

NORTHPARKES MINES

Road Traffic Noise Assessment

FINAL – REV 1

July 2019



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Prepared by
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on behalf of
CMOC Northparkes Mines

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1.0 Introduction

1.1 Project description

Northparkes Mines (NPM, the Applicant) produces a copper ore concentrate which is transported to port using purpose built sealed shipping containers. The containers are currently transported by truck from NPM to the Goonumbla Rail Siding via McClintocks Lane and Bogan Road where they are loaded onto trains for transport to port.

In late 2018, the Australian Rail Track Corporation (ARTC) approached the Applicant about finding an alternative transport route for its copper concentrate, as the current rail transport arrangements would be impacted by the Inland Rail Parkes to Narromine Project. NPM has been advised by ARTC that the rail line between Parkes and Goonumbla will be closed for a period of 6-12 months as part of these construction works.

During the Inland Rail upgrade works between Parkes to Narromine, the Applicant proposes to transport its ore by road train to the Parkes National Logistic Terminal (PNLT) located on Brolgan Road, Parkes. The existing approved road haulage route and the proposed road haulage route, identified following a review of several alternative routes and in consultation with Parkes Shire Council and NSW Roads and Maritime Service (RMS), are shown in **Figure 1.1**.

The proposed route continues on Bogan Road beyond the Goonumbla Rail Siding and joins the Newell Highway which is aligned through Parkes. The proposed route exits the Newell Highway onto Hartigan Avenue before making a westerly turn onto Brolgan Road which would take traffic to the PNLT. In keeping with current operations, the number of daily truck loads would be restricted to 16 per day (32 movements).

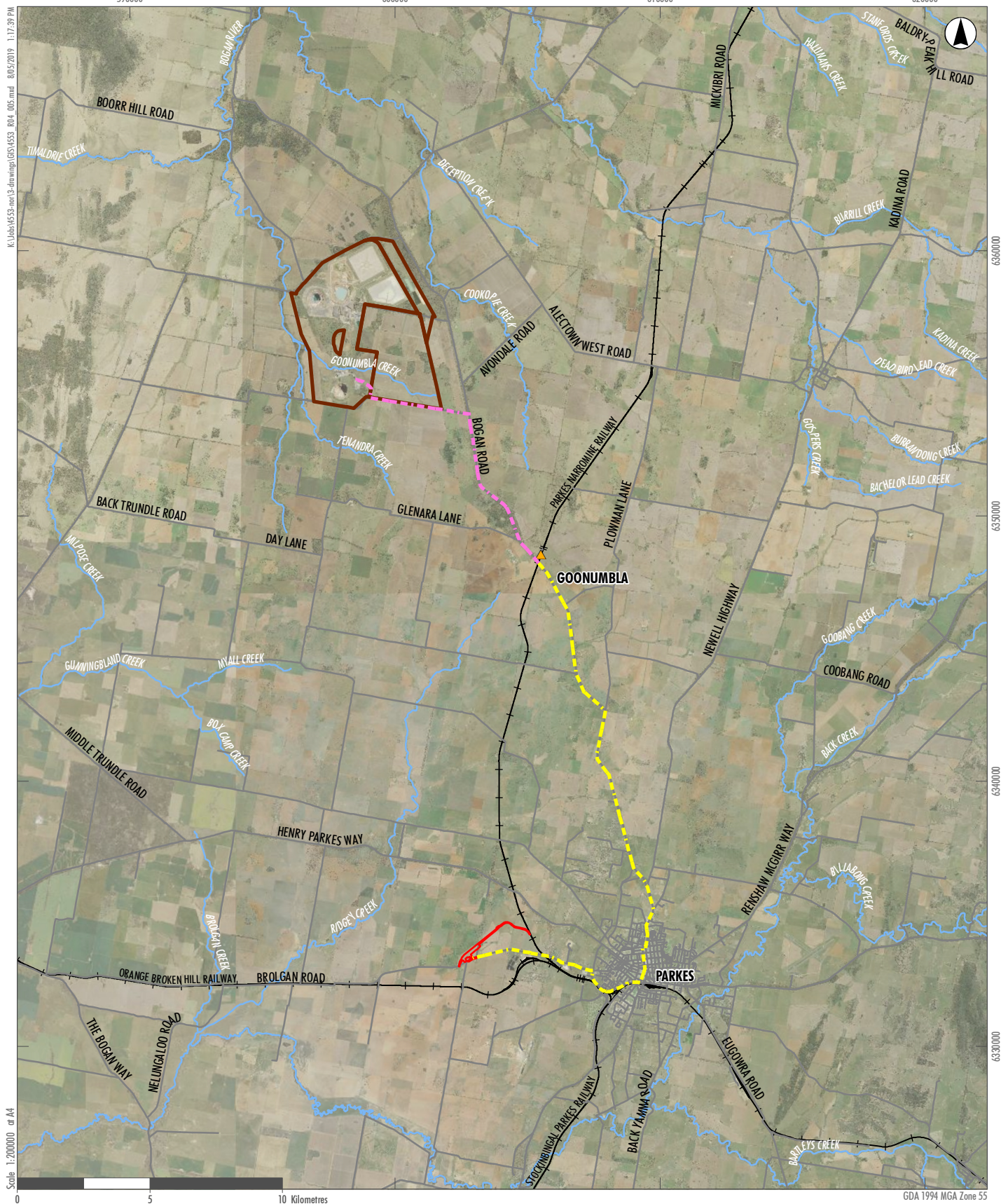
Of the roads of the proposed route, Hartigan Avenue is a 50 km/hr speed limited state road which has railway land to the south and primarily residential zoning to the north. These residential receivers along Hartigan Avenue are considered to have the highest potential to be affected by the proposed temporary transport route. Sixteen property owners and two quarry operators occur on the Bogan Road section of the proposed route, with the closest residential receiver located approximately 90 metres from the road. NPM trucks are proposed to travel at 80 km/hr on Bogan Road.

There are also residential and commercial receivers located along the Newell Highway, however, noting the Newell Highway is the principal north-south regional freight route through central NSW and subject to high traffic volumes these are unlikely to notice the additional truck movements generated by the proposed transport of copper concentrate (maximum of 32 movements per day) when compared to existing traffic volumes.

In order to reduce the number of trucks required to operate between the Mine Site and the PNLT, the Applicant proposes to operate 24 hours per day, excluding the currently nominated school drop-off / pick-up periods on McClintocks Lane and Bogan Road, namely:

- McClintocks Lane between 7.30 am to 9.00 am, and 3.00 pm to 4.30 pm on school days
- Bogan Road between 7:30 am and 9:00 am and 3:00 pm and 5:00 pm during school terms.

With only two trucks operating between the Mine Site and the PNLT, and with the operator of PNLT indicating a preference to manage truck movements during the daytime, it is unlikely the Applicant would require transport operations to be continuous. Unless required for time critical delivery of copper concentrate, the Applicant would not operate between 10:00pm and 7:00am on Saturday and Sunday nights.



- Legend
- Northparkes Mines
 - Parkes National Logistics Terminal
 - Approved Road Haulage Route (Northparkes Mine to Goonumbra Rail Siding)
 - Proposed Road Haulage Route (Goonumbra Rail Siding to Parkes National Logistics Terminal)
 - ▲ Goonumbra Rail Siding
 - Rail line
 - Road
 - Watercourse

FIGURE 1.1

Locality Plan and Local Setting

NPM advised that a maximum of 24 truck movements would occur during the day period (7:00am to 10:00pm), and a maximum of 18 truck movements would occur during the night period (10:00pm to 7:00am). NPM also advised that based on return trip times with two trucks operating, the worst-case hour would result in a maximum of four truck movements.

2.0 Criteria

2.1 Road Noise Policy

Relevant road traffic noise criteria for residential receivers on state and local roads are shown in **Table 2.1**, as derived from the NSW Road Noise Policy (RNP) (DECCW, 2011).

Table 2.1 Road traffic noise criteria

Road Category	Type of Project/Land Use	Assessment Criteria dB(A)	
		Day (7.00 am – 10.00 pm)	Night (10.00 pm – 7.00 am)
Freeway/arterial/ sub-arterial roads	Existing residences affected by additional traffic on existing freeways/arterial/sub-arterial roads generated by land use developments	LAeq, 15 hour 60 (external)	LAeq, 9 hour 55 (external)
Local road	Existing residences affected by additional traffic on existing local roads generated by land use developments	LAeq, (1 hour) 55 (external)	LAeq, (1 hour) 50 (external)

Source: NSW Road Noise Policy (DECCW 2011)

The RNP states that where existing traffic noise levels are above the noise assessment criteria, the primary objective is to reduce these through feasible and reasonable measures to meet the assessment criteria. A secondary objective is to protect against excessive decreases in amenity as the result of a project by applying the relative increase criteria.

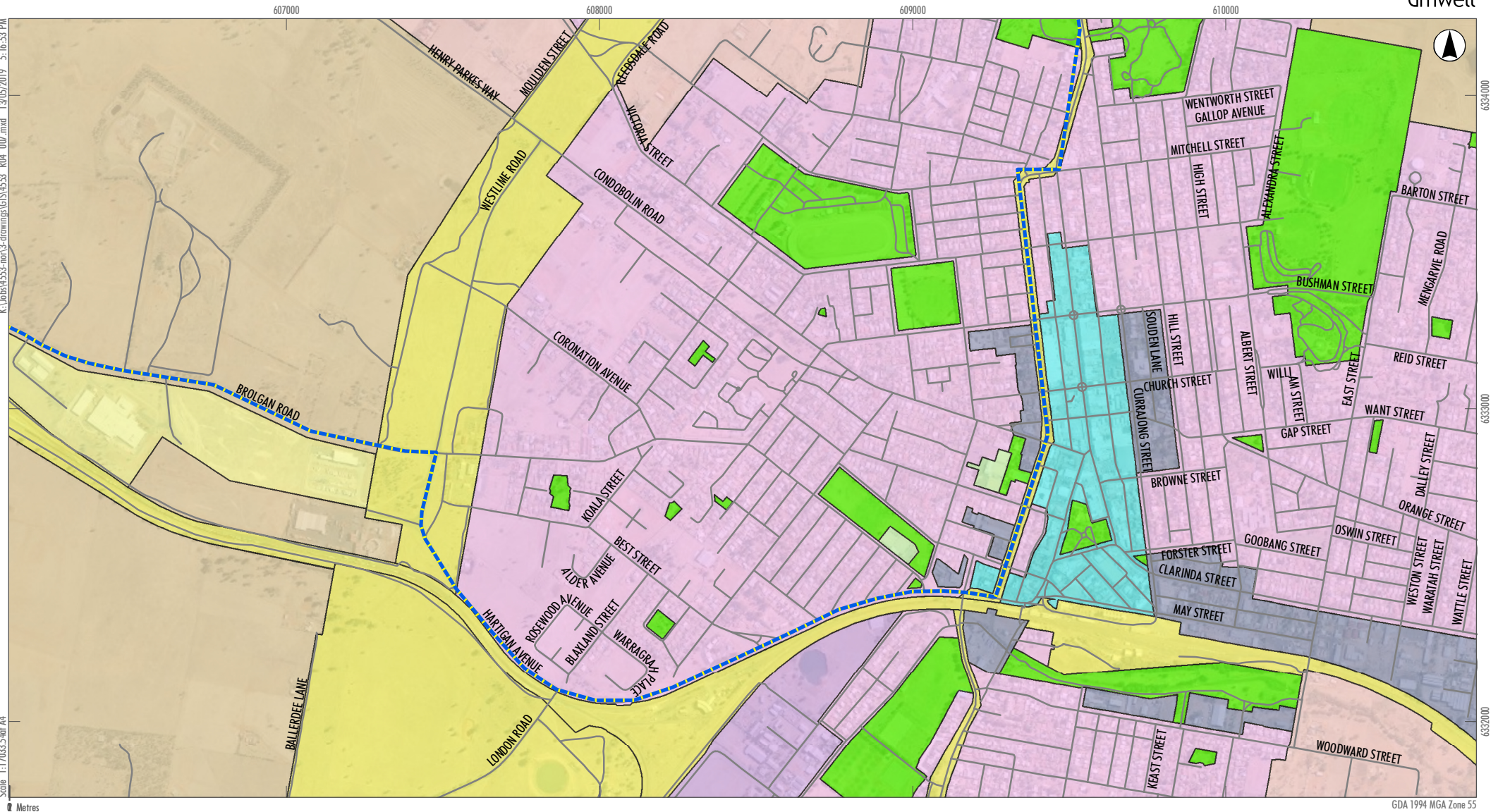
Section 3.4 of the RNP notes that when assessing noise impacts and the effectiveness of feasible and reasonable mitigation measures, an increase of up to 2 dB represents a minor impact that is considered barely perceptible to the average person.

2.2 Applicable Criteria

2.2.1 Hartigan Avenue residential receivers

Hartigan Avenue is gazetted as State Road 61, according to Roads and Maritime Services documents sourced from their website (Roads and Maritime Services, 2017). In accordance with the RNP (DECCW, 2011), the applicable road traffic noise criteria for residential receivers on state roads is the $L_{Aeq, 15 \text{ hour}}$ of 60 dB(A) and 55 dB(A) for the daytime and night time periods respectively (refer to **Table 2.1**).

The Local Zoning plan for Hartigan Avenue is shown in **Figure 2.1**. Land to the south of Hartigan Avenue is zoned as SP2 – Rail Infrastructure Facilities in the 2012 Parkes Local Environmental Plan, as this land forms part of the Orange - Broken Hill Railway line. Land adjoining the north of Hartigan Avenue is zoned primarily R1 – General Residential with a small isolated pocket of RE1 – Public Recreation and a Mixed Use zone on the Newell Highway intersection. The public recreation area is essentially a large traffic island, with the larger section of the recreation area set back further along a side street, Hooley Street. For the purpose of this assessment, the small public recreation area adjoining Hartigan Avenue, the commercial property on the intersection of the Newell Highway and a storage facility located in the General Residential zone were not assessed for road traffic noise impact.



Metres
Legend

- | | | |
|--|---|--|
| <p>Proposed Road Haulage Route
(Goonumbla Rail Siding to
Parkes National Logistics
Terminal)</p> <p>— Road</p> | <p>ZONE</p> <p>B2 Local Centre</p> <p>B4 Mixed Use</p> <p>IN1 General Industrial</p> <p>R1 General Residential</p> <p>R5 Large Lot Residential</p> | <p>RE1 Public Recreation</p> <p>RE2 Private Recreation</p> <p>RU1 Primary Production</p> <p>SP1 Special Activities</p> <p>SP2 Infrastructure</p> |
|--|---|--|

Image Source: Neamap Data source: DFSI (2017)

FIGURE 2.1
Local Zoning

2.2.2 Bogan Road residential receivers

Bogan Road is a local road, therefore road traffic noise levels are assessed in terms of a worst-case hour in accordance with the RNP (DECCW, 2011), i.e. $L_{Aeq, (1 \text{ hour})}$ of 55 dB(A) and 50 dB(A) for the daytime and night time periods respectively (refer to **Table 2.1**). Land adjoining Bogan Road is primarily zoned RU1 – Primary Production, with an area of R5 – Large Lot Residential close to the intersection with the Newell Highway.

3.0 Assessment Methodology

Noise levels at nominated setback distances with and without the NPM trucks have been predicted using the method given in the United Kingdom Department of Transport *Calculation of road traffic noise (CoRTN)*, 1988.

The model was set-up on the assumption that there are no barriers between the edge of the road and the receivers, and that the terrain for the road and receivers is flat. Should barriers exist between the source and receivers, which is the case for the majority of houses backing on to Hartigan Avenue, road traffic noise levels may be lower than the predicted results.

Road pavement and ground absorption parameters were modelled as dense graded asphalt and reflective ground type respectively, which are standard conditions in the CoRTN method and therefore no corrections were required to be applied. From aerial photography, the closest setback distance from a residential receiver to the edge of Hartigan Avenue is approximately 7 metres. Results have also been predicted for other setback distances including 10, 12.5 and 15 metres for Hartigan Avenue. The nearest residential receiver on Bogan Road has an estimated setback distance of approximately 90 metres.

All vehicles were assumed to be travelling at the sign-posted speed limit of 50 km/hr on Hartigan Avenue. NPM trucks on Bogan Road were assumed to be travelling at their restricted speed limit of 80 km/hr, with all other traffic on Bogan Road assumed to be travelling at the sign-posted speed limit of 100 km/hr.

Noise levels calculated with and without the proposed road haulage have then been compared to criteria in the RNP (DECCW, 2011) and described in **Section 2.2**.

3.1 Traffic count data

3.1.1 Hartigan Avenue

WSP were engaged to prepare a Traffic Impact Assessment (WSP, 2019) which involved undertaking traffic counts at two intersections on Hartigan Avenue over a 24-hour period. Traffic count data was collected on Wednesday 3 April 2019 at the intersection of Hartigan Avenue and the Newell Highway (Forbes Road) and also at the intersection of Hartigan Avenue, Brolgan Road and Westlime Road.

Higher traffic volumes were counted at the Hartigan Avenue and Newell Highway (Forbes Road) intersection, as it is just south of the main township of Parkes. Traffic travelling onto Hartigan Avenue at this intersection would include traffic accessing the residential area north of Hartigan Avenue, the Parkes Golf Club to the south of Hartigan Avenue (on the southern side of the railway line) as well as industrial sites adjoining the railway corridor.

The traffic volumes were significantly lower at the Hartigan Avenue and Brolgan Road intersection, but this intersection had a higher percentage of heavy vehicles, as the majority of light vehicles would likely have turned off at various points into the residential area north of Hartigan Avenue. Traffic counts on Hartigan Avenue are summarised in **Table 3.1**.

Table 3.1 Summary of road traffic counts at either end of Hartigan Avenue

Time period and traffic component	WSP Traffic Count Data on Hartigan Avenue	
	1 – Newell Highway intersection (Forbes Road)	2 – Brolgan Road intersection
24-Hr Total Vehicles	5005	1077
24-Hr Light vehicles	4520	678
24-Hr Heavy vehicles	485	399
Day (7am to 10pm) Total Vehicles	4580	995
Day (7am to 10pm) Light vehicles	4154	636
Day (7am to 10pm) Heavy vehicles	426	359
Night (10pm to 7am) Total Vehicles	425	82
Night (10pm to 7am) Light vehicles	281	35
Night (10pm to 7am) Heavy vehicles	144	47

Residential receivers along Hartigan Avenue would receive traffic flows somewhere between the volumes measured at the two count locations.

3.1.2 Bogan Road

Traffic counts were undertaken on Bogan Road in 2012 as part of the *Northparkes Mines Step Change Project Traffic Impact Assessment, 1 July 2013 (Ref 12031r2)* prepared by Transport & Urban Planning (TUP, 2013). It should be noted that these traffic counts are likely to have included approved NPM road haulage to the Goonumbla Rail Siding in 2012.

TUP (2013) stated that average background traffic growth over the 20 years following their 2013 report could increase by an average of up to 2.4%. During traffic counts undertaken in 2012, the daily average heavy vehicle percentage for two way traffic on Bogan Road was 11%. During the traffic counts, peak hourly traffic on Bogan Road occurred between 6 and 7 am, with a total of 242 vehicles which represents 21% of the average weekday daily traffic flow. This data was extrapolated to 2019 and 2020 and is shown in **Table 3.2**.

Table 3.2 Extrapolation of TUP (2013) Bogan Road traffic counts (average weekday hourly peak)

Year	Transport & Urban Planning Bogan Road traffic count extrapolation		
	Total vehicles	Light vehicles (89%)	Heavy vehicles (11%)
2012	242	215	27
2013	248	221	27
2014	254	226	28
2015	260	231	29
2016	266	237	29
2017	272	242	30
2018	279	248	31
2019	286	254	31
2020	293	260	32

To be conservative, as the diversion of NPM trucks may be in place in 2020, extrapolated traffic counts to 2020 have been used in calculations of existing and future traffic noise levels on Bogan Road to represent a worst-case scenario.

3.2 Trucking rates from NPM

On the basis of a 120 minute return trip, and operation of two trucks to deliver the copper concentrate, a maximum of 24 movements would occur during the 15-hour day period and a maximum of 18 truck movements would occur in the 9-hour night period, with a maximum of 4 movements in the worst-case hour.

For the purpose of the assessment, the impact of the addition of 24 truck movements during the day and 18 truck movements during the night was assessed for receivers on Hartigan Avenue. The addition of four NPM trucks was used to assess road traffic impacts for the nearest receiver on Bogan Road during the worst-case hour.

4.0 Results

4.1 Hartigan Avenue

4.1.1 Newell Highway (Forbes Road) intersection

Road traffic noise levels were estimated at several setback distances with and without the NPM truck movements based on traffic count data from the Newell Highway (Forbes Road) intersection and are shown in **Table 4.1** rounded to one decimal place.

Table 4.1 Road traffic noise levels based on Hartigan Avenue and Newell Highway (Forbes Road) traffic count data

Setback from Hartigan Avenue	Noise levels in dB(A) based on Newell Highway (Forbes Road) intersection counts					
	Day No NPM trucks	Day 24 NPM trucks	Day change in levels	Night No NPM trucks	Night 18 NPM trucks	Night change in levels
7 metres	65.2	65.3	0.1	60.7	61.1	0.4
10 metres	64.1	64.2	0.1	59.6	60.0	0.4
12.5 metres	63.4	63.5	0.1	58.8	59.3	0.5
15 metres	62.7	62.9	0.2	58.2	58.6	0.4

Results show that where noise levels were predicted to exceed the RNP day and night period criteria with the addition of NPM truck movements, they had already been predicted to exceed the criteria without the NPM trucks.

In accordance with the RNP, only minor changes in noise levels (less than 2 dB(A)) were predicted for day and night time levels for Hartigan road receivers based on the Newell Highway intersection count data.

4.1.2 Brolgan Road intersection

Road traffic noise levels were estimated at several setback distances with and without the NPM truck movements based on traffic count data from the Brolgan Road intersection and are shown in **Table 4.2** rounded to one decimal place.

Table 4.2 Road traffic noise levels based on Hartigan Avenue and Brolgan Road traffic count data

Setback from Hartigan Avenue	Noise levels in dB(A) based on Brolgan Road intersection counts					
	Day No NPM trucks	Day 24 NPM trucks	Day change in levels	Night No NPM trucks	Night 18 NPM trucks	Night change in levels
7 metres	62.3	62.6	0.3	55.4	56.7	1.3
10 metres	61.3	61.5	0.2	54.3	55.6	1.3
12.5 metres	60.5	60.8	0.3	53.5	54.9	1.4
15 metres	59.9	60.1	0.2	52.9	54.2	1.3

The estimated traffic noise levels exceed the relevant RNP criteria both with and without the addition of NPM trucks at the setback distances considered. However, the predicted change in noise levels remains below the 2 dB(A) criteria in the RNP (refer to **Section 2.1**).

The increase in LAeq, (period) road noise levels is predicted to be greater for receivers closer to the Brolgan Road intersection due to lower existing traffic levels. The predicted increase remains below 2 dB(A), which the RNP identifies as unlikely to be perceptible to receivers.

4.2 Bogan Road

Road traffic noise levels were estimated at a setback of 90 metres to represent the nearest receiver on Bogan Road. Results both with and without the proposed NPM truck movements for the worst-case hour are shown in Table 4.3 rounded to one decimal place. Calculations are based on extrapolated traffic count data as shown in Table 3.2 and discussed in **Section 3.1.2**.

Table 4.3 Road traffic noise levels based on Bogan Road extrapolated peak hour traffic flows count data of TUP, 2012

Setback from Bogan Road	Peak hour noise levels in dB(A) based on extrapolated traffic count data for 2020			
	Peak traffic No NPM trucks	4 NPM trucks only	Peak traffic with 4 NPM trucks	Peak traffic change in levels
90 metres	59.9	46.0	60.0	0.1

The predicted peak hour road traffic noise levels would already exceed the RNP $L_{Aeq(1\text{ hour})}$ night time criteria (50 dB(A)) at a setback distance of 90 m. With the predicted contribution of the NPM trucks, the predicted increase in road noise level with the addition of NPM truck movements on Bogan Road is well below the RNP road noise increase criteria of 2 dB(A) and is unlikely to be a discernible change in noise levels.

5.0 Conclusion

Road traffic noise levels have been estimated for residential receivers on Hartigan Avenue and Bogan Road, of the proposed temporary haulage route, both with and without the addition of a maximum of NPM truck movements. In accordance with the RNP (DECCW, 2011), road noise levels were predicted:

- On Hartigan Avenue with the addition of 24 day time and 18 night time truck movements, and
- On Bogan Road with the addition of 4 truck movements per hour.

Road traffic noise levels for the proposed temporary haulage route on Hartigan Avenue and Bogan Road are expected to comply with RNP change in noise level criteria.

Noise levels at residential and commercial receivers on the Newell Highway through Parkes were not assessed. However, since existing traffic volumes on the Newell Highway are substantially greater than Hartigan Avenue, and the addition of truck movements on Hartigan Avenue resulted in a negligible increase in road noise emissions, the addition of the same number of trucks on the Newell Highway would result in an even smaller increase in noise emissions. Therefore it is expected that the increase in road traffic noise from the Newell Highway due to the proposed additional trucks would comply with the RNP criterion for the relative increase in noise, i.e. any increase is expected to be substantially less than 2 dB(A).

6.0 References

Department of Environment, Climate Change and Water (DECCW), 2011. *NSW Road Noise Policy*.

Roads and Maritime Services, 2017. *Schedule of Classified Roads and Unclassified Regional Roads* (<https://www.rms.nsw.gov.au/business-industry/partners-suppliers/lgr/documents/classified-roads-schedule.pdf>).

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