Three Mile Hill Waste and Resource Management Facility

Road Safety Assessment

Prepared for Three Mile Hill Pty Ltd

September 2024

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Road Safety Assessment

Three Mile Hill Pty Ltd

E211092 RP#16

September 2024

Version	Date	Prepared by	Reviewed by	Comments
v.01	20/09/2024	Abdullah Uddin	Dr Timothy Nicholas Brooker	
v0.2	23/09/2024	Abdullah Uddin	Dr Timothy Nicholas Brooker	Client's comments are incorporated

Approved by

Dr Timothy Nicholas Brooker
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23/09/2024

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Executive Summary

This report undertakes a Road Safety Assessment (RSA) for the quarry haulage route on Black Hill Road between John Renshaw Drive and the access road to the existing Woodbury Quarry, Black Hill. The current approval of the quarry will end in July 2026. The proponent, Three Mile Hill Pty Limited wishes to repurpose the quarry and operate a Waste and Resource Management Facility at the existing quarry. As part of the proposal, a Traffic Impact Assessment (TIA) was prepared by EMM. As part of the approval process, some local residents have raised their concerns to the Hunter and Central Coast Regional Planning Panel regarding road safety issues along this section of Black Hill Road. This report investigates the residents' road safety concerns.

The key objectives of an RSA are to:

- identify any existing safety deficiencies of design, layout and road furniture which are not consistent with the road's function or use;
- identify potential safety issues for general road users;
- identify potential safety issues that may occur due to the operation of the development; and
- ensure that mitigation measures are identified to improve road user safety.

The RSA has been carried out by Abdullah Uddin, a qualified Traffic Engineer with more than 20 years' experience. Abdullah's CV can be found in Appendix A.

A daytime site inspection was carried out on Wednesday, 11 September 2024. There are a number of horizontal and vertical curves along Black Hill Road which result in limited sight distances at some haulage route intersections. However, appropriate warning signs are provided on the approaches to these intersections. The risk mitigation measures are considered appropriate. There are no existing road safety issues at the existing residential driveways on the surveyed section of Black Hill Road.

Speed surveys were conducted at the key intersections. The recorded traffic speed was generally under the posted speed limit of 80 km/h in Black Hill Road. It is noted that as the key intersections are located at a higher elevation, all vehicles generally arrive at these intersections at low speed. There is no recorded crash history at the key intersections on this section of Black Hill Road over the last five years.

Notwithstanding the above, the RSA has identified a number of existing road safety issues. These issues and potential mitigation measures are detailed in Section 3 of this report. The key findings and mitigation measures are summarised in Table 3.4. In summary, these short term measures should be implemented at a matter of priority.

The quarry currently contributes funding in accordance with Section 7.11 plans adopted by Council towards the road maintenance for Black Hill Road. Council should confirm contributions are being used to maintain pavements, line marking and signage along Black Hill Road. Should the proposed Waste and Resource Management Facility be approved, Council will continue to receive contributions in accordance with Section 7.11 for ongoing maintenance of Council's infrastructure in the area.

It should be noted that there can be no guarantee that the recommended road safety upgrade measures in this report will totally eliminate all future road safety issues along Black Hill Road, or all potential road safety issues which currently exist along Black Hill Road have been identified. Therefore, in the longer term, after approximately a future five year period, a follow up report should be undertaken to monitor the performance of the roads and intersections reviewed under this report.

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1 Introduction

This report undertakes a Road Safety Assessment (RSA) for Black Hill Road between John Renshaw Drive and the existing Woodbury Quarry access. There is no road name for the quarry access. Therefore, for the purpose of this report, this road is named as Quarry Access Road.

The total section of Black Hill Road that has been assessed is approximately 2.2 km long and the following three key intersections have been investigated (Figure 1.1):

- Black Hill Road/Quarry Access Road;
- Black Hill Road/Meredith Road; and
- Black Hill Road/Browns Road.

Furthermore, the other existing vehicular accesses along this section of Black Hill Road have also been assessed. This 2.2 km section of Black Hill Road has been selected for assessment as currently the quarry trucks are not allowed to travel to/from the east at the Quarry Access Road.

Figure 1.1 Analysed section of Black Hill Road

Source: Google Map

1.1 Background

The current approval of the Woodbury Quarry will end in July 2026. The Three Mile Hill Pty Ltd (Three Mile Hill, the Proponent) is seeking development approval to repurpose the existing quarry to operate a waste management facility located at 220 Black Hill Road, Black Hill NSW. The proposed Three Mile Hill Waste Facility

would recover materials for re-use and recycling within a resource recovery area and would infill the quarry void with non-putrescible general solid waste via landfilling.

As part of the approval process, some local residents have raised their concerns to Hunter and Central Coast Regional Planning Panel in relation to road and traffic safety along Black Hill Road. This report has investigated the residents' road safety related concerns.

1.2 Scope of the road safety assessment

The objective of the RSA is summarised below:

- undertake a daytime safety assessment for the relevant 2.2 km section of Black Hill Road (Figure 1.1);
- safety and sight distance assessment at the key intersections;
- undertake a visual inspection for the existing road geometry and pavement conditions;
- observe drivers' behaviour including their compliance with the Australian Road Rules;
- undertake speed surveys at key intersections and verify compliance with the speed limit;
- identify any pavement or road infrastructure damage due to operation of trucks at the current quarry;
- identify any existing safety deficiencies of design, layout and road furniture which are not consistent with the road's function or use;
- identify any potential safety issues due to the development's traffic; and
- identify potential mitigation measures and implementation strategy for consideration.

The crash data analysis at the study area was previously undertaken in the original Traffic Impact Assessment (TIA) prepared for this development, which identified a generally good safety record for Black Hill Road (no recorded crash at the Quarry Access Road intersection over the past five years).

As this is not a formal Road Safety Audit, not all safety issues for Black Hill Road have necessarily been identified during the site inspection and there is no guarantee that the recommended safety mitigation measures will totally eliminate all potential future traffic hazards or safety risks at this section of Black Hill Road. Therefore, whilst EMM has been responsible for identifying the relevant road safety issues in this report for this section of Black Hill Road, this report takes no responsibility for the implementation of these recommendation.

In due course, after approximately a future five year period, a follow up report should be undertaken to monitor the performance of the roads and intersections reviewed under this report.

1.3 Road Safety Assessor

The Road Safety Assessment has been undertaken by Abdullah Uddin, a qualified Traffic Engineer with more than 20 years' experience in Australia (Appendix A).

1.4 Site inspection

The site inspection was undertaken on Wednesday, 11 September 2024 (during a non-school holiday period) between 10 am to 1 pm. The current approval of the quarry has a maximum of 55 truck trips (110 in and out movements) per day. The site inspection was intentionally selected on that day as the quarry was operating at full capacity, so that the road safety assessment was undertaken for the worst case scenario.

The weather condition was sunny during the site inspection.

2 Black Hill Road

The existing condition of Black Hill Road is provided Table 2.1 and Plate 2.1.

Table 2.1 Black Hill Road

Aspect	Description
Road classification and connectivity	Local road between Pacific Motorway (east) and John Renshaw Drive (west)
Alignment	Generally east-west
Number of lanes	One lane each way
Carriageway type	Sealed road with road shoulders at some sections
Carriageway width	Varies approximately between 7 metres (m) to 11 m with 3.3 m travel lane each way (measure from MetroMap)
Posted speed limit	80 kilometres per hour (km/h), reduces to 40 km/h in school zone in front of Black Hill Public School
Heavy vehicle access	General access vehicle which is up to 19 m in length and under 50 tonnes (t)
Traffic function	Carries local traffic, including quarry trucks between the site and John Renshaw Drive
Additional comments	During the site inspection, there was road construction on John Renshaw Drive (east of Black Hill Road) which may have contributed additional vehicle on Black Hill Road during the survey.

Plate 2.1 Black Hill Road (looking west at east approach to the Quarry Access Road)

The current posted speed limit on Black Hill Road is 80 km/h. Normally a design speed is 10 km/h higher than the posted speed limit which is used to calculate the Safe Intersection Sight Distance (SISD).

In accordance with Austroads Guide to Road Design Part 4A (Unsignalised and Signalised Intersections) (Austroads, 2017), all unsignalised T-intersections need to have clear visibility between the through traffic

travelling on the major road and the turning traffic exiting from the minor road, so that the turning traffic can observe gaps to turn safely to merge with the major road traffic. In accordance with Austroads guide, for 90 km/h design speed, 214 m sight distance is required for 2 second driver's reaction time.

3 Road Safety Assessment

3.1 Black Hill Road/Quarry Access Road intersection

3.1.1 Road geometry

The Black Hill Road/Quarry Access Road has a large intersection geometry which facilitates turning truck movements by large trucks, without any difficulty. At this intersection, both the approaches of Black Hill Road are approximately 15 m wide, and the Quarry Access Road is approximately 6.5 m wide (Plate 3.1).

The Quarry Access Road forms a T-intersection with Black Hill Road but there is currently no sign control at this intersection.

Plate 3.1 Black Hill Road/Quarry Access Road intersection

There are underground utility services at southwest corner of this intersection (Plate 3.2). During the intersection upgrade work, these services need to be considered.

Plate 3.2 Utility services at the southwest corner of Black Hill Road/Quarry Access Road

Guideposts are provided on both sides of Black Hill Road to improve visibility of the road during the nighttime.

3.1.2 Pavement condition

During the inspection, the road pavement condition on Black Hill Road at and near this intersection was generally found to be in good condition. However, there are some hairline cracks and small potholes on Quarry Access Road, possibly due to wear and tear for continuous turning trucks at this intersection (Plate 3.3). Although the pavement cracks do not cause any immediate concern, over time, with rain, these cracks will allow water to penetrate the pavement subbase and subgrade layers. Any work to fix structural pavement damage could be expensive. Therefore, Cessnock City Council (CCC) should be requested to inspect the road immediately. Subject to inspection by the Council's pavement engineer, localised patching or resealing may be necessary to fix the current defects.

Plate 3.3 Pavement cracks on Quarry Access Road at Black Hill Road intersection

3.1.3 Speed survey

A radar speed gun was used to determine speed for the approaching vehicles travelling along Black Hill Road at this intersection. Due to the limited number of vehicles arriving at the surveyed intersections, a sample speed count of 10 vehicles was undertaken per intersection which is sufficient to depict the speed profile at these intersections.

The speed survey data is presented in Table 3.1.

Table 3.1 Speed survey data on Black Hill Road at Black Hill Road/Quarry Access Road intersection

Time (am)	Speed (km/h)	Light Vehicle	Heavy Vehicle	Direction
11.07	57	X	-	Westbound
11.10	61	X	-	Westbound
11.12	57	X	-	Westbound
11.14	67	X	-	Westbound
11.28	69	X	-	Eastbound
11.28	62	X	-	Westbound
11.31	62	X	-	Eastbound
11.33	71	X	-	Eastbound
11.36	69	X	-	Westbound
11.39	47	X	-	Westbound

The above table shows that:

- The 85%ile speed is 69 km/h
- The average speed is 62.2 km/h
- The maximum speed is 71 km/h
- There was no heavy vehicle speed recorded during the survey. All the heavy vehicles at this intersection were turning to/from the quarry so were not included in the speed survey.
- As the intersection sits at top of a hill, vehicles from both the eastern and western approaches arrive at a relatively slower speed compared to the posted speed limit of 80 km/hr, which is reflected in the speed survey results.

In summary, there is no traffic speed related safety issue at this intersection currently.

3.1.4 Sight distance assessment

As stated earlier, for 90 km/h intersection design speed, a minimum 214 m sight distance is required from the Quarry Access Road in each direction along Black Hill Road. The sight distance to the left is approximately 250 m which meets the minimum Austroads requirement, however, due to the existing vertical curve, the sight distance to the right is only approximately 50 m which does not meet the Austroads requirement (Plate 3.4).

However, truck drivers have a better light of sight (2.4 m eye height), compared to light vehicle drivers (1.15 m). The recommended sight distance still needs to be achieved for all type of vehicles. Where the sight distance can't be achieved, appropriate risk mitigation measures must be put in place.

Sight distance to the left (approx. 250 m) | Sight distance to the right (approx. 50 m)

Plate 3.4 Sight distance from Black Hill Road

TfNSW's Centre for Road Safety crash statistics do not show any recorded crash at this intersection. During the site inspection a Truck Warning sign was in place approximately, 250 m east of the intersection (Plate 3.5).

Plate 3.5 Truck warning sign on Black Hill Road (looking west)

To mitigate the sight distance issue and improve traffic safety, a vehicle activated warning sign is recommended to be installed with the existing Truck Warning sign (Figure 3.1). The flashing lights will start to operate for certain duration as soon as there is an exiting vehicle on the Quarry Access Road approaching Black Hill Road. As this sign is solely for the purpose of the quarry, the cost of the signage is to be borne by the quarry operator.

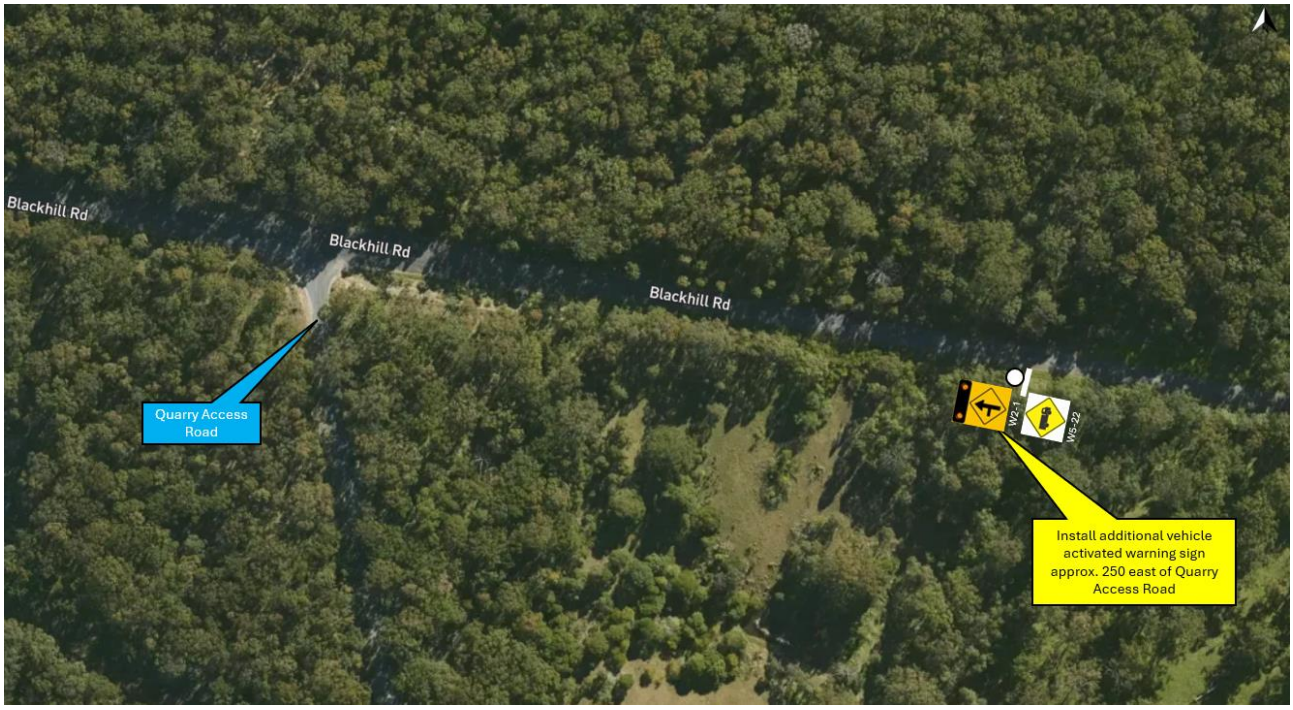


Figure 3.1 Recommended vehicle activated flashing sign

3.1.5 Signage and line marking

There is currently no sign or line marking at this intersection, except the Quarry signage at the front (Plate 3.1). The existing centre line (BB line) on Black Hill Road is faded and is not clearly visible to motorists (Plate 3.6).

Plate 3.6 Existing faded centre line on Black Hill Road

In the short term, to improve the safety and accessibility at this intersection, the following additional sign and line marking treatments are recommended (Figure 3.2).

Any new regulatory sign or line marking work would require Cessnock City Council Local Traffic Committee's approval. A 'Stop' signage is not recommended at this intersection as it does not meet all the criteria as stipulated in Australian Standards AS 1742.2: Manual of uniform traffic control devices Part 2: Traffic control devices for general use (Australian Standard, 2009), Clause 2.5.4.

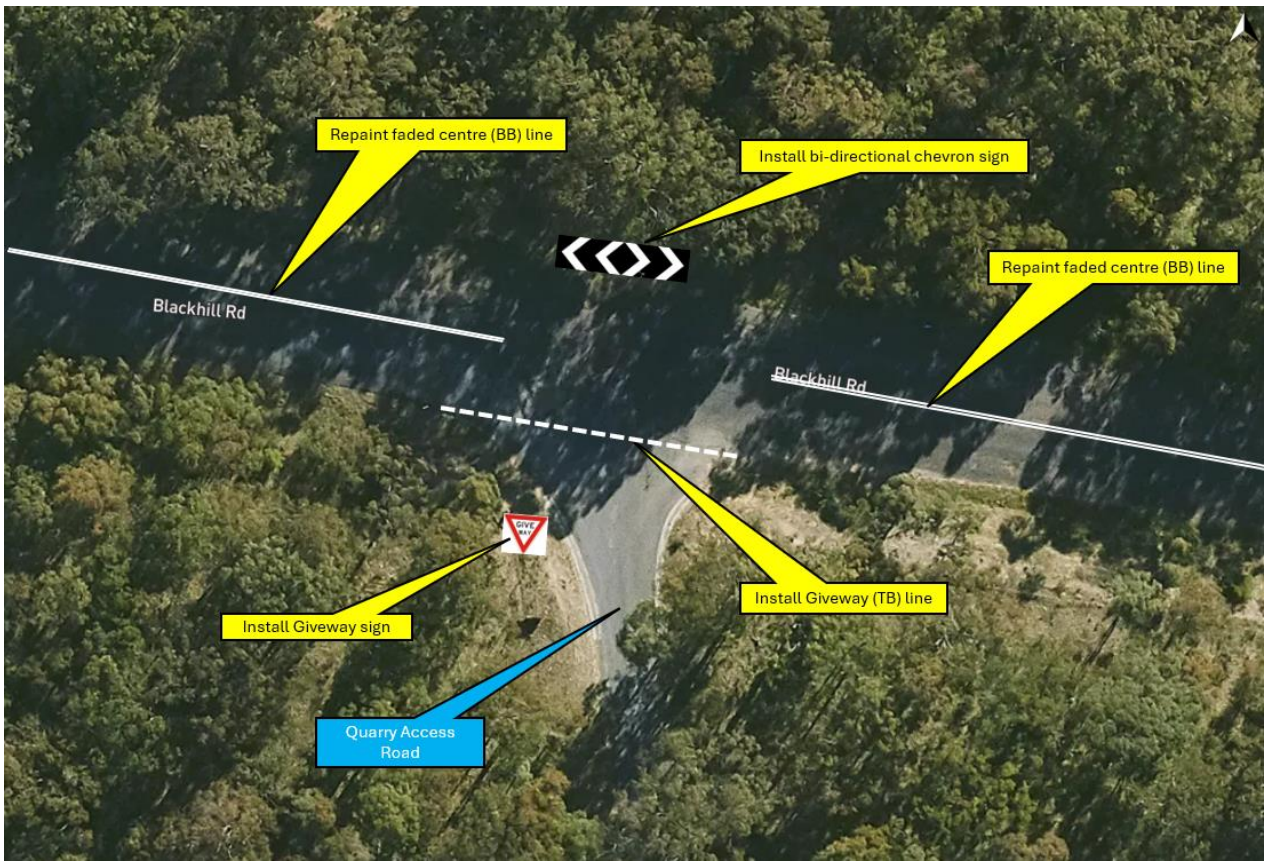


Figure 3.2 Recommended sign and line marking work at Black Hill Road/Quarry Access Road intersection

3.1.6 Intersection upgrade

During the site inspection it was noted that inbound trucks turning at this intersection occupy most of Quarry Access Road (Plate 3.7). This is acceptable currently due to the low daily volumes of trucks accessing this quarry. However, as part of the development proposal, the intersection needs to be widened so that two simultaneous trucks can turn to/from the quarry without encroaching to each other's path.

Plate 3.7 Trucks turning into Quarry Access Road from Black Hill Road

In the longer term, the intersection should be upgraded with Austroads Basic Left and Right Turn treatments as outlined in Table 5.9 of the original Traffic Impact Assessment ([1]TIA) report as part of the proposal including a swept path assessment undertaken for the longest vehicles, 19-m semi-trailer, accessing the proposed waste facility. To accommodate the two simultaneous semi-trailer movements in opposite directions, some widening of the Quarry Access Road will be required. However, as there will be no truck access to/from the east of the quarry along Black Hill Road, the centre line on Quarry Access Road can be disproportionately angled towards the west to minimise any unnecessary road widening.

Upon upgrading this intersection, full resealing (eg two coat seal) of the intersection will be required to seal the existing road surface and to provide a suitable base for fresh line marking at this intersection.

3.1.7 Driver's behaviour

During the site inspection, it was observed that truck drivers turn at this intersection with a lower speed. The speed gun survey recorded average truck speed between 15-25 km/h while turning at this intersection which is considered reasonable. There were no opposing simultaneous truck movements observed travelling to/from the quarry during the site inspection.

However, numerous tire marks were noted at this intersection which represent anti-social behaviour by car drivers (Plate 3.8). Some of the road shoulder guideposts near this intersection was also broken.

An intersection upgrade with fresh line marking may not be sufficient to prevent this type of anti-social behaviour. Therefore, consideration should be given to install a central median island as part of the intersection upgrade for the reasons stated above.

Plate 3.8 Tire marks at Black Hill Road/Quarry Access Road intersection

3.1.8 Other observations

During the site inspection, recreational motorcyclists were observed along Black Hill Road. The site Drivers Code of Conduct should note the likely presence of motorbikes. Also, Stock Crossing signage is noted at the entrance of Black Hill Road from John Renshaw Drive. This also need to be noted in the Drivers Code of Conduct.

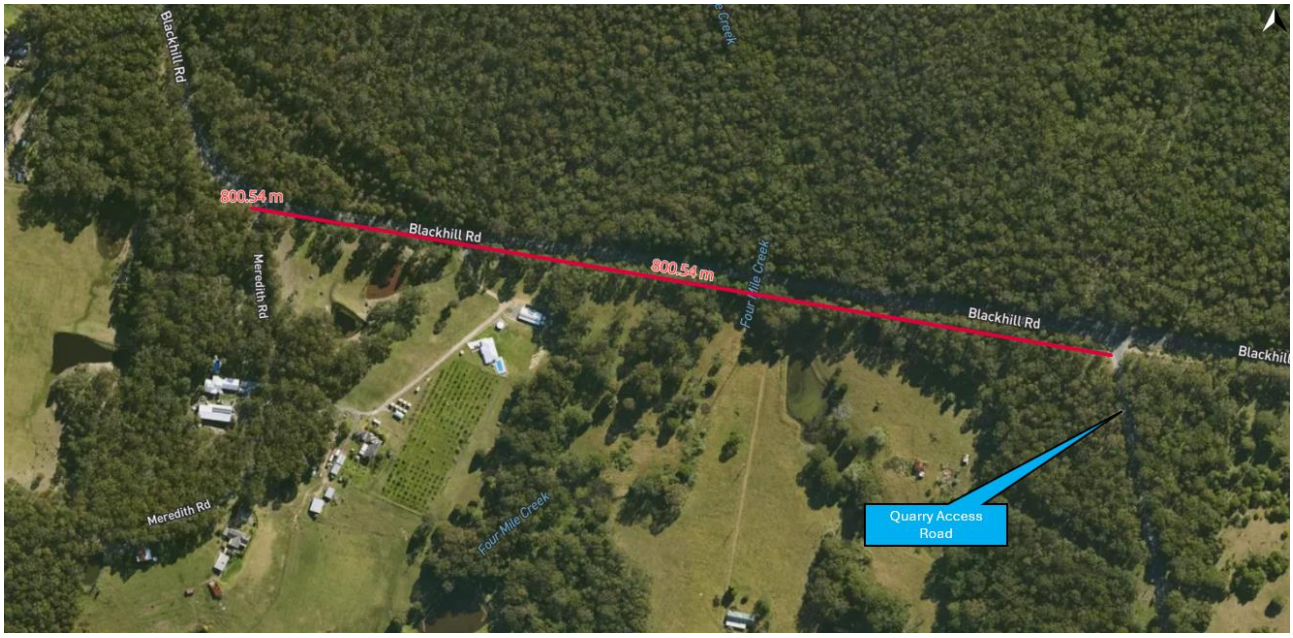
[1] EMM TIA Version 4, dated 26 July 2023

Other trucks not related to the Black Hill quarry were observed to travel further east along Black Hill Road, beyond the Quarry Access Road (Plate 3.9). As Black Hill Road is a designated [2]heavy vehicle route, heavy vehicle should not be using Black Hill Road, east of the Quarry Access Road without a valid local origin or destination. This matter should be brought to the attention of Cessnock City Council and the community.

Plate 3.9 Truck travelling eastbound along Black Hill Road

3.2 Black Hill Road/Meredith Road intersection

The Black Hill Road/Meredith Road intersection is located approximately 800 m west of the Quarry Access Road intersection (Figure 3.3). It is a 'Stop' controlled T-intersection which primarily provides access to rural residential properties (Plate 3.10).



[2] https://maps.transport.nsw.gov.au/egeomaps/restricted-access-vehicles-map/index.html

Figure 3.3 Distance between Meredith Road and Quarry Access Road

Plate 3.10 View of Meredith Road from Black Hill Road

3.2.1 Road geometry

The intersection has a large turning geometry, despite heavy vehicles not being expected to travel along Meredith Road. There is no Basic Right Turn (BAR) treatment at the intersection, however there is sufficient shoulder widening/run off area which works as a de-facto BAR turn treatment (Plate 3.11).

Plate 3.11 Shoulder widening on opposite sides of Meredith Road

3.2.2 Pavement condition

The pavement condition at this intersection is generally good with no visual crack or defect.

3.2.3 Speed survey

The speed count data is presented in Table 3.2.

Table 3.2 Speed survey data at Black Hill Road/Meredith Road intersection

Time (am/pm)	Speed (km/h)	Light Vehicle	Heavy Vehicle	Direction
11.48	44	-	X	Westbound
11.49	58	-	X	Eastbound
11.54	57	-	X	Eastbound
11.55	44	-	X	Westbound
11.55	75	X	-	Eastbound
11.56	58	-	X	Eastbound
11.57	47	X	-	Westbound
12.01	78	X	-	Eastbound
12.01	60	X	-	Westbound
12.03	64		X	Eastbound

The above table shows that:

- The 85%ile speed is 71.15 km/h
- The average speed is 58.5 km/h
- The maximum speed is 78 km/h
- No vehicle was travelling over the posted speed limit of 80 km/h on Black Hill Road.
- As the intersection sits at top of the hill, vehicles from both eastern and western approaches arrive at a relatively slower speed which is reflected in the speed survey.

In summary, there is no speed related safety issue at this intersection.

3.2.4 Sight distance assessment

Due to the presence of the horizontal and vertical curves, the sight distance does not meet the minimum requirement of 214 m to the left or right (Plate 3.12).

Sight distance to the left (approx. 70 m)

Sight distance to the right (approx. 60 m)

Plate 3.12 Sight distance from Black Hill Road

To mitigate traffic safety risks there are existing warning signages on both approaches of the intersection (Plate 3.13). In addition, TfNSW's Centre for Road Safety crash statistics do not show any recorded crash at this intersection over the last five years.

Warning signs on east approach of the intersection

Warning sign on west approach of the intersection

Plate 3.13 Sight distance from Black Hill Road

Based on the crash data, the current intersection geometry and existing warning signs, there are sufficient risk mitigation measures currently in place to mitigate the traffic safety risks for the sight distance deficiency at this intersection and no additional risk mitigation measure is warranted.

3.2.5 Signage and line marking

The existing signs and line marking was found to be adequate at this intersection (Plate 3.14) and no additional signs or line marking is required.

Plate 3.14 Existing signs and line marking at Black Hill Road/Meredith Road intersection

3.2.6 Driver's behaviour

As stated earlier, as the intersection is located at a relatively high grade, vehicles on Black Hill Road generally arrive at this intersection at a lower speed than the posted speed limit has been confirmed in the speed survey.

Based on the site observations and speed data, on additional safety measure is required at this intersection.

3.3 Black Hill Road/Browns Road intersection

The Black Hill Road/Browns Road intersection is located approximately 1.35 km west of the Quarry Access Road intersection (Figure 3.4). It is a 'Give Way' access controlled 'No Through' which primarily provides access to the residential properties (Plate 3.15).

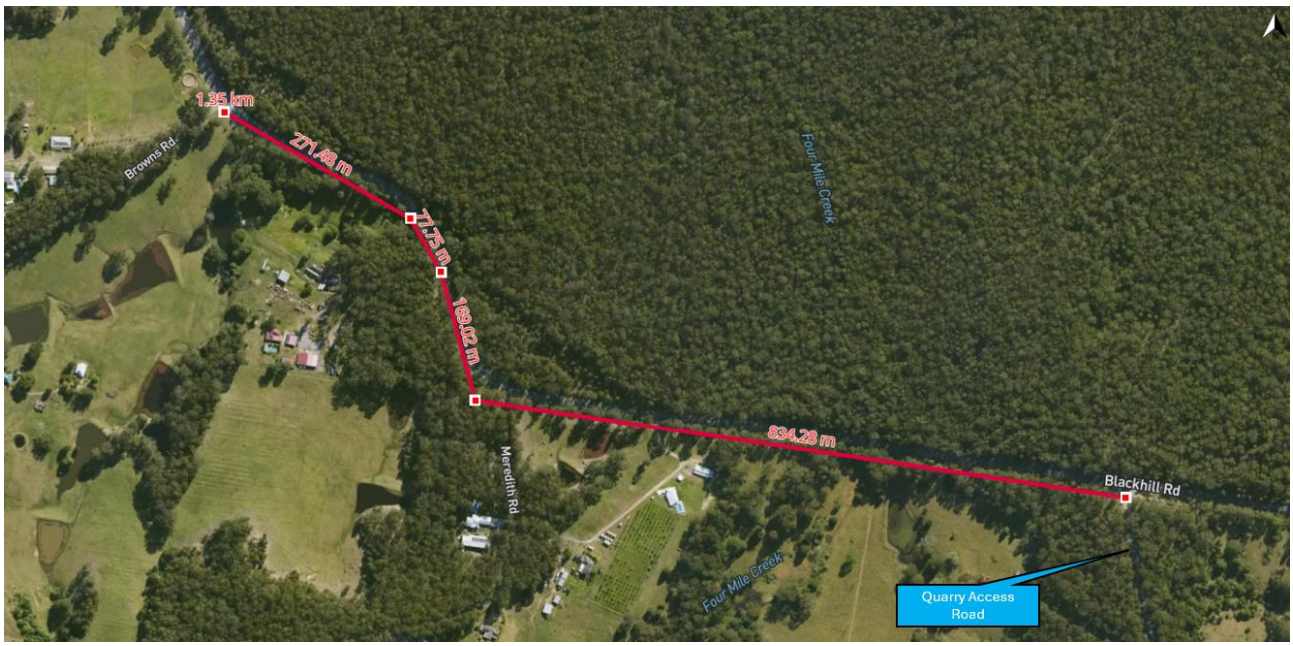


Figure 3.4 Distance between Browns Road and Quarry Access Road

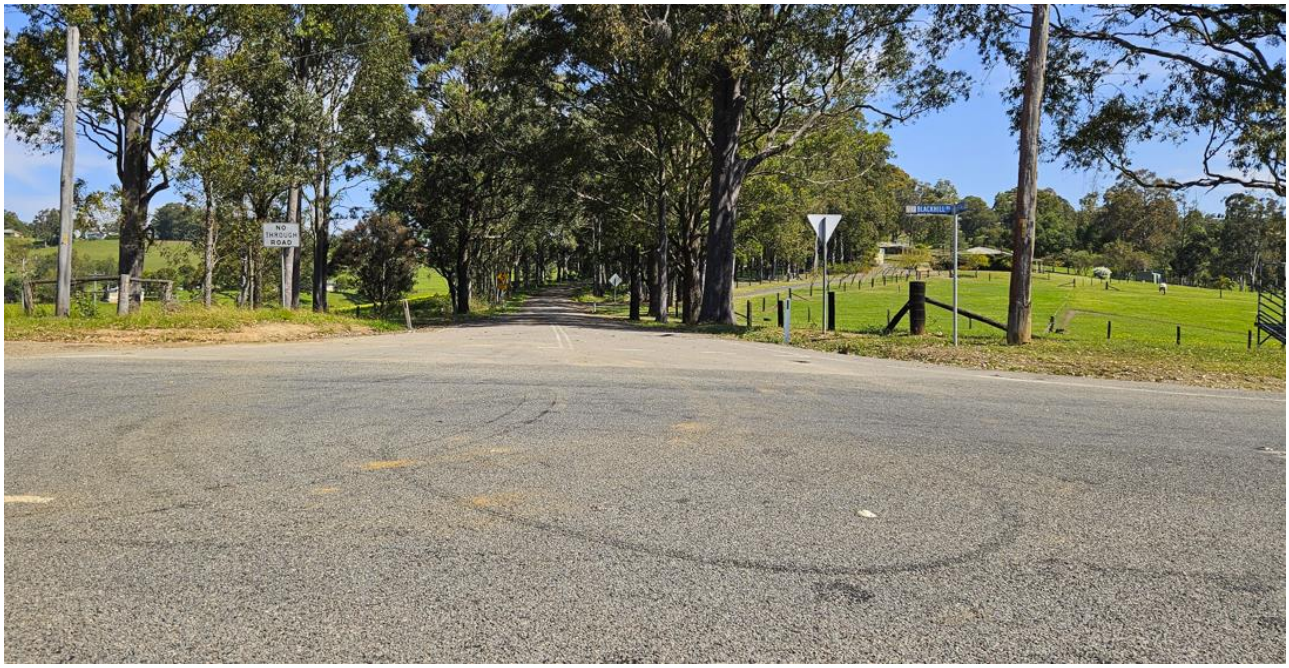


Plate 3.15 View of Browns Road from Black Hill Road

3.3.1 Road geometry

The intersection turning geometry is moderate, suitable for light vehicle access. Heavy vehicles will not generally require access to travel along Browns Road. There is sufficient shoulder widening along Black Hill Road, which is suitable for turning vehicles. There is no Basic Right Turn (BAR) treatment, however, there is sufficient shoulder widening provided opposite side of Browns Road (Plate 3.11), for through traffic to pass a stationary right turning vehicle.

Plate 3.16 Shoulder widening on opposite side of Browns Road

3.3.2 Pavement condition

The pavement condition at this intersection is generally good, except some minor hair cracks on Browns Road. However, no immediate action is required.

3.3.3 Speed survey

The speed count data is presented in Table 3.3.

Table 3.3 Speed survey data at Black Hill Road/Browns Road intersection

Time (pm)	Speed (km/h)	Light Vehicle	Heavy Vehicle	Direction
12.12	44	-	X	Westbound
12.14	48	-	X	Eastbound
12.15	49	X	-	Westbound
12.16	62	-	X	Westbound
12.22	49	-	X	Westbound
12.22	56	X		Westbound
12.31	59	X	-	Westbound
12.32	79	-	X	Eastbound
12.38	68	-	X	Eastbound
12.43	88	-	X	Eastbound

The above table shows that:

- The 85%ile speed is 75.15 km/h
- The average speed is 60.2 km/h

- The maximum speed is 88 km/h
- One vehicle was travelling over the posted speed limit of 80 km/h on Black Hill Road.
- As the intersection sits at high elevation, vehicles, especially from the east, arrive at a relatively slow speed which is reflected in the speed survey.

In summary, there is no speed related traffic safety issue at this intersection.

3.3.4 Sight distance assessment

The sight distance to the left meets the minimum requirement of 214 m, however, the sight distance to the right does not meet the requirement due to the presence of the horizontal and vertical curves (Plate 3.17).

To mitigate the traffic safety risks, there is an existing warning signage on east approach of the intersection. In addition, TfNSW's Centre for Road Safety crash statistics do not show any recorded crash at this intersection over the last five years.

Based on the crash data, intersection geometry and existing warning signs, there are sufficient risk mitigation measure in place for the sight distance deficiency at this intersection and no additional traffic safety risk mitigation measure is warranted.

Sight distance to the left (approx. 300+ m)	Sight distance to the right (approx. 80 m)

Plate 3.17 Sight distance from Browns Road to Black Hill Road

3.3.5 Signage and line marking

The existing signs and line marking are found to be adequate at this intersection (Plate 3.14) and no additional signs or line marking is required.

Plate 3.18 Existing signs and line marking at Black Hill Road/Browns Road intersection

3.3.6 Driver's behaviour

As stated earlier, as the intersection is located at a relatively higher grade, vehicles on Black Hill Road generally arrived at this intersection at a lower speed which has been reflected in the speed survey. Only one southbound truck is recorded 88 km/h which is 10% over the posted speed limit but on average, the vehicular speed was generally under the posted speed limit.

Based on the site observation and speed data, no additional safety measure is required at this intersection.

3.4 Assessment of the residential driveways along Black Hill Road

During the site inspection, other properties which also have direct vehicular access on Black Hill Road, between the Quarry Access Road and John Renshaw Drive were also inspected. All the inspected driveways were in a good condition with adequate sight distance to the left and right. There is no apparent traffic safety issue. Photographs of three of the driveways are shown below in Plate 3.19 to Plate 3.21.

Sight distance to the left

Sight distance to the right

Plate 3.19 160 Black Hill Road

Sight distance to the left

Sight distance to the right

Plate 3.20 45 and 46 Black Hill Road

Sight distance to the left

Sight distance to the right

Plate 3.21 12 Black Hill Road

3.5 Lighting along Black Hill Road

As the quarry and the proposed waste management facility are not proposed operate at night-time, a night-time lighting assessment is not required.

3.6 Key findings and mitigation measures

The key findings and potential mitigation measures from the Road Safety Assessment are summarised in Table 3.4.

In regard to the timing of their implementation, the following indicative timeframes should be followed for each recommendation:

- short term: 0 to 6 months;
- mid-term: 6 months to 1 year; and
- long term: before operation of the proposed waste management facility eg 2 to 3 years.

Table 3.4 Key road safety findings and mitigation measures

Item no.	Issue	Location	Suggested mitigation measure	Responsibilities	Indicative timeframe
1	Limited sight distance to the right	Black Hill Road/Quarry Access Road intersection	Install vehicle activated flashing lights on Black Hill Road at 250 m east of the Quarry Access Road (Figure 3.1).	Quarry Operator	Short term
2	Existing potholes and cracks on the pavement	Black Hill Road/Quarry Access Road intersection	Repair existing potholes and cracks at the intersection (Plate 3.3)	Cessnock City Council	Short term
3	Safety and accessibility improvement	Black Hill Road/Quarry Access Road intersection	Install necessary signs and line marking at this intersection (Figure 3.2).	Cessnock City Council	Mid-term
4	Safety and accessibility improvement	Black Hill Road/Quarry Access Road intersection	Intersection upgrade as outlined in Section 3.1.6.	Cessnock City Council	Long term
5	Anti-social behaviour	Black Hill Road/Quarry Access Road intersection	Notify NSW Police for appropriate action as outlined in Section 3.1.8.	Quarry Operator and Cessnock City Council	Short term
6	Presence of recreational motorbikes and Stock Crossing along Black Hill Road	Black Hill Road between John Renshaw Drive and Quarry Access Road	Update Drivers Code of Conduct	Quarry Operator	Long term

4 Conclusions

This report undertakes a Road Safety Assessment in Black Hill Road between John Renshaw Drive and Woodbury Quarry Access Road, Black Hill. The residents' road safety concerns along this section of the road have been investigated. The key findings of this assessment are summarised below:

- the speed surveys conducted at three key intersections do not indicate any speeding related issues along Black Hill Road;
- due to the presence of horizontal and vertical curves, there are sight distance issues at some intersections. However, there are adequate intersection warning signs as a risk mitigation measure which are considered to be appropriate for these intersections;
- there are no existing traffic safety issues at the existing residential driveways at the surveyed section of Black Hill Road;
- to improve traffic safety at Black Hill Road/Quarry Access Road intersection, vehicle activated flashing lights are recommended approximately 250 m east of the Quarry Access Road;
- there are existing pavement defects at the Black Hill Road/Quarry Access Road intersection which need to be fixed immediately before further damage is caused by water ingress and the turning trucks to/from the quarry;
- in the mid-term, a signage and line marking upgrade at Black Hill Road/Quarry Access Road should be implemented by Cessnock City Council;
- in the longer term, the Black Hill Road/Quarry Access Road intersection should be upgraded by the proponent and Cessnock City Council before opening of the proposed waste management facility; and
- other key findings and mitigation measures are outlined in Table 3.4 of this report.

Appendix A

Road Safety Assessor's CV

EMM
creating opportunities

Abdullah Uddin

Associate Traffic Engineer | National Technical Leader – Transport
EMM Consulting Pty Limited

Professional Overview

Abdullah has worked as a traffic engineer for over 20 years and has significant knowledge and experience in managing traffic engineering and planning projects. He has in depth knowledge of relevant traffic engineering codes and guidelines including development and planning.

Abdullah has managed multidisciplinary transport and civil engineering teams. He has considerable experience in traffic impact assessments, car park design, strategic transport planning and road safety reviews with a view to sustainability.

Abdullah has a strong understanding on the traffic engineering software including SIDRA, Auto CAD and GIS.

Qualifications and licences

Bachelor of Civil Engineering, Khulna University of Engineering and Technology, Bangladesh, 1998

Post Graduate Diploma in Information Technology, University of Southern Queensland, 2001

Master of Engineering Studies, University of Technology Sydney, 2011

Chartered Professional Member of Engineers Australia (CPEng)

National Engineering Register (NER)

Registered Professional Engineer of Queensland (RPEQ)

TfNSW Traffic Management Plan Designer (PWZ) certificate

Specialisation

Planning approvals

Traffic impact assessments

Strategic transport planning and road safety reviews

Representative experience

Mining, quarry and renewable energy projects

- Cobar, Queen Bee, Lake Cowal, Balranald, Euston mines, NSW (2021-2023)
- Dubbo, Luddenham, Dunmore Lakes, Wyndham, Seaham, Peppertree, Gunlake, Sandy Point, Menangle quarry, NSW (2021-Current)
- Sundown, Sandy Creek, Birriwa Solar farms, Boorolong, Guyra wind farms, Oven Mountain, Muswellbrook Pumped Hydro, NSW (2021-2023)
- Penrith, Girraween, Kurri Kurri, Cardiff, Muswellbrook recycling facilities, NSW (2021-2023)

Transport planning projects

- Victoria Park, Zetland Masterplan, Sydney NSW (TSA Project Management)
- Mascot Transport Management and Accessibility Plan (TMAP), NSW (DPIE, 2017-2021)
- Harold Park Paceway, Glebe Land Use and transport accessibility study, Sydney NSW (City of Sydney, 2022-2023)
- St Leonards and Lane Cove microsimulation modelling projects, Sydney NSW (Lane Cove Council)
- Sutherland transport interchange development, NSW (RailCorp)
- Sydney light rail feasibility analysis, NSW (TfNSW)

Traffic engineering projects

- Peakhurst, Penhurst & Punchbowl, James Sheahan school developments, Sydney NSW (SINSW)
- Campbelltown, Bankstown, Mudgee, Wagga Wagga, Nepean, Katoomba, Liverpool, Griffith, Tumut hospital developments NSW (Health Infrastructure NSW, CPB Contractors, CBRE)
- World Square car park and loading dock development, Sydney NSW (JLL)
- Schofields commuter car park development, Schofields NSW (TfNSW)
- B-Double route assessment, Matraville NSW (Randwick Council)

Parking study projects

- Georges River Council parking strategies, NSW (Georges River Council)
- Marrickville resident and business parking strategy, Sydney NSW (Inner West Council)
- Ku-ring-gai town centre parking strategy, Sydney NSW (Ku-ring-gai Council)

Active transport projects

- Moore Park Road Cycleway REF, Sydney NSW (City of Sydney)
- Bike plans, Sydney NSW (Lane Cove and City of Canada Bay Councils)
- Pedestrian And Mobility Plans (PAMP), Sydney NSW (Lane Cove & Willoughby City Councils)
- Powells Creek bicycle option development, Sydney NSW (Strathfield Council)

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