

Our Ref: 23117

8 May 2023

Whitehaven Coal Limited
231 Conadilly Street
GUNNEDAH NSW 2380

Attention: Tony Dwyer, Group Manager – Approvals and Biodiversity

Dear Tony,

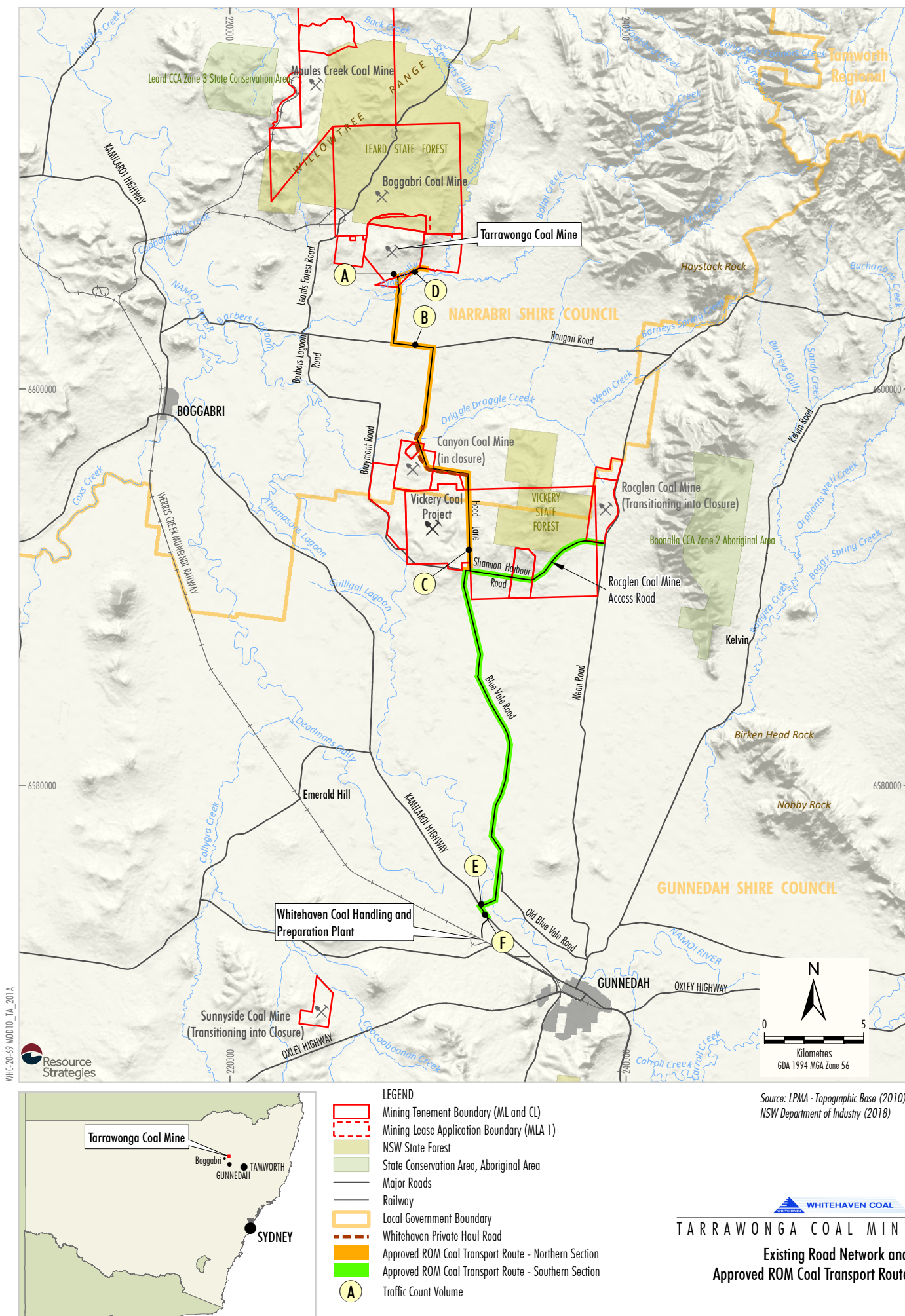
**RE: TARRAWONGA COAL MINE – HAULAGE HOURS MODIFICATION
ROAD TRANSPORT ASSESSMENT**

As requested, please find herein The Transport Planning Partnership (TPPP)'s assessment of the road transport implications of the proposed modification to Project Approval (PA) 11_0047 for the Tarrawonga Coal Mine (TCM).

1. Approved TCM Transport Operations

The TCM is an open cut coal mine located approximately 42 kilometres (km) north-northwest of Gunnedah in New South Wales (NSW) (Figure 1.1). The TCM is owned and operated by Tarrawonga Coal Pty Limited, a wholly owned subsidiary of Whitehaven Coal Limited (Whitehaven).

Mining operations at TCM are conducted in accordance with PA 11_0047, which was granted by the NSW Planning Assessment Commission under delegation from the NSW Minister for Planning & Infrastructure pursuant to section 75J of the NSW *Environmental Planning and Assessment Act 1979*. Run-of-Mine (ROM) coal is crushed and screened on-site, and the sized ROM coal is loaded onto trucks for transport via the Approved ROM Coal Transport Route to the Whitehaven Coal Handling and Preparation Plant (CHPP) at Gunnedah. Trucks also transport coal rejects from the Whitehaven CHPP to the TCM along the Approved ROM Coal Transport Route.



The Approved ROM Coal Transport Route (Figure 1.1) includes a combination of public and private roads and provides the shortest and least trafficked route from the TCM to the Whitehaven CHPP. The Approved ROM Coal Transport Route does not traverse either residential areas or permanent school zones, and consists of:

- Whitehaven Private Haul Road north-south between the TCM and Rangari Road;
- Rangari Road (between the two sections of private haul road);
- Whitehaven Private Haul Road south of Rangari Road, which crosses Hoad Lane and passes through the former Canyon Coal Mine and east-west to Hoad Lane;
- Hoad Lane between the Whitehaven Private Haul Road and Blue Vale Road;
- Shannon Harbour Road between the Rocglen Coal Mine (RCM) Access and Hoad Lane;
- Blue Vale Road between Hoad Lane and Kamilaroi Highway (noting that realignment of Blue Vale Road would occur with commencement of the Vickery Extension Project);
- Kamilaroi Highway between Blue Vale Road and Whitehaven CHPP access road; and
- the Whitehaven CHPP access road.

In accordance with the requirements of PA 11_0047, Whitehaven has entered into road maintenance agreements with the Narrabri Shire Council and Gunnedah Shire Council (GSC) in relation to the Approved ROM Coal Transport Route.

Schedule 2 Conditions 7 and 10A of PA 11_0047 permit a maximum of 3.5 million tonnes (Mt) of ROM coal to be transported from the TCM in any calendar year, and a maximum of 700,000 tonnes (t) of coal rejects to be transported from the Whitehaven CHPP to the TCM in any calendar year, respectively. The transportation of all ROM coal and rejects is limited to the Approved ROM Coal Transport Route to Kamilaroi Highway. Coal rejects are transported in the same fleet of trucks as ROM coal is transported, backloading the ROM coal transport trucks for their return trip from the Whitehaven CHPP to the TCM, and so do not generate any additional vehicle trips.

Schedule 2 Condition 9 of PA 11_0047 includes the following limits on the hours during which road haulage of coal from TCM and receipt of rejects from the Whitehaven CHPP occurs:

9. The Proponent shall only transport coal from the site or receive coal reject from the Whitehaven CHPP by truck between the hours of:

- (a) 6 am to 9.15 pm Monday to Friday;*
- (b) 7 am to 5.15 pm Saturday; and*
- (c) at no time on Sundays or public holidays.*

ROM coal from the TCM would be hauled to the Vickery Extension Project CHPP once it has been commissioned under Development Consent SSD 7480.

2. Existing ROM Coal Transport Activity and Management

ROM coal haulage is currently undertaken using a fleet of 26 A-doubles with a payload of approximately 62 t, and two B-doubles each with a capacity of approximately 42 t. Whitehaven's Traffic Management Plan (TMP) for the TCM¹ contains requirements and procedures regarding the operation of haulage trucks and their interaction with other road users. Additional safety management systems have also been implemented including:

- GPS tracking and engine management system to allow:
 - supervisors, driver trainer and managers to observe the drivers' behaviour;
 - monitoring of safety factors such as driver fatigue, incidents and accidents;
 - monitoring of the location of haulage trucks; and
 - implantation of alerts for speeding or harsh braking.
- Haul truck cameras (out-of-vehicle and in-vehicle) to:
 - improve driver training by allowing review and feedback on driver performance; and
 - assist in identifying the cause of incidents and accidents.
- Driver alertness glasses, which detect eye movements associated with fatigue, to support operators with real time information about levels of alertness.

3. The Modification

In recent times, the tonnage of ROM coal transported from the TCM to the Whitehaven CHPP has been below the approved limit of 3.5 million tonnes per annum (Mtpa). This is primarily due to low availability of road haulage truck drivers during the approved transport hours, and the impacts of flooding events. TTPP understands that the haulage contractor has faced rostering challenges due to limited flexibility provided by the current road haulage hours, which has resulted in driver availability issues.

Whitehaven is proposing a modification to PA 11_0047 to extend the hours during which road haulage of ROM coal and rejects may occur on the Approved ROM Coal Transport Route. The increased haulage hours would result in an increase in driver availability, and would allow for transport of the approved 3.5 Mtpa ROM coal from the TCM to Whitehaven CHPP².

¹ Whitehaven Coal Limited (2020), *Traffic Management Plan*.

² Up to 3.5 Mtpa of ROM coal cumulative from the Vickery Extension Project, TCM and RCM can be transported along the Approved ROM Coal Transport Route prior to commissioning of an overpass over the Kamilaroi Highway near the Gunnedah CHPP.

The Modification proposes the following hours for the dispatch of ROM coal from the TCM via the Approved ROM Coal Transport Route:

- (a) 4:00 am to 11:15 pm Monday to Friday (from the approved 6:00 am to 9:15 pm);
- (b) 5:00 am to 7:15 pm Saturday (from the approved 7:00 am to 5:15 pm); and
- (c) at no time on Sundays or public holidays (as approved, no change).

Trucks returning from the Whitehaven CHPP to the TCM would continue to be backloaded with up to 700,000 tonnes per annum of coal rejects. In addition, trucks returning from Whitehaven CHPP would transport coal rejects to the Vickery Extension Project in accordance with SSD 7480.

The Modification would not change the mine tenements, open-cut mining methods, coal extraction rate, coal reserves or mine life approved under PA 11_0047. Additionally, the Modification would not change any activities at the CHPP approved under Development Consent (DA) 0079-2002.

4. Approved ROM Coal Transport Trips

The most recent assessment of the road transport environment associated with the TCM³ presents forecasts of the vehicle trips⁴ expected to be generated by the transport of the approved 3.5 Mtpa of ROM coal during the approved haulage hours via the Approved ROM Coal Transport Route. Up until that time, haulage had been conducted using a fleet of trucks with a payload capacity of 42 t. The average daily and hourly truck trips generated on a weekday within the approved transport hours (to transport 3.5 Mtpa of ROM coal over 48 weeks per year) were assessed as:

- 612 trips per weekday; and
- 40 trips per hour between 6:00 am and 9:15 pm on weekdays and between 7:00 am and 5:15 pm on Saturdays.

³ TPPP (2019), *Tarrawonga Coal Mine Life of Mine Modification Road Transport Assessment*.

⁴ A trip is a one way movement. A truck travelling from the TCM to the CHPP and returning to the TCM generates two trips.

As weekdays have higher traffic volumes than Saturdays, TTPP (2019) did not separately consider Saturday haulage trip generation, which would be expected to generate an average of 412 trips per Saturday within the approved transport hours assuming use of the 42 t capacity trucks as above. The average weekday daily and peak hourly volume forecasts for 2030 are presented in Table 1 and Table 2, respectively. The forecasts conservatively include the effects of other influences on the traffic conditions, including construction and operation of the approved Vickery Extension Project, continued operation of the RCM, Boggabri Coal Mine and Maules Creek Coal Mine, and non-specific background growth in traffic.

Table 1: Forecast Average Weekday Total Daily Traffic 2030 (vehicles per day)

Site ^A	Location	Light Vehicles	Heavy Vehicles	ROM Coal Haulage	Total Vehicles
A	TCM Access	265	62	-	327
B	Rangari Road	749	122	612	1,483
C	Hoad Lane	624	124	612	1,360
D	Goonbri Road	60	8	612	680

^A Refer to Figure 1.1
Source: TTPP (2019)

Table 2 presents the forecast peak hourly trips at each location on the transport route, based on the surveyed variation in volumes, with the peak volumes not necessarily coinciding at all locations along the route.

Table 2: Forecast Average Weekday Peak Hour Traffic 2030 (vehicles per hour)

Site ^A	Location	Hour Start	Light Vehicles	Heavy Vehicles	ROM Coal Haulage	Total Vehicles
A	TCM Access	6:00 am	41	5	-	46
		4:00 pm	42	5	-	47
B	Rangari Road between Private Haul Roads	6:00 am	100	9	35	144
		5:00 pm	120	13	44	177
C	Hoad Lane North of Shannon Harbour Road	6:00 am	93	10	34	137
		5:00 pm	95	12	41	148
D	Goonbri Road east of TCM	6:00 am	7	1	34	42
		4:00 pm	10	1	45	56

^A Refer to Figure 1.1
Source: TTPP (2019)

TTPP (2019) found that with haulage of 3.5 Mtpa using trucks with a capacity of 42 t over the approved haulage hours, drivers would continue to experience good levels of service on the Approved ROM Coal Transport Route, and there were no capacity concerns regarding the intersections along the route.

A new fleet of prime movers comprising A-double side-tippers with higher payload capacity was being introduced at the time that the TTPP (2019) assessment was undertaken, which would result in fewer trips being required to transport the same tonnage of ROM coal. The assessment of Modification 7 to PA 11_0047 (the Life of Mine Modification) was however undertaken on the basis of ongoing use of the lower capacity trucks, and the higher number of trips generated on the Approved ROM Coal Transport Route (TTPP, 2019).

5. Approved Road Transport Route Conditions

The Approved ROM Coal Transport Route (defined in Section 1) consists of sealed roads with a single travel lane in each direction and auxiliary lanes at some intersections, notably on Kamilaroi Highway at both the CHPP and Blue Vale Road intersections, on Hoad Lane at Shannon Harbour Road and on Rangari Road at its two intersections with the Whitehaven Private Haul Road. Widened sealed shoulders are provided at school bus stop locations along the route.

The roads on the Approved ROM Coal Transport Route are linemarked with centre and edgelines. Guide posts with reflective delineators are provided on each side of the road, sight boards are located facing the stem of T-intersections along the route, and 'GIVE WAY' or 'STOP' signs are provided on the minor road approaches. The posted speed limit on the public roads is 100 kilometres per hour.

The current road maintenance agreement with GSC includes a protocol (prepared in consultation with GSC) to clean and maintain the designated haulage route, including visibility of signage, guideposts, lane delineation and pavement.

6. Historic Surveyed Traffic Volumes on the Approved Road Transport Route

The most recent surveys on the Approved ROM Coal Transport Route were conducted on the Northern section of the route during October 2018, as part of the assessment of the now-approved Life of Mine Modification (TTPP, 2019). Whitehaven's records indicated that over the surveyed week in October 2018, there was an average of 426 trucks trips generated per day by the transport of ROM coal from TCM. Over the approved haulage hours, this is equivalent to an average of 28 trips per hour.

The busiest part of the Approved ROM Coal Transport Route is Kamilaroi Highway between Blue Vale Road and the CHPP access. A survey was conducted in August 2016⁵ on the southern parts of the Approved ROM Coal Transport Route, including Kamilaroi Highway and Blue Vale Road. During that month, 200,057 t of ROM coal was transported from the TCM, which would have generated an average of 336 truck trips per weekday and 22 trips per hour. During that month, 92,499 t of ROM coal was transported from the RCM, which would have generated an average of 155 truck trips per weekday and 10 trips per hour.

⁵ GTA Consultants (2016), *Tarrawonga and Rocglen Coal Mines Temporary Road Haulage Increase Modification Road Transport Assessment*. The data reported herein were collected outside the week of AgQuip.

The surveys were conducted prior to the introduction of the new fleet of higher capacity trucks. Outside of the approved ROM coal and rejects transportation hours (6:00 am to 9:15 pm on weekdays), weekday traffic volumes recorded on the Approved ROM Coal Transport Route are low, as presented in Table 3, which also presents the highest volumes recorded at any time (i.e. during the approved haulage hours) over the average weekday.

Table 3: Historic Surveyed Average Weekday Traffic Volumes (vehicles per hour)

Site ^A	Survey Location	Hour Starting									
		21:00	22:00	23:00	0:00	1:00	2:00	3:00	4:00	5:00	Peak ^B
October 2018 – Haulage Average TCM 28 trips per hour ^C											
A	TCM Access Road	4	1	2	2	0	9	10	7	32	81
B	Rangari Road between Private Haul Roads	7	3	2	3	1	7	7	11	73	113
C	Hoad Lane North of Shannon Harbour Road	8	1	1	3	1	5	7	7	47	83
August 2016 – Haulage Average TCM 22 trips per hour and RCM 10 trips per hour ^C											
E	Blue Vale Road West of Namoi River bridge	73	18	3	1	0	1	5	12	63	148
F	Kamilaroi Highway between Blue Vale Road and CHPP	90	42	16	17	12	7	15	67	157	333

Haulage trucks do not depart the TCM after 9:15 pm or before 6:00 am on weekdays

^A Refer to Figure 1.1

^B Occurs during the approved haulage hours

^C During the approved haulage hours only.

Similarly, outside of the approved ROM coal and rejects transportation hours on Saturdays (7:00 am to 5:15 pm), traffic volumes recorded on the Approved ROM Coal Transport Route are low, as presented in Table 4, which also presents the highest volumes recorded at any time (i.e. during the approved haulage hours) over the surveyed Saturdays.

Table 4: Historic Surveyed Saturday Traffic Volumes (vehicles per hour)

Site ^A	Survey Location	Hour Starting								
		17:00	18:00	19:00	20:00	Avg ^B	4:00	5:00	6:00	Peak ^C
October 2018 – Haulage Average TCM 28 trips per hour ^D										
A	TCM Access Road	22	7	0	0	4	7	20	34	47
B	Rangari Road between Private Haul Roads	47	22	7	0	3	8	39	48	48
C	Hoad Lane North of Shannon Harbour Road	28	14	3	0	3	5	17	41	41
August 2016 – Haulage Average TCM 22 trips per hour and RCM 10 trips per hour ^D										
E	Blue Vale Road West of Namoi River bridge	96	26	2	6	2	11	27	29	115
F	Kamilaroi Highway between Blue Vale Road and CHPP	212	160	76	37	21	39	57	101	248

Haulage trucks do not depart the TCM after 5:15 pm or before 7:00 am on Saturdays

^A Refer to Figure 1.1

^B Hourly average over period 21:00 to 4:00

^C Occurs during the approved haulage hours

^D During the approved haulage hours only.

The results in Table 4 demonstrate that over all the hours outside of the approved haulage hours on Saturdays, the volume of traffic on the Approved ROM Coal Transport Route is well below the peak volumes recorded over the entire Saturday. The peak Saturday volumes (Table 4) are well below the peak average weekday volumes (Table 3), confirming that the average weekday peak hour conditions are more critical with regard to road capacity than the Saturday peak hour conditions.

7. Road Safety History

Road crash data for the Approved ROM Coal Transport Route between the TCM and Whitehaven CHPP was obtained from the Transport for NSW Centre for Road Safety⁶ for the period of 1 January 2017 to 31 December 2021. Data collected over this period include crashes which conform to the national guidelines for reporting and classifying road vehicles crashes based on the following criteria:

- The crash was reported to the police.
- The crash occurred on a road open to the public.
- The crash involved at least one moving vehicle.
- The crash involved at least one person being killed or injured or at least one motor vehicle being towed away.

⁶ <https://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/index.html>

Over the five-year period, four crashes were reported on the Approved ROM Coal Transport Route, summarised below:

- May 2019, a southbound light truck on Hoad Lane 2 km north of Braymont Road left the carriageway to the left on a straight road and rolled over. It occurred in daylight, during rain and on a wet road surface.
- September 2019, a northbound light truck utility on Blue Vale Road 5 km north of Old Blue Vale Road left the carriageway to the left on a straight road and rolled over. It occurred in darkness (between 2 am and 4 am), fine weather and on a dry road surface.
- August 2020, a northbound light truck utility turning right from Kamilaroi Highway to Blue Vale Road struck a southbound car travelling straight, which struck a traffic island. A westbound articulated vehicle waiting in Blue Vale Road to turn right to Kamilaroi Highway was also struck. It occurred in daylight, fine weather and on a dry road surface.
- December 2020, an eastbound light truck on Kamilaroi Highway 600 m east of Blue Vale Road left the carriageway, which was flooded, to the right on a left-hand bend and struck a drain/culvert. It occurred in daylight, overcast conditions and a wet road surface. Speeding was nominated as a contributing factor.

Three of the four crashes occurred in daylight and none of the reported crashes involved haulage trucks associated with the TCM. The crashes each occurred at different locations along the route.

Whitehaven maintains records of incidents involving haulage trucks operated by Whitehaven's contractor, noting that such incidents may occur on private sections of the Approved ROM Coal Transport Route, which are not included in the data above. Whitehaven has advised that since January 2017, there has been one incident involving a haulage truck. A private vehicle was also involved. The incident was minor, and no personal injuries were involved.

Historic complaints made to Whitehaven by the community regarding trucks speeding were investigated by NSW Police, which found that as the haulage trucks are appropriately speed limited, they are unable to exceed the 100 km/h speed limit on the Approved ROM Coal Transport Route.

The review of the crash history of the Approved ROM Coal Transport Route does not highlight any particular crash causation factors on the route.

8. Modification ROM Coal Transport Trip Generation

The 26 A-doubles and two B-doubles used to transport ROM coal and rejects between the TCM and Whitehaven CHPP have an average payload capacity of approximately 60.6 t per vehicle. Consistent with previous assessments, allowing for haulage to occur over 48 weeks per year, the average daily and hourly truck trips that would be generated within the Modification extended haulage hours (to transport 3.5 Mtpa of ROM coal) would be:

- 420 trips per weekday;
- 310 trips per Saturday;
- 22 trips per hour between 4:00 am and 11:15 pm on weekdays and between 5:00 am and 7:15 pm on Saturdays.

Comparing the haulage trip generation assessed for the currently approved TCM operations (refer to Section 4) with those forecast with the Modification, it is evident that the Modification would result in a decrease in the average number of truck trips per hour on the Approved ROM Coal Transport Route during the currently approved haulage hours, and an increase in trips during the extended haulage hours, as summarised in Table 5.

Table 5: Average Weekday ROM Coal Transport Trip Generation

	Weekday Trips (vehicles per day)	Hourly Trips (vehicles per hour)			
		4:00 am to 6:00 am	6:00 am to 9:15 pm	9:15 pm to 11:15 pm	11:15 pm to 4:00 am
Approved – Life of Mine Modification Assessment	612	0	40	0	0
Modification	420	22	22	22	0
Difference	-192	+22	-18	+22	0

Due to the increased payload of the current fleet, the average weekday daily trips generated by haulage activity with the Modification would therefore be lower than that previously assessed for the approved Life of Mine Modification (TTPP, 2019).

Due to the combined effects of the increased truck payloads and extended weekday haulage hours, the average hourly trips generated by haulage activity with the Modification would be lower than that previously assessed for the approved Life of Mine Modification (TTPP, 2019).

9. Modification Impacts on Daily and Peak Hour Traffic Volumes

Table 6 compares the haulage truck trips generated by the TCM throughout the day and night as approved and with the Modification.

Table 6: Impact on Average Weekday ROM Coal Transport Trips (vehicles per hour)

Time of Day	Approved ^A	Modification ^B	Difference
0:00 to 3:00	0	0	0
4:00 to 5:00	0	22	+22
5:00 to 6:00	0	22	+22
6:00 to 21:00	40	22	-18
21:00 to 22:00	10	22	+12
22:00 to 23:00	0	22	+22
23:00 to 0:00	0	6	+6
Daily Total (vehicles per day)	612	420	-192

^A As assessed in TPPP (2019)

^B Hourly trips rounded up

Table 7 compares the average weekday traffic forecast in 2030 as approved and with the Modification, on the Northern section of the Approved ROM Coal Transport Route between the TCM and Shannon Harbour Road.

Table 7: Average Weekday Total Daily Traffic with Modification in 2030 (vehicles per day)

Site ^A	Location	Light Vehicles	Heavy Vehicles	ROM Coal Haulage	Total Vehicles
Approved^B					
A	TCM Access	265	62	-	327
B	Rangari Road between Private Haul Roads	749	122	612	1,483
C	Hoad Lane North of Shannon Harbour Road	624	124	612	1,360
D	Goonbri Road east of TCM	60	8	612	680
With Modification					
A	TCM Access	265	62	-	327
B	Rangari Road between Private Haul Roads	749	122	420	1,291
C	Hoad Lane North of Shannon Harbour Road	624	124	420	1,168
D	Goonbri Road east of TCM	60	8	420	488

^A Refer to Figure 1.1

^B As assessed in TPPP (2019)

Table 8 compares the peak hourly traffic forecast in 2030 as approved and with the Modification. For the purpose of this comparison, ROM coal haulage during the weekday peak hours is assumed to be the average hourly trips forecast throughout the haulage hours.

Table 8: Forecast Average Weekday Peak Hour Traffic (vehicles per hour)

Site ^A	Location	Hour Start	Light Vehicles	Heavy Vehicles	ROM Coal Haulage	Total Vehicles
Approved ^B Average Hourly Haulage Trips During Peak Hour						
A	TCM Access	6:00 am 4:00 pm	41 42	5 5	- -	46 47
B	Rangari Road between Private Haul Roads	6:00 am 5:00 pm	100 120	9 13	40 40	149 173
C	Hoad Lane North of Shannon Harbour Road	6:00 am 5:00 pm	93 95	10 12	40 40	143 147
D	Goonbri Road east of TCM	6:00 am 4:00 pm	7 10	1 1	40 40	48 61
With Modification Average Hourly Haulage Trips During Peak Hour						
A	TCM Access	6:00 am 4:00 pm	41 42	5 5	- -	46 47
B	Rangari Road between Private Haul Roads	6:00 am 5:00 pm	100 120	9 13	22 22	131 155
C	Hoad Lane North of Shannon Harbour Road	6:00 am 5:00 pm	93 95	10 12	22 22	125 129
D	Goonbri Road east of TCM	6:00 am 4:00 pm	7 10	1 1	22 22	30 33

^A Refer to Figure 1.1

^B Based on TPPP (2019) assessment amended to use average hourly haulage truck trip generation.

Table 7 and Table 8 demonstrate that the daily and peak hourly traffic volumes on the Approved ROM Coal Transport Route with the Modification would be lower than those assessed for the approved TCM operations. While the TPPP (2019) assessment focussed on the Northern section of the Approved ROM Coal Transport Route between the TCM and Shannon Harbour Road (as shown in Table 7 and Table 8), the same reductions in average haulage trips would occur on the Southern section of the Approved ROM Coal Transport Route between Shannon Harbour Road and the Whitehaven CHPP, which is approved to carry the same maximum tonnage of ROM coal (TCM cumulative with other mines) as the Northern section.

The Modification would also reduce the average number of ROM coal trucks travelling on the Approved ROM Coal Transport Route during periods when the school bus is operating.

10. Modification Impacts on Hourly Volumes During Additional Haulage Hours

As the Modification would permit haulage truck trips to occur on weekdays between 4:00 am and 6:00 am, and between 9:15 pm and 11:15 pm, TPPP has reviewed the impacts on traffic volumes between 9:00 pm and 6:00 am on weekdays, consistent with the assessment undertaken for the approved Life of Mine Modification. The review includes the effects of potential additional traffic generated by the approved Vickery Extension Project, continued operation of other mining operations, as well as non-specific growth in background (non-mine related) traffic, which was assumed to be negligible during the overnight period being investigated due to the contribution of mine-related traffic to the surveyed traffic and low non-mine related traffic. The forecast traffic volumes are presented in Table 9.

Table 9: Average Weekday Traffic Outside Approved Haulage Hours 2030 (vehicles per hour)

Site ^A	Survey Location	Hour Starting								
		21:00	22:00	23:00	0:00	1:00	2:00	3:00	4:00	5:00
Surveyed										
A	TCM Access Road (2018)	4	1	2	2	0	9	10	7	32
B	Rangari Road between Private Haul Roads (2018)	7	3	2	3	1	7	7	11	73
C	Hoad Lane North of Shannon Harbour Road (2018)	8	1	1	3	1	5	7	7	47
E	Blue Vale Road West of Namoi River bridge (2016)	73	18	3	1	0	1	5	12	63
F	Kamilaroi Highway between Blue Vale Road and CHPP (2016)	90	42	16	17	12	7	15	67	157
Additional Vickery Extension Project Traffic 2030 ^B										
A	TCM Access Road	0	0	0	0	0	0	0	0	0
B	Rangari Road between Private Haul Roads	0	0	0	0	0	0	0	0	24
C	Hoad Lane North of Shannon Harbour Road	0	0	0	0	0	0	0	0	24
E	Blue Vale Road West of Namoi River bridge	0	0	0	0	0	0	0	0	38
F	Kamilaroi Highway between Blue Vale Road and CHPP	0	0	0	0	0	0	0	0	38
Haulage Truck Trips – Northern Section of Approved ROM Coal Transport Route										
-	Surveyed Trips (TCM 2018)	3	0	0	0	0	0	0	0	0
-	Modification Trips	22	22	6	0	0	0	0	22	22
-	Increase with Modification	+19	+22	+6	0	0	0	0	+22	+22
Haulage Truck Trips – Southern Section of Approved ROM Coal Transport Route										
-	Average Trips During Survey (TCM & RCM 2016)	8	0	0	0	0	0	0	0	0
-	Modification Trips	22	22	6	0	0	0	0	22	22
-	Increase with Modification	+14	+22	+6	0	0	0	0	+22	+22
Total Vehicle Trips in 2030										
A	TCM Access Road ^A	23	23	8	2	0	9	10	29	54
B	Rangari Road between Private Haul Roads	26	25	8	3	1	7	7	33	119
C	Hoad Lane North of Shannon Harbour Road	27	23	7	3	1	5	7	29	93
E	Blue Vale Road West of Namoi River bridge	87	40	9	1	0	1	5	34	123
F	Kamilaroi Highway between Blue Vale Road and CHPP	104	64	22	17	12	7	15	89	217

^A Total traffic on existing TCM access road and new access road off Goonbri Road combined.

^B GTA Consultants (2018), Vickery Extension Project Gunndah Basin, NSW Road Transport Assessment.

Table 9 demonstrates that with the extension of haulage hours on weekdays with the Modification, traffic volumes on the Approved ROM Coal Transport Route would remain low. The highest volumes over the additional haulage hours on weekdays are expected to occur between 5:00 am and 6:00 am, with the increase during that hour being attributable to both the Modification and the Vickery Extension Project traffic.

As the Modification would permit haulage truck trips to occur on Saturdays between 5:00 am and 7:00 am, and between 5:15 pm and 7:15 pm, TTPP has reviewed the impacts on traffic volumes after 5:00 pm and before 7:00 am on Saturdays. As for the average weekday assessment above, the review includes the effects of potential additional traffic generated by the approved Vickery Extension Project, continued operation of other mine activity, as well as non-specific growth in background (non-mine related) traffic, which was assumed to be negligible during the overnight period being investigated due to the contribution of mine-related traffic to the surveyed traffic and low non-mine related traffic. The review assumes that the traffic generated by the Vickery Extension Project on Saturdays is approximately 60 percent of that generated on an average weekday, based on the surveyed relationship between average weekday and Saturday traffic generation of the TCM in 2018. The forecast traffic volumes are presented in Table 10.

Table 10 demonstrates that with the extension of haulage hours with the Modification, traffic volumes on the Approved ROM Coal Transport Route would remain low. The highest volumes over the additional haulage hours on Saturdays are expected to occur between 6:00 am and 7:00 am on the Northern section and between 5:00 pm and 6:00 pm on the Southern section of the Approved Road Transport Route. The increase in traffic during those hours is also attributable to both the Modification and the Vickery Extension Project traffic.

Table 10: Saturday Traffic Outside Approved Haulage Hours 2030 (vehicles per hour)

Site ^A	Survey Location	Hour Starting							
		17:00	18:00	19:00	20:00	Avg	4:00	5:00	6:00
Surveyed									
A	TCM Access Road (2018)	22	7	0	0	4	7	20	34
B	Rangari Road between Private Haul Roads (2018)	47	22	7	0	3	8	39	48
C	Hoad Lane North of Shannon Harbour Road (2018)	28	14	3	0	3	5	17	41
E	Blue Vale Road West of Namoi River bridge (2016)	96	26	2	6	2	11	27	29
F	Kamilaroi Highway between Blue Vale Road and CHPP (2016)	212	160	76	37	21	39	57	101
Additional Vickery Extension Project Traffic 2030 ^B									
A	TCM Access Road	0	0	0	0	0	0	0	0
B	Rangari Road between Private Haul Roads	34	14	28	0	0	0	14	34
C	Hoad Lane North of Shannon Harbour Road	34	14	28	0	0	0	14	34
E	Blue Vale Road West of Namoi River bridge	62	22	44	0	0	0	22	62
F	Kamilaroi Highway between Blue Vale Road and CHPP	62	22	44	0	0	0	22	62
Haulage Truck Trips – Northern Section of Approved ROM Coal Transport Route									
-	Average Trips During Survey (TCM 2018)	7	0	0	0	0	0	0	0
-	Modification Trips	22	22	6	0	0	0	22	22
-	Increase with Modification	+15	+22	+6	0	0	0	+22	+22
Haulage Truck Trips – Southern Section of Approved ROM Coal Transport Route									
-	Average Trips During Survey (TCM & RCM 2016)	8	0	0	0	0	0	0	0
-	Modification Trips	22	22	6	0	0	0	22	22
-	Increase with Modification	+14	+22	+6	0	0	0	+22	+22
Total Vehicle Trips in 2030									
A	TCM Access Road ^A	37	29	6	0	4	7	42	56
B	Rangari Road between Private Haul Roads	96	58	41	0	3	8	75	104
C	Hoad Lane North of Shannon Harbour Road	77	50	37	1	3	5	53	97
E	Blue Vale Road West of Namoi River bridge	172	70	52	1	2	11	71	113
F	Kamilaroi Highway between Blue Vale Road and CHPP	288	204	126	30	21	39	101	185

^A Total traffic on existing TCM access road and new access road off Goonbri Road combined.

^B 60 percent of average weekday traffic generation (GTA Consultants, 2018).

11. Modification Impacts on Road Network Operations

During the approved haulage hours, the Modification would reduce the average number of haulage trips generated on the Approved ROM Coal Transport Route below those currently approved, with reductions in peak hourly traffic volumes and improvements in road operating conditions expected.

During the proposed additional haulage hours, the Modification would increase the number of trips generated on the Approved ROM Coal Transport Route. Table 11 presents a comparison between the forecast peak hourly traffic volumes during the additional haulage hours and those previously surveyed or forecast.

Table 11: Peak Hourly Traffic Volumes Comparison (vehicles per hour)

Site ^A	Survey Location	Peak Volume During Additional Haulage Hours ^A	Surveyed Peak Volume ^B	Approved Life of Mine Modification ^C	Vickery Extension Project Peak Hours ^D
A	TCM Access Road	54	81	92	-
B	Rangari Road between Private Haul Roads	119	113	177	175
C	Hoad Lane North of Shannon Harbour Road	97	83	148	158
E	Blue Vale Road West of Namoi River bridge	172	148	56	177
F	Kamilaroi Highway between Blue Vale Road and CHPP	288	333	-	303

^A Refer to Table 9 and Table 10

^B Refer to Table 3 and Table 4

^C Refer to Table 2, TCM access combined with new Goonbri Road access

^D GTA Consultants (2018), Hoad Lane forecast taken from Blue Vale Road Realignment forecast

On the Northern section of the Approved ROM Coal Transport Route, the future peak hourly volumes throughout the extended haulage hours proposed with the Modification would remain below those assessed for the peak hours with the approved Life of Mine Modification (TTPP, 2019) and for the peak hours associated with the Vickery Extension Project (GTA Consultants, 2018). On the Southern section of the Approved ROM Coal Transport Route, the highest volumes forecast during the additional haulage hours would remain below those assessed for the peak hours associated with the Vickery Extension Project.

As the previous assessments for the Life of Mine Modification and the Vickery Extension Project found that there would be no capacity concerns with the operation of the roads and intersections during the peak hours, it follows that with the lower peak hourly volumes expected to occur during the extended haulage hours, there would also be no capacity concerns with the operation of the roads and intersections with the Modification.

Under a conservative assumption that haulage is undertaken using the previous smaller-capacity truck fleet (i.e. with a 42 t payload), the average hourly haulage trip generation of the Modification would be less than 32 trips per hour over the proposed extended haulage hours. Under those theoretical conditions, future traffic volumes would remain sufficiently low that there would be no capacity concerns with the operation of the roads and intersections during the peak hours.

12. Mitigation Measures

The Modification would not alter the average daily trips generated by the transport of ROM coal and rejects on the Approved ROM Coal Transport Route compared with the currently operating conditions, and would reduce the average daily trips compared with that assessed for the approved conditions. The review of the crash history of the Approved ROM Coal Transport Route does not highlight any particular crash causation factors on the route that would need to be addressed.

No additional measures or upgrades are required to mitigate the impacts of the development on the capacity, safety and efficiency of the road network as a result of the changed road traffic conditions associated with the Modification. It is recommended that prior to the extension of haulage hours:

- the TMP, Driver Code of Conduct and Whitehaven's specific inductions for haulage truck operators be reviewed to ensure the behavioural requirements for truck drivers operating in darkness are adequately addressed (such as appropriate use of high-beam headlights);
- existing fatigue management measures applicable to the haulage truck drivers are appropriate; and
- the approved protocol to clean and maintain the visibility of signage, guideposts and lane delineation on the Approved ROM Coal Transport Route be reviewed to ensure that it adequately addresses the night-time visibility needs of drivers on the route.

13. Summary and Conclusion

This assessment has found that the proposed extension to the approved hours for the dispatch of ROM coal from the TCM via the Approved ROM Coal Transport Route would have acceptable impacts on the road network, with no change to the overall number of trips generated along the route by the TCM activity. No additional measures or road upgrades are required to mitigate impacts of the Modification. Impacts to the road network have been reduced by the recent implementation of a larger truck fleet, however, even under a conservative assumption where the previous smaller-capacity trucks are used, the Modification would have acceptable impacts on the road network.

It is recommended that the existing TMP, fatigue management measures and road maintenance protocols be reviewed to ensure they remain adequate for the needs of drivers operating in darkness on the Approved ROM Coal Transport Route.

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

Yours sincerely,

A handwritten signature in black ink that reads 'P Dalton'.

Penny Dalton
Associate Director