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25 September 2019

P1489 Bangus Quarry Landfill report

InSitu Advisory
P O Box 503
Frenches Forest NSW 1640

Attn: Alan Dyer

Dear Alan,

Proposed Bangus Quarry Landfill development, Tumblong, NSW.

Further to your request we have now completed our review of the documentation for the proposed landfill site and have completed our site assessment work. We have completed this assessment of the proposed transport operations associated with the project, undertaken consultation with the RMS and provide the following advice. This assessment has been completed taking into account the RMS Guide to Traffic Generating Developments as well as the detailed discussion held with the RMS for the project.

Background

The existing Bangus gravel quarry is identified as Lot 7004 of Deposited Plan 1028797 and Lot 7300 of Deposited Plan 1149008 and was designated as a quarry reserve (Reserve 89508) in 1975. The Bangus gravel pit is located on the gravel surfaced Tumblong Reserve Road, approximately 1.2 km from its intersection with the Old Hume Highway. In turn, the sealed Old Hume Highway intersection with the current Hume Highway lies a further 2.25 km to the south. It is accessed with B-doubles via the intersection of the Old Hume Highway and Hume Highway with trucks from both north and south of the intersection.

The quarry occupies approximately 4.5 hectares of land and the site is located in close proximity to the former Tumblong landfill and is adjoined by a travelling stock reserve and two large rural holdings. The nearest residence is approximately 800 metres from the existing operation.

The quarry has been used as a source of gravel to service regional needs. The quarry will soon reach the end of its productive life and requires remediation in accordance with the quarry licence requirements and duty of care to the community.

This proposal involves remediation of the quarry by utilising it for landfill purposes after which the quarry will be capped and returned to a state consistent with the surrounding landscape and local biodiversity considerations.

The proposed landfill will fulfil a local regional need servicing a single manufacturing facility operating in the resource recovery and recycling industry. Visy Pulp and Paper, located at Tumut, NSW is a producer of Kraft linerboard utilising plantation grown radiata pine and recycled wastepaper. Unfortunately, due to anomalies and imperfections in the recycling industry, contaminants such as glass, metal and plastics are generated in the

process and these elements are required to be sent to landfill in the absence of other resource recovery options. The waste stream includes dregs and grits, boiler sand / fly ash and Paper Machine Rejects. Paper Machine Rejects composition includes 80% plastics, 8% paper and 12% other materials. The waste classification is General Solid Waste (Non–Putrescible).

Waste handling procedures will include regular testing, loading and weighing at the source, transportation in covered vehicles, disposal at the proposed site and relevant reporting documentation.

The surrounding area has a typical rural outlook including primarily open and relatively flat cropping and grazing country, mainly to the south and west with some higher and more heavily vegetated hill country joining the north east corner of the site. The rural landscape is typical of other rural land in the region that has been subject to historic clearing practices and subject to improved pastures for grazing and cropping purposes. The site adjoins the Tumblong travelling stock reserve within which is located the former Tumblong community landfill.

Larger rural holdings adjoin the area to the north, west and south with a number of hobby farms located west of the site. The hobby farms generally front the Old Hume Highway and are in the vicinity of 9 to 10 hectares in area. The larger rural property residences are widely dispersed.

Access to the site is currently provided via an existing access off the Old Hume Highway which connects to the Hume Highway to the south of the site.

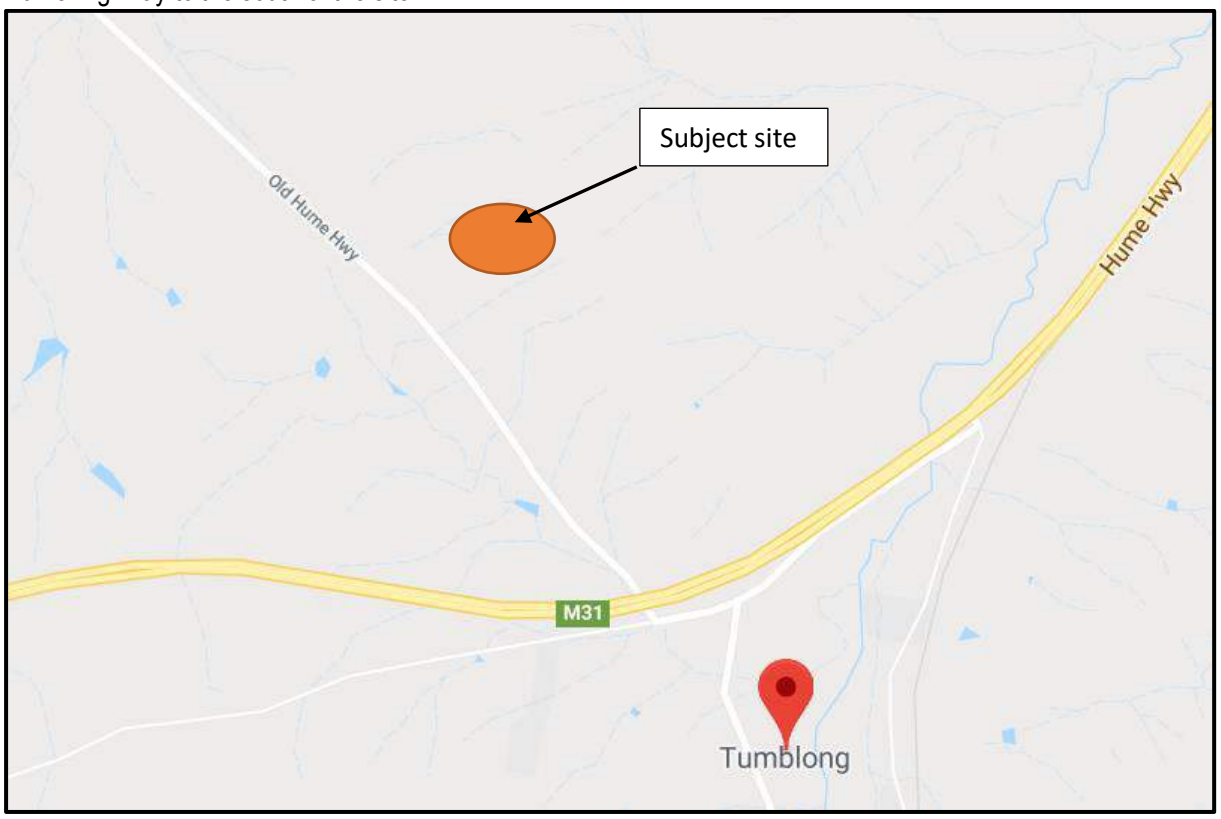


Figure 1 – Location of the subject site in the context of the local road network.

Road Hierarchy

The main road through the locality is the **Hume Highway** which provides a major road connection in the area linking Sydney to the north and Melbourne to the south. As a state highway, it carries a reasonable volume of traffic which includes both local traffic and interstate transport demands. In the vicinity of the subject site the Hume Highway operates under the posted speed limit of 110 km/hr and provides 2 lanes of travel in both directions with a central median to separate opposing traffic movements.

The Hume Highway connects with the **Old Hume Highway** via an at-grade 4-way intersection, with a local connection to Tumblong being the 4th leg to this intersection. Access to the site is via the Old Hume Highway, which provides a sealed road surface to the site access with a pavement width of 10 metres.

Traffic flows on the Hume Highway are recorded by the RMS and show that in 2019, to the north of the site near Gundagai, the daily traffic flows are 10,877 vehicles per day, with 34% heavy good vehicles. This would give potential peak hour traffic flows in the order of 900 vehicles 2-way in a single hour, based on peak flows representing around 8% of the daily flows. Given that this road forms part of the state road network, carrying a significant volume of freight between Sydney and Melbourne it is considered that the flows would be reasonably consistent throughout the typical day. Traffic flows on the Old Hume Highway are much lower, carrying local traffic only with a destination along the road. Based upon observations completed at the time of the site visit by Seca Solution, the 2-way traffic flow on the Old Hume Highway is less than 10 vehicles per hour and 100 per day.

It is noted that the Hume Highway is approved for B-double use as is the majority of the length of the Old Hume Highway from its intersect with the Hume Highway, past the site as far as Hillas Creek Bridge. This road is currently used by B doubles associated with the quarry with trucks accessing the site from the north and south via the intersection of the Hume Highway and Old Hume Highway.

Proposal

The proposed landfill shall fully comply with the requirements of the NSW EPA Environmental Guidelines: Solid Waste Landfills, Second Edition 2016 and the NSW Department of Planning and Environment's EIS Guideline Landfilling (Department of Urban Affairs and Planning, 1996).

The concept design will incorporate a composite lining barrier system utilizing a combination of compacted clay, geosynthetic clay liner (GCL) and HDPE geomembrane. A leachate drainage blanket will be installed on the base and side slope of the proposed landfill to collect leachate into a sump area. Leachate shall be periodically pumped and stored within an open leachate storage pond between Tumblong Reserve Road and the western edge of the proposed landfill.

Waste shall be placed within the landfill to form a final waste profile of 1(V):5(H) or 20% perimeter slope angles. The proposed design capacity of the landfill has a capacity to accept in the order of 485,000m^3 of waste.

The proposed facility will require the establishment of a small site office, together with staff amenities and storage area to facilitate operational needs. These facilities will be established in a way that minimises, in particular, visual impacts from off site.

Minimal car parking will be provided close to the office and amenities.

The landfill is projected to directly employ eight full time staff. However, there may be opportunities for further positions to be created as new sustainable technologies and procedures are introduced to the resource recovery process. Projected employment positions include:

- Three onsite plant and maintenance workers.
- One loader operator at waste source.

- Two truck drivers.
- One administration officer.
- One manager.

The proposal will also involve temporary construction staff, plant operators and management as well as the employment of support service industries and other businesses during the course of construction, operation and remediation. Added to this is the potential multiplier effect on the immediate local economy and job creation environment which is generally in the range of three times the direct employment number.

The operational activities on the site will include the use of the following plant and machinery:

- Haulage Heavy Vehicles (truck and Trailer).
- Water Cart.
- Front End Loader.
- Excavator.
- This machinery will be utilised for waste haulage, dust suppression and waste emplacement respectively.

During the operational phase of the landfill, the facility is proposed to receive waste at a maximum rate of 60,000 tonnes per annum.

The waste disposal process to be followed during the normal daily operation of the facility is outlined below:

- Waste is loaded onto vehicles at the source.
- The load is covered so as to prevent any escape of waste while in transit.
- The vehicle weight is recorded upon entering and leaving the site and the net vehicle weight leaving the site is recorded.
- Waste is transported via the designated haulage route to the landfill.
- The vehicle arrives at site and establishes contact with site management and staff via UHF radio and proceeds along the site access road to the waste receival area.
- The vehicle is guided to the waste unloading hopper.
- Waste is unloaded into the waste cell.
- The haulage vehicle is inspected and any remaining waste on the interior or exterior of the vehicle is removed and placed in the cell.
- The waste is spread and compacted by the front-end loader / excavator located within the waste cell.
- The haulage vehicle leaves the site to pick up another load of waste.
- The process is repeated.

Road Authority Consultation

As part of the project work, Seca Solution has consulted with Maurice Morgan from the RMS Wagga Wagga office with regard to the project. The RMS have advised the following:

- The volume of traffic associated with the project is not considered to create any issues with regards to road capacity along the haulage route
- The intersection of the Hume Highway and Old Hume Highway creates safety concerns, due to the width of the median for storage of vehicles and potential safety implications
- Seca Solution indicated that the project may involve the use B doubles to haul the material to the site. The RMS indicated that this would create safety concerns, as the width of the central median between the opposing traffic movements on the Hume Highway would not permit the B double to prop outside of the traffic lanes
- Options discussed for the project included limiting the length of trucks that can use the existing median in this location to ensure that the vehicle can be fully located within the central median and not over-hang into the through traffic lanes on the Hume Highway
- If the project wishes to use B doubles for access, then the vehicles would have to continue past the Old Hume Highway and complete a safe U turn further along the Hume Highway. The location suggested by Seca Solution is at Rosedale Road, approximately 10 kms south of the Old Hume Highway.

Review of transport route

The project requires heavy vehicles to travel between the site at Tumut and the landfill site at Tumblong. The route will allow for the following:

- Exit site onto Snowy Mountains Highway, turning left towards the east
- Turn left onto Gocup Road at the 4-way intersection and head north towards Gundagai South
- Turn left from Gocup Road / Cross Street onto Mount Street to connect with the Hume Highway via the 4-way roundabout
- Travel to the site via Old Hume Highway

The return journey, with empty trucks, uses the same route and crosses over the Hume Highway via the Cross Street overbridge.

A review of this route shows that this route is currently well used by B-doubles in both directions and provides a good alignment. Gocup road has been upgraded by the RMS over the last 5 years with $70 million spent to improve the alignment and provide overtaking lanes. It provides a safe road alignment and is suitable to carry the vehicles associated with the project site. The route for the trucks associated with the project provides a safe connection and the intersections along the route have all been designed to accommodate the swept path requirements for B doubles. It is noted that whilst B-doubles use the Old Hume Highway with access off the Hume Highway, this creates some safety concerns as the central median is not adequate to accommodate the length of a stationary B-double vehicle.

The project is seeking to transport 60,000 tonnes of waste per annum to the Bangus quarry landfill site, predominantly using truck and dog combinations. With a typical truck load of 30 tonnes (truck and dog combination) this would generate some 2,000 truck movements per direction between the site at Tumut and Bangus quarry.

It is considered that the typical daily traffic flows per direction will be between 10-15 truck movements (300-450 tonnes per day). Based on the site observations, it is considered that these trucks will have a minimal and acceptable impact upon the road network between the two sites, with 2 truck movements per hour per direction created by the project.

Impact at Hume Highway and Old Hume Highway

Based upon the observations on site, together with the discussion with the RMS, it is considered that the additional traffic movements associated with the project shall have a minimal impact upon the capacity of this intersection. However, it is considered that B-doubles should not be permitted to turn right off the Hume Highway into the Old Hume Highway. The distance between the opposing traffic movements for trucks to prop is 20 metres and a B-double is typically 25 metres long. A B-double propped here is considered to be a safety risk for this project.

For truck and dog combinations, the length of these combinations is less than 20 metres and as such are able to prop in an appropriate manner between the opposing traffic movements on the Hume Highway. Site observations confirmed this, with a 19 metres semi-trailer observed to be propped in the central median whilst completing a U-turn at this location. When located in the central median, the view south along the Hume Highway for a driver exceeds 500 metres (12.5 second gap measured on site) and allows a driver to determine a suitable time to cross the northbound carriageway of the Hume Highway to enter the Old Hume Highway.

For the return movement with empty trucks, the vehicles shall turn left out of the Old Hume Highway. The gap to the approaching vehicles approaching on the Hume Highway was measured at 12.5 seconds, which would safely permit a driver to determine a suitable gap to exit the Old Hume Highway and merge into the Hume Highway. The forward sight distance also allows a driver approaching the intersection to adjust their vehicle speed if required and / or move right into the outside travel lane to pass a truck exiting the Old Hume Highway.

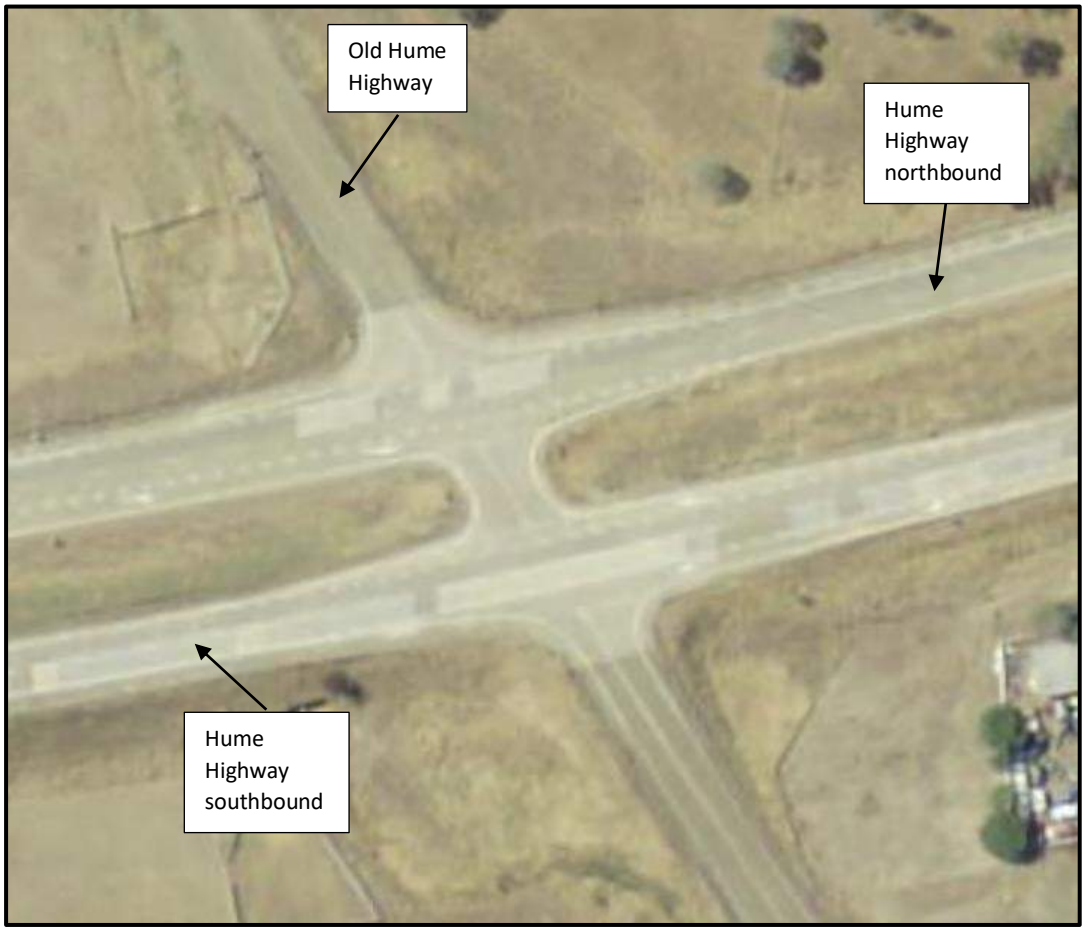


Figure 2 – Aerial view of intersection of Hume Highway and Old Hume Highway. Central median allows for a 20 m long vehicle to prop in the median.

If the project requires B double use, these will not be permitted to turn right at Old Hume Highway. They shall instead proceed to Rosedale Road to complete a U-turn. At this location, there is a right turn deceleration lane for trucks to turn into the central median turn lane. The central median in this location allows for 35 metres storage, which is sufficient for a B-double. Visibility for a driver then turning right to head back north along the Hume Highway exceeds 1 km.

As part of the project, a Drivers Code of Conduct shall be prepared that shall detail these controls to ensure that road safety is maintained for the project, especially at the intersection of the Hume Highway and Old Hume Highway.

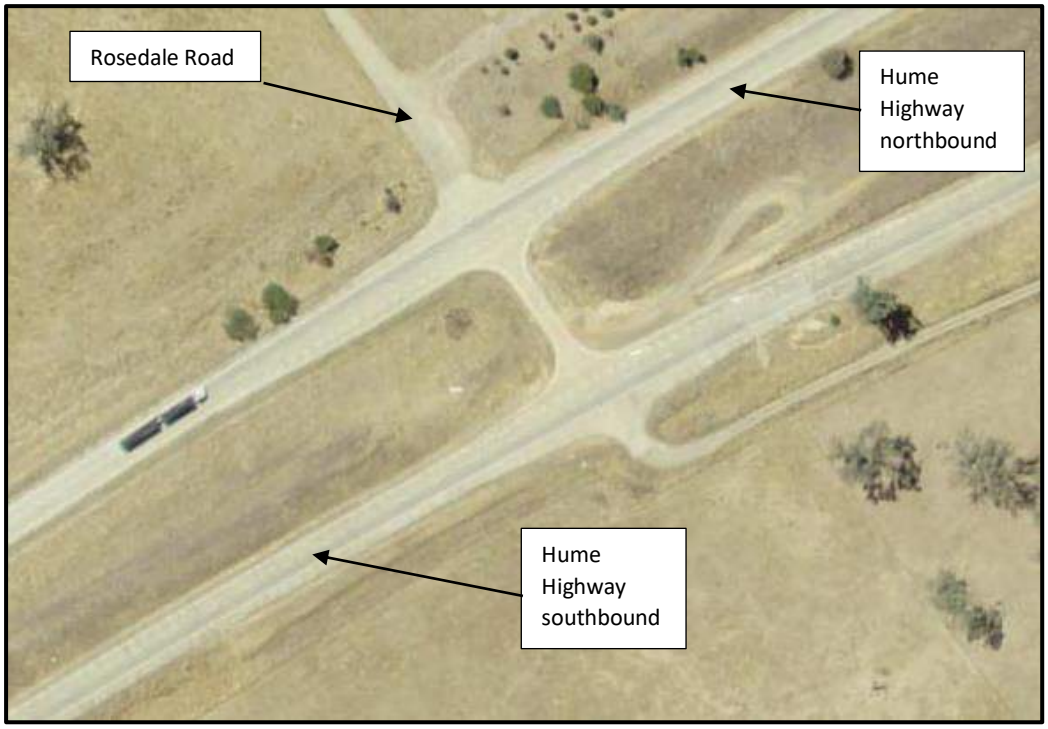


Figure 3 – Intersection of Hume Highway and Rosedale Road. Central median approximately 40 metres

Accident data available for the intersection of the Hume Highway and Old Hume Highway shows that there has been a single vehicle accident at this location over the 4 year timeframe for the data. The accident involved a cross movement at this location and resulted in a serious injury.

Internal site operation

The project site area will allow all vehicles to enter and exit the site in a forward direction. The site has formally operated as a quarry and allows for the circulation of large trucks across the site. The internal operations will be controlled with a specific on-site management plan.

Conclusion

From our study work it is concluded that the proposed development can operate in a safe and satisfactory manner. Discussion with the RMS has highlighted the safety concerns at the key intersection of the Hume Highway and Old Hume Highway and the project will allow for suitable vehicle use and the control of vehicles at this location to maintain road safety.

Overall it is considered that the proposed development should be approved with respect to traffic and road safety.

Please feel free to contact me on (02) 40327979 should you have any further queries.

Yours sincerely,

Sean Morgan
Director

Site Photos:

Photo 1 – view to left (south) for driver propped in central median at Old Hume Highway

Photo 2 – View north to approach to Old Hume Highway intersection. Note right turn deceleration lane for vehicle exiting the Hume Highway.

Photo 3 – Central cross over on Hume Highway at Old Hue Highway intersection. Width allows for 20 metres vehicle to prop in the centre of the opposing traffic movements on the Hume Highway.

Photo 4 – Typical cross section and formation along Old Hume Highway between fill site access and Hume Highway

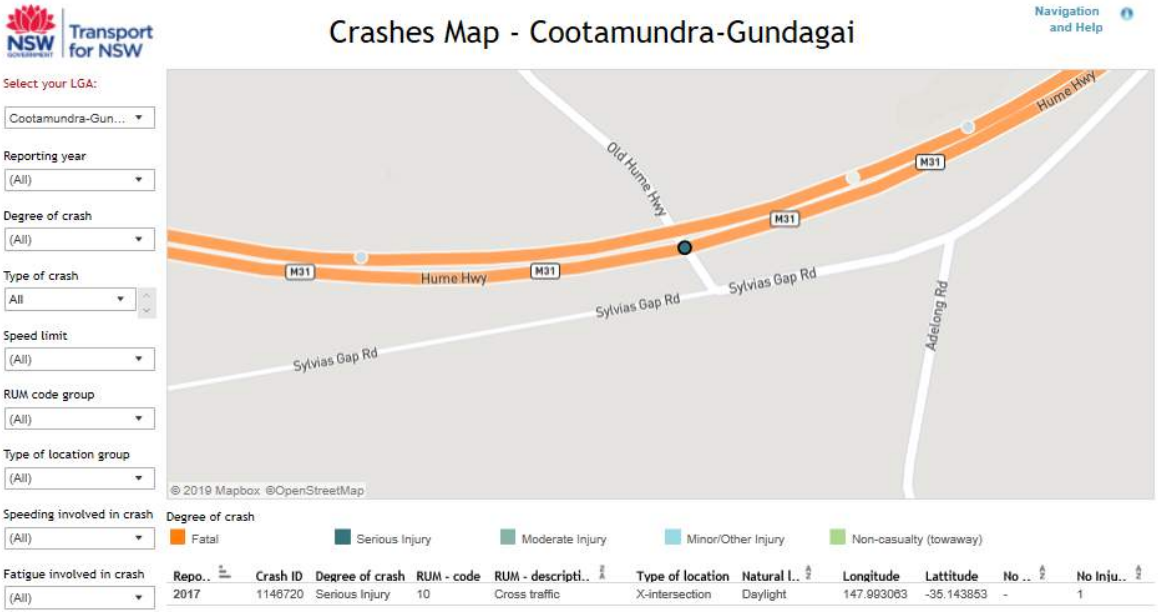
Photo 5 – View right (south) for driver exiting Old Hume Highway onto Hume Highway

Photo 6 – View north along Hume Highway showing right turn deceleration lane for turns into Rosedale Road

Photo 7 – Central median at Rosedale Road. Distance for vehicle storage approximately 40 metres

Photo 8 – View to left (south) for driver exiting U-turn option at Rosedale Road

Accident data



Repo..	Crash ID	Degree of crash	RUM - code	RUM - descripti..	Type of location	Natural l..	Longitude	Lattitude	No ..	No Inju..
2017	1146720	Serious Injury	10	Cross traffic	X-intersection	Daylight	147.993063	-35.143853	-	1