Response to Questions from Mr and Mrs Cameron – 10 May 2020

Thank you for your considered questions on the assessment outcomes and we apologise where our previous replies did not provide sufficient information. It is worth noting that we are in the final stages of preparing the Environmental Impact Statement (EIS) for the Project and shortly expect to have this documentation available for you to review. Many of the reports that we refer to below will be made available with the EIS, which also presents a comprehensive overview of the detailed technical assessment outcomes. A lot of time, effort and expense has been put into the reporting and we anticipate that many of your concerns have also been addressed in the EIS but to a broader perspective. However, we also appreciate that the documentation may seem daunting and we reiterate our offer to answer any queries either in correspondence such as this or where possible, in person or over the phone.

We have numbered the queries from your letter dated 18 March 2020 for ease of response, removing the numbering from the previous correspondence.

1. *You refer to a 'store-and-release-cover' method to be used over the tailings storage dam. The cover is comprised of the pre-existing sub soil and top soil. Please advise what disposal method is planned for the liquid in the tailings dam. We note the "store and release cover" method is used effectively in semi arid areas however there has not been the same success in non semi arid areas which are wetter, such as in Lue.*

   You are correct that the effective function of the cover relies upon climate conditions. Bowdens Silver has commissioned Advisian to evaluate the requirements for decommissioning of the Tailings Storage Facility (TSF) and specifically to assess the capping and cover design for the TSF to plan for eventual Mine closure. A report prepared by Advisian detailing this assessment will be presented with the EIS once this is finalised and made publicly available. Advisian analysed long-term climate factors (over 125 years) and concluded that a store-and-release cover and water shedding profile would be required. Advisian describe this as an 'enhanced store-and-release cover system' as it incorporates a barrier layer intended to limit infiltration (water-shedding) with a growth medium cover that stores moisture before releasing it back to the atmosphere via evapotranspiration. In addition to this, Bowdens Silver would undertake rehabilitation trials during the operational phase of the Mine on sections of the TSF to demonstrate that the proposed cover design is suitable for longer-term rehabilitation of the facility. The rehabilitation trials may result in refinement of the rehabilitation approach. The predictive assessment undertaken by Advisian and confirmation through trials is considered best practice in the mining industry.

   The tailings material that is to be placed in the TSF would have a solids content of 56% with the TSF designed so that material is deposited through down valley discharge. The water captured in the TSF naturally collects in a decant pond and may be recycled for processing, thereby maximising re-use of liquid in the tailings. As the TSF is developed, the pressure of the solid materials on previously deposited tailings would force the water from this in situ material and progressively the material would become more dense as it dries. The tailings material would continue to naturally dry until the cover liner is applied, which would interrupt the upward movement of water.

2. *Further, we note that the current proposed location of the tailings dam is to be in a natural water way. What additional measures will Bowdens be taking to ensure that the toxic tailings residue will never leach and contaminate the adjacent environment?*

   Highly qualified and experienced engineers from ATC Williams have been commissioned to design the TSF to ensure that the lining, embankments and eventual cover minimise risks of seepage and contamination. Significant work has been undertaken to analyse preliminary samples of tailings material in order to understand its physical and chemical characteristics and to plan for the design, management and closure of the TSF.

   Specific measures to limit seepage from the TSF include the following.

   a) A compacted clay liner designed to meet the permeability standards set by the NSW Government.

   b) Construction of the embankments with the following components.

      i) a bituminous geomembrane liner on the upstream face of the embankment that would be tied to a grout curtain beneath the toe of the upstream face of the embankment;

      ii) an upstream low permeability geomembrane/clay zone;

      iii) a filter zone comprising gravels and sands; and

      iv) coarser material in a downstream zone

   c) An emergency spillway designed to capture overflow of the TSF during an extreme rainfall event (one in one hundred-thousand-year water flows) and a seepage collection pond at the downstream toe of the embankment.

   Bowdens Silver not only need to ensure that the TSF would be designed and managed appropriately to support the ongoing operation of the Mine, but the proposed designs and management will be scrutinised by the NSW Government prior to receiving any approval and then throughout the life of the Mine.

3. *Please advise the anticipate movements in the "operations phase" and the type of vehicles and weight of vehicles.*

   Our apologies for omitting this information in the earlier response. During the operations phase, the anticipated vehicle movements that would pass your property via the re-located Maloneys Road would decrease to a total of 160 movements per day (80 return trips). These movements would comprise predominantly light vehicles and buses but also include heavy vehicles and concentrate transport. Therefore, it is difficult to provide a weight of these vehicles. In addition to movements past your property, it is expected there would be 102 movements per day from the Mine Site to and from the TSF to transport material for construction of the embankments.

4. *Further, you have not answered my question in regards to truck traffic noise. You say that it is not possible to use the suggested noise levels in my question of 80dB as stated in the PEA as they need to be related to distance, however you have not provided the noise - distance information.*

   Please note that the value of 80dB quoted in the PEA referred to the noise that would be generated by the equipment and heard if a person was standing beside it (technically referred to as the sound power level). Noise levels decrease the further away you get from the source of the noise and noise attenuation is also influenced by barriers, such as topography and vegetation, between the noise source and the person experiencing the noise. This is what was referred to in terms of noise-distance information. It is not something specific that can be provided to you but is used in modelling the predicted noise generated by the operations.

5. *Please clarify what the projected truck traffic noise levels will be, in each of the "site establishment and construction phase" and the "operations phase" from all areas of your operation to the closest relevant points on my property.*

Noise from truck traffic within the Mine Site is considered operational noise for the purpose of assessment. These noise sources are not singled out or treated separately but are assessed as part of the total operational (or construction) noise impact of the Project. Therefore, the truck traffic noise may be considered a component of the total noise predictions. The truck traffic noise from the operation may be considered to be less than or equal to the total noise levels presented to you previously. The outcomes of noise assessment are appended to this response for your reference (**Attachment 1**). The following phases and periods have been provided.

- Site establishment and construction phase (day-time only)
- Operational phase – day-time, evening and night-time periods
- Operational phase – Sleep disturbance (night-time only)

With respect to road traffic noise it is noted that the dwelling on your property (R87) is approximately 830m from the proposed Relocated Maloneys Road, and approximately 660m from Lue Road. During the Site establishment and Construction Stage (Months 7 to 18) total traffic noise level (inclusive of the project related traffic) is predicted to increase by only 1dBA up to a modest 34dBA during the daytime, and during the night-time the total traffic noise level would increase by only 2dBA up to a very modest 28dBA. During Year 3 mining operations, the total traffic noise level (inclusive of the project related traffic) would also increase by only 1dBA up to 35dBA during the daytime, and during the night-time the total traffic noise level would also increase by only 2dBA up to 28dBA. Any project related traffic noise impacts at property R87 are anticipated to be minimal and therefore comply with the relevant road traffic noise criteria.

6. *Please confirm that you have not used any actual noise monitors on my property or any noise monitors in the near vicinity of my property.*

Noise monitoring locations are selected to get a representative record of background noise levels. No noise monitoring was undertaken on your property, however noise monitoring was undertaken at the Clydesdale property to the east of your property.

7. *Please also confirm that whilst you acknowledge that background noise levels in Lue are low (Question12), you choose to use a generic EPA indicator of 35dB(A) during the day, and 30dB(A) at night.*

The indicators that you are referring to are the Rating Background Levels established in the *Noise Policy for Industry 2017* that guides the assessment of industrial noise in NSW. The policy is intended to provide for the assessment of noise that may be intrusive or impact amenity. The approach taken for the assessment of the Bowdens Silver Project is consistent with that policy.

8. *You advise that noise will be generated from regular delivery and crushing and placement of rock for 7-10 months during 3 construction periods. In Question 6 you state trucks will be transporting waste rock on a daily basis for the first eight years of the project life. Please confirm which answer is correct.*

Effectively, both answers were correct. It is proposed that heavy vehicles would be transporting material to the TSF from the commencement of site establishment and construction and for the first eight years of operations. For the purpose of assessment different scenarios are considered

including site establishment and construction and at various stages of operations, which is why we refer to these different periods.

9. *I also note from your map that the waste rock stockpile area is approximately 750 metres from my property, whilst the southern most part of the tailings dam is approximately 800m. Please clarify the projected cumulative noise level from the array of machinery and equipment used to crush and move and dump rocks from all areas of your operation to the closest relevant points on my property. Please advise what that equipment and machinery will be.*

   There would be a range of equipment required for the transport, crushing and eventual emplacement of materials as well as for construction of the embankment. The following equipment may be used in the vicinity of the embankment.

   - Road trucks and haul trucks
   - Bulldozers
   - Front end loaders
   - Hydraulic excavators
   - Graders
   - A vibrating roller for compaction
   - A crushing and screening unit
   - A water truck for dust suppression
   - A chain saw and mulching unit for vegetation clearing

   It should be noted that this equipment would not all be operating at the same time. The Noise Impact Assessment does not consider single sources of noise but the cumulative impact of the entire operation at your residence.

   The noise assessment does not isolate single sources or groups of sources to provide an outcome but rather presents the noise levels predicted at your residence for the modelled scenario. These results are included as **Attachment 1**. You may assume that the noise from the operations in the vicinity of the TSF would be equal to or less than that predicted for those scenarios.

10. *Please clarify that the embankment will be 56m high once completed and confirm that it will not be visible from our property.*

    As noted in the previous response, no components of the TSF including the embankment would be visible from your property. The embankment would be 56m above ground level.

11. *You state that the open cut mine will result in a reduction in the flow of the Lawsons Creek adjacent to my property by .5ML/day or 2.5%, however in Question 13 you advise that there have been no measured stream flows from the creek and that you are using a generic measure called Australian Water Balance Model. How can you give such a specific figure with no actual baseline measure.*

    The Australian Water Balance Model is used to develop a representation (model) of the catchments that contribute water to Lawsons Creek. Ideally the water model would be calibrated to a long-term stream flow record based on monitoring on Lawsons Creek. However, given the very long record of data required to establish accurate levels for calibration, it was not feasible to undertake such monitoring.

    The accuracy of the model at your property can not be directly verified, however it is considered the best estimate and therefore an acceptable prediction of the reduction in flow can be made.

This is standard practice and involves review of all available data including the landscape scale catchment area. The approach has been subject to independent peer review and refined to ensure it is as accurate as possible given the limitations.

12. *Why is there no measure for silver in your water quality table?*

Silver is not commonly tested for when assessing water quality as it is not generally present in samples. For it to be present in the water requires that the metal disassociates from a solid form and is in high enough quantities to be detected. There has also been no indication that levels of silver would be at a level that is a risk and no indication that this would change under the Project.

This omission has been identified internally and silver has been included in water sample monitoring over the past three months. All samples tested for silver presence returned results that were below the limit of detection, indicating that it is not present or at levels too low for laboratory analysis to identify it.

13. *Please advise if monitor BSW28 is upstream or downstream from the causeway on Lawson Creek.*

The monitoring point BSW28 is upstream of the causeway on Lawsons Creek. A figure with the location of BSW28 is provided as **Figure A**.

14. *How does the clay lining of the storage facility that prevents seepage of waste material work with the store and-release cover that sits on top?*

As described above, the 'enhanced store-and-release cover system' incorporates a barrier layer intended to limit infiltration (water-shedding) with a growth medium cover that stores moisture before releasing it back to the atmosphere via evapotranspiration. The clay lining stops the rainfall from infiltrating to the tailings material.

15. *Why is the compacted clay only on the floor and not also on the walls of the tailing dam? How is Bowdens going to prevent seepage from the 56m walls of the tailings dam?*

a) As noted above the embankment walls would include the following components.

   i) a bituminous geomembrane liner on the upstream face of the embankment that would be tied to a grout curtain beneath the toe of the upstream face of the embankment;

   ii) an upstream low permeability geomembrane/clay zone;

   iii) a filter zone comprising gravels and sands; and

   iv) coarser material in a downstream zone

These components would limit seepage from the embankment walls.

16. *Please advise if water table levels have been measured near my property, if so where and what are the results?*

The groundwater levels at your property have not been measured, however the groundwater levels may be inferred from other monitoring undertaken for the assessment at nearby locations. Groundwater level may also vary depending on the location and geology of the underlying strata. For example, alluvial aquifers are generally shallow, easily accessed and highly connected to surface water, while regional groundwater in the much broader fractured rock

aquifer is deeper, confined and difficult to access. Local bores in Lue are most likely within the alluvial aquifer.

Without monitoring it is difficult to determine accurately what the groundwater levels at your property are, except that given your location in proximity to Lawsons Creek, you are likely to have both alluvial and fractured rock aquifers beneath your property.

17. *As offered, please determine if the realigned power lines will be visible from our property.*

Bowdens Silver are considering a number of options to supply power to the Mine Site. Preliminary enquires with energy providers indicate that several of these are feasible with each having different requirements in terms of easement length and location, technical requirements and whether the cost for installation would be shared or solely the responsibility of Bowdens Silver. As such, the location of the power lines is not confirmed. Some options require use of existing powerlines, minor relocations of the existing power lines or new power lines that enter the Mine Site from the east or west.

It is expected that regardless of the final option used to supply power to the Mine Site, the existing high voltage power line that traverses the Mine Site would be relocated. A visibility assessment prepared by Richard Lamb and Associates commented that the alignment of the proposed re-aligned power transmission line is largely in country with similar visual and physical characteristics to the existing line and the new line would be likely to be compatible with the appearance of the existing line and not cause any significant change to view compositions. The relocated powerline would be on the eastern side of Bingham Hill and cross to the ridge line immediately to the north from where it crosses the ridgeline towards Blackmans Gully.

18. *Please advise exactly where DG07 is located, as I cannot find it on the map. Please provide a full copy of the data that has been collected so far.*

BDG07 is a deposited dust gauge located on the property of Mr John Lydiard (in the southwest of his property). The location is displayed on the figure presented as **Figure B**. The following table presents the data collected at BDG07 to date. Please note that this monitor does not record particulate matter (PM_{10} or $PM_{2.5}$). Particulate matter has been recorded at the TEOM and high volume air sampler locations (see **Figure B**).

Average Monthly Monitoring Results at BDG07	
12-month average	**Total Insoluble Matter (g/m^2/month)**
2012	0.7
2013	1.3
2014	0.9
2015	0.9
2016	1.2
Maximum	2.2
Minimum	0.7
Average all samples	0.8

19. *Please advise why the cumulative amount of particulate matter in your VLAMP report to us is so very much higher, sometimes 20 times higher, than the project generated amount?*

The cumulative outcome in the reporting is the sum of the background dust levels and the predicted dust levels from the mining operations. Where the background dust levels are significantly higher than the predicted dust from the mining operation, the cumulative outcome will be much higher than the Project-generated amount.

20. *Please advise what the air quality is like at the property at the moment.*

Air quality patterns vary distinctly in seasonal patterns and different fractions of dust also varying different patterns over a year. For example, it is common that fine particles increase in winter due to the increased use of wood fires to heat properties. We cannot comment on the specific air quality at your property as monitoring has not been undertaken at your property. However, it is worth noting that for the purpose of assessment, Ramboll has assumed the background dust levels presented in the following table. This may be considered a conservative estimate of the air quality at your property on a worst-case day or year. For assessment, Ramboll assumed the highest records from the available monitoring locations rather than specific data from the various locations. Therefore, the outcomes of assessment are conservatively high in order that the assessment takes into account the worst-case scenario. Assessment outcomes at all privately-owned properties satisfy the criteria requirements established by the NSW EPA for air quality assessment.

Pollutant	**Averaging period**	**Adopted background value**
PM_{10}	24-hour average	Daily varying with a maximum of 43.7µg/m³
	Annual average	13.6µg/m³
$PM_{2.5}$	24-hour average	Daily varying with a maximum of 15.4µg/m³
	Annual average	3.9µg/m³
TSP	Annual average	30.7µg/m³
Lead	Annual average	Negligible (i.e. 0.2% of the impact assessment criteria)
Dust deposition	Annual average	1.0g/m²/month

21. *We note the Bowdens assessment of the impact on our property fails to address in relation to Voluntary Land Acquisition Rights whether the particulate matter is "on more than 25% of any privately owned land where there is an existing dwelling or where a dwelling could be built under existing planning conditions".*

The Air Quality Assessment prepared by Ramboll has identified that particulate matter concentrations generated by the Project are not predicted to exceed the criteria that triggers mitigation or acquisition in accordance with the VLAMP across more than 25% of any privately-owned land not related to the Project. On this basis, and the results of assessment at residences, it is concluded that the VLAMP provisions would not apply to any land in the vicinity of the Mine Site as a result of predicted air quality impacts. This includes your property.

22. *New question: 15 MAP reference "PREDICTED DRAWDOWN BENEATH LAWSONS CREEK" Please explain exactly what this notation on your map means, as I note from the map that it runs the whole length of the creek running through my property.*

The groundwater assessment has predicted drawdown of the groundwater table that would impact groundwater beneath Lawsons Creek in the vicinity of your property. This is predicted

to reduce the contribution of groundwater to the creek in that location (referred to as a baseflow reduction). The existing flows in Lawsons Creek as such that this impact would not generally be noticeable, except in extremely dry situations where the Lawsons Creek is reduced to pools. Where groundwater is contributing to the depth of these pools a decrease to the depth of these pools would be noticeable. This would be a rare occurrence given the more regular flows in the creek. We also acknowledge that the recent dry conditions have reduced flows in Lawsons Creek, however these are not considered normal conditions and hopefully we soon see an end to the drought conditions experienced over the last few years.

Attachment 1: Noise Results

Attached Figures: Figure A – Surface Water Monitoring Locations
Figure B – Air Quality Monitoring Locations (Proximal to Cameron Residence

Attachment 1

Site Establishment and Construction Noise Impact Assessment

Period	Off-site Road Network		On-site Earthworks and Infrastructure		Total Off-site plus On-site Construction Noise		Intrusive Construction Noise Management Level	Intrusive Highly Noise Affected Level
	Standard	Enhancing Wind	Standard	Enhancing Wind	Standard	Enhancing Wind		
Day-time (dB(A))	30	43	17	35	30	43	45	75

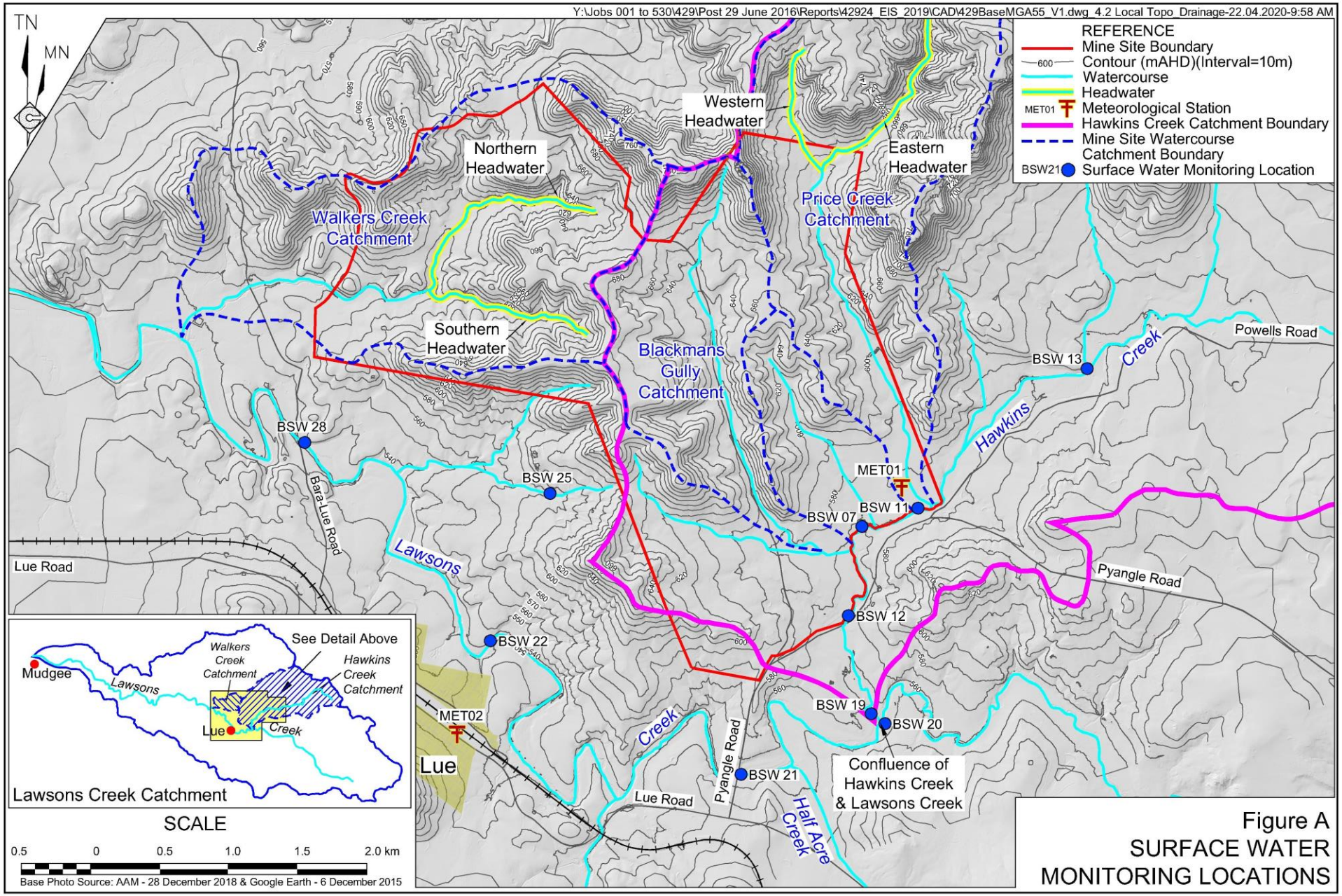
Operational Noise Impact Assessment

Period	Year 0 Scenario 1			Year 3 Scenario 2			Year 8 Scenario 3			Year 10 Scenario 4			% Frequency of Occurrence			Project Noise Trigger Level
	Standard	Enhancing Wind	Enhancing Inversion	Standard	Enhancing Wind	Enhancing Inversion	Standard	Enhancing Wind	Enhancing Inversion	Standard	Enhancing Wind	Enhancing Inversion	Standard	Enhancing Wind	Enhancing Inversion	
Day-time (dB(A))	29	43	-	27	41	-	28	40	-	12	35	-	3	21	-	40
Evening (dB(A))	-	-	-	10	36	-	10	33	-	11	34	-	2	39	-	35
Night-time (dB(A))	-	-	-	7	34	36	7	30	33	8	31	33	4	7	48	35

Sleep Disturbance Assessment

Period	Year 0 Scenario 1		Year 3 Scenario 2		Year 8 Scenario 3		Year 10 Scenario 4		Percentage Occurrence	Sleep Disturbance Noise Levels	
	LAeq (15min)	LAmax	LAeq (15min)	LAmax	LAeq (15min)	LAmax	LAeq (15min)	LAmax	Enhancing Inversion	LAeq (15min)	LAmax
Night-time (dB(A))	-	-	36	43	33	43	33	43	48	40	52

Green: Predicted LAeq(15minute) intrusive noise level complies with the criteria.
Orange: Predicted negligible noise exceedance 1-2dB(A) above the criteria.
Red: Predicted marginal to moderate noise exceedance 3-5dB(A) above the criteria.
Standard: Standard meteorological condition - wind speed up to 0.5m/s.
Enhancing Wind: Noise-enhancing wind - stability categories A to E wind speed up to 3m/s; plus/minus 45 degrees with respect to the receiver.
Enhancing Inversion: Noise-enhancing temperature inversion - stability categories F to G wind speed up to 2m/s; plus/minus 45 degrees with respect to the receiver.


Y:\Jobs 001 to 530\429\Post 29 June 2016\Reports\42924_EIS_2019\CAD\429BaseMGA55_V1.dwg_4.2 Local Topo_Drainage-22.04.2020-9:58 AM
TN
MN
REFERENCE
Mine Site Boundary
600 Contour (mAHD)(Interval=10m)
Watercourse
Headwater
MET01 Meteorological Station
Hawkins Creek Catchment Boundary
Mine Site Watercourse Catchment Boundary
BSW21 Surface Water Monitoring Location
Western Headwater
Northern Headwater
Eastern Headwater
Walkers Creek Catchment
Price Creek Catchment
Southern Headwater
Blackmans Gully Catchment
BSW 28
BSW 25
BSW 13
BSW 11
BSW 07
MET01
BSW 12
BSW 22
BSW 19
BSW 20
BSW 21
MET02
Lue
Lue Road
Bara-Lue Road
Powells Road
Pyangle Road
Hawkins Creek
Lawsons Creek
Half Acre Creek
Confluence of Hawkins Creek & Lawsons Creek
See Detail Above
Mudgee
Walkers Creek Catchment
Hawkins Creek Catchment
Lawsons Creek
Lue
Lawsons Creek Catchment
SCALE
0.5 0 0.5 1.0 1.5 2.0 km
Base Photo Source: AAM - 28 December 2018 & Google Earth - 6 December 2015
Figure A
SURFACE WATER MONITORING LOCATIONS

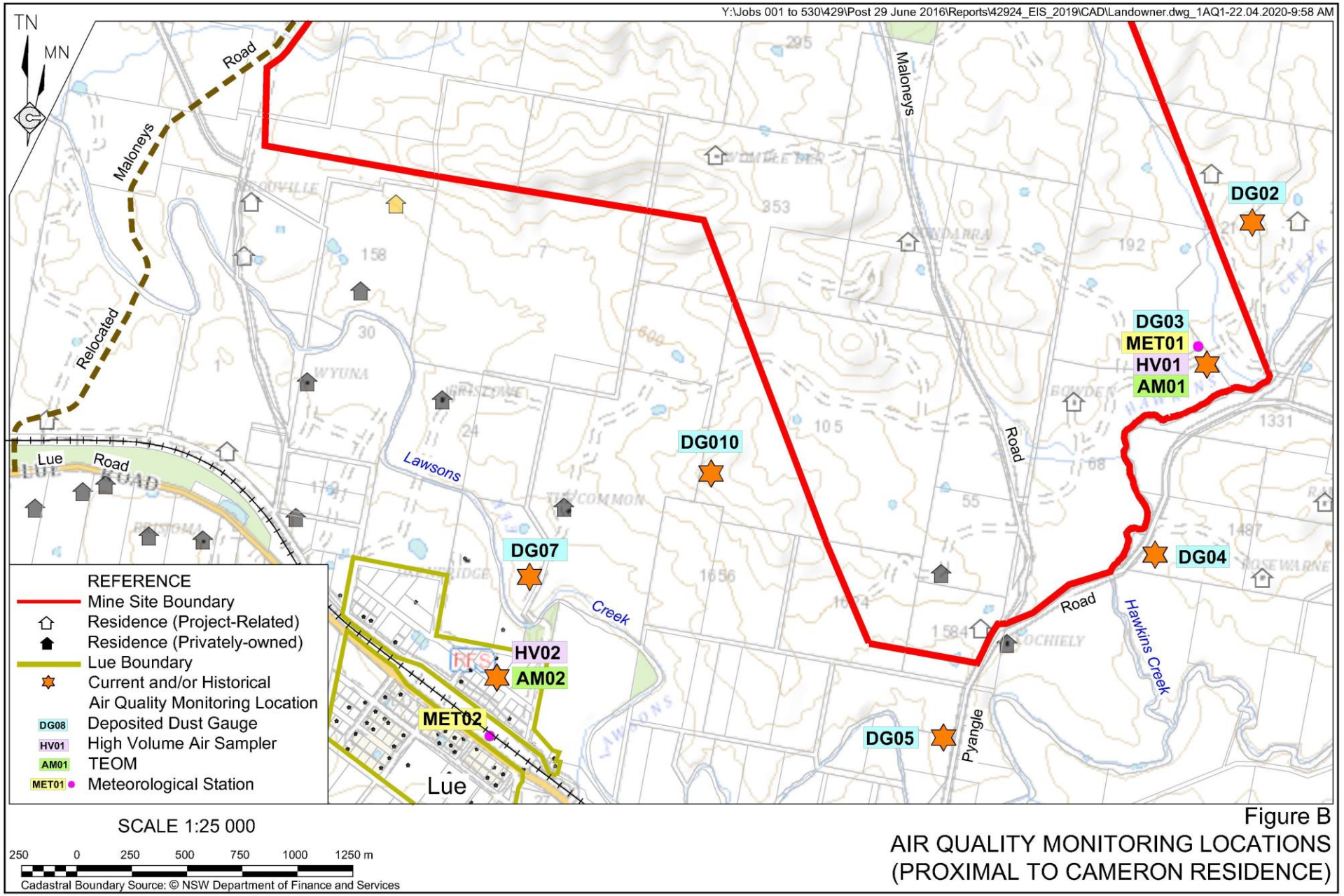


Figure B
AIR QUALITY MONITORING LOCATIONS
(PROXIMAL TO CAMERON RESIDENCE)