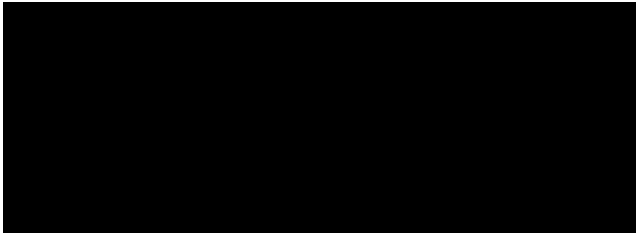




SALT CREEK HARD ROCK QUARRY
WA 1336
HEXHAM – WOORNDOO ROAD
WOORNDOO

TRAFFIC ASSESSMENT AND TRAFFIC
MANAGEMENT PLAN



Rev 0 Oct 2023

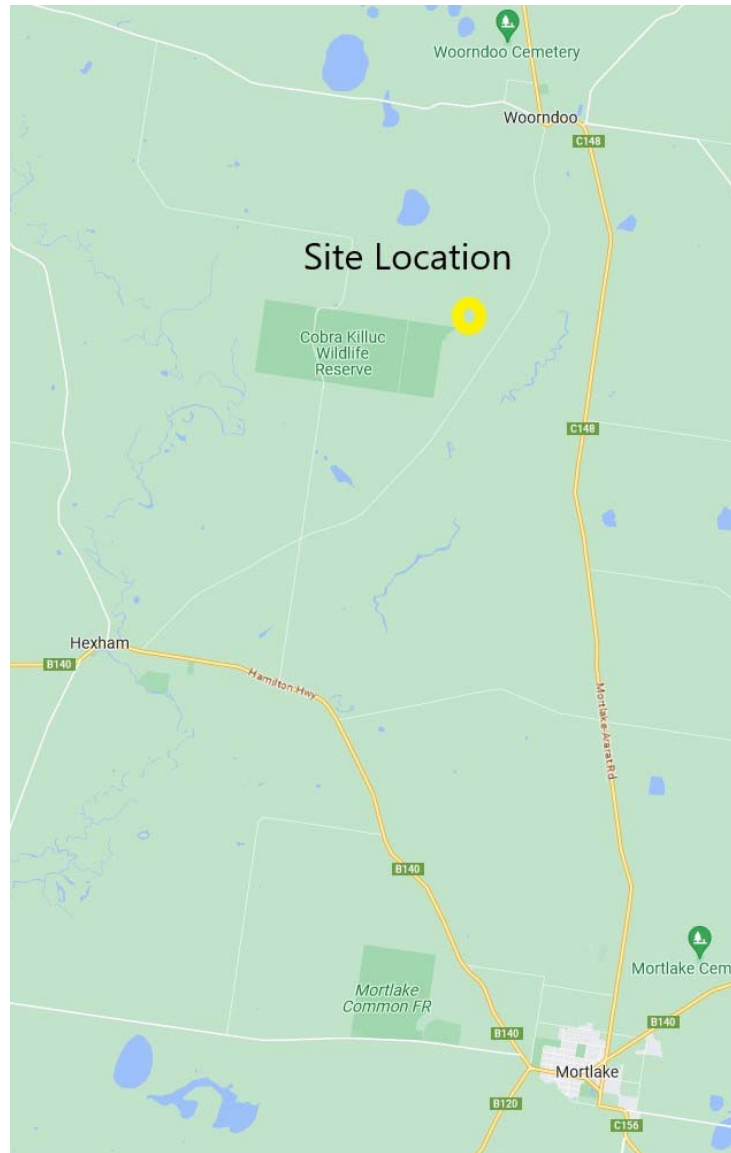
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1. INTRODUCTION

[REDACTED] has been commissioned to provide a Road and Traffic Management Plan associated with the Salt Creek Quarry at Hexham – Woorndoo Road, Woorndoo as per Planning Permit PL07/138.



SITE LOCATION

2. SCOPE OF THE REPORT

The purpose of this report is to describe the existing road conditions surrounding the site and makes recommendations regarding road infrastructure improvements to service the development and delivery routes.

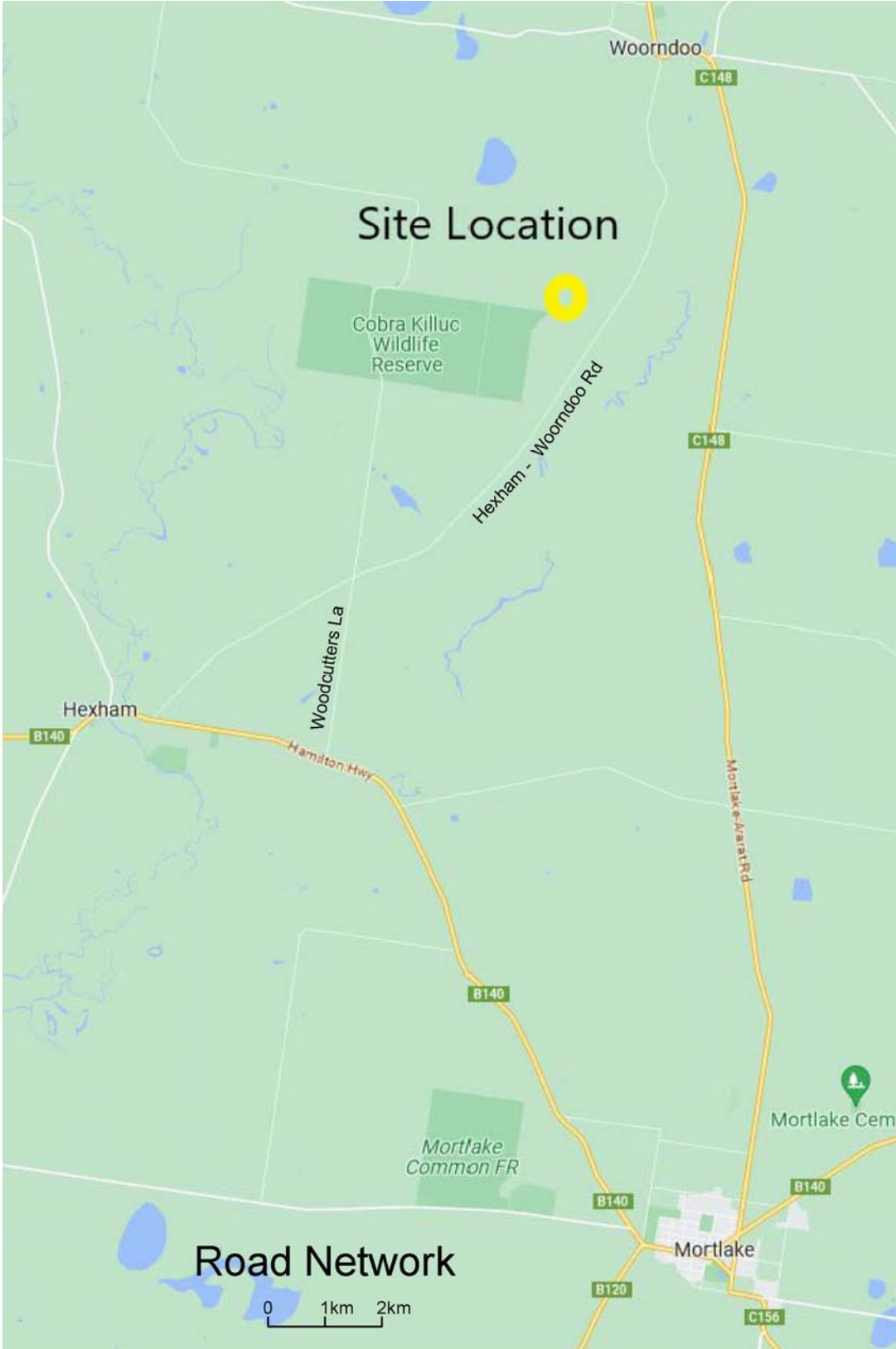
3. EXISTING ROAD NETWORK

The road network consists of:

Hexham – Woorndoo Road northwards to Mortlake – Ararat Road. Mortlake – Ararat Road (C148) is a declared road administered by the Department of Transport.

Hexham – Woorndoo Road south west to Woodcutters Lane, thence Woodcutters Lane southwards to Hamilton Highway. Hamilton Highway (B140) is a declared road administered by the Department of Transport.

Higher order declared main roads administered by Department of Transport are deemed to be suitable for trucks engaged in quarry deliveries.



CRASH STATISTICS

With reference to the VicRoads CrashStats website and a review of information regarding crashes from the www.data.vic.gov.au website, there has been one crash in the last 5 years along the Hexham – Woorndoo Road. This was a single vehicle collision on a Sunday caused by vehicle crashing into a parked car which resulted in a serious injury to one person.

3.1 Hexham - Woorndoo Road north of quarry entrance.

Woorndoo – Hexham Road north of quarry entrance consists of:
60.0m wide road reserve.

- 60.0m wide road reserve.
- 6.4m wide sealed road.
- 1.3m wide unsealed shoulders.
- The centreline is marked.
- Guideposts and warning signs are installed.

Woorndoo – Hexham Road north of the quarry entrance was upgraded for the construction and maintenance of the Salt Creek Wind Farm. The 5km length of sealed road links the quarry to Woorndoo township where it then connects to Mortlake – Ararat Road.

It is slightly undulating with some horizontal curves towards the north. Vehicles can readily achieve the default speed limit on the straighter sections of the road. The pavement is in excellent condition with no signs of deformity.

There is no speed limit posted for Hexham – Woorndoo Road, so the default speed of 100km will apply.



HEXHAM-WOORDOO ROAD FACING SOUTH APPROACHING ENTRANCE.

There is a T Junction warning sign 500m from the entrance. The intersection is not hidden and the T Junction sign is not warranted. The sign could be replaced with a truck symbolic warning sign (W5-22) to comply with planning permit requirements.

There is no sign posted speed limit of 80km/h when approaching the township. Mortlake – Ararat Road has a speed limit of 80km/hr through the township. Speed on Hexham – Woorndoo Road is constrained by the road geometry as the road approaches the intersection. A speed limit sign at this location would have no effect on speeds. This section of road has bends and hazard warning signs. The installation of an additional sign at this location could be unhelpful. It is more important for the driver to be aware of the approaching intersection. The road intersects with Mortlake Ararat Road within the township.

The intersection between Hexham – Woorndoo Road and Mortlake – Ararat Road is a “Y” Junction. Before the road upgrade there were two Give Way signs controlling this intersection. These were changed to Stop signs, probably as a part of the upgrade works. The warrants for installing Stop signs at this intersection do not exist. Visibility at the intersection is good and although the through road is posted as 80km/hr, there is an advisory sign in both directions to take the curve at 55km/hr.

Forcing trucks to Stop before entering the intersection means that the truck takes longer to move through the intersection. The risk of a traffic conflict is thereby increased. The Stop signs were probably installed under the mistaken notion that this will add a level of safety.



MORTLAKE-ARARAT ROAD & HEXHAM-WOORNDOO ROAD INTERSECTION



MORTLAKE-ARARAT ROAD & HEXHAM-WOORNDOO ROAD INTERSECTION FOR NORTH BOUND TRAFFIC FACING STOP SIGN.



MORTLAKE-ARARAT ROAD FACING SOUTH APPROACHING THE INTERSECTION.



MORTLAKE-ARARAT ROAD & HEXHAM-WOORNDOO ROAD INTERSECTION FOR EAST BOUND TRAFFIC FACING STOP SIGN.

3.2 Hexham - Woorndoo Road south of quarry entrance to Woodcutters Road.

Hexham – Woorndoo Road south of quarry entrance to Woodcutters Road consists of:

- 60.0m wide road reserve.
- 5.5m wide unsealed road.
- 1.0m unsealed shoulders.

Hexham – Woorndoo Road south of quarry entrance to Woodcutters Road. Is an unsealed road for 6.1km. It is managed by Moyne Shire Council. There is no posted speed limit so the default speed limit of 100km/h will apply although, being an unsealed road actual speeds travelled will be less.

There is a T Junction warning sign 500m from the entrance. The intersection is not hidden and the T Junction sign could be replaced with a truck symbolic warning sign to comply with planning permit requirements.

Heading south from the quarry entrance, Hexham – Woorndoo Road is relatively flat with long straight sections and large radius horizontal curves. There are spaced out guide posts.

The pavement is in good condition.



HEXHAM-WOORNDOO ROAD FACING SOUTH FROM QUARRY ENTRANCE.

The intersection with Woodcutters Lane is a staggered intersection. Woodcutters Lane has right of way. Hexham – Woorndoo Road approaches the intersection at 35 degrees off the perpendicular. The approach angle is reduced by the staggered configuration.

From the Woodcutters Lane intersection, the first 300m of Hexham – Woorndoo Road towards the quarry is sealed. This short length of road consists of:

- 60.0m wide road reserve.
- 6.4m wide sealed road.
- 1.0m unsealed shoulders.

The intersection is controlled by a Stop sign on Hexham – Woorndoo Road. The Stop sign is warranted because the visibility on the approach to the intersection is reduced by trees.



INTERSECTION OF HEXHAM-WOORNDOO ROAD AND WOODCUTTERS LANE



AT WOODCUTTERS LANE FACING NORTH EAST ALONG HEXHAM-WOORNDOO ROAD.

The entire intersection has been upgraded to two carriageway sealed width in all four directions. The other three directions then taper back to a single carriageway width of seal with wide shoulders.

3.3 Woodcutters Lane between Hexham - Woorndoo Road and Hamilton Hwy

- 20.0m wide road reserve.
- 3.3m wide sealed road.
- 1.7m wide unsealed shoulders.
- The centreline is not marked.

The section of road from Hexham – Woodcutters Lane to Hamilton Highway is 3.2km in length. It is a straight road. The sealed pavement is one carriageway width meaning that vehicles would move the passenger side wheels off the bitumen onto the gravel shoulder to pass oncoming traffic. This is normal on low traffic volume roads in rural areas.

There is no speed limit posted for Hexham – Woorndoo Road, so the default speed of 100km will apply. The intersection with Hamilton Highway offers good stopping sight distances. The intersection is controlled by a Give Way sign.



AT HEXHAM-WOORNDOO ROAD FACING SOUTH ALONG WOODCUTTERS LANE



INTERSECTION OF WOODCUTTERS LANE AND HAMILTON HIGHWAY

3.4 Quarry Entrance

Access to the site was established with the opening of the quarry. It consisted of a gravel road intersecting with a gravel road. During construction of the wind farm, Hexham – Woorndoo Road has been sealed as well as the first 25m of the access road. There is evidence on the ground that the swept path of the truck goes over the edge of the bitumen on the north side. A survey of the splay confirmed that it does not conform with IDM SD 265. The splay should be widened to conform with the SD. This will remove the problem of the swept path running off the bitumen.

There is a Give Way sign controlling exiting traffic.

The centre line marking for the access road is off centre and skewed northward. The line should be remarked to line up with the centreline of the access road to ensure that trucks are not deflected north on the approach.

There is evidence of minor pavement stress on Hexham – Woorndoo Road at the entrance.



QUARRY ENTRANCE

3.5 Access Road

The access road is a 6m wide unsealed pavement with a straight alignment. The pavement is in smooth condition.

It appears that the original speed limit on the road was 40km/hr but this was reduced to 25km/hr for the construction phase of the wind farm. Since the conclusion of the construction phase, there does not appear to be any warrant to restrict speed to any less than 40km/hr. The 40km/hr limit is still considered to be a controlled speed.

There is a T-Junction warning sign on the approach to Hexham – Woorndoo Road. This sign is not necessary because all traffic leaving the site has entered by the same route. For the same reason, the chevron hazard sign on the opposite side of Hexham – Woorndoo Road is unnecessary. Both of these signs could be removed either immediately or when they are deteriorated.

For traffic entering along the access road, there is signage to direct quarry related traffic. The existing signage is clear and does not need to be upgraded. A visitor or truck driver not familiar with the site will find the correct way.

4 PROPOSED QUARRY OPERATIONS

4.1 CURRENT OPERATIONAL ACTIVITY

The quarry currently operates from Monday to Friday between the hours of 7:00am to 6:00pm, and Saturday between the hours of 7:00am to 3:00pm.

The amount of extracted material that is produced from the quarry is estimated to be approximately 50,000m³ year.

4.2 PREDICTED TRAFFIC VOLUMES

As mentioned in the previous section, it is expected that the site will generate 50,000m³ per year. This is based on demand and capacity. Demand is linked to funding for road construction and maintenance as well as supply from other quarries. Demand in the future could fluctuate.

It is expected that the quarry will generate 1500 truckloads per year or an average of 6-7 loads per day. (This equates to 12-16 truck movements per day from entering plus departing.)

The number of truck loads leaving the site can fluctuate. On peak days there may be 12 – 14 truck loads per day. A quiet day may generate 0 – 2 truckloads.

Truck configurations vary. The main truck configurations are:

- 13 tonne tip truck
- 30 tonne tip truck and tri-axle trailer
- 38 tonne tip truck and quad-axle trailer.

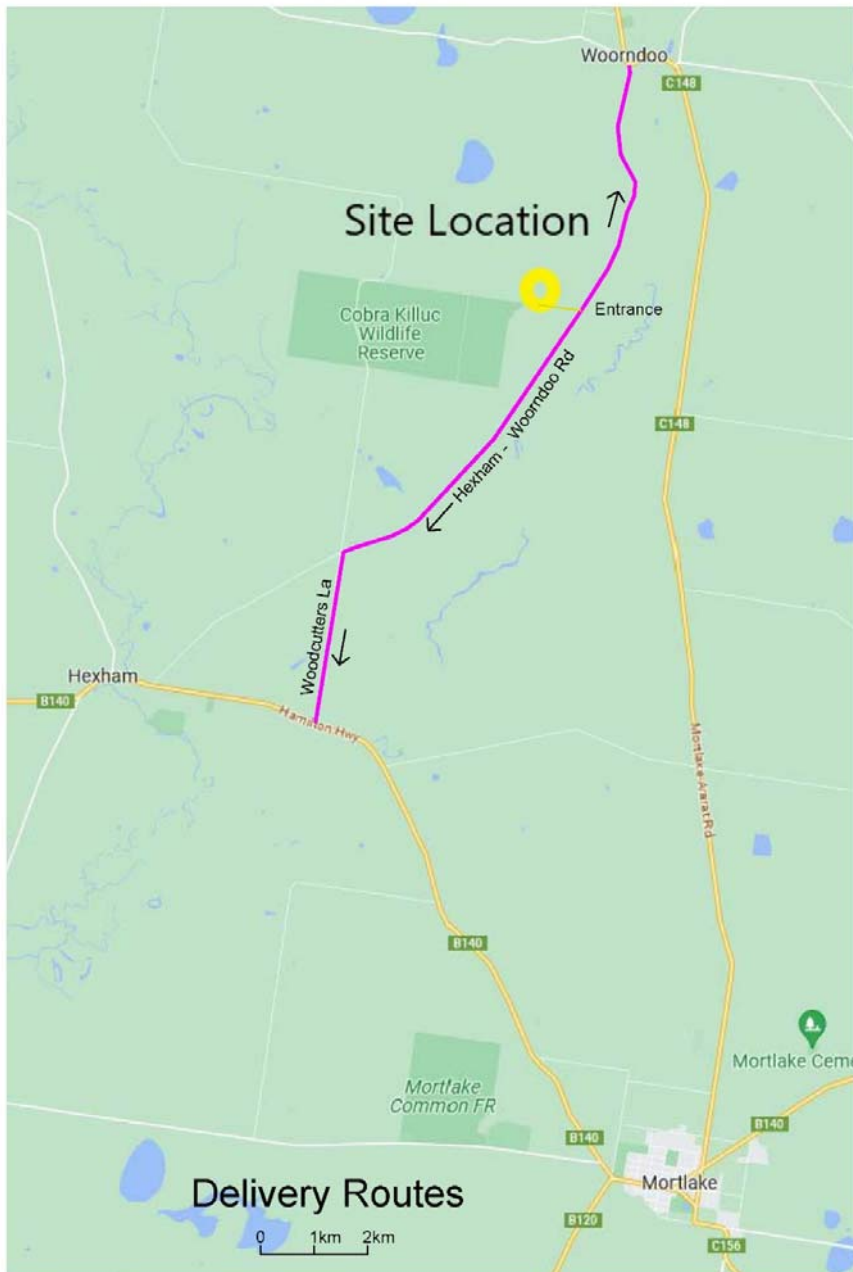
When operating at full capacity there are 7 staff employed at the quarry.

There is an insignificant number of additional light vehicles that visit the site generated by the quarry manager, contractors or visitors to the site. Less than one per day on average.

5. TRAFFIC MANAGEMENT PLAN

5.1 TRAFFIC ROUTES

Hexham – Woorndoo Road will take delivery trucks to the higher order Department of Transport road network. The preferred direction is Hexham – Woorndoo Road north from the quarry entrance to Mortlake - Ararat Road. The other route is Hexham - Woorndoo Road south of the quarry entrance to Woodcutters Lane and south along Woodcutters Lane to Hamilton Highway. Both routes are considered suitable.



6. MITIGATION MEASURES

6.1 ENTRANCE UPGRADES

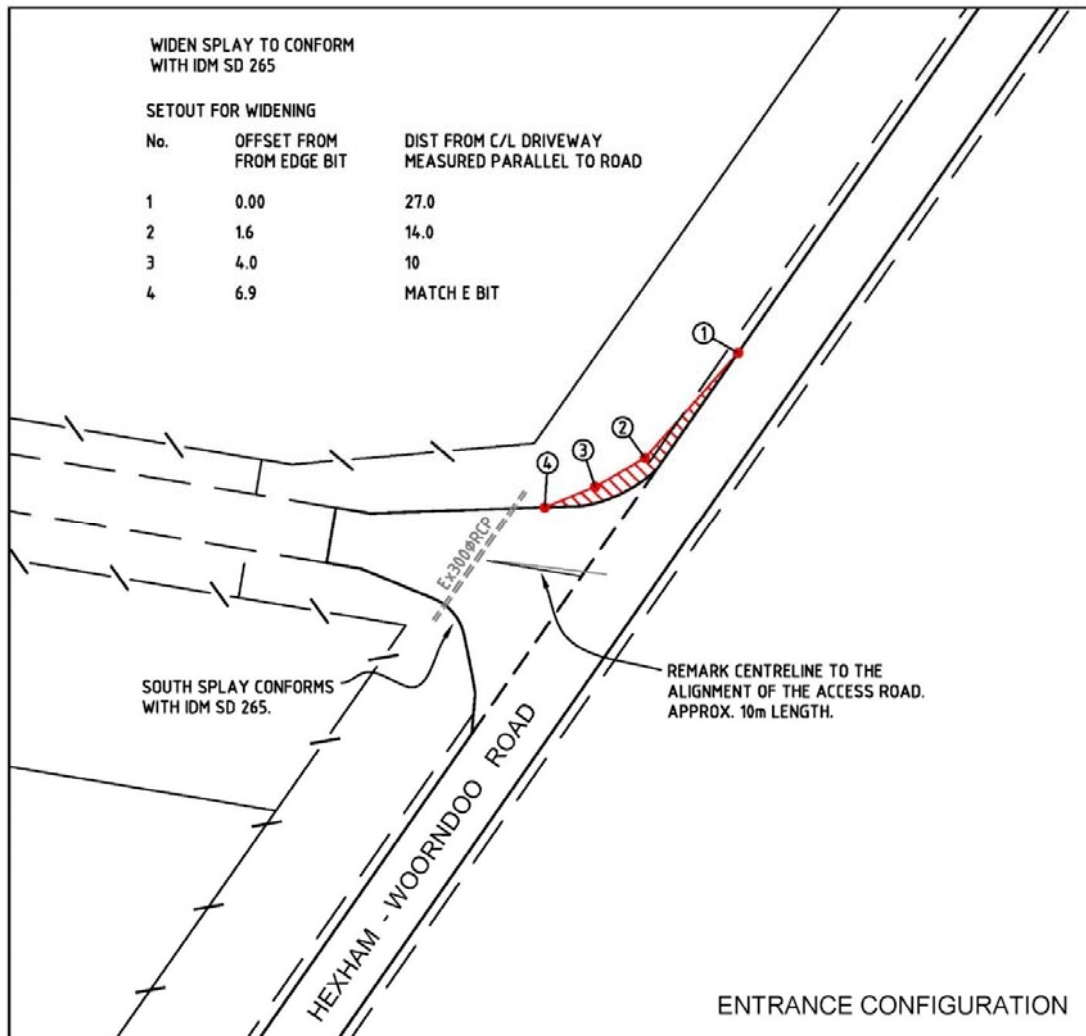
The quarry entrance was upgraded as part of the wind farm construction works. The upgrade consisted of a sealed bellmouth. The seal extends for the first 25m of the access road.

The layout of the entrance is suitable on the south side. However, the splay on the north side was too narrow to comply with IDM SD 265.

The line marking on the access road does not align with the centreline of the access road.

The following alterations to the quarry entrance are required to be addressed:

- The sealed splay of the entrance should be widened to ensure that the swept path of trucks remains on the seal.
- Remark the centre line to the correct alignment.



6.2 ROAD NETWORK TREATMENTS

To comply with Planning Permit condition 7, truck symbolic signs (W5-22) are to be installed on the north and south approaches to the quarry entrance along Hexham – Woorndoo Road to warn drivers approaching the quarry entrance. There are T Junction warning signs 500m north and south of the entrance. The intersection is not hidden and the T Junction sign could be removed and replaced by the truck symbolic warning sign to comply with planning permit requirements.



WARNING SIGN W5-22 – TRUCK SYMBOLIC

The Stop signs installed on Hexham-Woorndoo Road at the intersection of Mortlake – Ararat Road should be removed and replaced with Give Way signs to make the intersection safer.



REGULATORY SIGN R1-2 – GIVE WAY SIGN

The existing road pavement conditions at the intersection of the entrance is showing signs of stress due to the turning movements of heavy vehicles. The area may need to be resealed earlier than the rest of the road.

7. SUMMARY AND CONCLUSIONS

The condition and standard of Hexham – Woorndoo Road is sufficient to carry heavy vehicles from the quarry entrance onto the higher order road network. The use of the unsealed section of Hexham-Woorndoo Road may contribute to some deterioration of the road.

Truck symbolic warning signs are to be installed on Hexham – Woorndoo Road.

The sealed splay at the quarry entrance should be widened to accommodate the swept path of trucks leaving the site.

The Stop sign at the intersection of Hexham – Woorndoo Road and Mortlake – Ararat Road is not warranted and may be replaced with a Give Way sign.

With the implementation of these measures, the road network is suitable to accommodate the traffic that will be generated by the quarry.