34	DP654711					49	42	35	58	48	43	41	41	41	-8	-1	6	-17	-7	-2	Significant	43	41	41	-6	-1	6	2	0	0
276451.32	6205627.22	6a	1419	1	DP900391					45	39	35	53	48	43	38	38	38	-7	-1	3	-15	-10	-5	Marginal	42	38	38	-3	-1	3	4	0	0
275699.86	6206997.15	1b	1420	2	DP213596	2	0	0	0	43	43	39	58	48	43	40	42	42	-3	-1	3	-18	-6	-1	Marginal	40	42	42	-3	-1	3	0	0	0
276374.75	6207091.77	1a	1421	2	DP213596					47	47	43	58	48	43	49	49	49	2	2	6	-9	1	6	Significant	50	49	49	3	2	6	0	0	0
275746.08	6206513.34	7	1423	3	DP25735					40	35	35	53	48	43	39	39	39	-1	4	4	-14	-9	-4	Marginal	39	39	39	-1	4	4	1	0	0
275975.12	6206407.45	7	1424	6	DP25735					40	35	35	53	48	43	42	42	42	2	7	7	-11	-6	-1	Significant	43	42	42	3	7	7	1	0	0
276511.88	6207774.21	1a	1425	6	DP1029837	5	2	2	0	47	47	43	58	48	43	51	54	54	4	7	11	-7	6	11	Significant	51	54	54	4	7	11	0	0	0
276770.42	6207717.38	1	1426	1	DP877585	5	2	2	0	51	48	43	58	48	43	54	57	57	3	9	14	-4	9	14	Significant	54	57	57	3	9	14	0	0	0
276603.56	6207751.53	1a	1427	7	DP1029837	5	2	2	0	47	47	43	58	48	43	52	55	55	5	8	12	-6	7	12	Significant	52	55	55	5	8	12	0	0	0
276205.87	6207522.76	1b	1428	3	DP1010127	5	2	2	0	43	43	39	58	48	43	49	52	52	6	9	13	-9	4	9	Significant	49	52	52	6	9	13	0	0	0
276472.91	6207649.83	1a	1429	5	DP1010127	5	2	2	0	47	47	43	58	48	43	52	55	55	5	8	12	-6	7	12	Significant	52	55	55	5	8	12	0	0	0
279534.30	6205802.51	7	1430	102	DP581529					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	44	36	36	4	1	1	8	0	0
276496.29	6205973.85	6	1538	1012	DP867593					49	42	35	58	48	43	41	41	41	-8	-1	6	-17	-7	-2	Significant	43	41	41	-6	-1	6	2	0	0
278287.38	6208945.75	4a	1542	3501	DP1097543					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	39	39	39	-1	-1	4	0	0	0
278295.51	6209043.56	4a	1543	2323	DP1121659					40	40	35	58	48	43	38	38	38	-2	-2	3	-20	-10	-5	Marginal	39	38	38	-1	-2	3	0	0	0
277936.51	6209041.38	4a	1544	2325	DP1121659					40	40	35	58	48	43	40	40	40	0	0	5	-18	-8	-3	Marginal	40	40	40	0	0	5	0	0	0
278230.22	6209115.89	4a	1545	2322	DP1121659					40	40	35	58	48	43	36	36	36	-4	-4	1	-22	-12	-7	Negligible	37	36	36	-3	-4	1	0	0	0
278873.67	6208639.60	4a	1546	135	DP879762					40	40	35	58	48	43	38	38	38	-2	-2	3	-20	-10	-5	Marginal	38	38	38	-2	-2	3	0	0	0
278069.79	6208625.94	4	1547	52	DP866493					41	41	41	58	48	43	42	42	42	1	1	1	-16	-6	-1	Negligible	42	42	42	1	1	1	0	0	0
278466.66	6208912.96	4a	1549	103	DP703678					40	40	35	58	48	43	38	38	38	-2	-2	3	-20	-10	-5	Marginal	38	38	38	-2	-2	3	0	0	0
278663.07	6208710.60	4a	1550	131	DP879762					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	39	39	39	-1	-1	4	0	0	0
278903.97	6208828.15	4a	1553	133	DP879762					40	40	35	58	48	43	37	37	37	-3	-3	2	-21	-11	-6	Negligible	38	37	37	-2	-3	2	0	0	0
277885.93	6208794.54	4a	1554	23	DP11845					40	40	35	58	48	43	41	41	41	1	1	6	-17	-7	-2	Significant	41	41	41	1	1	6	0	0	0
277182.65	6209074.11	3	1555	1	DP227780					44	42	35	58	48	43	39	39	39	-5	-3	4	-19	-9	-4	Marginal	39	39	39	-5	-3	4	0	0	0
277536.06	6209340.55	3	1556	11	DP11845					44	42	35	58	48	43	38	38	38	-6	-4	3	-20	-10	-5	Marginal	39	38	38	-5	-4	3	0	0	0
277568.50	6209377.21	3	1557	9	DP11845					44	42	35	58	48	43	38	38	38	-6	-4	3	-20	-10	-5	Marginal	38	38	38	-6	-4	3	0	0	0
277776.52	6209005.30	4a	1558	20	DP11845					40	40	35	58	48	43	41	41	41	1	1	6	-18	-8	-3	Significant	41	41	41	1	1	6	0	0	0
277599.33	6209408.90	3	1559	7	DP11845					44	42	35	58	48	43	38	38	38	-7	-5	3	-21	-11	-6	Marginal	38	38	38	-6	-4	3	0	0	0
278651.39	6208864.47	4a	1560	101	DP703678					40	40	35	58	48	43	38	38	38	-2	-2	3	-20	-10	-5	Marginal	38	38	38	-2	-2	3	0	0	0
278480.86	6208763.05	4a	1561	101	DP703678					40	40	35	58	48	43	40	40	40	0	0	5	-18	-8	-3	Marginal	40	40	40	0	0	5	0	0	0
277675.30	6209054.16	4a	1562	19	DP11845					40	40	35	58	48	43	41	41	41	1	1	6	-18	-8	-3	Significant	41	41	41	1	1	6	0	0	0
277554.09	6209360.66	3	1563	10	DP11845					44	42	35	58	48	43	38	38	38	-6	-4	3	-20	-10	-5	Marginal	38	38	38	-6	-4	3	0	0	0
277657.65	6209204.18	3	1565	17	DP11845					44	42	35	58	48	43	39	39	39	-5	-3	4	-19	-9	-4	Marginal	39	39	39	-5	-3	4	0	0	0
277669.88	6209174.87	3	1566	17	DP11845					44	42	35	58	48	43	39	39	39	-5	-3	4	-19	-9	-4	Marginal	39	39	39	-5	-3	4	0	0	0
277614.84	6209416.88	3	1570	6	DP11845					44	42	35	58	48	43	37	37	37	-7	-5	2	-21	-11	-6	Negligible	38	37	37	-6	-5	2	0	0	0
276570.30	6209899.49	7	1571	3	DP205690					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276606.12	6208857.53	7	1572	1	DP388165					40	35	35	53	48	43	40	40	40	0	5	5	-13	-8	-3	Marginal	40	40	40	0	5	5	0	0	0
277845.93	6208869.36	4a	1573	22	DP11845					40	40	35	58	48	43	41	41	41	1	1	6	-17	-7	-2	Significant	41	41	41	1	1	6	0	0	0
277633.62	6209435.51	3	1574	5	DP11845					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
276207.21	6208736.24	7	1575	104	DP625901					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	38	38	38	-2	3	3	0	0	0
276319.39	6209116.10	7																																

Table 3 - Existing mine noise compared to Existing+Construction

X	Y	NCA	Rec_ID	Lot	DP	Mod Factor Eve+Nt (pre mit)	Mod Factor Day (pre mit)	Mod factor Eve+Nt (post mit)	Mod factor Day (post mit)	PNTL			PANL			Existing							Existing + Worst case construction											
										Day	Eve	Nt	Day	Eve	Nt	Predicted			Compare to PNTL			Compare to PANL			Noise impact category	Predicted			Compare to PNTL			Compared to Existing		
																Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt		Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt
276441.16	6209125.12	7	1579	3	DP818444					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	38	38	38	-2	3	3	0	0	0
276736.75	6209793.99	7	1580	10	DP748921					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276458.33	6209045.82	7	1581	1	DP775492					40	35	35	53	48	43	39	39	39	-1	4	4	-14	-9	-4	Marginal	39	39	39	-1	4	4	0	0	0
276374.57	6209133.04	7	1582	2	DP818444					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	38	38	38	-2	3	3	0	0	0
276662.74	6209045.52	7	1583	B	DP389583					40	35	35	53	48	43	39	39	39	-1	4	4	-14	-9	-4	Marginal	39	39	39	-1	4	4	0	0	0
277957.97	6209354.80	3	1584	24	DP12096					44	42	35	58	48	43	37	37	37	-7	-5	2	-21	-11	-6	Negligible	37	37	37	-7	-5	2	0	0	0
276909.02	6208791.03	3	1585	12	DP787919					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
276929.01	6208832.37	3	1586	12	DP787919					44	42	35	58	48	43	38	38	38	-6	-4	3	-20	-10	-5	Marginal	38	38	38	-6	-4	3	0	0	0
277976.60	6209265.99	4a	1587	26	DP12096					40	40	35	58	48	43	38	38	38	-2	-2	3	-20	-10	-5	Marginal	38	38	38	-2	-2	3	0	0	0
278017.71	6209250.80	4a	1588	26	DP12096					40	40	35	58	48	43	38	38	38	-2	-2	3	-20	-10	-5	Marginal	39	38	38	-1	-2	3	0	0	0
277850.71	6209189.90	4a	1589	25	DP12096					40	40	35	58	48	43	37	37	37	-3	-3	2	-21	-11	-6	Negligible	37	37	37	-3	-3	2	0	0	0
277834.09	6209771.20	3	1590	2	DP874556					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
276977.46	6209296.68	3	1591	101	DP818490					44	42	35	58	48	43	38	38	38	-6	-4	3	-20	-10	-5	Marginal	38	38	38	-6	-4	3	0	0	0
276488.36	6208953.08	7	1592	5	DP258503					40	35	35	53	48	43	39	39	39	-1	4	4	-14	-9	-4	Marginal	39	39	39	-1	4	4	0	0	0
277637.18	6208618.24	4	1593	14	DP3306					41	41	41	58	48	43	42	42	42	1	1	1	-16	-6	-1	Negligible	42	42	42	1	1	1	0	0	0
276682.59	6208822.42	7	1594	11	DP787919					40	35	35	53	48	43	41	41	41	1	6	6	-12	-7	-2	Significant	41	41	41	1	6	6	0	0	0
276675.28	6209894.16	7	1595	41	DP851631					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276699.21	6209919.45	7	1596	41	DP851631					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276942.95	6209688.86	7	1598	122	DP791429					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276597.45	6209812.76	7	1600	121	DP800037					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276848.37	6209924.56	7	1601	14	DP10849					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
277112.44	6209582.83	7	1602	9	DP10849					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
277161.12	6209132.02	3	1603	1	DP809471					44	42	35	58	48	43	38	38	38	-6	-4	3	-20	-10	-5	Marginal	38	38	38	-6	-4	3	0	0	0
276840.32	6209668.67	7	1605	121	DP791429					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276813.69	6209695.64	7	1606	121	DP791429					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
277059.03	6209721.41	7	1607	16	DP10849					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
277241.72	6209655.08	7	1609	8	DP10849					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276793.19	6209460.95	7	1610	1	DP349360					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
276950.11	6209799.91	7	1611	13	DP10849					40	35	35	53	48	43	36	36	36	-5	1	1	-18	-13	-8	Negligible	36	36	36	-4	1	1	0	0	0
277451.77	6209233.98	3	1613	20	DP1022412					44	42	35	58	48	43	38	38	38	-6	-4	3	-20	-10	-5	Marginal	38	38	38	-6	-4	3	0	0	0
276801.14	6209563.42	7	1614	11	DP10849					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
276805.79	6209579.77	7	1615	11	DP10849					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
276710.66	6209398.59	7	1616	1	DP1079514					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	38	37	37	-2	2	2	0	0	0
276509.29	6209349.44	7	1617	3	DP1079514					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
276652.35	6209402.40	7	1618	2	DP1079514					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
276295.65	6209413.21	7	1619	5	DP1079514					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	37	36	36	-3	1	1	0	0	0
277967.65	6209115.04	4a	1620	2324	DP1121659					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	39	39	39	-1	-1	4	0	0	0
276884.81	6208968.59	3	1621	7303	DP1138888					44	42	35	58	48	43	39	39	39	-5	-3	4	-19	-9	-4	Marginal	39	39	39	-5	-3	4	0	0	0
277509.89	6209310.43	3	1622	500	DP1178912					44	42	35	58	48	43	39	39	39	-5	-3	4	-19	-9	-4	Marginal	39	39	39	-5	-3	4	0	0	0
277288.60	6209222.01	3	1623	2	DP706983					44	42	35	58	48	43	38	38	38	-6	-4	3	-20	-10	-5	Marginal	39	38	38	-5	-4	3	0	0	0
276967.19	6209191.92	3	1624	102	DP818490					44	42	35	58	48	43	38	38	38	-6	-4	3	-20	-10	-5	Marginal	38	38	38	-6	-4	3	0	0	0
277026.89	6209627.70	7	1625	10	DP10849					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	37	36	36	-3	1	1	0	0	0
276501.21	6209822.98	7	1626	120	DP800037					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276453.33	6209832.20	7	1627	101	DP1196919					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276732.79	6209542.99	7	1628	1	DP403638					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
275858.64	6209313.48	7	1630	111	DP832884					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
275928.27	6208598.51	7	1632	2	DP258503					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	38	38	38	-2	3	3	0	0	0
276169.52	6209057.68	7	1634	1	DP258503																													

Table 3 - Existing mine noise compared to Existing+Construction

X	Y	NCA	Rec_ID	Lot	DP	Mod Factor Eve+Nt (pre mit)	Mod Factor Day (pre mit)	Mod factor Eve+Nt (post mit)	Mod factor Day (post mit)	PNTL			PANL			Existing							Existing + Worst case construction											
										Day	Eve	Nt	Day	Eve	Nt	Predicted			Compare to PNTL			Compare to PANL			Noise impact category	Predicted			Compare to PNTL			Compared to Existing		
																Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt		Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt
275940.47	6209269.39	7	1643	55	DP1135222					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
275923.19	6209276.74	7	1644	55	DP1135222					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276091.51	6209152.38	7	1648	1	DP610388					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
275731.09	6209125.81	7	1676	151	DP873802					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	37	36	36	-3	1	1	0	0	0
276367.61	6209832.13	7	1677	22	DP1000081					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
275293.51	6208702.36	7	1678	3	DP831283					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
275668.82	6209079.55	7	1679	150	DP873802					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	37	36	36	-3	1	1	0	0	0
275507.33	6209031.74	7	1680	16	DP449614					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
275862.99	6209144.98	7	1696	14	DP11928					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	37	36	36	-3	1	1	0	0	0
275218.04	6208797.96	7	1699	1	DP831283					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276302.34	6209840.67	7	1703	21	DP1000081					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
275042.60	6208623.82	7	1716	4012	DP1039592					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276072.82	6208717.32	7	1717	103	DP625901					40	35	35	53	48	43	39	39	39	-1	4	4	-14	-9	-4	Marginal	39	39	39	-1	4	4	0	0	0
275941.59	6209122.45	7	1718	13	DP11928					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
275630.54	6209237.43	7	1719	92	DP834715					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
275211.78	6208707.17	7	1721	2	DP831283					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
276223.62	6209138.57	7	1729	2	DP610388					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	38	37	37	-2	2	2	0	0	0
275448.67	6209086.05	7	1736	17	DP449614					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
275715.82	6209242.40	7	1744	101	DP863914					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	36	36	36	-4	1	1	0	0	0
278166.23	6208380.04	4	1992	102	DP1007374					41	41	41	58	48	43	43	43	43	2	2	2	-15	-5	0	Negligible	43	43	43	2	2	2	0	0	0
278808.99	6208573.38	4a	1993	136	DP879762					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	39	39	39	-1	-1	4	0	0	0
279042.72	6208272.62	4a	1994	1	DP615604					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	39	39	39	-1	-1	4	0	0	0
277972.06	6208607.59	4	1996	12	DP3306					41	41	41	58	48	43	42	42	42	1	1	1	-16	-6	-1	Negligible	42	42	42	1	1	1	0	0	0
278377.39	6208334.38	4	1997	3	DP3306					41	41	41	58	48	43	42	42	42	1	1	1	-16	-6	-1	Negligible	42	42	42	1	1	1	0	0	0
278268.85	6208287.89	4	1998	7	DP3306					41	41	41	58	48	43	43	43	43	2	2	2	-15	-5	0	Negligible	43	43	43	2	2	2	0	0	0
278020.92	6208390.79	4	1999	9	DP3306					41	41	41	58	48	43	43	43	43	2	2	2	-15	-5	0	Negligible	43	43	43	2	2	2	0	0	0
277994.56	6208547.09	4	2000	11	DP3306					41	41	41	58	48	43	42	42	42	1	1	1	-16	-6	-1	Negligible	43	42	42	2	1	1	0	0	0
278852.54	6208399.36	4a	2002	2	DP615604					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	40	39	39	0	-1	4	0	0	0
279273.01	6207882.50	7	2003	45	DP751270					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	38	38	38	-2	3	3	1	0	0
277054.35	6208081.68	2	2005	201	DP733965					51	48	43	58	48	43	45	45	45	-6	-3	2	-13	-3	2	Negligible	45	45	45	-6	-3	2	0	0	0
276936.31	6208104.54	2	2006	2063	DP1014538					51	48	43	58	48	43	46	46	46	-5	-2	3	-12	-2	3	Moderate	47	46	46	-4	-2	3	0	0	0
277076.13	6208331.78	2	2011	1	DP518934					51	48	43	58	48	43	44	44	44	-7	-4	1	-14	-4	1	Negligible	44	44	44	-7	-4	1	0	0	0
277997.37	6208486.99	4	2014	10	DP3306					41	41	41	58	48	43	43	43	43	2	2	2	-15	-5	0	Negligible	43	43	43	2	2	2	0	0	0
278017.46	6208248.67	4	2015	8	DP3306					41	41	41	58	48	43	43	43	43	2	2	2	-15	-5	0	Negligible	43	43	43	2	2	2	0	0	0
278672.87	6208502.62	4a	2017	2	DP589786					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	40	39	39	0	-1	4	0	0	0
279586.45	6207923.65	7	2021	21	DP777104					40	35	35	53	48	43	36	36	36	-5	1	1	-18	-13	-8	Negligible	37	36	36	-3	1	1	1	0	0
279511.35	6207887.22	7	2022	1	DP725580					40	35	35	53	48	43	36	36	36	-4	1	1	-17	-12	-7	Negligible	37	36	36	-3	1	1	1	0	0
276413.28	6208329.47	7	2025	2	DP232677					40	35	35	53	48	43	41	41	41	1	6	6	-12	-7	-2	Significant	41	41	41	1	6	6	0	0	0
278253.65	6209373.84	4a	2037	A	DP417040					40	40	35	58	48	43	37	37	37	-3	-3	2	-21	-11	-6	Negligible	37	37	37	-3	-3	2	0	0	0
278175.79	6209576.44	3	2042	23	DP233658					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	37	36	36	-7	-6	1	0	0	0
278153.33	6209624.58	3	2043	14	DP202095					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
278294.16	6209306.23	4a	2046	1	DP9636					40	40	35	58	48	43	36	36	36	-4	-4	1	-22	-12	-7	Negligible	37	36	36	-3	-4	1	0	0	0
277347.81	6209157.56	3	2047	21	DP1022412					44	42	35	58	48	43	39	39	39	-5	-3	4	-19	-9	-4	Marginal	39	39	39	-5	-3	4	0	0	0
278098.43	6209772.95	3	2539	6	DP26499					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
278116.80	6209717.07	3	2540	9	DP26499					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
278107.22	6209752.64	3	2544	7	DP26499					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
278115.04	6209734.12	3	2546	8	DP26499					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
278085.43	6208863.41	4a	2549	3502	DP1097543					40																								

Table 3 - Existing mine noise compared to Existing+Construction

X	Y	NCA	Rec_ID	Lot	DP	Mod Factor Eve+Nt (pre mit)	Mod Factor Day (pre mit)	Mod factor Eve+Nt (post mit)	Mod factor Day (post mit)	PNTL			PANL			Existing							Existing + Worst case construction											
										Day	Eve	Nt	Day	Eve	Nt	Predicted			Compare to PNTL			Compare to PANL			Noise impact category	Predicted			Compare to PNTL			Compared to Existing		
																Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt		Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt
278143.68	6209662.84	3	2557	123	DP839913					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
278128.61	6209695.82	3	2565	10	DP26499					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
278130.98	6209680.07	3	2566	11	DP26499					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
277810.83	6209159.85	4a	2570	18	DP11845					40	40	35	58	48	43	37	37	37	-3	-3	2	-21	-11	-6	Negligible	37	37	37	-3	-3	2	0	0	0
276280.96	6209124.31	7	2579	1	DP818444					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	38	38	38	-2	3	3	0	0	0
277678.86	6209292.45	3	2580	52	DP861231					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	36	-8	-6	1	0	0	0
276398.22	6209381.46	7	2585	4	DP1079514					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	38	38	38	-2	3	3	0	0	0
277907.38	6209125.99	4a	2586	2324	DP1121659					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	39	39	39	-1	-1	4	0	0	0
276317.28	6209532.05	7	2599	102	DP1196919					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	37	37	37	-3	2	2	0	0	0
276542.07	6205186.78	6a	2735	4	DP23602					45	39	35	53	48	43	37	37	37	-8	-2	2	-16	-11	-6	Negligible	40	37	37	-5	-2	2	3	0	0
276547.22	6206139.20	6	2736	135	DP130885					49	42	35	58	48	43	40	40	40	-9	-2	5	-18	-8	-3	Marginal	40	40	40	-9	-2	5	0	0	0
276624.96	6205725.20	6	2739	2	DP789005					49	42	35	58	48	43	40	40	40	-9	-2	5	-18	-8	-3	Marginal	43	40	40	-6	-2	5	3	0	0
279074.35	6207982.71	7	2746	454	DP751270					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	38	38	38	-2	3	3	1	0	0
278182.09	6205888.12	5	2747	216	DP751250					40	39	35	53	48	43	36	36	36	-4	-3	1	-17	-12	-7	Negligible	64	40	40	24	1	5	28	4	4

Table 4 - Existing and predicted mine noise - all stages

X	Y	NCA	Rec_ID	Lot	DP	Mod Factor Eve+Nt (pre mit)	Mod factor Day (pre mit)	Mod factor Eve+Nt (post mit)	Mod factor Day (post mit)	PNTL						PANL						Existing												Stage 2 Mitigated												Stage 4 Mitigated												Stage 5 Mitigated											
										Day	Eve	Nt	Day	Eve	Nt	Predicted			Compare to PNTL			Compare to PANL			Noise impact category	Predicted			Compare to PNTL			Compare to PANL			Noise impact category	Predicted			Compare to PNTL			Compare to PANL			Noise impact category	Predicted			Compare to PNTL			Compare to PANL			Noise impact category														
																Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt		Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt		Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt		Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt		Day	Eve	Nt	Day	Eve	Nt	Day	Eve	Nt					
277990	6208940	4a	2550	2326	DP1121659					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	40	40	33	0	0	-2	-18	-8	-10	None	40	40	33	0	0	-2	-18	-8	-10	None	40	40	34	0	0	-1	-18	-8	-9	None														
278114	6209205	4a	2551	2327	DP1121659					40	40	35	58	48	43	38	38	38	-2	-2	3	-20	-10	-5	Marginal	38	38	32	-2	-2	-3	-20	-10	-11	None	38	38	32	-2	-2	-3	-20	-10	-11	None	38	38	32	-2	-2	-3	-20	-10	-11	None														
278144	6209663	3	2557	123	DP839913					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	29	-8	-6	-6	-22	-12	-14	None	36	36	29	-8	-6	-6	-22	-12	-14	None	36	36	30	-8	-6	-5	-22	-12	-13	None														
278129	6209696	3	2565	10	DP26499					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	29	-8	-6	-6	-22	-12	-14	None	35	35	29	-9	-7	-6	-23	-13	-14	None	36	36	30	-8	-6	-5	-22	-12	-13	None														
278131	6209680	3	2566	11	DP26499					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	29	-8	-6	-6	-22	-12	-14	None	36	36	29	-8	-6	-6	-22	-12	-14	None	36	36	30	-8	-6	-5	-22	-12	-13	None														
277811	6209160	4a	2570	18	DP11845					40	40	35	58	48	43	37	37	37	-3	-3	2	-21	-11	-6	Negligible	38	38	31	-2	-2	-4	-20	-10	-12	None	38	38	31	-2	-2	-4	-20	-10	-12	None	37	37	31	-3	-3	-4	-21	-11	-12	None														
276281	6209124	7	2579	1	DP818444					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	36	36	32	-4	1	-3	-17	-12	-11	Negligible	36	36	32	-4	1	-3	-17	-12	-11	Negligible	35	35	32	-5	0	-3	-18	-13	-11	None														
277679	6209292	3	2580	52	DP861231					44	42	35	58	48	43	36	36	36	-8	-6	1	-22	-12	-7	Negligible	36	36	30	-8	-6	-5	-22	-12	-13	None	35	35	30	-9	-7	-5	-23	-13	-13	None	35	35	30	-9	-7	-5	-23	-13	-13	None														
276398	6209381	7	2585	4	DP1079514					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	37	37	31	-3	2	-4	-16	-11	-12	Negligible	37	37	31	-3	2	-4	-16	-11	-12	Negligible	37	37	31	-3	2	-4	-16	-11	-12	Negligible														
277907	6209126	4a	2586	2324	DP1121659					40	40	35	58	48	43	39	39	39	-1	-1	4	-19	-9	-4	Marginal	40	40	33	0	0	-2	-18	-8	-10	None	39	39	33	-1	-1	-2	-19	-9	-10	None	39	39	33	-1	-1	-2	-19	-9	-10	None														
276317	6209532	7	2599	102	DP1196919					40	35	35	53	48	43	37	37	37	-3	2	2	-16	-11	-6	Negligible	36	36	30	-4	1	-5	-17	-12	-13	Negligible	36	36	30	-4	1	-5	-17	-12	-13	Negligible	36	36	30	-4	1	-5	-17	-12	-13	Negligible														
276542	6205187	6a	2735	4	DP23602					45	39	35	53	48	43	37	37	37	-8	-2	2	-16	-11	-6	Negligible	35	35	33	-10	-4	-2	-18	-13	-10	None	36	36	33	-9	-3	-2	-17	-12	-10	None	36	36	33	-9	-3	-2	-17	-12	-10	None														
276547	6206139	6	2736	135	DP130885					49	42	35	58	48	43	40	40	40	-9	-2	5	-18	-8	-3	Marginal	39	39	37	-10	-3	2	-19	-9	-6	Negligible	39	39	37	-10	-3	2	-19	-9	-6	Negligible	39	39	36	-10	-3	1	-19	-9	-7	Negligible														
276625	6205725	6	2739	2	DP789005					49	42	35	58	48	43	40	40	40	-9	-2	5	-18	-8	-3	Marginal	39	39	37	-10	-3	2	-19	-9	-6	Negligible	39	39	37	-10	-3	2	-19	-9	-6	Negligible	39	39	37	-10	-3	2	-19	-9	-6	Negligible														
279074	6207983	7	2746	454	DP751270					40	35	35	53	48	43	38	38	38	-2	3	3	-15	-10	-5	Marginal	41	41	33	1	6	-2	-12	-7	-10	Moderate	38	38	33	-2	3	-2	-15	-10	-10	Marginal	38	38	34	-2	3	-1	-15	-10	-9	Marginal														
278182	6205888	5	2747	216	DP751250					40	39	35	53	48	43	36	36	36	-4	-3	1	-17	-12	-7	Negligible	35	35	30	-5	-4	-5	-18	-13	-13	None	43	43	36	3	4	1	-10	-5	-7	Marginal	35	35	30	-5	-4	-5	-18	-13	-13	None														

Table 3.1 of the NIA (July 2020) groups ‘none’ and ‘negligible’ noise impacts (as categorised by the VLAMP) together, making it unclear the number of receivers which would experience an exceedance of the PNTL and exacerbating the number of receivers that are predicted to be impacted. The Department requests that this table is updated to:

- reflect worst-case operational noise emissions under all stages of the project for the mitigated scenario (consistent with Table b above); and
- identify receivers with ‘negligible’ impacts (ie those with predictions 1-2 dB above the PNTL).

The updated table 3.1 is provided below.

Table 3.1 Noise assessment summary

	Number of assessment locations within each category											
	Existing Tahmoor mine			Stage 2 mitigated			Stage 4 mitigated			Stage 5 mitigated		
	Day	Eve	Night	Day	Evening	Night	Day	Evening	Night	Day	Evening	Night
Meets PNTL	2721	2634	2546	2720	2652	2714	2732	2668	2713	2734	2677	2714
1-2 dB above PNTL	28	78	103	28	66	19	19	56	20	18	51	20
3-5 dB above PNTL	5	24	73	7	30	19	4	26	19	3	22	18
More than 5 dB above PNTL	1	19	33	0	7	3	0	5	3	0	5	3

Provide Lot and DP numbers for all receivers within the marginal, moderate and significant impact categories.

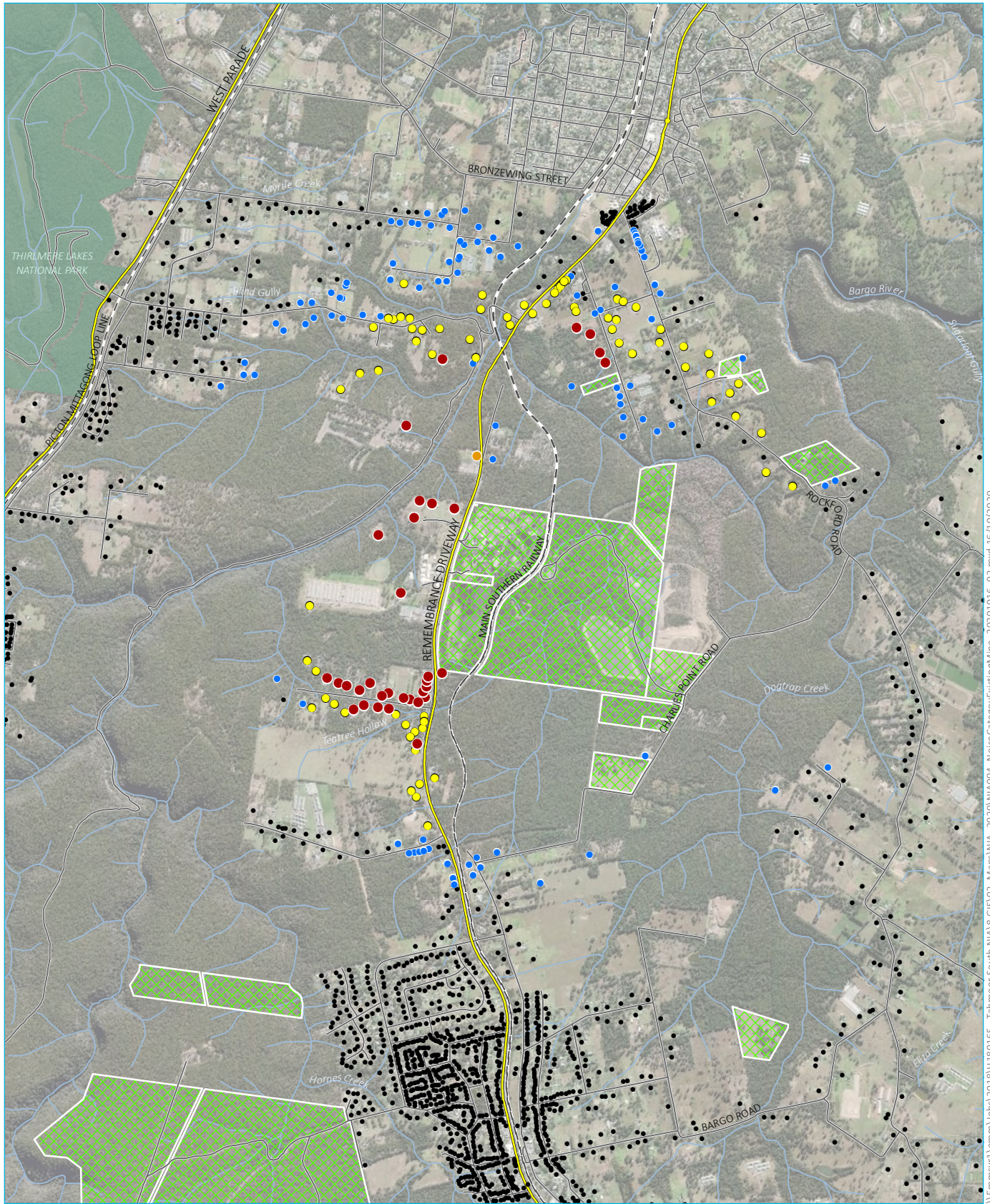
The lot and DPs for each receiver are provided in Tables 3 and 4.

Provide updated figures showing:

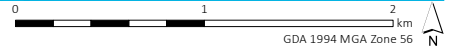
- all Noise Catchment Areas (NCAs) with receiver numbers for all residences predicted to experience an exceedance of the PNTL.
- receiver locations that fall within the negligible, marginal, moderate and significance categories (ie separating receivers with ‘none’ and ‘negligible’ impacts).
- worst-case operational noise emissions for all stages of the project (mitigated scenario) in comparison to the existing noise levels (ie to allow a comparison of noise contours can be made visually).

The following figures are provided:

- Figure 2: Modelled existing noise impacts at Tahmoor Mine
- Figure 3: Predicted noise impacts - Stage 2 Tahmoor South Project (mitigated)
- Figure 4: Predicted noise impacts - Stage 4 Tahmoor South Project (mitigated)
- Figure 5: Predicted noise impacts - Stage 5 Tahmoor South Project (mitigated)
- Figure 6: Predicted noise impacts - Worst case of all stages
- Figure 7: Assessment locations where the existing noise is above the PNTL.



Source: EMM (2020); DFSI (2017)



KEY

- Rail line
- Main road
- Local road
- Watercourse / drainage line
- ◇ Tahmoor-owned land
- NPWS reserve

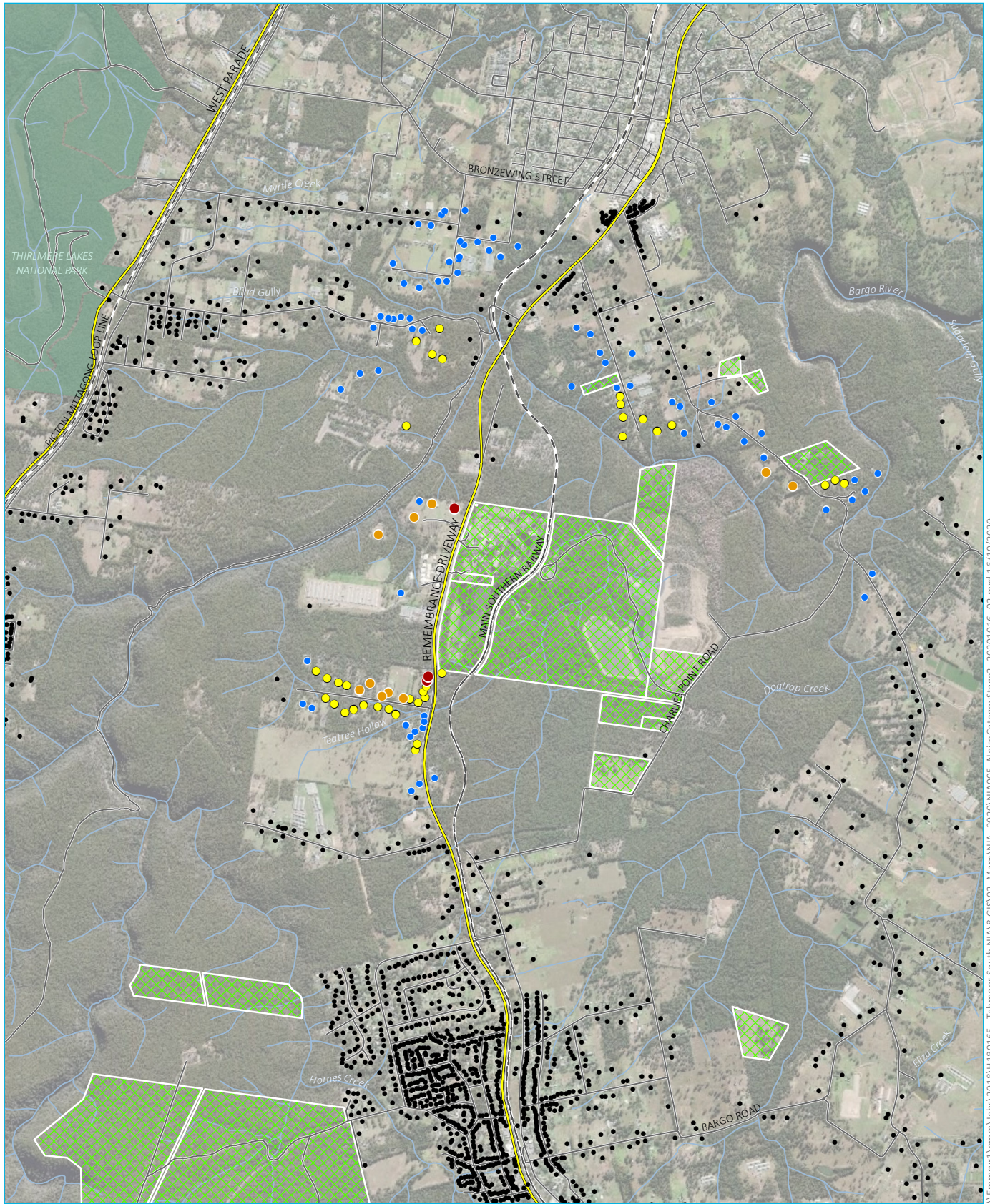
- Noise impact category**
- None
 - Negligible
 - Marginal
 - Moderate
 - Significant

Modelled noise impact – existing Tahmoor Mine

Tahmoor South Project
Noise and vibration impact assessment
Figure 2



\\emmsvr1\emms\Jobs\2018\180165 - Tahmoor South NIA & GIS\02_Maps\NIA_2020\NIA004_NoiseCategoryExistingMine_20201016_02.mxd 16/10/2020



Source: EMM (2020); DFSI (2017)

KEY

- Rail line
- Main road
- Local road
- Watercourse/drainage line
- ▨ Tahmoor-owned land
- NPWS reserve

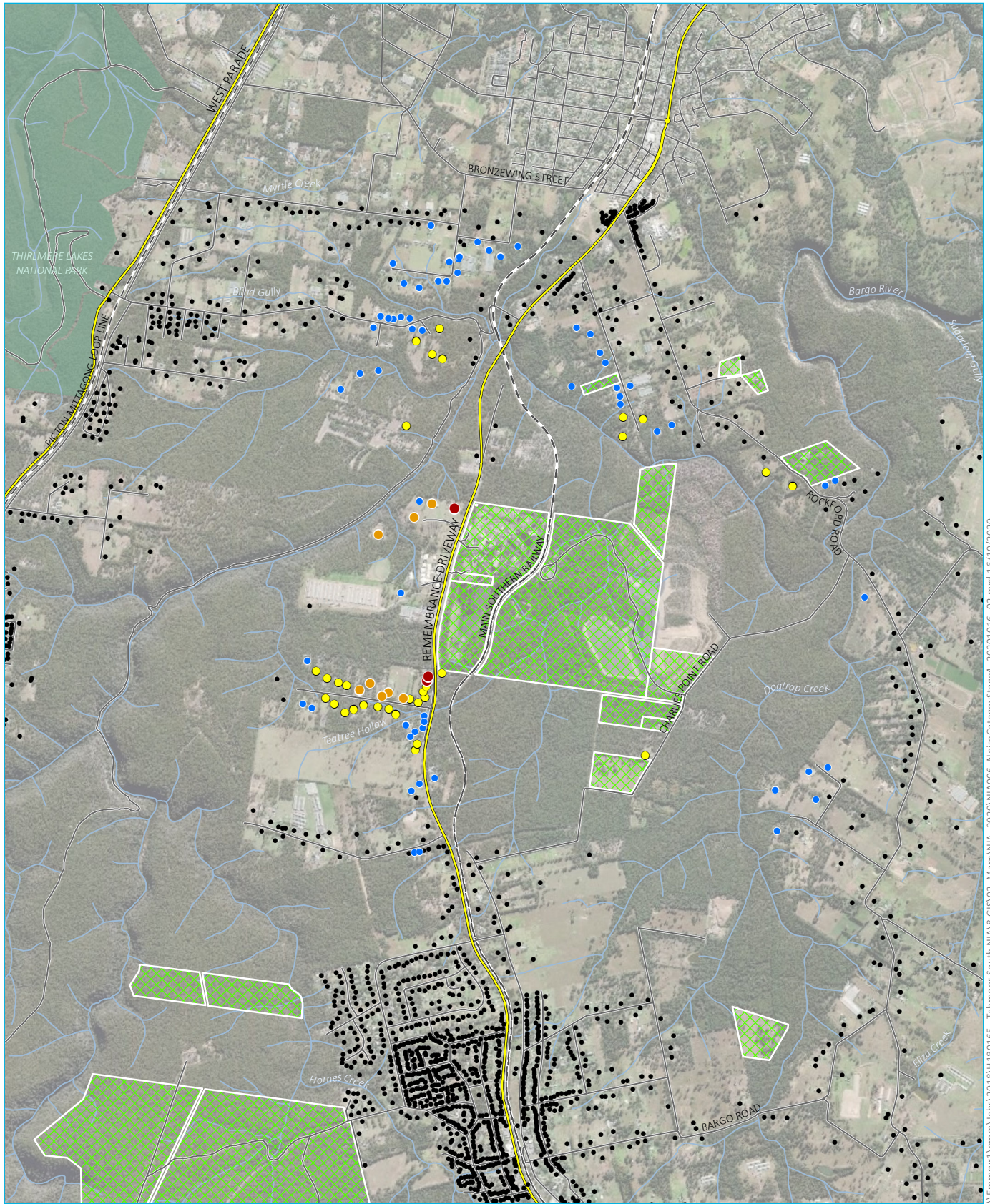
Noise impact category

- None
- Negligible
- Marginal
- Moderate
- Significant

Predicted noise impact –
Stage 2 Tahmoor South Project (mitigated)

Tahmoor South Project
Noise and vibration impact assessment
Figure 3

\\emmsvr1\emms\Jobs\2018\180165 - Tahmoor South NIA & GIS\02_Maps\NIA_2020\NIA005_NoiseCategoryStage2_20201016_02.mxd 16/10/2020



Source: EMM (2020); DFSI (2017)

KEY

- Rail line
- Main road
- Local road
- Watercourse/drainage line
- ▨ Tahmoor-owned land
- NPWS reserve

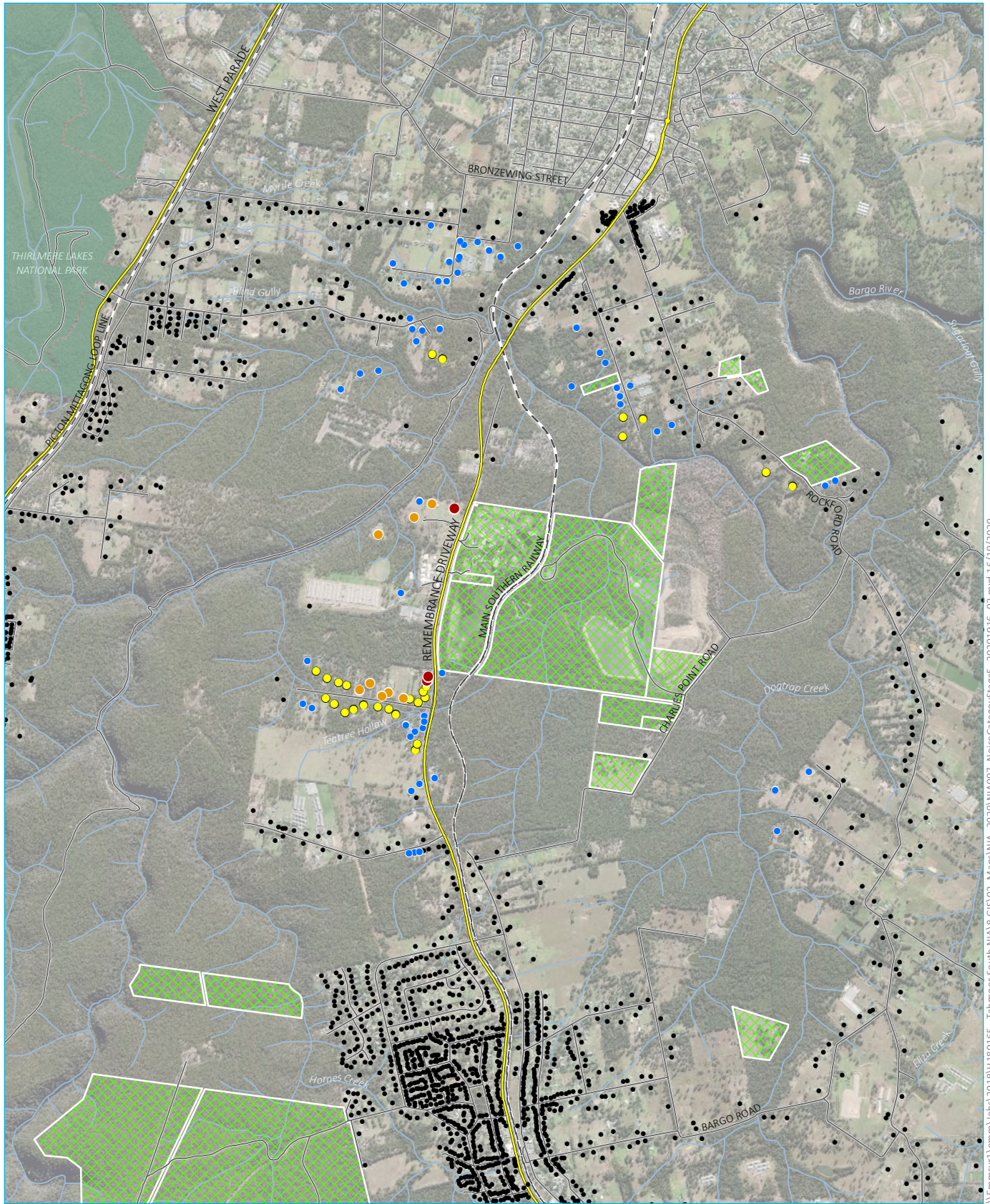
- Noise impact category
- None
 - Negligible
 - Marginal
 - Moderate
 - Significant

Predicted noise impact – Stage 4 Tahmoor South Project (mitigated)

Tahmoor South Project
Noise and vibration impact assessment
Figure 4



\\emmsvr1\emms\Jobs\2018\180165 - Tahmoor South NIA & GIS\02_Maps\NIA_2020\NIA005_NoiseCategoryStage4_20201016_02.mxd 16/10/2020



Source: EMM (2020); DFSI (2017)

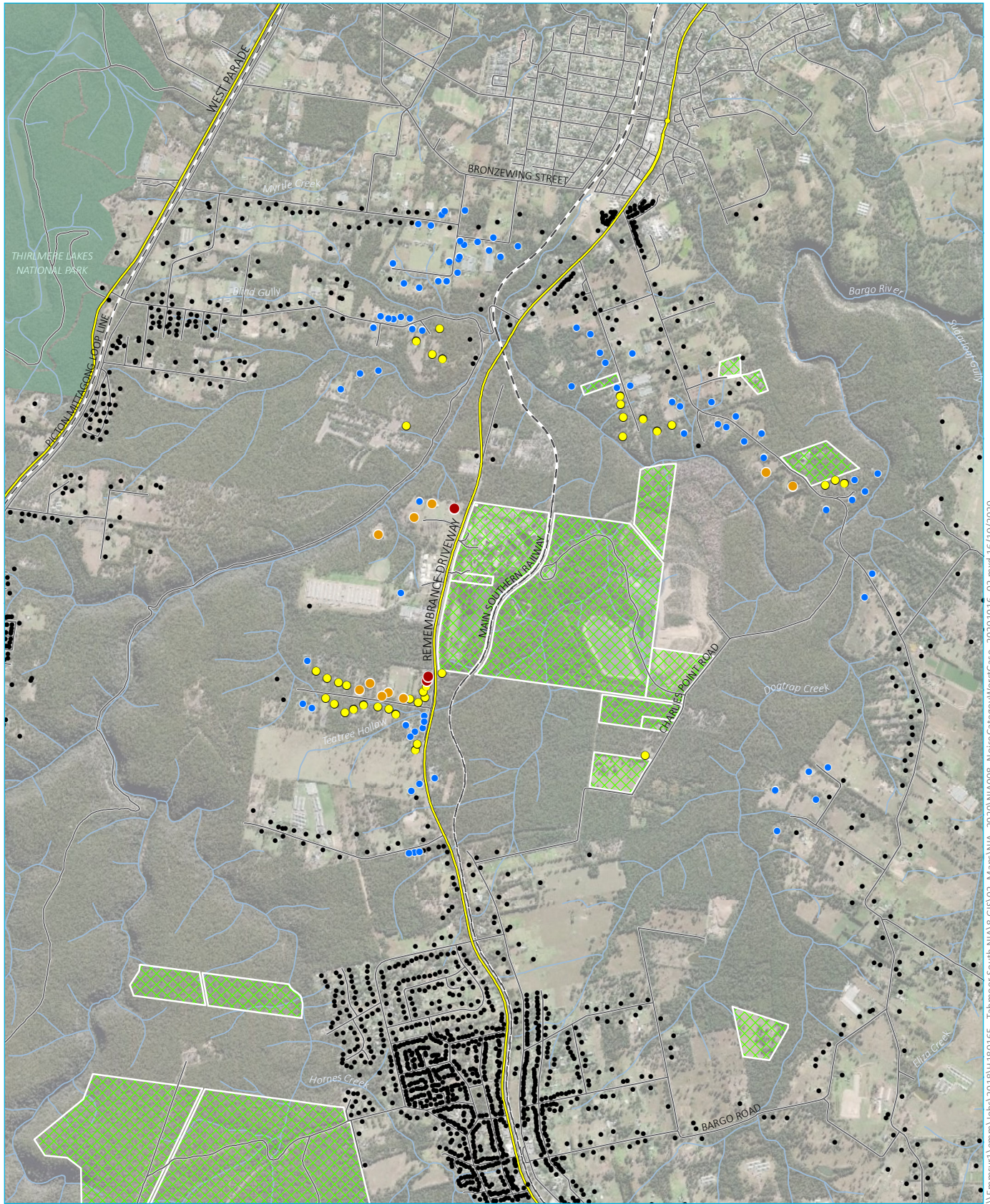
KEY

- | | |
|-----------------------------|-----------------------|
| --- Rail line | Noise impact category |
| — Main road | • None |
| — Local road | • Negligible |
| — Watercourse/drainage line | • Marginal |
| ▨ Tahmoor-owned land | • Moderate |
| ■ NPWS reserve | • Significant |

Predicted noise impact –
Stage 5 Tahmoor South Project (mitigated)

Tahmoor South Project
Noise and vibration impact assessment
Figure 5

\\emmsvr1\emms\Jobs\2018\180165 - Tahmoor South NIA & GIS\02_Maps\NIA_2020\NIA007_NoiseCategoryStages_20201016_02.mxd 16/10/2020



Source: EMM (2020); DFSI (2017)

KEY

- Rail line
- Main road
- Local road
- Watercourse/drainage line
- ▨ Tahmoor-owned land
- NPWS reserve

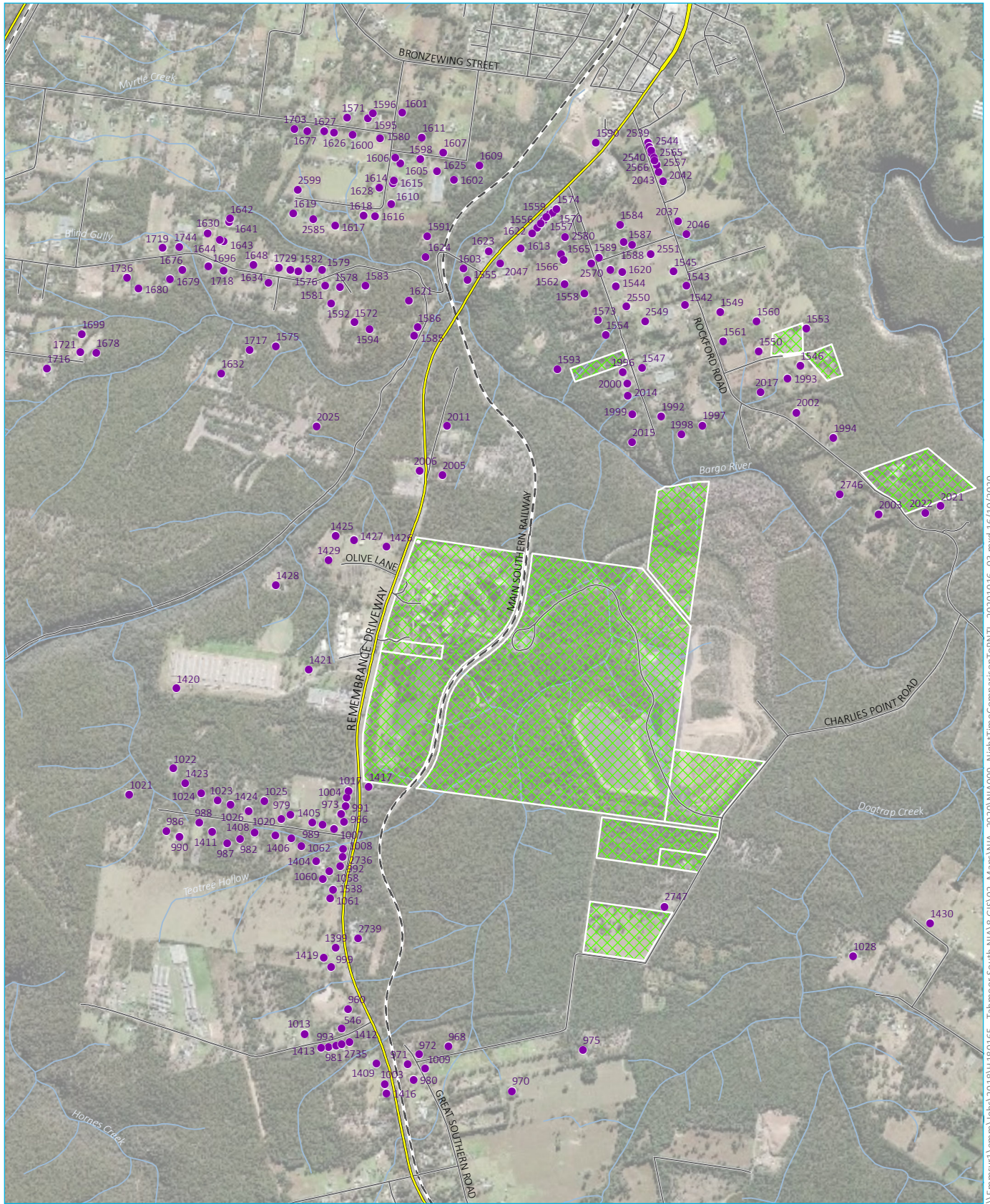
- Noise impact category
- None
 - Negligible
 - Marginal
 - Moderate
 - Significant

Predicted noise impact – worst case of all stages

Tahmoor South Project
Noise and vibration impact assessment
Figure 6



\\emmsvr1\emms\Jobs\2018\180165 - Tahmoor South NIA & GIS\02_Maps\NIA_2020\NIA008_NoiseCategoryWorstCase_20201016_02.mxd 16/10/2020



Source: EMM (2020); DFSI (2017)

0 0.5 1 km
GDA 1994 MGA Zone 56

- KEY**
- Assessment location
 - Rail line
 - Main road
 - Local road
 - Watercourse/drainage line
 - ▨ Tahmoor-owned land

Assessment locations where existing mine noise is above PNTL

Tahmoor South Project
Noise and vibration impact assessment
Figure 7



\\Emswv1\emmm\loba\2018\H-180165 - Tahmoor South NIA & GIS\02_Maps\NIA_2020\NIA009_NightTimeComparisonforPNTL_20201015_03.mxd 16/10/2020

9. Gas pipelines

Consider and respond to comments made by the APA Group dated 21 September 2020 (attached) regarding the Moomba to Sydney Ethane and Moomba to Wilton Natural Gas pipelines.

The concerns expressed by APA regarding potential impacts on APA's pipelines are understood by Tahmoor Coal. Tahmoor Coal commits to ensuring that APA's pipeline remains safe and serviceable during and after mining.

Tahmoor Coal recognises that the above commitment will require substantial work and agrees with APA's statement that "past underground mining activities have only been successful as a result of extensive mitigation works" and that "significant works are required to ensure the continued safe and efficient operation of these state significant pipelines during these works."

Tahmoor Coal also agrees that extensive consultation is required with APA to achieve the same successful outcomes as previously experienced. Tahmoor Coal has a long history of managing potential impacts on infrastructure, in consultation with infrastructure owners. This includes the Main Southern Railway, Tahmoor township, associated civil infrastructure and services, and significant retail, industrial and commercial establishments and public amenities.

Tahmoor Coal is committed to adopting MSEC's recommendations that were outlined in Section 6.8.4 of the Second Amendment Report, which is reproduced below.

It is recommended that Tahmoor Coal, in consultation with APA, study the potential for impacts on the Moomba-Sydney Gas Pipeline and Gorodok Ethane Pipeline and develop management measures to ensure that the pipelines remain safe and serviceable throughout the mining period.

Based on the previous experience of managing potential mine subsidence impacts on gas pipelines in the NSW Coalfields, these management strategies could include:-

- *Form a Technical Committee to develop the necessary management strategies, including representatives from the asset owners and the mine, as well as specialist consultants on subsidence and pipeline design;*
- *Undertake stress analyses of the pipelines based on the predicted conventional subsidence and valley related movements resulting from the proposed longwalls, in addition to the normal operating stresses based on the Maximum Operating Pressure (MOP);*
- *In the locations where the stress analyses indicate that mining could affect the MOP, such as at the larger stream crossings then these sections of the pipelines could be exposed prior to mining and placed on sandbags to allow it to move independently of the natural ground. These strategies would need to be developed in consultation with the adjacent land owners;*
- *Consider whether additional management measures might be required where the gas pipeline passes near residential structures directly above the proposed longwalls;*
- *Install strain gauges where required, such as on exposed sections of pipelines to monitor the changes in pipe stresses during mining;*
- *Install a traditional ground monitoring line along the alignment of the pipeline, so that the observed ground movements can be compared with those predicted during mining;*
- *Develop a subsidence management plan for the pipelines, in consultation with the asset owners, including defined trigger levels and strategies to reduce the stresses in the pipeline; and*

- *The technical committee would regularly review the observed movements and make management decisions in accordance with the subsidence management plan. This may include locally exposing the pipelines to relieve them of mining-induced pipe stresses.*

Tahmoor Coal believes that the above recommendations address the concerns and views expressed in the letter by APA. They are also consistent with the discussions held between Tahmoor Coal and APA during an initial technical presentation at Tahmoor Mine on 10 December 2013.

Tahmoor Coal looks forward to consulting with APA if the Tahmoor South Project is approved.

10. Biodiversity

Confirm under which existing consent clearing of 1.42 ha of native vegetation on the REA is approved.

The clearing of 1.42 ha of native vegetation on the REA is approved under the now repealed NSW *Local Government Act 1919*, dated 23 August 1979 for Interim Development, being a coal preparation plant and ancillary washery and reject area (REA Approval).

It is noted that following the first amendment, a credit shortfall of 532 credits existed for PCT 1395 (Shale Sandstone Transition Forest), and 82 credits for PCT 1081 (Red Bloodwood – Grey Gum woodland). The number of available Biobanking credits on the public register for PCT 1395 was 3,710. Provide an update on the credit shortfall for these PCTs following the second amendment, and the number of currently available credits on the public register.

As detailed in Table 8 of the Niche (2020a) report *Tahmoor South Project – Biodiversity Assessment Update*, the Project requires the following Plant Community Types (PCTs) and associated BioBanking credits to be retired:

- 455 x PCT1395 Narrow-leaved Ironbark - Broad-leaved Ironbark - Grey Gum open forest (HN556)
- 399 x PCT1081 Red Bloodwood - Grey Gum woodland on the edges of the Cumberland Plain, Sydney Basin (HN564).

As detailed in the Biodiversity Assessment Report (BAR) (Niche, 2020b), Tahmoor Coal proposes a biodiversity offset package that may employ a combination of offsetting opportunities including the following:

1. Establishment of Stewardship sites on Tahmoor Coal landholdings;
2. Purchase BioBanking/BAM credits on the public register;
3. Payment into the Biodiversity Conservation Fund;
4. Establishment of Stewardship sites on additional landholdings.

Five potential Biodiversity Stewardship Sites have been identified in the BAR, which are currently under-going site surveys in accordance with the OEH (2016) *Biodiversity Assessment Methodology*.

Credit estimates for each of the five sites using the BioBanking methodology were provided in Table 31 of the BAR and have been outlined in the table below based on further field surveys, and correspondence from the Biodiversity Conservation Trust (BCT) associated with Biodiversity Stewardship Site Applications.

Table 5 - Estimated BioBanking credits available at proposed offset sites compared to Project offset liability

Vegetation type	Offset liability	Proposed offset sites – with FBA credits generated					Estimated total FBA credits generated	Credit shortfall for Project offset liability
		1	2	3	4	5		
PCT1395 Narrow-leaved Ironbark - Broad-leaved Ironbark - Grey Gum open forest (HN556)	455	0	140	80	113	70 ¹	403	52
PCT1081 Red Bloodwood - Grey Gum woodland on the edges of the Cumberland Plain, Sydney Basin (HN564).	399	0	0	0	316	0	316	83

¹Estimated in BAR at generating 219 Biobanking credits, however based on current the current Biodiversity Stewardship Site Assessment process, areas of the site would need to be excluded for easements and dwelling setbacks. This has therefore reduced the credit estimate provided in the BAR.

If the sites are formally established as Biodiversity Stewardship Sites for the purposes of the Tahmoor South Project, there will be an estimated shortfall of the following:

- 52 x BioBanking credits for PCT1395 Narrow-leaved Ironbark - Broad-leaved Ironbark - Grey Gum open forest (HN556); and
- 83 x PCT1081 Red Bloodwood - Grey Gum woodland on the edges of the Cumberland Plain, Sydney Basin (HN564).

The shortfall may be satisfied by offsetting options listed above.

Based on a review of the BioBanking Public Register on the 8th October 2020, the following BioBanking credits are available:

- 2,117 x PCT1395 BioBanking credits
- 1,044 x PCT1081 BioBanking credits.

As previously noted, Tahmoor Coal has the option to pay into the BCF for the entire offset liability or to make up any shortfall that cannot be purchased on the market.

11. Greenhouse gas emissions

Provide a worst-case scenario of the estimated greenhouse gas emissions (Scope 1 and 2) for the project, including the proportion of methane gas flared, vented, released fugitively, and sent to the Waste Coal Mine Gas (WCMG) power plant.

In responding to this request, the Scope 1, 2 and 3 emission predictions for the Project have been updated based on the latest relevant data available. The intensity factors used to relate tonnes of ROM to tonnes of CO₂-e in the EIS and subsequent amendments were based on NGER reporting numbers from 2010-2013 (from when work commenced on the EIS) and have now been updated to incorporate the most recent figures from 2018-2020.

Table 6 over the page presents a summary of the revised predicted Scope 1, 2 and 3 emissions for the Project including the use of flaring and power generation, and Table 7 presents unabated emission predictions (i.e. without flaring and power generation).

Advise the Scope 1 and Scope 2 greenhouse gas emissions associated with:

- the management of methane in the 2018-19 financial year (or 2019-20, if available); and
- reported under the National Greenhouse and Energy Reporting Act 2007 in that year.

FY19

Scope 1: 1,260,004 t CO₂-e

Scope 2: 83,312 t CO₂-e

FY20

Scope 1 - 1,238,774 t CO₂-e

Scope 2 - 87,644 t CO₂-e

Advise the volume of methane gas flared, vented, released fugitively, and processed in the WCMG during 2018-19. Advise the total electricity (MWh) generated by the WCMG power plant during this period.

- Methane flared – 51,968 t CO₂-e;
- Vented – 1,158,104 t CO₂-e;
- Released fugitively – 40,156 t CO₂-e; and,
- Processed in power plant – 44,489 MWh

Provide rationale for zero Scope 1 emissions from flaring predicted over the 2028-2032 period (Table 4.2 of Appendix K – First Amendment Report).

Revised calculations are provided in Tables 6 and 7 for both abated and unabated emissions.

Table 6 – Revised Scope 1, 2 and 3 emission, abated (both flaring and power generation)

Scope 1 Emissions (t CO ₂ -e) (flaring and power generation occurring)							Scope 2 Emissions (t CO ₂ -e)	Scope 3 Emissions (t CO ₂ -e)
Year	Diesel	Unleaded Petrol	Fugitive Methane	SF ₆	Post-Mining Activities	Total	Electricity	Energy Production
2021	519	2	222,905	0.4	6,614	230,041	14,764	525,244
2022	2,265	9	972,126	1.7	28,844	1,003,246	64,389	2,880,188
2023	3,695	14	1,586,076	2.8	47,061	1,636,849	105,054	4,837,896
2024	4,638	18	1,990,826	3.5	59,071	2,054,557	131,863	6,618,074
2025	4,161	16	1,785,918	3.1	52,991	1,843,089	118,291	6,467,475
2026	4,663	18	2,001,262	3.5	59,380	2,065,327	132,555	7,763,571
2027	4,676	18	2,006,737	3.5	59,543	2,070,977	132,917	7,735,856
2028	5,196	20	2,230,323	3.9	66,177	2,301,721	147,727	8,463,474
2029	4,198	16	1,801,681	3.1	53,459	1,859,357	119,335	6,939,653
2030	4,554	17	1,954,385	3.4	57,990	2,016,949	129,450	6,515,485
2031	3,978	15	1,707,174	3.0	50,654	1,761,824	113,076	5,520,472
2032	1,053	4	451,849	0.8	13,407	466,314	29,928	1,565,209
Total	43,596	167	18,711,262	33	555,191	19,310,249	1,239,350	65,832,595
Annual average						1,609,187	103,279	5,486,050

Table 7 – Revised Scope 1, 2 and 3 emission, Unabated (no flaring and no power generation)

Scope 1 Emissions (t CO ₂ -e) (no flaring and no power generation)							Scope 2 Emissions (t CO ₂ -e)	Scope 3 Emissions (t CO ₂ -e)
Year	Diesel	Unleaded Petrol	Fugitive Methane	SF ₆	Post-Mining Activities	Total	Electricity	Energy Production
2021	519	2	310,782	0.4	6,614	317,918	14,764	525,244
2022	2,265	9	1,355,372	1.7	28,844	1,386,492	64,389	2,880,188
2023	3,695	14	2,211,362	2.8	47,061	2,262,135	105,054	4,837,896
2024	4,638	18	2,775,679	3.5	59,071	2,839,410	131,863	6,618,074
2025	4,161	16	2,489,989	3.1	52,991	2,547,160	118,291	6,467,475
2026	4,663	18	2,790,229	3.5	59,380	2,854,294	132,555	7,763,571
2027	4,676	18	2,797,863	3.5	59,543	2,862,103	132,917	7,735,856
2028	5,196	20	3,109,594	3.9	66,177	3,180,992	147,727	8,463,474
2029	4,198	16	2,511,967	3.1	53,459	2,569,642	119,335	6,939,653
2030	4,554	17	2,724,872	3.4	57,990	2,787,436	129,450	6,515,485
2031	3,978	15	2,380,201	3.0	50,654	2,434,852	113,076	5,520,472
2032	1,053	4	629,984	0.8	13,407	644,449	29,928	1,565,209
Total	43,596	167	26,087,895	33	555,191	26,686,882	1,239,350	65,832,595
Annual average						2,223,907	103,279	5,486,050

12. Water – aquatic ecology

Outline the expected reduction in barium concentrations in discharge water following treatment in the Wastewater Treatment Plant (WWTP).

A concentration criterion for barium was not included in the design objectives specified by the EPA for the new WWTP. Consequently, there is no specified concentration for barium in the scope of work for the new WWTP.

13. Traffic

Explain how 24 additional mine-related vehicle trips (ie 2.1% of total vehicles) at the Avon Dam Rail Bridge intersection leads to a reduction of the Level of Service from LoS C to LoS E for the left turn during the peak PM period in 2028. Likewise, explain the reduction from LoS D to LoS E for the right turn.

The background traffic growth to 2027 has been calculated on a 3.3% lineal increase between 2017 and 2027; ie a 33% increase over this period. This increase has been added to all movements at the intersection and results in an additional 269 vehicle trips using the intersection in 2027. This includes an additional 98 vehicles using the northern approach of Remembrance Driveway, an additional 77 vehicles using the southern approach of Remembrance Driveway and an additional 94 vehicles using the Avon Dam approach. It is this background traffic growth which leads to the deterioration in the level of service for both the left and right turns out of Avon Dam Road which has a single approach lane. The traffic modelling shows that in the PM peak hour in 2027, the delays for the left turn out of Avon Dam Road are predicted to be 41.9 seconds per vehicle (ie. Level of Service C bordering on Level of Service D). For the right turn out of Avon Dam Road the delays are predicted to be 52.2 seconds per vehicle (ie. Level of Service D close to Level of Service E).

The proposal in 2027 will add an additional 14 vehicles turning right out of Avon Dam Road in the PM peak, which is a small increase when compared to the background traffic growth of an additional 269 vehicles per hour. The predicted delays with the project are 48.7 seconds per vehicle for the left turn and 59.2 seconds per vehicle for the right turn (ie. Level of Service D and E respectively). The additional delay from the project will be an additional 7 seconds per vehicle using the Avon Dam Road approach.

In summary, the deterioration in the Level of Service is primarily due to the predicted background traffic growth. If this increase is lower than predicted, then the delays will be lower, with a corresponding improvement of the level of service for vehicles turning left and right out of Avon Dam Road.

Conclusion

Should you have any queries regarding this letter, please do not hesitate to contact Zina Ainsworth, Environment and Community Manager, at zina.ainsworth@simecgfg.com, or Charlie Wheatley, Project Director, at charlie.wheatley@simecgfg.com.

Yours sincerely,



Zina Ainsworth
Environment and Community Manager
Tahmoor Coal

References

AECOM 2018, *Tahmoor South Project - Environmental Impact Statement*, prepared for Tahmoor Coal Pty Ltd by AECOM Australia Pty Ltd.

AECOM 2020, *Tahmoor South Project - Project Amendment Report*, prepared for Tahmoor Coal Pty Ltd by AECOM Australia Pty Ltd.

EMM 2020, *Tahmoor South Project – Second Amendment Report*, prepared for Tahmoor Coal Pty Ltd by EMM Consulting Pty Ltd.

Hydrosimulations 2020, *Tahmoor South Amended Project Report: Groundwater Assessment*, prepared for Tahmoor Coal Pty Ltd by Hydrosimulations/SLR/NPM Technical Pty Ltd trading as Hydrosimulations.

Niche 2020, *Tahmoor South Project, Biodiversity Assessment Report*, prepared for Tahmoor Coal Pty Ltd by Niche Environment and Heritage.

Attachment A – Tahmoor Mine – existing development consents and mining leases

Development consents and mining leases Tahmoor and Bargo

Development Consents Tahmoor Colliery

There are a number of valid development consents and modifications that apply to Tahmoor Colliery. In chronological order, these consents are:

Date Granted	Consent Number	Consent Authority	Land Affected	Comments	Document Evidencing	Renewal Date
26.03.1975		Wollondilly Shire Council (WSC)	Coal Mine and associated facilities and Special Mining Lease (later CCL 716)	Consent to mine coal and transport ROM coal to Glenlee	Dames and Moore EIS Jan 1975 WSC Letters 26 Mar 1975 & 19 May 1975	NA
23.08.1979		NSW Planning & Environment Commission (NSWPEC) (referred by WSC)	Coal Preparation Plant and Ancillary Washery and Reject Area	Additional consent to wash coal and stockpile on site.	Dames and Moore EIS April 1979 NSWPEC Approval 23 Aug 1979	NA
16.09.1985		NSW Planning & Environment Commission	Coal Preparation Plant and Ancillary Washery and Reject Area	Amended consent for road haulage of two trial shipments of coal	NSW Planning Environment Commission Approval 16 Sep 1985, Dept of Env & Planning Letter of 16 Sep 1985	NA
16.12.1985	DA190- 85	Wollondilly Shire Council (WSC)	Tahmoor Colliery	Surface Civil and Mechanical Work for Gas Extraction	WSC Letter of Consent DA190-85	NA

Date Granted	Consent Number	Consent Authority	Land Affected	Comments	Document Evidencing	Renewal Date
5.11.1986		Director of Department of Environment and Planning	Coal Preparation Plant and Ancillary Washery and Reject Area	Amended consent to upgrade surface civil and mechanical work on facilities for longwall mining at Tahmoor Colliery	Director of NSW Department of Environment and Planning (DEP) Approval 5 Nov 1986, DEP letter 1986, WSC letter 16 Dec 1986	NA
1988 Undated		Director of NSW Department of Planning	Coal Preparation Plant and Ancillary Washery and Reject Area	Amended consent for road haulage of coal due to rail disruption, or within Wollondilly Shire to 50,000tpa	Director of NSW Department Planning Approval	NA
7.09.1994	DA57/93	NSW Land and Environment Court	Tahmoor North surface facilities and Mining Lease Application No 1 (Later ML 1376)	Additional consent to construct surface facilities and access shaft, mine coal by longwall means and emplace refuse	EIS dated February 1993 L&EC Judgement dated 7 Sep 1994	NA
13.12.1994		Director of Department of Planning	Coal Preparation Plant and Ancillary Washery and Reject Area	Amended consent for road haulage of coal to Corrimal and Illawarra Coke Works if West Cliff Mine unable to supply	Director of Department of Planning Approval 13 Dec 1994, DEP letter 28 Dec 1994	NA
25.02.1999	DA 67/98	Minister for Urban Affairs and Planning	Tahmoor North Extension Mining Lease Application No 105 (Later ML 1539)	Additional consent to mine coal by longwall means	EIS dated March 1998, Minister UAP consent dated 25 Feb 1999, Letter DUAP 9 Mar 1999	See comment below to Mod 4
26.11.2006	DA 67/98 (MOD 1)	Minister for Planning	Tahmoor North Extension Mining Lease Application No 105 (Later ML 1539)	Modifications to wording in consent conditions 27 and 28 to make the condition applicable in the Wollondilly LEP and also to extend the	Statement of Environmental Effects dated May 2006 Minister for Planning dated 26 November 2006.	See comment below to Mod 4

Date Granted	Consent Number	Consent Authority	Land Affected	Comments	Document Evidencing	Renewal Date
				zone of subsidence into 6 small areas, not proposed to be subsided in the 1998 EIS.		
7.06.2007	DA57/93 (MOD1)	Wollondilly Shire Council (WSC)	Tahmoor North Surface Facilities and Mining Lease Application No 1 (Later ML 1376)	Modification to Condition 54 which controls heritage impact assessment, to reflect the modifications sought for the same issue under the 1999 consent.	Statement of Environmental Effects dated May 2006 WSC Letter 7 June 2007	NA
8.04.2012	DA 67/98 (MOD 2)	Deputy Director General of Department of Planning under delegation from Minister for Planning and Infrastructure	Tahmoor North Extension Mining Lease Application No 105 (Later ML 1539)	Modification to manage subsidence of Redbank Railway Tunnel and update consent conditions.	S75 Notice of Modification dated 8 April 2012 EA dated 8 Sep 2011	See comment below to Mod 4
13.11.2012	DA 67/98 (MOD 3)	Director Mining and Industry Projects under delegation from the Minister for Planning and Infrastructure	Tahmoor North Extension Mining Lease Application No 105 (Later ML 1539)	Modification to consent to allow land subdivision and consolidation for Redbank Tunnel Subsidence Management Project	S75 Notice of Modification dated 13 November 2012 Subdivision Certificate dated 16 Nov 2012 EA dated 19 Sep 2012	See comment below to Mod 4
September 2018	DA 67/98 (MOD 4)	The Independent Planning Commission as delegate of the Minister for Planning	Tahmoor North and related infrastructure	Modification to Tahmoor Coal Mine including infrastructure, coal processing and transportation	Tahmoor Underground Modification 4 DA/98 Prepared by Umwelt (Australia) Pty Ltd October 2017	Note Condition 4 of Schedule 2 Provides: <i>'The approval for mining is for a period of</i>

Date Granted	Consent Number	Consent Authority	Land Affected	Comments	Document Evidencing	Renewal Date
						<i>21 years from the date of granting of a mining lease pursuant to this consent.'</i>

Development Consents Bargo Colliery

There is one development consent that applies to the Bargo Colliery lease.

Date Granted	Consent Number	Consent Authority	Land Affected	Comments	Document Evidencing	Renewal Date
21.04.1976	DA 162/76	Wollondilly Shire Council (WSC)	Coal mine, coal preparation plant and rail loader, associated facilities and Mining Lease (later CCL 747)	Consent to mine and wash coal, stockpile on site and transport by rail.	Longworth & McKenzie EIS Jan 1975 WSC Letters 21 April 1976 & 28 August 1987	NA

Mining Leases Tahmoor Colliery

There are 3 mining leases and two exploration authorisations that apply to Tahmoor Colliery.

Date Granted	Title	Status	Area Covered	Comment	Renewal Date
15.06.1990	CCL716	Current	1975 DA application area	Associated with 1975 consent	13.03.2021
28.08.1995	ML1376	Current	DA57/93 application area	Associated with DA57/93	28.08.2016 Renewal application submitted
16.02.2003	ML1539	Current	DA67/98 application area	Associated with DA67/98	15.06.2024
	ML1308	Current	1975 DA application area	Associated with 1975 consent	2:03:2035
	ML1642 (Surface lease)	Current	1975 DA application area	Associated with 1975 consent	27:08:2031
21.01.1981	Authorisation 206	Expired May 2019	CCL716	Associated with CCL716	
26.04.1989	Authorisation 410	Expired May 2019	ML1539, ML1376	Associated with ML1539 & 1376	

Mining Leases Bargo Colliery

There is 1 mining lease that applies to Bargo Colliery.

Date Granted	Title	Status	Area Covered	Comment	Renewal Date
23.05.1990	CCL747	Current	DA162/76 application area	Associated with DA162/76 (Bargo)	06.11.2025