

DENDROBIUM MINE MODIFICATION 11

Appendix E

Road Transport Review

Our Ref: 25062

14 May 2025

GM³
c/- Resource Strategies Pty Limited
PO Box 1842
MILTON QLD 4064

Attention: Cody Brady – Principal Approvals

Dear Cody,

RE: DENDROBIUM MINE MODIFICATION 11 – ROAD TRANSPORT REVIEW

As requested, please find herein The Transport Planning Partnership's (TTPP) assessment of the road transport aspects of the proposed development.

1. Introduction

The Dendrobium Mine is an existing underground coal mine situated in the Southern Coalfield of New South Wales (NSW), approximately 8 kilometres (km) west of Wollongong.

The Dendrobium Mine is owned and operated by Dendrobium Coal Pty Ltd, a subsidiary of Illawarra Coal Holdings Pty Ltd (ICHPL), which is a wholly owned subsidiary of Gear M Illawarra Met Coal Pty Ltd, trading as GM³. Existing surface facilities for the Dendrobium Mine include:

- the Dendrobium Pit Top;
- Kemira Valley Coal Loading Facility;
- Kemira Valley Rail Line;
- Gas Management Plant;
- Dendrobium Coal Preparation Plant (CPP), located within the Port Kembla Steelworks precinct; and
- Dendrobium Shaft Numbers 1, 2 and 3.

GM³ has undertaken a review of key surface facilities at the Dendrobium Mine and identified a requirement to improve current land management practices at the Dendrobium Pit Top and other ancillary works required to maintain safe and effective surface operations (the Modification).

2. The Modification

The Modification would include the following activities:

- minor extension of the Dendrobium Pit Top disturbance footprint to facilitate access and the continuation of land management activities;
- decommissioning and demolition of the Bulk Warehouse at the Dendrobium Pit Top and construction of a concrete slab used for materials laydown;
- landing of helicopters within already disturbed areas of the existing Dendrobium Gas Management Plant to satisfy safety requirements when road access is restricted by catchment closures;
- cumulative assessment of the use of helicopters for approved mining support activities (i.e. environmental monitoring, site remediation and redundant infrastructure demolition) (noting operation of helicopters occurs in compliance with the Civil Aviation Safety Authority);
- transportation of rehabilitation waste materials on the Kemira Valley Rail Line (to avoid heavy vehicle movements on public roads);
- incorporation of Cordeaux Colliery operations into Development Consent (DA 60-03-2001) and associated surrender of D74/134 granted by Wollongong City Council in 1974;
- removal of Conditions 3 to 7, Schedule 5 and Appendix 3 of Development Consent (DA 60-03-2001) relating to the West Cliff Coal Wash Emplacement Area (such that this is regulated under Bulli Seam Operations Project Approval [MP08_0150] only); and
- update of the Schedule of Lands in Development Consent (DA 60-03-2001).

With regard to the road transport environment, the potential impacts of the Modification would relate to road traffic generated by the decommissioning and demolition of the existing Bulk Warehouse and construction of the concrete slab at the Dendrobium Pit Top, located on Cordeaux Road west of the Mount Kembla Village. This Road Transport Review assesses the potential impacts of those activities (referred to herein as the Modification activities) on the road transport environment in the region, and has been prepared in accordance with the *Guide to Transport Impact Assessment*¹.

¹ Transport for New South Wales (2024), *Guide to Transport Impact Assessment*.

3. Approved Dendrobium Mine Operations – Transport Activities

The Dendrobium Mine currently extracts coal within Consolidated Coal Lease (CCL) 768 using underground longwall mining methods, within approved Mining Areas 1, 2 and 3. ROM coal is transported from underground workings to the Kemira Valley Coal Loading Facility via an underground conveyor network reaching the surface via the Kemira Valley tunnel. Coal is then sized and stockpiled at the Kemira Valley Coal Loading Facility prior to transport by train to the Dendrobium CPP within the Port Kembla Steelworks via the Kemira Valley Rail Line.

ROM coal from the Dendrobium Mine is processed at the Dendrobium CPP, which is located within the Port Kembla Steelworks precinct. Product coal is delivered from the Dendrobium CPP to the Port Kembla Steelworks or Port Kembla Coal Terminal (PKCT) for transport to Liberty Primary Steel Whyalla Steelworks or export. Coal wash is transported by road from the Dendrobium CPP to the West Cliff Colliery Coal Wash Emplacement. Coal wash is also supplied to third parties as an engineering fill material or for other beneficial uses.

The Dendrobium Mine operates on a continuous basis (24 hours per day, seven days per week). On Mondays to Thursdays, shifts primarily operate between 6:00 am and 4:00 pm (day), 2:00 pm and 12:00 am (afternoon) and 10:00 pm to 8:00 am (night). On Fridays to Sundays, shifts primarily operate between 6:00 am and 6:00 pm (day), and 8:00 pm to 8:00 am (night).

Vehicle access to and from some surface facilities is restricted to specific hours as per the *Dendrobium Drivers Code of Conduct*². With the exception of personnel passenger vehicles, the allowable travel times for travel to the Dendrobium Pit Top through the area between the eastern end of the Mount Kembla Village and the Dendrobium Pit Top entrance at the western end of the Mount Kembla Village, are:

- Monday to Friday 7:00 am to 8:00 am;
- Monday to Friday 9:30 am to 2:30 pm;
- Monday to Friday 4:00 pm to 5:00 pm;
- Saturday 8:00 am to 1:00 pm.

These hours also apply during school holidays. There are no allowable travel times on Sundays or public holidays.

² GM³ (2024), *Dendrobium Drivers Code of Conduct*.

4. Modification Activities

The key features of the Modification activities as relevant to potential impacts on the road transport environment are summarised below:

- activities would occur over a six day period from Monday to Saturday inclusive;
- activities would occur during standard daytime hours, typically 7:00 am to 5:00 pm;
- five additional personnel would be present at the Dendrobium Pit Top each day;
- machinery and equipment would be transported to the Dendrobium Pit Top via Cordeaux Road at the start and end of the demolition activities;
- allowable travel times to and from the Dendrobium Pit Top would be in accordance with the Dendrobium Drivers Code of Conduct; and
- demolition waste would be removed from the Dendrobium Pit Top via Cordeaux Road for disposal at an appropriately licenced facility.

The Modification activities are anticipated to occur during 2026.

5. Modification Vehicle Types

Vehicles required for the Modification activities would include:

- Workforce – light vehicles such as cars, vans, utilities and four-wheel drives;
- Waste removal – 4-axle rigid trucks with a 12 tonne (t) payload;
- Equipment and machinery – semitrailers, excavators;
- Concrete deliveries – large rigid concrete trucks; and
- Steel reinforcement delivery – flatbed rigid truck or semitrailer.

6. Modification Activities Vehicle Trip Generation

Workforce

The Modification activities would require five personnel over the six days. The workforce would arrive at the Dendrobium Pit Top at around 7:00 am each day, and depart at around 5:00 pm. While some car pooling of those personnel may occur, there is the potential for the five personnel to each drive independently. This would generate five inbound light vehicle trips each morning, and five outbound light vehicle trips each evening.

Demolition Machinery and Equipment Transport

The Modification activities are anticipated to require delivery of three pieces of machinery and/or equipment, using heavy vehicles up to the size of a semitrailer. Two of these deliveries would be road registered vehicles that would arrive at the Dendrobium Pit Top at the start of the Modification activities, and remain there until the end of the Modification activities. One of the deliveries would be equipment that is transported via a float vehicle that would arrive at the start of the activities, unload and leave the site, then return to collect at the end of the activities.

These transport trips that would occur at the start and end of the activities are assumed to occur on the first day and final day of the Modification activities, however it is noted that the arrival of equipment may be scheduled to occur prior to the first day of Modification activities, and if work is not completed prior to the end of the allowable transport hours through Mt Kembla, the trips at the end of the Modification activities may be delayed until the Monday following. This assumption will tend to overestimate the number trips generated on the first and final days of the Modification activities.

Demolition Waste Removal

The trucks transporting waste would travel via Cordeaux Road to the Dendrobium Pit Top, and are expected to then travel via Princes Highway and other classified roads to access an appropriately licenced facility in the region.

GM³ has advised that the disposal of waste from the Modification activities would require a total of 20 loads, using four-axle trucks with a 12 t capacity. With the arrival of empty trucks and departure of laden trucks, the 20 loads would generate 40 trips³ on Cordeaux Road between Princes Highway and the Dendrobium Pit Top Access.

The 20 loads of waste would occur over the six days of the Modification activities, equivalent to an average of three to four loads per day, or fewer than seven trips per day. As the timing of those trips would be directly linked to the generation of waste, it is not expected that the trips would be evenly spread across the six days. For the purpose of this assessment, it is assumed that on the busiest day, waste removal would generate 14 trips to and from the Dendrobium Pit Top, being double the average throughout the demolition period. It is not expected that the peak number of waste removal trips would occur on the same days as the transport of the equipment and machinery.

³ For clarity and consistent with Austroads definition, throughout this assessment, a trip is a one way movement. A vehicle arriving at Dendrobium Mine and departing Dendrobium Mine generates two trips.

Concrete Slab Construction

Construction of the concrete slab would require five large concrete deliveries, using rigid concrete trucks. Those deliveries are expected to occur over the last two days of the Modification activities. One delivery of steel reinforcement would be required for the concrete slab, which would use a rigid flatbed truck or a semitrailer.

Total Modification Trips

Table 1 summarises the indicative schedule of the daily vehicle trips expected to be generated during the Modification activities.

Table 1: Modification Trip Generation (vehicle trips per day)

	Workforce Light Vehicles		Waste Removal ^A Rigid Heavy Vehicles		Concrete ^A Rigid Heavy Vehicles		Equipment ^A Articulated Vehicles		Total
	In	Out	In	Out	In	Out	In	Out	
Day 1	5	5	3	3	0	0	3	1	20
Days 2 to 4	5	5	7 ^B	7 ^B	0	0	1 ^C	1 ^C	24
Day 5	5	5	7 ^B	7 ^B	2	2	0	0	28
Day 6	5	5	3	3	3	3	1	3	26

^A heavy vehicle trips during allowable travel hours in GM³ (2024).

^B peak generation would not occur each and every day shown.

^C steel reinforcement delivery, would occur on one day only.

Table 1 indicates that the Modification activities would be expected to generate between 20 and 28 vehicle trips per day, of which 10 vehicle trips per day would be light vehicles, and the remaining trips would be rigid and/or articulated heavy vehicles. The light vehicle trips would all occur at around 7:00 am (inbound) and 5:00 pm (outbound) each day, while the heavy vehicle trips would be spread throughout the allowable travel hours (GM³, 2024).

The allowable travel hours comprise seven hours on weekdays and five hours on Saturdays. On a peak weekday, the Modification is expected to generate up to 18 heavy vehicle trips (nine inbound and nine outbound), equivalent to an average of 2.6 trips per hour over the allowable travel hours. On Saturday, the Modification is expected to generate up to 16 heavy vehicle trips (eight inbound and eight outbound), equivalent to an average of 3.2 trips per hour during the allowable travel hours. Over the six days of Modification activities, the number of heavy vehicle trips in any one hour may vary from the average. It is unlikely that more than five heavy vehicle trips would occur in any one hour.

7. Modification Trip Access Routes

Noting that the significant majority of existing Dendrobium Mine traffic is generated to and from the east along Cordeaux Road, all vehicle trips generated by the Modification activities may travel to and from the Dendrobium Pit Top via Cordeaux Road east. To the extent that some personnel may travel to and from the west, this will overestimate the number of trips generated by the Modification activities on Cordeaux Road.

The trucks transporting waste material from the Dendrobium Pit Top may travel either north or south on Princes Highway, depending on the location of the appropriately licenced waste disposal facility.

8. Existing Road Network

The **Dendrobium Pit Top Access** is off Cordeaux Road, approximately 4.9 km from the Princes Highway. This is the main site access used by employees, contractors, visitors and delivery vehicles associated with the Dendrobium Mine activity.

The intersection of Cordeaux Road with the Dendrobium Pit Top Access is a T-intersection with no auxiliary storage or turn lanes. At the intersection, the access road is very wide, and the road to the main car park lies at an acute angle to Cordeaux Road, rather than within the preferred range of 70 to 90 degrees. The impact of this alignment has been mitigated by providing a painted median and kerb extensions to assist drivers to align their vehicle when turning into or out of Cordeaux Road. Sight distance at the intersection is satisfactory for both entering and exiting vehicles. Exiting vehicles are controlled with a "STOP" sign and delineation.

Cordeaux Road is a local road that provides access from Kembla Heights to the Princes Highway at Figtree, via Cordeaux Heights and Mount Kembla. The intersection of Cordeaux Road with the Princes Highway is controlled by a two-lane roundabout, with single entry and exit lanes on the Cordeaux Road leg. Most intersections along Cordeaux Road are priority-controlled T-intersections, with the exception of the signalised intersection with Central Road.

Cordeaux Road typically has a single travel lane in each direction with kerbside parking permitted, and a speed limit of 60 km/h. There is a full time "high pedestrian activity" 40 km/h speed limit signposted on Cordeaux Road between James Road and Cudgee Crescent, which also includes school zone signage and a signposted truck and bus speed limit of 40 km/h.

Cordeaux Road climbs steeply through Mount Kembla to the Dendrobium Pit Top Access. An off-road cycleway is provided along the southern side of Cordeaux Road along most of its length from near the Princes Highway to the eastern end of the built-up area of Mount Kembla. There is a school crossing immediately south of Benjamin Road adjacent to Mount Kembla Public School.

West of the Dendrobium Pit Top Access, Cordeaux Road forms a two lane, two-way rural road, with a winding alignment, narrow or no shoulders, no footpaths, and several bends with advisory speeds of 35 km/h. West of the Dendrobium Pit Top Access, Cordeaux Road also provides a connection to Harry Graham Drive at a T-intersection, at which the western approach of Cordeaux Road forms the minor leg. At that intersection, Cordeaux Road west is signposted as “no through road” and provides only local access to a small number of residences and fire trails. Harry Graham Road provides access through to Picton Road (Main Road 95).

Princes Highway (HW1) is a State and Regional Road linking Sydney to the Victorian border. It is a State Road from the southern end of the Princes Motorway at the Bulli Tops interchange via Bulli Pass and Bulli to Bellambi Lane, then via Bellambi Lane and Memorial Drive to the on/off ramps at Flinders Street, North Wollongong, then via Flinders Street, Keira Street and Crown Street, Wollongong to the junction with Five Islands Road at Unanderra. It is a Regional Road from the intersection of Five Islands Road at Unanderra via Dapto, to the intersection with the F6 Southern Freeway at Yallah.

9. Background Traffic Volumes

TTPP has collated and reviewed traffic survey data previously collected on behalf of ICHPL on the roads relevant to the Modification. This includes data on Mondays to Saturdays along the route between the Dendrobium Pit Top Access and Princes Highway.

Transport for New South Wales (TfNSW) collects and publishes Annual Average Daily Traffic (AADT) volume data on classified roads throughout NSW. AADT is the average number of vehicles passing the survey location per day, measured over one year. The most recent two-way traffic volume data available on Princes Highway is north-east of Gibsons Road at Figtree (Station 07593), where data was collected up to 2022. During 2020, Princes Highway carried 28,660 vehicles per weekday and 24,199 vehicles per day on weekend days (noting that the AADT data at that station displays a reduction in traffic during 2021 and 2022). The southbound (only) AADT on Princes Highway north-east of Five Islands Road (Station 7217) in 2024 was 11,782 vehicles (10.3 per cent [%] heavy vehicles) per weekday and 9,498 vehicles (7.1 % heavy vehicles) per weekend day in 2024.

Surveys conducted during March-April 2017 quantified the volume and classification of vehicles on Cordeaux Road east of Stones Road in Mount Kembla, and on the Dendrobium Pit Top Access. The survey excluded vehicles using the car parking area to the east of the entry intersection with Cordeaux Road, which was estimated by GTA Consultants (2019)⁴ to generate 128 vehicle trips on a weekday. At the time of the surveys, the workforce at the Dendrobium Pit Top was indicatively 400 people, with two development units in use. The daily traffic volumes recorded at those locations over Monday to Saturday are summarised in Table 2.

Table 2 demonstrates that the demands on the surveyed roads varied from day to day, with the highest demand at the Dendrobium Pit Top access recorded on Tuesday, and the highest daily demand on Cordeaux Road recorded on Friday. On weekdays, the surveyed trip generation of the Dendrobium Pit Top was between 401 and 601 vehicle trips per day, with an estimated 128 vehicle trips per day not captured by the survey.

Table 2: Surveyed Daily Two-Way Traffic Volumes 2017 (vehicles per day)

	Dendrobium Pit Top			Cordeaux Road		
	Light	Rigid Heavy	Articulated	Light	Rigid Heavy	Articulated
Monday	468	56	2	3,011	210	7
Tuesday	545	53	2	3,354	205	14
Wednesday	504	63	2	3,565	182	11
Thursday	489	53	1	3,295	192	22
Friday	365	32	2	3,546	211	15
Saturday	182	13	0	3,309	96	6

^A excludes car parking to the east of the entry, estimated to generate 128 vehicle trips per weekday.

Figure 1 shows how the demands on Cordeaux Road varied throughout the day, with distinct morning and evening peaks on weekdays with the exception of Friday, which displays a more spread evening peak period. The demands on Saturday were distinctly different from those of the weekdays. Peak hourly demands on weekdays were up to 347 vehicles per hour in the morning (8:00 am to 9:00 am on Thursday) and up to 384 vehicles per hour in the evening (4:00 pm to 5:00 pm on Wednesday).

⁴ GTA Consultants (2019), *Dendrobium Mine – Plan for the Future: Coal for Steelmaking Road Transport Assessment*.

Figure 1: Two-Way Traffic on Cordeaux Road 2017

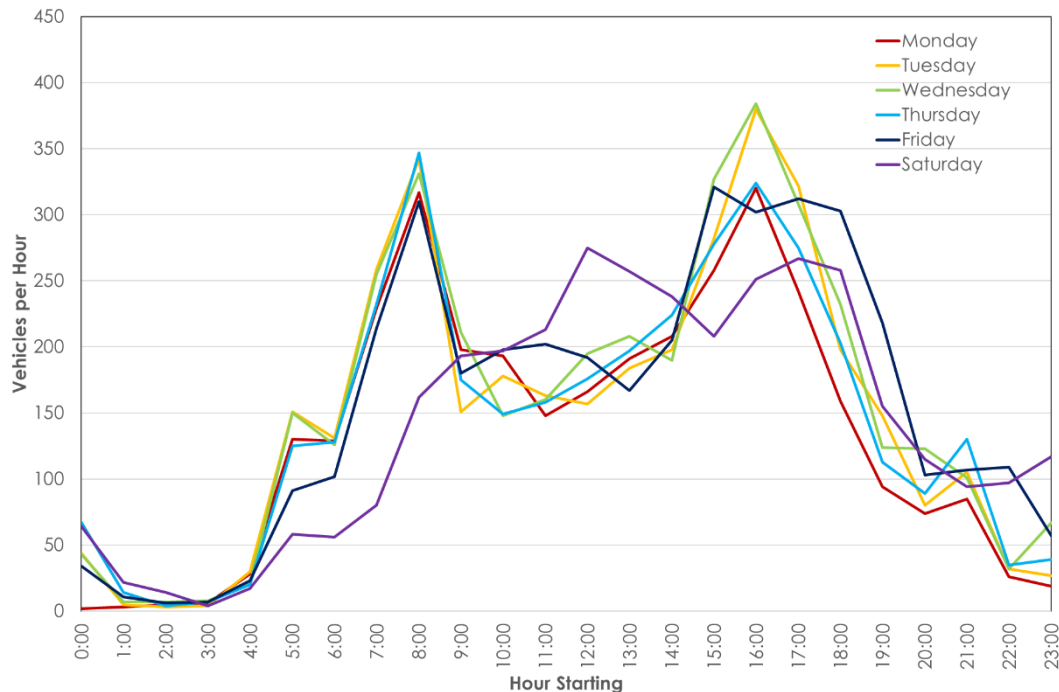
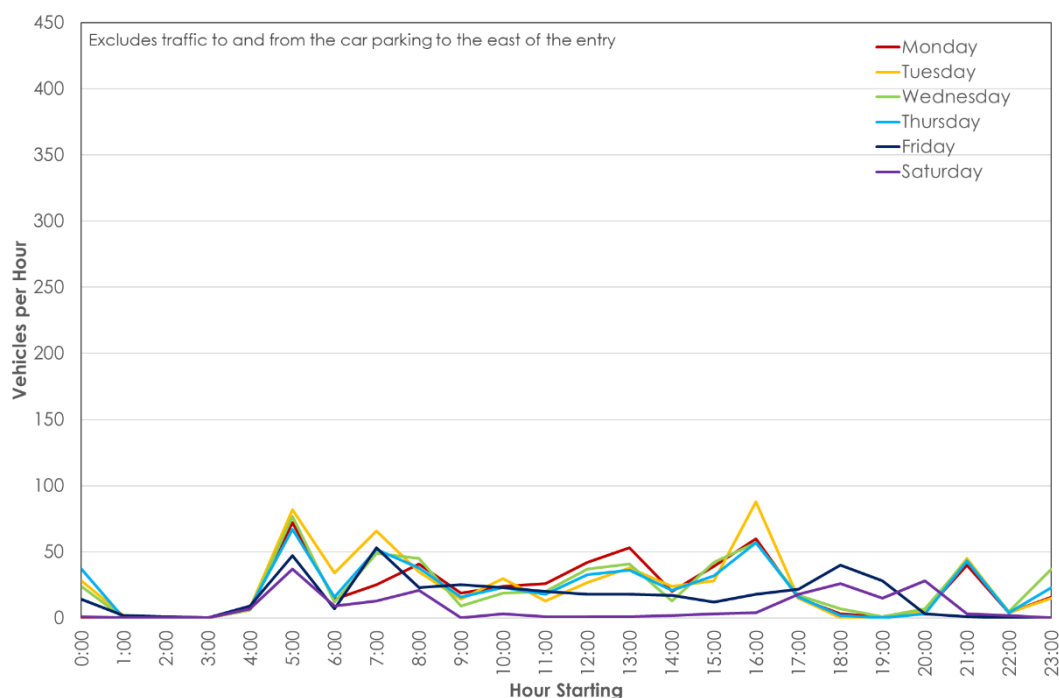


Figure 2 shows how the demands on the Dendrobium Pit Top access varied throughout the day, with peak hourly demands on up to 82 vehicles per hour in the morning (5:00 am to 6:00 am on Tuesday) and up to 88 vehicles per hour in the evening (4:00 pm to 5:00 pm on Tuesday). The traffic generated to and from the car park to the east of the entry is estimated to have generated an additional 15 to 20 vehicle trips during the peak hours.

Figure 2: Two-Way Traffic on Dendrobium Pit Top Access 2017

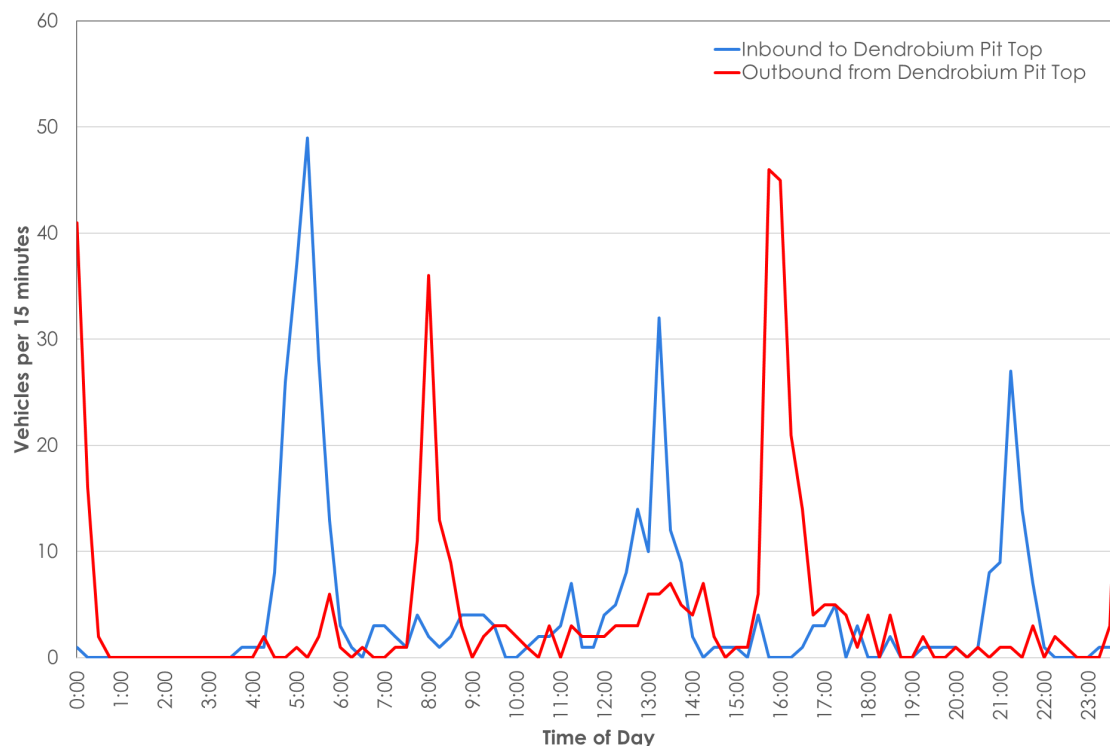


An intersection vehicle turning movement survey conducted over six hours on a Thursday in March 2017 concurrent with the above surveys found that approximately 95% of traffic using the Dendrobium Pit Top Access Road approached from or departed to Cordeaux Road east of the access.

A supplementary survey was undertaken at the intersection of Cordeaux Road and the Dendrobium Pit Top Access Road over a 24-hour period on Wednesday 21 July 2021. With the exception of non-essential visitors to the Dendrobium Pit Top due to Covid restrictions, operations were normal at that time. At the time of that survey, two additional development units had been introduced at the Dendrobium Pit Top, with a total workforce of approximately 500 people. The car park at the Dendrobium Pit Top had also been upgraded and extended, with an increase in the number of car parking spaces available compared with 2017. The survey included vehicles travelling to and from the car parking to the east of the entry.

Figure 3 presents the surveyed distribution of inbound and outbound vehicles at the Dendrobium Pit Top every 15 minutes throughout the day. This shows the “peaky” nature of the traffic, with short distinct peaks occurring, separated by periods of very low trip generation.

Figure 3: Dendrobium Pit Top Access Traffic 2021



The peak hours for the number of vehicle trips generated to and from Dendrobium Pit Top in 2021 occurred between 4:45 am and 5:45am, and between 3:45 pm and 4:45 pm. Over the 24-hour period, approximately 94 % of traffic using the Dendrobium Pit Top Access approached from or departed to Cordeaux Road east.

At the time of the 2021 survey, non-essential visitors to the Dendrobium Pit Top were not permitted. Under normal conditions, and based on review of visitor sign-in records outside of the restrictions in place during the survey, an average of approximately 12 visitors attends the Dendrobium Pit Top per day, primarily during business hours 9:00 am to 5:00 pm. Operations at the Dendrobium Pit Top typically receive up to 20 heavy vehicle deliveries per day, generating up to 40 heavy vehicle trips per day during the allowable travel hours only. During the 2021 supplementary survey, 33 heavy vehicle movements were recorded to and from Dendrobium Pit Top.

Key findings of the supplementary survey are summarised in Table 3, which also presents the estimated total existing traffic generation of the Dendrobium Pit Top allowing for the attendance of non-essential visitors and a "busy" day for deliveries not captured in the 2021 survey. It also presents the estimated contribution that traffic to and from Dendrobium Pit Top makes to traffic on Cordeaux Road east of the Dendrobium Pit Top. These consider the peak hours for operational traffic generated to and from Dendrobium Pit Top (4:45 am to 5:45am, and 3:45 pm to 4:45 pm) as well as the peak hours for workforce traffic expected to be generated by the Modification (indicatively 6:30 am to 7:30 am, and 4:30 pm to 5:30 pm) and peak hours for traffic on Cordeaux Road in t Kembla (8:00 am to 9:00 am and 4:00 pm to 5:00 pm).

Table 3: Dendrobium Pit Top Two-Way Daily and Peak Hourly Traffic

	Light Vehicles	Mini Buses	Heavy Vehicles	Total Vehicles
Daily Traffic (vehicles per day)				
Surveyed weekday in 2021	789	11	33	833
Existing Total Dendrobium Pit Top Traffic	813	11	40	864
Existing Dendrobium Pit Top Traffic on Cordeaux Road east	765	11	40	816
4:45 am to 5:45 am Dendrobium Pit Top AM Peak Hour (vehicles per hour)				
Surveyed weekday in 2021	143	0	0	143
Existing Total Dendrobium Pit Top Traffic	143	0	0	143
Existing Dendrobium Pit Top Traffic on Cordeaux Road east	134	0	0	134
6:30 am to 7:30 am Modification Workforce AM Peak Hour (vehicles per hour)				
Surveyed weekday in 2021	6	0	4	10
Existing Total Dendrobium Pit Top Traffic	6	0	4	10
Existing Dendrobium Pit Top Traffic on Cordeaux Road east	6	0	4	10
8:00 am to 9:00 am Cordeaux Road AM Peak Hour (vehicles per hour)				
Surveyed weekday in 2021	70	0	0	70
Existing Total Dendrobium Pit Top Traffic	70	0	0	70
Existing Dendrobium Pit Top Traffic on Cordeaux Road east	66	0	0	66
3:45 pm to 4:45 pm Dendrobium Pit Top PM Peak Hour (vehicles per hour)				
Surveyed weekday in 2021	126	1	0	127
Existing Total Dendrobium Pit Top Traffic	130	1	2	133
Existing Dendrobium Pit Top Traffic on Cordeaux Road east	122	1	2	125
4:00 pm to 5:00 pm Cordeaux Road PM Peak Hour (vehicles per hour)				
Surveyed weekday in 2021	88	0	0	88
Existing Total Dendrobium Pit Top Traffic	90	0	2	92
Existing Dendrobium Pit Top Traffic on Cordeaux Road east	85	0	2	87
4:30 pm to 5:30 pm Modification Workforce PM Peak Hour (vehicles per hour)				
Surveyed weekday in 2021	40	0	0	40
Existing Total Dendrobium Pit Top Traffic	42	0	2	44
Existing Dendrobium Pit Top Traffic on Cordeaux Road east	40	0	2	42

10. Impacts of Modification Trips on Cordeaux Road

The impacts of the Modification activities on the total vehicle trips to and from Dendrobium Pit Top on Cordeaux Road east of the Dendrobium Pit Top are summarised in Table 4.

Table 4: Impact of Modification on Dendrobium Pit Top Weekday Traffic Cordeaux Road East

	Light Vehicles	Mini Buses	Heavy Vehicles	Total Vehicles
Daily Traffic (vehicles per day)				
Existing Dendrobium Pit Top Traffic	765	11	40	816
Modification Traffic	10	0	10 to 18	20 to 28
Total with Modification	775	11	50 to 58	836 to 844
4:45 am to 5:45 am Dendrobium Pit Top AM Peak Hour (vehicles per hour)				
Existing Dendrobium Pit Top Traffic	134	0	0	134
Modification Traffic	0	0	0	0
Total with Modification	134	0	0	134
6:30 am to 7:30 am Modification AM Peak Hour (vehicles per hour)				
Existing Dendrobium Pit Top Traffic	6	0	4	10
Modification Traffic	5	0	3 ^A	8
Total with Modification	11	0	7	18
8:00 am to 9:00 am Cordeaux Road AM Peak Hour (vehicles per hour)				
Existing Dendrobium Pit Top Traffic	66	0	0	66
Modification Traffic	0	0	5	5
Total with Modification	66	0	5	71
3:45 pm to 4:45 pm Dendrobium Pit Top PM Peak Hour (vehicles per hour)				
Existing Dendrobium Pit Top Traffic	122	1	2	125
Modification Traffic	0	0	4 ^B	4
Total with Modification	122	1	5	129
4:00 pm to 5:00 pm Cordeaux Road PM Peak Hour (vehicles per hour)				
Existing Dendrobium Pit Top Traffic	85	0	2	87
Modification Traffic	3	0	5	8
Total with Modification	88	0	7	95
4:30 pm to 5:30 pm Modification PM Peak Hour (vehicles per hour)				
Existing Dendrobium Pit Top Traffic	40	0	2	42
Modification Traffic	5	0	3 ^B	8
Total with Modification	45	0	5	50

^A Between 7:00 am and 8:00 am only

^B Between 4:00 pm and 5:00 pm only.

Table 4 indicates that the trips generated by the Modification would tend to have negligible impact on the total traffic generated to and from Dendrobium Pit Top during the peak hours associated with background operational activities at Dendrobium Pit Top and background peak conditions on Cordeaux Road in Mt Kembla.

The additional 20 to 28 vehicle trips per day expected to be generated by the Modification activities is well within the day-to-day variations in total traffic demands observed on Cordeaux Road and the Dendrobium Pit Top access during the traffic surveys in 2017 (Table 2). The additional maximum number of trips during any one hour are well within the day-to-day variations in traffic demands observed on Cordeaux Road in 2017.

Considering the background traffic on Cordeaux Road and Princes Highway, the increases in traffic as a result of the Modification are sufficiently small that they would have an imperceptible impact on the performance of Cordeaux Road and its intersections, and would occur over a limited period of six days. No measures are required to provide additional capacity for the Modification traffic.

11. Modification Access Arrangements

All vehicles generated by the Modification activities would enter and exit Dendrobium Pit Top via the existing access intersection on Cordeaux Road. The types of vehicles that would be used for the Modification activities are consistent with the types of vehicles that are used for operational activities at Dendrobium Pit Top. As the layout of the access satisfactorily accommodates those vehicles, no issues are raised regarding the suitability of the access arrangements for the Modification-generated vehicles. All vehicles would enter and exit Dendrobium Pit Top in a forward direction.

12. Conclusion

It is concluded that the Modification would have acceptable impacts on the operation of the road network and its intersections. No specific measures are required to mitigate the impacts of the Modification, as:

- the volume of traffic forecast to be generated by the Modification activities would be negligible in the context of the background traffic conditions;
- the activities have been conservatively assessed to occur over a period of six days (if the actual period is longer this would result in lower traffic volumes compared to what has been assessed in this review);
- the types of vehicles are consistent with vehicles currently accessing the Dendrobium Pit Top; and
- all vehicular activity would be undertaken in accordance with the *Dendrobium Drivers Code of Conduct*.

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 8437 7800.

Yours sincerely,



Penny Dalton
Associate Director