

Proposed Sand Quarry Expansion

Traffic Impact Assessment

Lots 24, 25, 27 & 330 DP

755915 Larbert Road, Larbert,

NSW

for



Outline Planning Consultants Pty Ltd
Town Planning & Project Management

On behalf of

Braidwood Sand & Gravel
and
Lentro Earthworks Pty Ltd

July 2025



Traffic Impact Assessment Details

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CONTENTS

1. BACKGROUND.....	3
1.1 Introduction.....	3
1.2 Quarry Location.....	3
1.3 The Proposal	4
1.4 SEARs Requirements.....	5
1.5 Council Requirements	6
2. ROAD NETWORK.....	6
2.1 Local Road Network	6
2.1 Kings Highway Upgrade.....	9
3. EXISTING TRAFFIC VOLUMES	10
3.1 The Kings Highway.....	10
3.2 Existing Roadway Capacity	12
4. FUTURE TRAFFIC ASSESSMENT	15
4.1 Proposed Quarry Traffic Generation.....	15
4.2 Summary Traffic Generation.....	16
4.3 Traffic Growth.....	17
4.4 Assessment Design Horizon.....	17
4.5 Traffic Distribution	17
4.6 Summary of Predicted Traffic Generation, Distribution & Assignment.....	17
4.7 Predicted Roadway Capacity.....	18
4.8 Intersection Requirements	19
4.9 Intersection Assessment.....	19
5. SITE ACCESS	20
5.1 Sight Distance	21
6. ROAD SAFETY	21
6.1 Sight Distance	21
6.2 Crash History.....	22
6.3 Haulage Route	22
7. PUBLIC TRANSPORT	27
8. SUMMARY	28
9. RECOMMENDATIONS	31

APPENDICES

Appendix A.....	33
Concept Layout of Quarry Site.....	33
Appendix B.....	35
Correspondence with Road Authorities.....	35
Appendix C.....	37

1. BACKGROUND

1.1 Introduction

StreetWise Road Safety and Traffic Services have been engaged by Outline Planning Consultants, on behalf of Braidwood Sand and Gravel and Lentro Earthworks Pty Ltd, to prepare a Traffic Impact Assessment (TIA) to expand an existing sand extraction operation at Larbert.

1.2 Quarry Location

The existing sand extraction operation is located on Lot 332 in DP 755915 at No. 552 Larbert Road, Larbert. The proposed site is located within the Queanbeyan-Palerang Regional Council local government area, approximately 6km north of Kings Highway, and 14km north of the Braidwood CBD.



FIGURE 1.1 Quarry Location

1.3 The Proposal

Braidwood Sand and Gravel and Lentro Earthmoving proposes to continue extraction, processing and product transport operations within an expanded area at the existing approved sand quarry.

The proposed expansion would comprise an increase to the annual production rate to 200,000 tonnes per annum and expansion into an additional extraction area over Lots 332 and 333 DP 755915 of approximately 16.1ha, with a resource of approximately 1.2 million tonnes. Extraction to a depth of 5-6 metres is planned, consistent with the current approval. The proposed expansion would include:

- The staged, progressive expansion of the existing sand extraction area by an additional 16 ha approximately.
- An increase in the rate of sand extraction, from the currently approved 25,000 tonnes per annum to 200,000 tonnes per annum.
- Reliance on existing approved access to and from the sand pit back to Larbert Road.
- No change in the currently approved hours of operation of the facility.
- An increase in loaded truck volumes, equivalent to an average of 20 loaded trucks per day, with a maximum of up to about 50 loaded trucks per day.
- Avoidance of stand of trees located to the north of the currently approved extraction area.
- The project would initially rely on the existing sand processing plant.
- Rehabilitation once sand extraction is completed.
- Increase the number of jobs within extractive industry sectors in the Queanbeyan-Palerang and Canberra region.



FIGURE 1.2 Locality Plan

The proposed development relies on the use of the existing wet screening plant and quarry silt pond and clean water ponds.

The proposed development includes minor upgrades to the facility including installation of site shed, rainwater tanks, new weighbridge, fuel and stores containers. The sand extraction operations would involve 1x excavator, 1x front-end loader and 1x haul truck. The sand would be washed on site by the existing wet screening plant. A stockpile area would hold up to 8000 tonnes of product.

Infrastructure required for the quarry operation external to the site typically will be truck and dog vehicles. A mix of truck and dog combination (32 tonnes+), with larger and smaller trucks used where road weight limits allow.

1.4 SEARs Requirements

A recent letter (13 June 2025) from the NSW Government (Department of Planning, Housing & Infrastructure) included requirements to be addressed when assessing the impacts of the proposed development. The Planning Secretary's Environmental Assessment Requirements (SEARs) included the following in regard to traffic impacts:

Traffic & Transport - including:

- accurate predictions of the road traffic generated by the construction and operation of the development, including a description of the types of vehicles likely to be used for transportation of quarry products;

Response: See Section 4.1

- an assessment of potential traffic impacts on the capacity, condition, safety and efficiency of the local and State road networks, detailing the nature of the traffic generated, transport routes, traffic volumes and potential impacts on local and regional roads;

Response: See Section 4.7

- a description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road network (particularly the proposed transport routes) over the life of the development;

Response: See Section 4

- evidence of any consultation with relevant roads authorities, regarding the establishment of agreed contributions towards road upgrades or maintenance;

Response: Discussions with TfNSW in regard to traffic assessment of The Kings Highway and intersection with Larbert Road. StreetWise spoke with [REDACTED] (Development Services Case Officer, Development Services). [REDACTED] requested the following be included in the assessment and report:

TfNSW provides the following comments:

1. Transport's recent traffic counts for the Kings Highway at Braidwood and Bungendore would not be appropriate for this application, noting that traffic volumes in these towns would be higher than what would be relevant for your proposal. It is recommended that the applicant obtain their own traffic counts to inform the assessment of the impact of the proposal on the road network and the Highway/Larbert Road intersection.
2. TfNSW does not have any current proposals to upgrade the Kings Highway/Larbert Road intersection. It is noted that the asset program has a culvert replacement on the Highway 400m west of Larbert Road and the segment is due for a reseal in the coming year.

3. TfNSW require the traffic impact assessment to be prepared in accordance with the Guide to Transport Impact Assessment (November 2024).

- a. For key intersections impacted by the proposal, electronic copies of the SIDRA modelling files are required to be provided to TfNSW for review.
- b. Should the traffic analysis identify upgrades are required at any state road intersections, a strategic design will be required to be prepared, for further information on strategic design requirements see this [link](#).

StreetWise also contacted Queanbeyan-Palerang Regional Council (see Section 1.5 below).

- a description of access roads, specifically in relation to nearby Crown roads and fire trails;

Response: There are no Crown roads or firetrails in the vicinity of the proposed development

1.5 Council Requirements

StreetWise contacted Queanbeyan-Palerang Regional Council in regard to council's requirements in regard to this traffic assessment (See Appendix B). Council were satisfied with the requirements of the SEARs above, but also requested an assessment of the existing intersection of The Kings Highway and Larbert Road.

2. ROAD NETWORK

2.1 Local Road Network

The existing sand operation is located approximately 11km to the north of Braidwood and 6km north of the Kings Highway. The main haul route (road) will be Larbert Road, which heads south for approximately 6km before intersecting with the Kings Highway (see Figure 1.1).

2.1.1 Kings Highway (B52)

The Kings Highway is a major east-west road connecting Canberra and the Australian Capital Territory (ACT) with Batemans Bay on the NSW south coast. It's length is approximately 137 km and passes through several towns including Queanbeyan, Bungendore, Braidwood, and Nelligen before reaching Batemans Bay.

In the vicinity of the proposed quarry the travel lanes are generally 3.5m wide in each direction with 1.0m wide sealed shoulders. As can be seen in Figure 2.1, the roadway is delineated with centrelines, edgelines, reflectors and guideposts. Much of the linemarking also is enhanced by raised tactile markers.

The posted speed limit in the vicinity of Larbert Road is 100km/h.

The Kings Highway is an approved B Double route for heavy vehicles up to a length of 26.0m long (see Figure 6.3).



FIGURE 2.1 Typical view of the Kings Highway, looking east near Larbert Road

2.1.2 Larbert Road

Larbert Road is a rural road with one lane of traffic each way which runs north from a channelised T-intersection with the Kings Highway in the south. Currently the traffic volumes on Larbert Road are very low. The 8km long road provides access to rural properties in the Larbert precinct, north of the Braidwood township.

The existing quarry access road is located approximately 6km from the Kings Highway. The southern section of Larbert Road is sealed (up to the quarry access) then unsealed to the end in the north.

The sealed formation width of Larbert Road varies in width between 5.5 and 6.5m, with minimal crushed gravel shoulders on both sides. There is no posted speed limit on Larbert Road, although some curves include signage with recommended speeds (see below).



FIGURE 2.2 Typical view of sealed section of Larbert Road



FIGURE 2.3 Larbert Road, showing curve signage

2.1.3 Intersection of The Kings Highway (A15) & Larbert Road

The existing intersection of The Kings Highway (B52) and Larbert Road generally conforms to a Channelised) CHR intersection. The existing linemarked intersection is within a 100kmh speedzone, and includes:

- 1 x through lane in either direction
- 170m dedicated right turn lane (into Larbert Road)
- 160m dedicated left turn lane (into Larbert Road)
- A Hold Line but no controls (i.e. STOP sign or GIVE WAY) on the side road

Sight distance in both directions on the highway from Larbert Road is greater than 240m, which generally meets the Austroads desired requirements for a 100kmh speedzone, and exceeds the minimal requirements.

A stockpile is currently located at the intersection, with gravel stored on the site (see Figure 2.4 below).



FIGURE 2.4 Existing Intersection of The Kings Highway & Larbert Road



FIGURE 2.5 Sight distance at The Kings Highway from Larbert Road

2.1 Kings Highway Upgrade

The NSW Government has committed \$20 million to deliver a program of safety and efficiency upgrades on the Kings Highway. The Kings Highway links the Australian Capital Territory (ACT) with the NSW South Coast via Bungendore, Braidwood and Nelligen. Within NSW, the Kings Highway is approximately 128 kilometres long and it serves as a primary link to the NSW South Coast for traffic from the ACT and the Snowy Monaro region. The Highway travels through the Queanbeyan-Palerang Regional Council and Eurobodalla Shire Council local government areas.

Transport for NSW has rescoped the deliverable projects under the \$20 million Kings Highway upgrade program after preliminary development confirmed funding allocation constraints. Five projects will continue to be delivered under the program with three projects moving to development only and one project to be reinvestigated. Additional construction funding will be sought for development-only projects from alternate programs in the coming years.

The upgrade program will now deliver:

- a new eastbound overtaking lane at Mulloon
- a new eastbound overtaking lane near Misty Mountain Road
- safety treatments including widened centrelines, widened shoulders, roadside safety barrier, and audio-tactile line marking north of McCarty's Creek
- high-friction pavement seal on parts of 'Clyde Mountain' to reduce the likelihood of wet weather crashes
- roadside safety barrier along the southern approach to Braidwood

The below projects will be developed as delivery ready projects for future funding opportunities:

- safety treatments including widened centrelines, widened shoulders, roadside safety barrier, and audio-tactile line marking at the following locations:
 - between Bungendore and the ACT border
 - west of Mulloon Road
 - south of Northangera Creek Bridge

The safety improvements north of Northangera Creek Bridge will be reinvestigated.

The overall program is planned for completion in June 2025, weather permitting.

3. EXISTING TRAFFIC VOLUMES

3.1 The Kings Highway

3.1.1 StreetWise Traffic Count

StreetWise inspected the site on Wednesday 9 July and undertook manual traffic counts at the intersection of The Kings Highway and Larbert Road. The diagrams below show a summary of the morning (Thu 10 July) and afternoon (Wed 9 July) peak hours.

StreetWise noted the following:

- The total AM peak hour vehicle numbers were 267
- The total PM peak hour vehicle numbers were 485
- Heavy vehicle percentage on the highway is approximately 6%

StreetWise also make the following comments:

- The PM peak hour volumes were significantly higher than the AM peak hour. However, StreetWise believe the morning peak hour numbers were 'solid' and likely to continue through until late morning i.e. the hourly numbers were less, but likely to continue for a few hours.
- Traffic volumes turning in & out of Larbert Road were low, with a higher percentage of heavy vehicles (haulage trucks)
- The manual traffic count was undertaken during school holidays. It is likely that local traffic movements were reduced during the peak hours due to the lack of school-generated movements

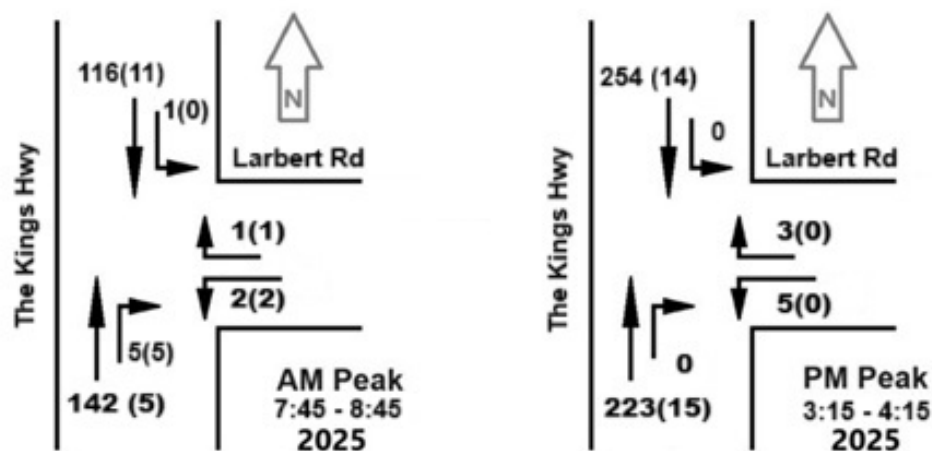


FIGURE 3.1 2025 peak hour traffic volumes at the Kings Highway & Larbert Rd

3.1.2 Previous Traffic Count

A previous traffic count at the intersection of The Kings Highway and Larbert Road was undertaken by Indesco in relation to a previous development in the Larbert area. The count was undertaken on Thursday 18 August 2022, and the results are shown below:

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

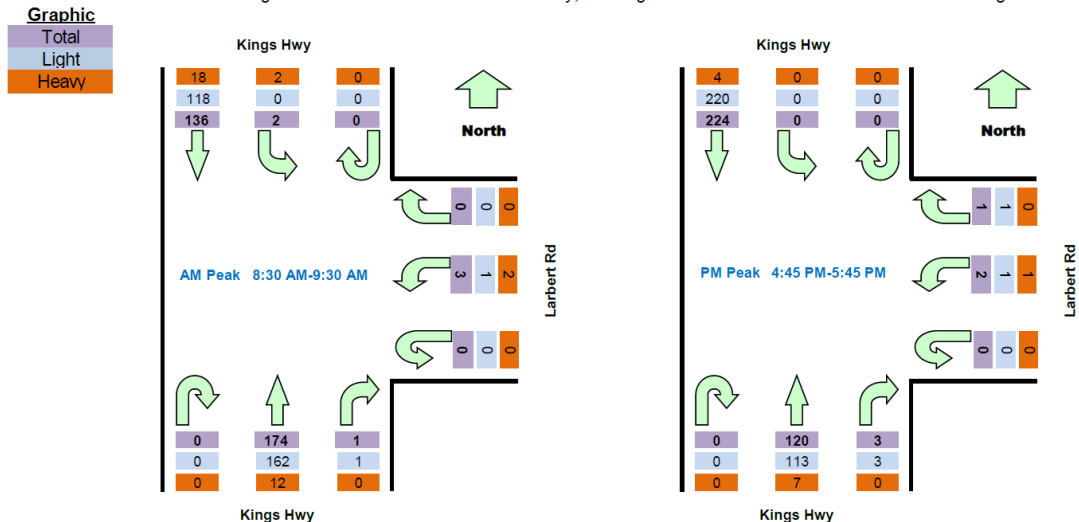


FIGURE 3.2 2022 peak hour traffic volumes at the Kings Highway & Larbert Rd (Indesco)

The following was taken from Queanbeyan-Palerang Regional Council's website:
"In 2021, the total population of Braidwood was estimated to be 1,710 people. It is expected to increase by over 188 people to 1,898 by 2031, at an average annual growth rate of 1.05%. This is based on an increase of over 83 households during the period, with the average number of persons per household rising from 2.11 to 2.12 by 2031."

For the purposes of this assessment, StreetWise have adopted an annual growth rate of 1.0%. StreetWise then applied the adopted annual increase to update the Indesco traffic count to 2025 numbers below.

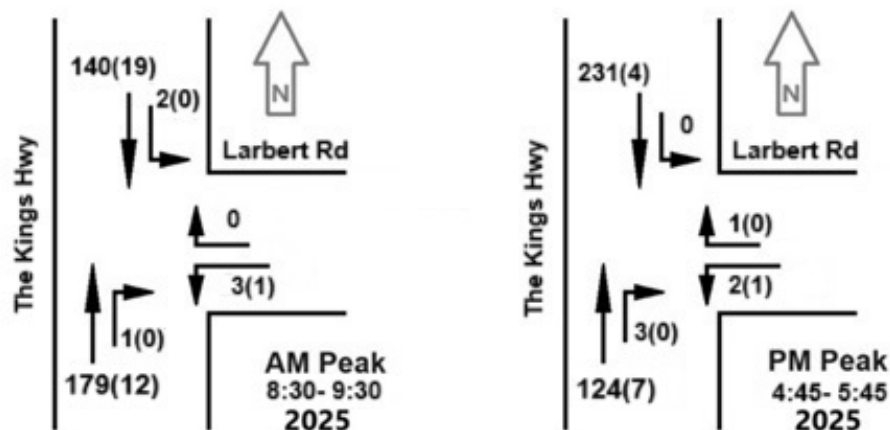


FIGURE 3.3 Updated (2025) peak hour traffic volumes at Kings & Larbert Rd (Indesco)

Most traffic assessments are based on future traffic volumes. Therefore, StreetWise have provided future traffic (2035) volumes through the intersection of Larbert Road and The Kings Highway by applying an annual growth factor of 1%, as shown in Figure 3.4 below.

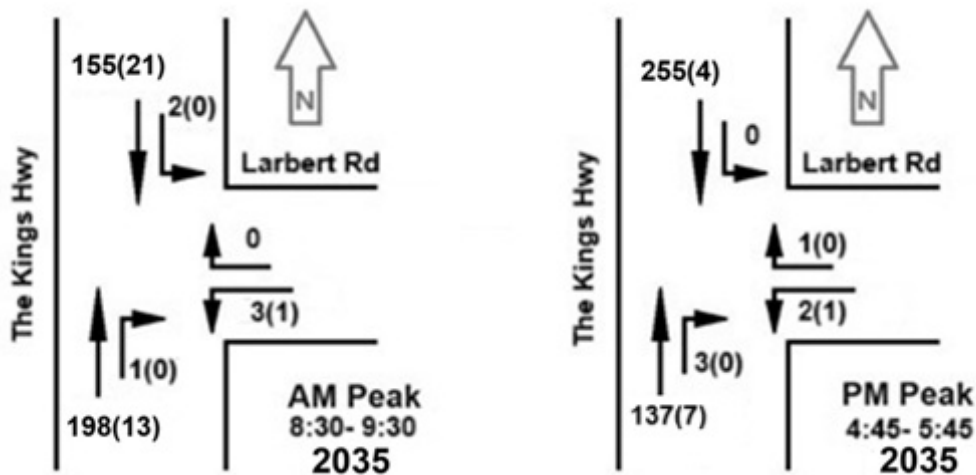


FIGURE 3.4 Future (2035) peak hour traffic volumes at Kings & Larbert Rd (Indesco)

3.2 Existing Roadway Capacity

3.2.1 Road Category

Road capacity can have a major impact on the road safety of a road. These impacts can relate to gaps in traffic, impatience by drivers where gaps in traffic flows are minimal, acceptable travel times, ability for traffic to merge with through traffic.

The Austroads Guide to Traffic Management uses the HCM method for the determination of roadway capacity on two lane two way rural roads. HCM 2016 provides for three (3) categories for two lane highways.

- **Class I** – These are two-lane highways on which motorists expect to travel at relatively high speeds. Two-lane highways that are major intercity routes, primary arterials connecting major traffic generators, daily commuter routes, or primary links in state or national highway networks generally are assigned to Class I. Class I facilities most often serve long-distance trips or provide connecting links between facilities that serve long-distance trips.
- **Class II** – These are two-lane highways on which motorists do not necessarily expect to travel at high speeds. Two-lane highways that function as access routes to Class I facilities, serve as scenic or recreational routes that are not primary arterials, or pass through rugged terrain generally are assigned to Class II. Class II facilities most often serve relatively short trips, the beginning and ending portions of longer trips, or trips for which sightseeing plays a significant role.
- **Class III** – These are two-lane highways serving moderately developed areas. They may be portions of a Class I or Class II highway that pass through small towns or developed recreational areas. On such segments, local traffic often mixes with through traffic, and the density of unsignalised roadside access points is noticeably higher than in a purely rural area. Class III highways may also be longer segments passing through more spread-out recreational areas, also with increased roadside densities. Such segments are often accompanied by reduced speed limits that reflect the higher activity level.

For the purposes of this assessment The Kings Highway will be referred to as a Class I category.

3.2.2 Level of Service

The Austroads Guide to Traffic Management prescribes the following definitions for Level of Service (LoS) with the various levels of service as follows:

- **LOS A** describes primarily free-flow operation. Vehicles are completely unimpeded in their ability to manoeuvre within the traffic stream. Control delay at the boundary intersections is minimal. The travel speed exceeds 80% of the base free-flow speed (BFFS).
- **LOS B** describes reasonably unimpeded operation. The ability to manoeuvre within the traffic stream is only slightly restricted and control delay at the boundary intersections is not significant. The travel speed is between 67% and 85% of the BFFS.
- **LOS C** describes stable operation. The ability to manoeuvre and change lanes at mid-segment locations may be more restricted than at LOS B. Longer queues at the boundary intersections may contribute to lower travel speeds. The travel speed is between 50% and 67% of the BFFS.
- **LOS D** indicates a less stable condition in which small increases in flow may cause substantial increases in delay and decreases in travel speed. This operation may be due to adverse signal progression, high volume, or inappropriate signal timing at the boundary intersections. The travel speed is between 40% and 50% of the BFFS.
- **LOS E** is characterised by unstable operation and significant delay. Such operations may be due to some combination of adverse progression, high volume, and inappropriate signal timing at the boundary intersections. The travel speed is between 30% and 40% of the BFFS.
- **LOS F** is characterised by flow at extremely low speed. Congestion is likely occurring at the boundary intersections, as indicated by high delay and extensive queuing. The travel speed is 30% or less of the BFFS.

LOS F is assigned to the subject direction of travel if the through movement at one or more boundary intersections has a VCR ratio greater than 1.0.

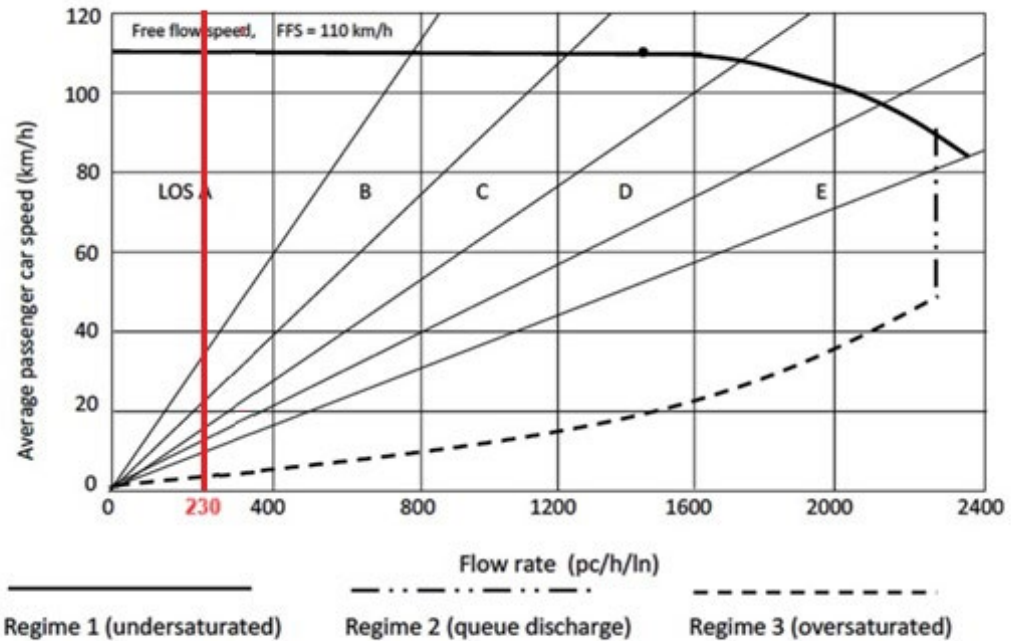
In summary, roads generally operate safely and efficiently at a Level of Service of 'C' or better. When the Level of Service deteriorates to 'D' or worse, the roads become congested and inefficient, and measures may need to be considered to improve the roadway including widening or other upgrades.

3.2.3 Road Capacity

Kings Highway

Austroads Guide to Traffic Management includes a table for determining Level of Service for highways (see Figure 3.4 below), based on travel speeds and volumes per lane. As can be seen from Figure 3.4, the 100kmh Kings Highway, with a maximum volume of 231vph in one direction, currently has a Level of Service of 'A'.

Figure 4.1: LOS and service flow rates for freeways



Note: The LOS is defined by density as the slopes shown in the diagram. Highway Capacity Manual, TRB (2016)

Source: Adapted from Exhibits 12-3, 12-7 and 12-16 in HCM 2016 (TRB 2016).

FIGURE 3.5 Level of Service for Kings Highway at Larbert

Larbert Road

The following table is from TfNSW 'Guide to Traffic Generating Developments' (see Figure 3.5 below), which determines a Level of Service based on peak hour traffic volumes, percentage of heavy vehicles, posted speedzone and type of terrain. Larbert Road runs through rolling hills, has an estimated peak hour volume of less 50 vehicles, an unposted speedzone (adopt 80kmh) and around 10% heavy vehicle content. This indicates a Level of Service of 'B', and adequate capacity to safely and efficiently cater for predicted future traffic growth.

Terrain	Level of Service	Percent of Heavy Vehicles			
		0	5	10	15
Level	B	630	590	560	530
	C	1030	970	920	870
	D	1630	1550	1480	1410
	E	2630	2500	2390	2290
Rolling	B	500	420	360	310
	C	920	760	650	570
	D	1370	1140	970	700
	E	2420	2000	1720	1510
Mountainous	B	340	230	180	150
	C	600	410	320	260
	D	1050	680	500	400
	E	2160	1400	1040	820

Table 4.5
peak hour flow on two-lane rural roads (veh/hr)
(Design speed of 100km/hr)

FIGURE 3.6 Level of Service for Larbert Road (TfNSW)

3.2.4 Suitability for Heavy Vehicles

Kings Highway

The Kings Highway is an approved Heavy Vehicle route, catering for vehicles up to 26m B-doubles.

Larbert Road

The recent traffic count data (Section 3) indicates that heavy vehicles make up over 10% of total daily traffic volumes turning in & out of Larbert Road at the Kings Highway intersection. StreetWise's inspection and onsite traffic count noted a number of haulage vehicles (truck & dog trailers) on Larbert Road i.e. existing quarries in the Larbert area generate regular haulage movements on Larbert Road. It is also assumed that the rural activities in the Larbert area generate regular heavy vehicle movements such as deliveries, transporting farming equipment, water & fuel tankers, milk tankers, livestock movements etc.

StreetWise are not aware of any school bus routes servicing Larbert Road. However, regular services utilise The Kings Highway, with pick-up & drop-off locations at various intersections, including Larbert Road.

As discussed elsewhere in this report, the existing vertical alignment of Larbert Road consists of generally level roads with some rolling hills. The horizontal alignment consists generally of straight stretches of road, with some sections of winding curves. On the 6km section of sealed road between the subject quarry and the Kings Highway, there are a number of curves with radii of between 100m - 200m. Some of these curves include warning signage with a recommended speed of 60kmh (see Figure 2.3). It should be noted that recommended curve speed signs generally end in a '5', not a '0'.

It is understood that Larbert Rd is currently an approved haulage route, and currently caters for a number of quarries in the Larbert area.

4. FUTURE TRAFFIC ASSESSMENT

4.1 Proposed Quarry Traffic Generation

StreetWise understand there is currently a high demand for quarry products in the Southern Highlands, and in particular sand for concrete production, housing construction and other civil infrastructure projects.

The operators currently use mix of truck and dog combinations (32 & 37.50 tonnes) to haul the quarry material, with occasional use of larger and smaller trucks to service particular projects. The larger truck & dog combination (37.5 tonne) will be used for the majority of haulage trips. As shown in Table 4.1 below, it is estimated the proposed expanded quarry will generate an average of 20 laden trips per day, as shown below:

Sand Quarry - Proposed Activity	Existing	Proposed
Annual Output (Tonnes)	25,000	200,000
Vehicle capacity (Truck & dog (tonnes)	37.5	37.5
Average no. of laden trucks per year	667	5333
Available working weeks per year	48	48
Maximum working hours per week	67	67
Average no. of laden trucks per week	13.9	111.1
Average no. of laden trucks per weekday	2.5	20.2
Average no. of laden trucks per hour		2

Table 4.1 Average Laden Truck Movements to be generated by the quarry

The above table showing average haulage vehicle movements is based on the following:

1. Hours of Operation
 - 6.00am to 6.00pm (Monday to Friday)
 - 7.00am to 2.00pm (Saturdays)
 - No Work Sundays or public holidays

However, the operators have stated that the quarry may occasionally require up to 50 laden truck & dog movements per day to service major projects. Therefore, for the purposes of this assessment, a maximum of 50 laden trips per day has been adopted. This equates to around 5 laden trips per hour at peak production. However, is common for a greater number of haulage movements to be generated during the morning, and less during the afternoon. This AM weighting is shown in Figure 4.2 below.

The proposed quarry will employ up to regular 4 staff working on site plus casual contractors, machinery servicing and refuellers. It is estimated that quarry staff and service vehicles will likely generate around 20 light – medium vehicle movements (10 in and 10 out) each day. This equates to an average of 1.5 trips per hour to and from the quarry. It is likely that commuter trips by staff will be into the site between 6:00 - 7:00am and exit around mid to late afternoon.

4.2 Summary Traffic Generation

Table 4.2 provides a summary of the predicted traffic generation to be generated by the proposed quarry operation which will be used in future assessments in this report moving forward. Note that the AM peak hour volume has been rounded up to 5, given that more haulage trips are likely to be generated in the morning than the afternoon.

	Normal Operation		Peak Capacity	
	Out (Laden)	Total (Out laden + In empty)	Out (Laden)	Total (Out laden + In empty)
Daily	20	40	50	100
Hourly	2	4	5	10
AM Peak	4	8	7	14

TABLE 4.2 Summary of Total Peak Hour Trip Generation

In addition to the haulage trips shown above, approximately 2 light vehicle trips an hour will be generated by the proposed quarry during a working day.

4.3 Traffic Growth

Based on the average growth across the Queanbeyan-Palerang Regional Council area, StreetWise have adopted an annual growth factor of 1.0% for the purposes of this assessment.

4.4 Assessment Design Horizon

For the purposes of this assessment a design horizon of 10 years (2025 to 2035) into the future will be used to assess the impacts of the local road network.

4.5 Traffic Distribution

For the purposes of this assessment the following traffic distribution has been assumed:-

- The majority of laden truck movements will occur in the morning, with less movements in the afternoon
- The majority of laden truck movements will turn south (left) out of the quarry onto Larbert Road towards The Kings Highway.
- At the intersection of Larbert Road and The Kings Highway:
 - 40% of laden haulage vehicles are likely to head north towards ACT, Queanbeyan and Bungendore
 - 60% of laden haulage vehicles are likely to head south towards Braidwood and the South Coast.
- The majority of light vehicle movements (i.e. staff, service vehicles, deliveries etc) will be to & from Braidwood township

The diagram below (Figure 4.3) shows the estimated increase in traffic volumes through the intersection of Larbert Road and The Kings Highway during the AM and PM peak hours.

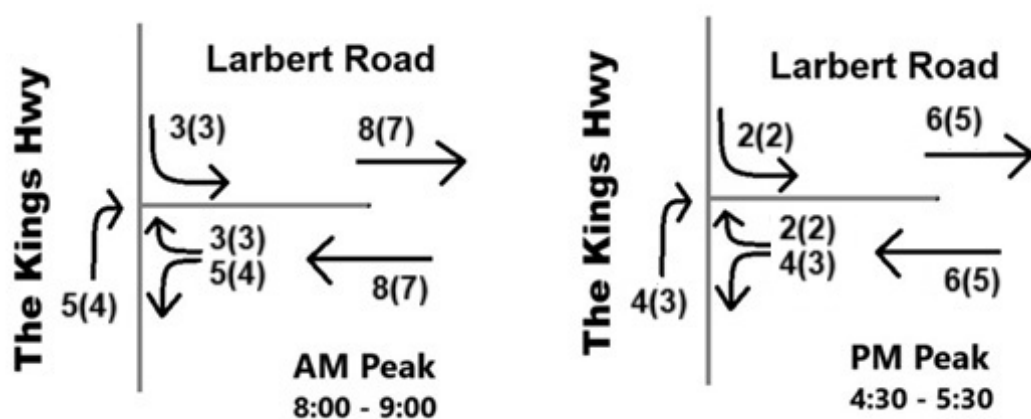


Figure 4.3 Future quarry-generated peak-hour movements through the Kings Highway intersection (Heavy Vehicles shown in brackets)

4.6 Summary of Predicted Traffic Generation, Distribution & Assignment

Based on the assumptions and assessments completed in the previous section of this report, the following diagrams provide a summary of future (2035) peak hour traffic volumes through the intersection of The Kings Highway and Larbert Road,

including quarry-generated movements (i.e. the total of the estimated traffic volumes in 2035, as shown in Figure 3.3, and the estimated quarry-generated movements shown in Figure 4.3 above).

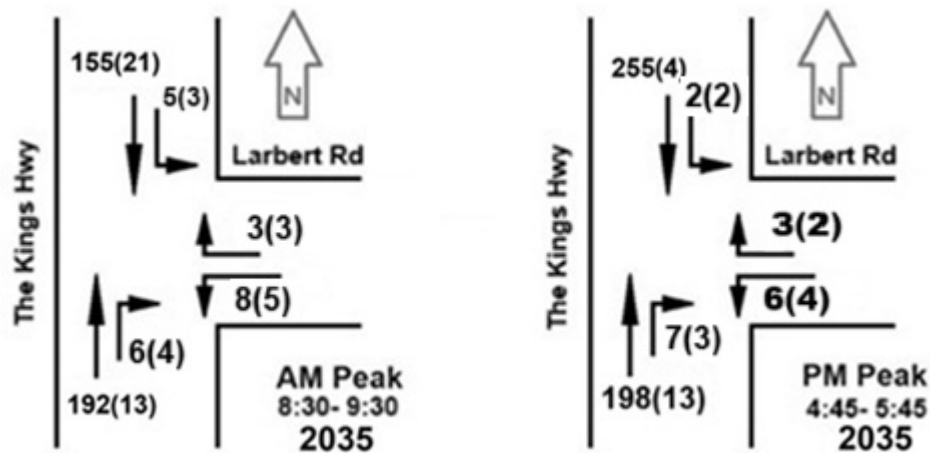


Figure 4.4 Future total peak-hour movements (2035) through The Kings Hwy intersection (Heavy Vehicles shown in brackets)

4.7 Predicted Roadway Capacity

The Kings Highway is a high quality regional roadway with adequate capacity to cater for future (2035) traffic volumes, including the additional traffic movements to be generated by the proposed quarry. As discussed earlier in this report, The Kings Highway is being continually upgraded, with numerous works being undertaken around the township of Braidwood.

Figure 4.4 above indicates future volumes on The Kings Highway have been estimated to be less than 300 vph in a single direction. Figure 4.5 below is an excerpt from Austroads guidelines showing the capacity of a 2-lane rural highway, indicating that a single lane can cater for up to 1700 vph.

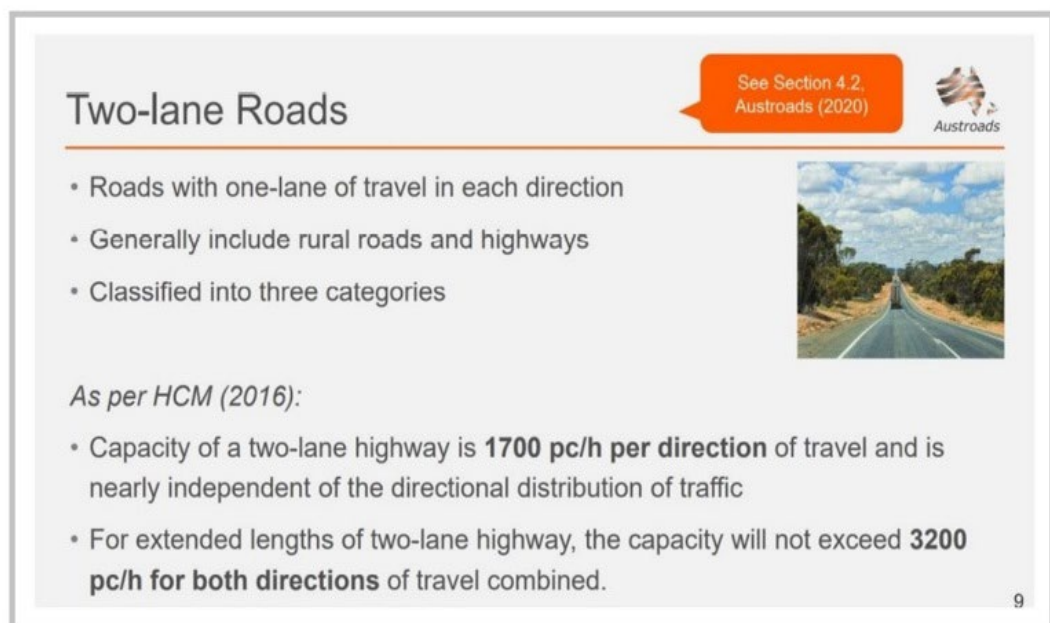


Figure 4.5 Rural highway capacity (Austroads)

Section 3.2.3 of this report discusses Larbert Road and its current Level of Service of 'B'. StreetWise consider that Larbert Road has adequate capacity to cater for the additional traffic movements to be generated by the proposed quarry, with minimal reduction in safety or efficiency.

4.8 Intersection Requirements

Austrroads guidelines provide methods for assessment of basic intersections. The assessment below is based on the future movements through the intersection of The Kings Highway and Larbert Road shown in Figure 4.4 above.

Guide to Traffic Management Part 6: Intersections, Interchanges and Crossing

Figure 2.25: Warrants for turn treatments on major roads at unsignalised intersections

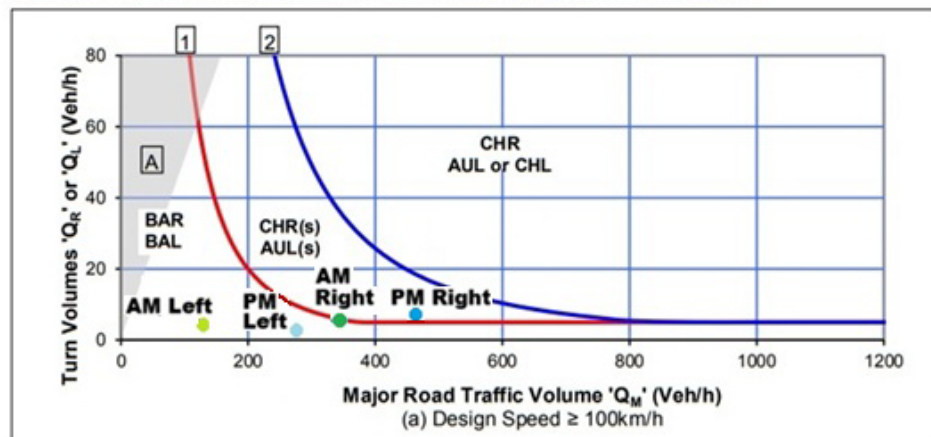


Figure 4.6 Intersection Warrant for 100kmh rural T-intersection (Austroads)

As can be seen from Figure 4.6 above, the future traffic volumes and movements through the intersection of The Kings Highway and Larbert Road indicate a channelised intersection may be required to cater for the right hand movements into the side road. However, given that heavy vehicles make up a large proportion of the turning movements, it is understandable that the previous BAR/BAL intersection was ungraded to a Channelised Intersection (CHL) with long turn lanes to allow safe truck turn movements within the 100kmh speedzone.

Therefore, there is no further requirement to upgrade this intersection as a result of the expansion of this quarry operation.

4.9 Intersection Assessment

A recent traffic report by Indesco (Oct 2022) for a proposed expansion of Larbert Quarry (located on Lots 24, 25, 27 & 330 DP 755915) included SIDRA modelling of the existing intersection of The Kings Highway and Larbert Road. The Indesco report included computer modelling of the operation of the existing intersection, using:

- Existing peak hour volumes
- Future peak hour volumes (2032), and
- Future peak hour volumes + Larbert quarry generated traffic

Each of the 6 movements through the intersection was shown to operate at a Level of Service of 'A' for all scenarios, where 'A' is described representing the best operating condition and service quality from the users' perspective (i.e. free-flow). A full summary of the SIDRA modelling for the worst case scenario (future peak

hour traffic volumes + increased traffic generated by the Larbert Quarry expansion) is included in Appendix B.

Based on the above SIDRA modelling results, the existing intersection layout has adequate capacity to cater for the estimated traffic increases to be generated by the subject sand quarry expansion, with no significant reduction in safety or efficiency.

5. SITE ACCESS

The existing quarry is currently accessed via a driveway off the eastern side of Larbert Road, as shown in Figure 5.1 below. The driveway connects with an existing easement through Lot 331 DP 755915, which currently provides access to Lots 332 and Lot 333.



FIGURE 5.1: Quarry access road off Larbert Road (L) and access easement (R)



FIGURE 5.2: Aerial photograph showing existing quarry site and existing access road

(Source: Google Earth website)

5.1 Sight Distance

The existing speedzone on Larbert Road in the vicinity of the quarry site is not signposted, and it is assumed that driver's vehicle speeds are determined by the current road conditions. A number of curves along Larbert Road are signposted with recommended reduced speeds, including curve approximately 100m to the south of the existing site access, which recommends a speed of 55kmh. Traffic speeds at the southern approach to the quarry road are also reduced by a concrete causeway approximately 100m to the south of the quarry site, and the unsealed roadway.

Sight distance from the existing driveway at Larbert Road is approximately:

- 120m to the north (right) due to a crest and curving alignment
- 200+m to the south (left)

The existing driveway location generally meets Austroads (desirable) requirements for Safe Intersection Sight Distance for a 60kmh speedzone, and easily meets the minimum requirements (Approach Sight Distance). Existing sight distance could be further improved by reshaping the roadside batter and trimming existing vegetation.

It should be noted that local traffic volumes at the northern end of Larbert Road were observed to be very low. Also, a large percentage of the local vehicle movements at this location are haulage vehicles and other heavy vehicles, many of which will be in contact via 2-way radio.



FIGURE 5.3: Looking south (L) and north (R) from existing driveway at Larbert Road

6. ROAD SAFETY

As part of assessing the future intersection requirements for the proposed operation of the quarry road safety for all road users will need to be considered given the traffic mix. Therefore, the following assessment will be completed with regard to road safety around the access intersection:-

- Sight Distance
- Crash History
- Haulage Route
- Speedzone

6.1 Sight Distance

Sight distance has been discussed previously in this report for the intersection of The Kings Highway & Larbert Road (Section 2.1.3) and also the access to the quarry from Larbert Road (Section 5.1).

In order to make drivers more aware of heavy vehicles in the area and to improve road safety around the quarry access it is recommended W5 – 22 (B size) signs be erected at 150m on approach to each side of the quarry access.



FIGURE 6.1: Typical W5-22 Sign Face (TfNSW)

6.2 Crash History

The Transport For New South Wales website indicates there have been at least 6 recorded crashes on The Kings Highway and 1 on Larbert Road in the vicinity of the proposed quarry in the past 5 years. Three of the recent crashes resulted in moderate injuries, while the others resulted in no injuries. Four involved collisions between 2 or more vehicles, while 3 involved vehicles leaving the roadway.

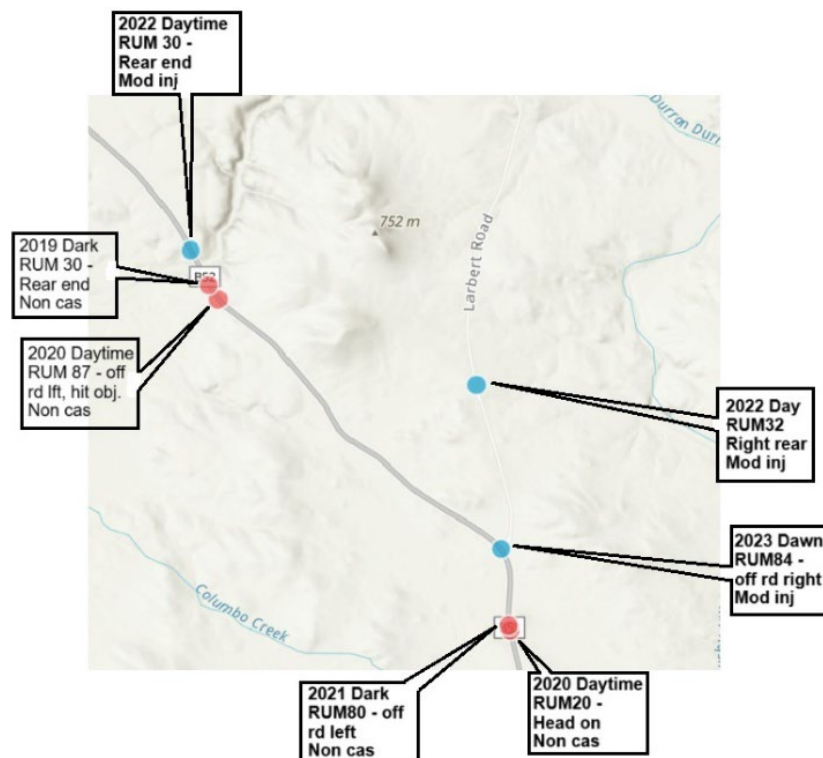


FIGURE 6.2 Recent crashes in the vicinity of Larbert

6.3 Haulage Route

As previously indicated in this report, the proposed expanded quarry operation will service infrastructure projects undertaken within the Canberra, Braidwood and

South Coast area. The main haulage route being to the southwest via Larbert Road, then further afield via The Kings Highway.

The following desktop assessment of the haulage route is provided.

6.3.1 The Kings Highway

The Kings Highway is 137km in length, and connects Canberra and the Australian Capital Territory (ACT) in the west with Batemans Bay and the NSW south coast at the eastern end. The highway provides access to a number of towns including Queanbeyan, Bungendore, Braidwood, and Nelligen. The formation generally provides for a single travel lane in each direction with widenings at intersections and some overtaking lanes along its route.

In the vicinity of the subject quarry the travel lanes are generally 3.5m wide in each direction with 0.50 to 1.00m wide sealed. As discussed previously, ongoing roadworks continue to improve The Kings Highway in the Braidwood area. This section of The Kings Highway is signposted at 100km/h.

The Kings Highway is considered a high quality road approved for use by B-doubles up to 26m (see Figure 6.2 below). The Kings Highway currently caters for a high percentage of heavy vehicles, including laden truck & dogs generated by existing quarries in the Larbert and Braidwood area. The minor increase in haulage truck movements to be generated by the proposed sand quarry expansion will not have a significant impact on the existing safety and efficiency of traffic flows on The Kings Highway.

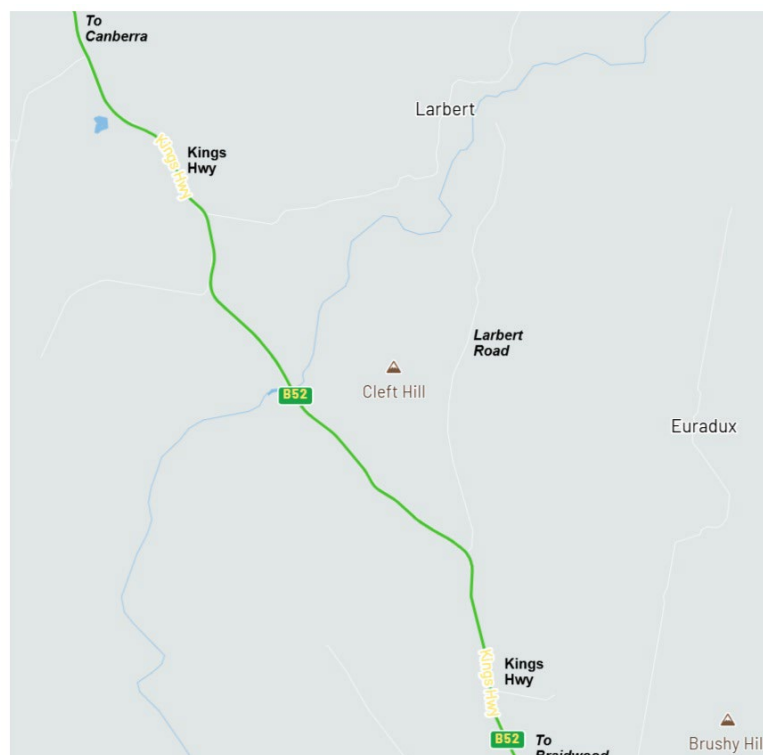


FIGURE 6.3: TfNSW Approved Heavy Vehicle Routes (B-doubles up to 26m)

6.3.2 Larbert Road

Larbert Road is a local rural access road providing access to rural properties north-west of the Braidwood township. The southern section of Larbert Road is sealed (approximately 5.8km), then becomes an un-sealed road further to the north. A

concrete causeway allows vehicles to cross the Durran Durra Creek, which separates the sealed and unsealed sections of Larbert Road. The subject sand quarry is located immediately north of the sealed section, i.e. just north of the concrete causeway.



FIGURE 6.3: Looking south from causeway at sealed section of Larbert Rd

The formation width of the sealed section of Larbert Road varies in width between 5.5 and 6.5m, with unsealed shoulders on both sides, and minimal linemarking or delineation.

StreetWise's inspection indicated there is no linemarking on Larbert Road, and minimal delineation, apart from white guideposts at the edge of the road. Consideration should be given to providing a painted centreline where possible, to provide separation between the 2 directions.

Road Alignment

The vertical alignment of Larbert Road is generally flat, with some small rolling hills. The horizontal alignment of Larbert Road between the quarry site and The Kings Highway is generally sections of straight road combined with a few towards the northern end. As mentioned previously, Larbert Road does not include any speedzone signage, which means technically, the 100kmh speedzone on The Kings Highway extends through to the side road. However, the current alignment, dimensions and condition of Larbert Road does not support a high speed environment.

StreetWise assessed the current alignment of Larbert Road between the subject quarry and The Kings Highway and noted a number of these curves have a radius of 200m or less (see Figure 6.4 below), with some including warning signage with reduced speeds (see Figure 6.5).

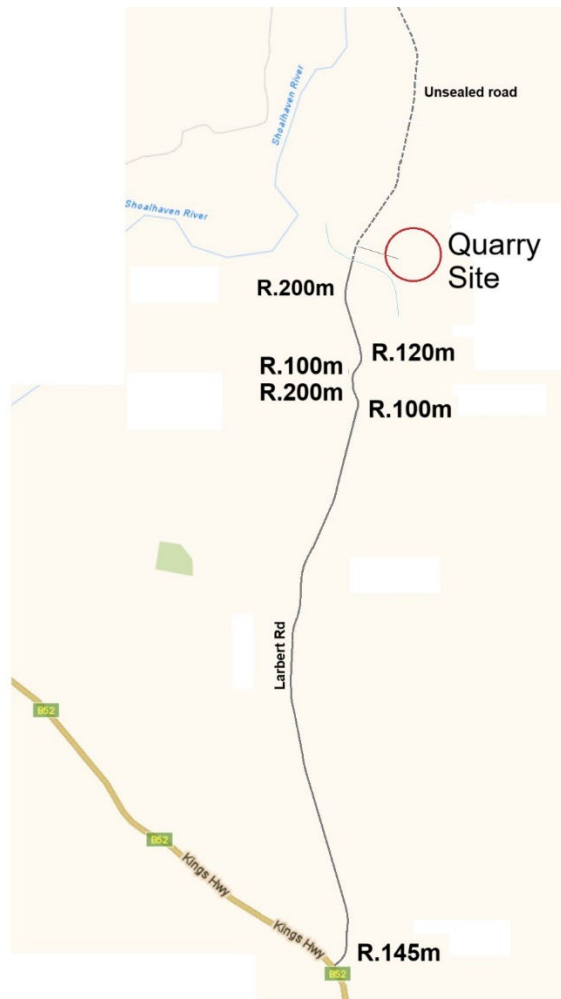


FIGURE 6.4: Existing alignment of Larbert Road, showing approximate curve radii



FIGURE 6.5: Looking south at curve warning and reduced speed signage on Larbert Road.

Current traffic volumes on Larbert Road are low, with less than 10 vehicles per hour at peak times at the highway intersection. This equates to an average of 12 minutes gap between vehicles in each direction. Given that the quarry will generate a maximum of 5 laden truck & dog trips per hour at peak times, the likelihood of

conflict on Larbert Road between local vehicles and quarry-generated movements is relatively low.

StreetWise understand that the quarry operators currently ensure all drivers are educated in regard to the quarry's Drivers Code of Conduct, and all haulage truck drivers will be in communication via 2-way radio, which will minimise any conflict between haulage vehicles on Larbert Road.

Sealed Road Width

The following table is from Austroads 'Guide to Road Design Part 3: Geometric Design' and indicates the recommended sealed width for rural roads catering for various daily traffic volumes.

Table 4.5: Single carriageway rural road widths (m)

Element	Design AADT				
	1–150	150–500	500–1000	1000–3000	> 3000
Traffic lanes ⁽¹⁾	3.7 (1 x 3.7)	6.2 (2 x 3.1)	6.2–7.0 (2 x 3.1/3.5)	7.0 (2 x 3.5)	7.0 (2 x 3.5)
Total shoulder	2.5	1.5	1.5	2.0	2.5
Minimum shoulder seal (2),(3),(4),(5),(6)	0	0.5	0.5	1.0	1.5
Total carriageway	8.7	9.2	9.2–10.0	11.0	12.0

- 1 Traffic lane widths include centrelines but are exclusive of edge-lines.
- 2 Where significant numbers of cyclists use the roadway, consideration should be given to fully sealing the shoulders. Suggest use of a maximum size 10 mm seal within a 20 km radius of towns.
- 3 Wider shoulder seals may be appropriate depending on requirements for maintenance costs, soil and climatic conditions or to accommodate the tracked width requirements for Large Combination Vehicles.
- 4 Short lengths of wider shoulder seal or lay-bys to be provided at suitable locations to provide for discretionary stops.
- 5 Full width shoulder seals may be appropriate adjacent to safety barriers and on the high side of superelevation.
- 6 A minimum 7.0 m seal should be provided on designated heavy vehicle routes (or where the AADT contains more than 15% heavy vehicles).

FIGURE 6.5 Single carriageway rural road widths (Austroads)

Traffic volume data at the intersection with The Kings Highway indicates that a maximum of 9 vehicles per hour utilise the southern end of Larbert Road, which equates to approximately 100 vehicles per day. According to the Austroads table above, a rural road catering for between 1 - 150 vehicles per day should have a minimum sealed width of 3.7m, with a total carriageway width of 8.7m. Assessment by StreetWise indicates that Larbert Road's sealed width is variable, with some sections over 7m wide, but generally around 6m, with the majority of Larbert Road having 1m gravelled shoulders. The average sealed width generally complies with the Austroads requirements.

Road Condition

StreetWise conducted a site inspection, which included a visual assessment of Larbert Road (between the highway and the quarry access road), on Wednesday 9 July 2025. StreetWise observed the Larbert Road surface is generally in reasonable condition, although some existing defects were noted over the 5.8km section of sealed rural road. A concrete causeway is utilised to cross the Durran Durra Creek just south of the quarry access road. Larbert Road is unsealed north of the causeway, including across the frontage of the quarry site. The northern 2km section of Larbert Road is unsealed. However, it is unlikely that any laden haulage vehicles will turn right out of the quarry and head north on Larbert Road.

At the time of inspection, the concrete causeway was covered by approximately 100mm of water. It is understood that the water level varies, and the creek is often dry at this location. Markers on both approaches to the causeway indicate the water level above the causeway. It should be noted that it is unlikely that sand will be quarried during heavy rain events that result in high water levels at the causeway.

Note also that the inspection of Larbert Road was recorded via dashcam, and saved to a StreetWise job file. A copy of the video files is available, if required.

6.3.3 Road Safety

StreetWise observed numerous hazards close to the sealed roadway at numerous locations along Larbert Road, including culverts, tabledrains & steep batters, large trees, fence posts etc. The recommendations at the rear of this report include a speedzone assessment of Larbert Road, and these existing roadside hazards should be considered when determining an appropriate speedzone for the roadway.

6.3.4 Speedzone Assessment

If we assume Larbert Road is suitable for an 80kmh speedzone, we can undertake a desktop assessment for this speedzone. The following is an extract from Section 9.4.19 of the Transport for New South Wales 'Speed Zoning Standard' (TS 03631:1.0) states the following:

'Rural 80 km/h speed limits shall:

- be a high-standard divided arterial road*
- have less than five regularly used private accesses per kilometre on each side of the carriageway with adequate sight distance*
- be applied to undivided roads in rural areas where road design is not aligned with current TfNSW standard of vertical or horizontal alignment.*

Rural 80 km/h speed limits should be assessed on a route-based approach to provide consistency across the road network.'

A desktop assessment indicates Larbert Road does not meet a number of requirements for an 80kmh speedzone, particularly in regard to the reduced standard and lack of separation between the two directions, while some of the curves do not appear to meet design guides for 80kmh.

Larbert Road generally meets the recommended maximum number of regularly used driveways per kilometre and the roadside in most locations is suitable for a wayward vehicle to re-gain control.

Given the low traffic volumes on Larbert Road, the sealed road width and adequate width shoulders, 80kmh may be considered a suitable speedzone for Larbert Road, provided the sub-standard curves are sign-posted with warnings and suitable reduced speeds.

7. PUBLIC TRANSPORT

Currently there are no regular public bus routes in the vicinity of the quarry. However, a daily school bus service for students runs on The Kings Highway, and picks up students from the Larbert area at the highway intersection.

8. SUMMARY

StreetWise Road Safety and Traffic Services have been engaged by Outline Planning Consultants, on behalf of Braidwood Sand and Gravel and Lentro Earthworks Pty Ltd, to prepare a Traffic Impact Assessment (TIA) to expand an existing sand extraction operation at Larbert.

The proposed expanded quarry operation will service infrastructure projects undertaken within the Canberra, Braidwood and South Coast area. The main haulage route being to the southwest via Larbert Road, then further afield via The Kings Highway.

The existing sand extraction operation is located on Lot 332 in DP 755915 at No. 552 Larbert Road, Larbert. The proposed site is located within the Queanbeyan-Palerang Regional Council local government area, approximately 6km north of Kings Highway, and 14km north of the Braidwood CBD.

The proposed expansion would comprise an increase to the annual production rate to 200,000 tonnes per annum and expansion into an additional extraction area over Lots 332 and 333 DP 755915 of approximately 16.1ha, with a resource of approximately 1.2 million tonnes. The proposal includes:

- an increase in the rate of sand extraction, from the currently approved 25,000 tonnes per annum to 200,000 tonnes per annum.
- Continued use of the existing approved access to and from the sand pit back to Larbert Road.
- No change in the currently approved hours of operation of the facility.
- An increase in loaded truck volumes, equivalent to an average of 20 loaded trucks per day, with a maximum of up to about 50 loaded trucks per day.

The Kings Highway (B52) is a major east-west road connecting Canberra and the Australian Capital Territory (ACT) with Batemans Bay on the NSW south coast. The length is approximately 137 km and passes through several towns including Queanbeyan, Bungendore, Braidwood, and Nelligen before reaching Batemans Bay.

In the vicinity of the proposed quarry the travel lanes are generally 3.5m wide in each direction with 1.0m wide sealed shoulders. The posted speed limit in the vicinity of Larbert is 100km/h. The Kings Highway is an approved B Double route for heavy vehicles up to a length of 26.0m long. The NSW Government has committed \$20 million to deliver a program of safety and efficiency upgrades on the Kings Highway.

Larbert Road is a rural road with one lane of traffic each way which runs north from a T-intersection with the Kings Highway in the south. Currently the traffic volumes on Larbert Road are very low. The 8km long road provides access to rural properties in the Larbert precinct, north of the Braidwood township. The southern section of Larbert Road is sealed (up to the quarry access) then unsealed to the end in the north. Guideposts are provided to delineate to road edge, but no centreline or other linemarking was observed.

The sealed formation width of Larbert Road varies in width between 5.5 and 6.5m, with minimal crushed gravel shoulders on both sides. There is no posted speed limit on Larbert Road, although some curves include signage with recommended speeds (see below).

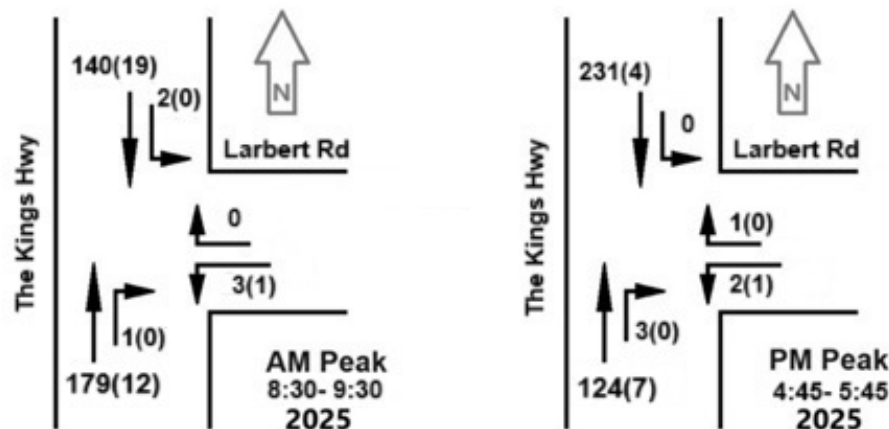
The existing intersection of The Kings Highway (B52) and Larbert Road generally conforms to a CHL (Channelised) intersection. The existing linemarked intersection is within a 100kmh speedzone, and includes a dedicated right turn lane and left turn lane into Larbert Road. Sight distance in both directions on the highway from Larbert Road is greater than 240m and exceeds the minimal requirements.

StreetWise undertook manual traffic counts at the intersection of The Kings Highway and Larbert Road. The following was noted:

- The total AM peak hour vehicle numbers were 267
- The total PM peak hour vehicle numbers were 485
- Heavy vehicle percentage on the highway is approximately 6%

A previous traffic count at the intersection of The Kings Highway and Larbert Road was undertaken by Indesco in relation to a previous development in the Larbert area. The 2 separate traffic counts produced similar results. StreetWise applied a 1% annual growth factor to determine future (2035) traffic volumes through the intersection.

For the purposes of this assessment, StreetWise have adopted the previous 'Indesco' traffic count, due it being taken outside of school holidays.



A desktop assessment of road capacity indicates the 100kmh Kings Highway, with a maximum volume of 231vph in one direction, currently has a Level of Service of 'A', where 'A' describes primarily free-flow operation.

Larbert Road runs through rolling hills, has an estimated AADT of less than 400 vehicles per day, an unposted speedzone (adopt 100kmh) and around 10% heavy vehicle content. According to Austroads guidelines, Larbert Road currently has a Level of Service of 'B', where 'B' describes reasonably unimpeded operation.

This assessment considers both The Kings Highway and Larbert Road have and adequate capacity to safely and efficiently cater for current and future traffic volumes, including additional vehicle movements generated by the expanded sand quarry.

The Kings Highway is an approved Heavy Vehicle route, catering for vehicles up to 26m B-doubles. Larbert Road currently caters for a relatively high proportion of heavy vehicles (10%), including haulage vehicles generated by existing quarries at Larbert. It is also assumed that the rural activities in the Larbert area generate regular heavy vehicle movements such as deliveries, transporting farming equipment, water & fuel tankers, milk tankers, livestock movements etc.

The operators currently use mix of truck and dog combinations (32 & 37.50 tonnes) to haul the quarry material, with occasional use of larger and smaller trucks to service particular projects. The larger truck & dog combination (37.5 tonne) will be used for the majority of haulage trips. The proposed expanded quarry will generate an average of 20 laden trips per day, and a maximum of 50 trips per day, which equates to around 5 laden trips per hour at peak production.

The proposed quarry will employ up to regular 4 staff working on site plus casual contractors, machinery servicing and refuellers. It is estimated that quarry staff and service vehicles will likely generate around 20 light – medium vehicle movements (10 in and 10 out) each day. This equates to an average of 2 trips per hour to and from the quarry.

Austroads guidelines indicate the future traffic volumes and movements through the intersection of The Kings Highway and Larbert Road will require a channelised intersection to cater for the right hand movements into the side road. The current upgraded intersection layout i.e. a Channelised Intersection (CHL) with long turn lanes to allow safe truck turn movements within the 100kmh speedzone, meets the Austroads requirements.

A recent traffic report by Indesco for a proposed expansion of Larbert Quarry (located on Lots 24, 25, 27 & 330 DP 755915) included SIDRA modelling of the existing intersection of The Kings Highway and Larbert Road. Each of the 6 movements through the intersection was shown to operate at a Level of Service of 'A' for all scenarios, where 'A' is described representing the best operating condition and service quality from the users' perspective (i.e. free-flow). Based on the previous SIDRA modelling results, the existing intersection layout has adequate capacity to cater for the estimated traffic increases to be generated by the subject sand quarry expansion, with no significant reduction in safety or efficiency.

The existing quarry is currently accessed via a driveway off the eastern side of Larbert Road, as shown in Figure 5.1 below. The driveway connects with an existing easement through Lot 331 DP 755915, which currently provides access to Lots 332 and Lot 333.

The TfNSW website indicates there have been at least 6 recorded crashes on The Kings Highway and 1 on Larbert Road in the vicinity of the proposed quarry in the past 5 years. Three of the recent crashes resulted in moderate injuries, while the others resulted in no injuries. Four involved collisions between 2 or more vehicles, while 3 involved vehicles leaving the roadway.

The vertical alignment of Larbert Road is generally flat, with some small rolling hills. The horizontal alignment of Larbert Road between the quarry site and The Kings

Highway is generally sections of straight road combined with a few towards the northern end.

Traffic volume data at the intersection with The Kings Highway indicates that a maximum of 9 vehicles per hour utilise the southern end of Larbert Road, which equates to approximately 100 vehicles per day (an average of 12 minutes gap between vehicles in each direction). According to the Austroads table above, a rural road catering for between 1 - 150 vehicles per day should have a minimum sealed width of 3.7m, with a total carriageway width of 8.7m. The average sealed width generally complies with the Austroads requirements.

A site inspection observed the Larbert Road surface is generally in reasonable condition, although some existing defects were noted. A concrete causeway is utilised to cross the Durran Durra Creek just south of the quarry access road. Larbert Road is unsealed north of the causeway, including across the frontage of the quarry site. It is unlikely that any laden haulage vehicles will turn right out of the quarry and head north on Larbert Road.

A desktop assessment indicates Larbert Road does not meet a number of requirements for an 80kmh speedzone, particularly in regard to the reduced standard and lack of separation between the two directions, while some of the curves do not appear to meet design guides for 80kmh. Given the low volumes on Larbert Road, the sealed road width and adequate width shoulders, 80kmh may be considered a suitable speedzone for Larbert Road, provided the sub-standard curves are sign-posted with warnings and suitable reduced speeds.

The current alignment of Larbert Road between the subject quarry and The Kings Highway and noted a number of these curves have a radius of 200m or less, with some including warning signage with reduced speeds.

Currently there are no regular public bus routes in the vicinity of the quarry. However, a daily school bus service for students runs on The Kings Highway, and picks up students from the Larbert area at the highway intersection.

9. RECOMMENDATIONS

In summary, StreetWise Road Safety and Traffic Services recommend that the proposed development as being a suitable development based on the assessed traffic impacts. The additional vehicle trips to be generated by the development are relatively low and the local roads and intersections have the capacity to cater for future traffic volumes, including the additional trips generated to by the development, with no significant impact on the efficiency or safety of the local road network.

Consideration should also be given to:

- Maximising sight distance at the future access location by removing trees and vegetation in the vicinity of the existing quarry driveway.
- W5-22 Advanced Warning signage is to be erected on both approaches to the quarry site access to make drivers more aware of heavy vehicles in this location thus improving road safety.

- Make application to TfNSW to assess Larbert Road, with a view to installing speedzone signage. A suitable speedzone will:
 - Reduce sight distance requirements at intersections and driveways
 - Reduce the severity of any future crashes
 - Improve safety at existing curves
- Maximising sight distance at the future access location by removing trees and vegetation in the vicinity of the quarry entry
- Consideration of centre linemarking where adequate width is available on Larbert Road

In summary, StreetWise Road Safety and Traffic Services recommend that the proposed development as being a suitable development based on the predicted traffic impacts. The additional vehicle trips to be generated by the development will not have a significant impact on the efficiency or safety of the local road network, and that the local roads and intersections have the capacity to cater for the additional trips generated by the development, with minimal upgrades required.

Appendix A

Concept Layout of Quarry Site





Braidwood - Proposed Stage Plans



Disclaimer:
- This plan is a conceptual design only
- This plan is not suitable for operational use
- This plan should be used for visual reference only

Date: 25/07/2025

Drawn By: A.Richards

Appendix B

Correspondence with Road Authorities



Reminder ✓ Add task ↗ Permalink ⌚ Snooze

🖨️ 💬 ↗ ✕

RE: Traffic assessment requirements for proposed quarry at Larbert Road, Larbert

DE Development Engineering • 🔍

↶ ↷ → 🔗 | ✓

▶ 2:33 PM • 📧 • INBOX

🕒 Andrew Davis

📖 🔗

Hi Andrew,

You have covered the majority of our requirements on the bullet points below. I assume your point 2 below will include the intersection performance of Larbert Road and Kings Highway, including SIDRA modelling. Additionally, your point one (road traffic generation) should align with the actual tonnage that will be transported from the site as part of the expansion approval.

Regards,

Amul

Development Engineering**Queanbeyan-Palerang Regional Council****Tel:****Web:** www.qprc.nsw.gov.au**Mail:** PO Box 90 Queanbeyan NSW 2620

From: Andrew Davis [REDACTED]
Sent: Wednesday, 16 July 2025 12:34 PM
To: Council Mail <Council.Mail@qprc.nsw.gov.au>
Subject: Traffic assessment requirements for proposed quarry at Larbert Road, Larbert

@mention a user or group to share this conversation

📄 📌 😊

Hi,

My name is Andy Davis, and I am a director at StreetWise Road safety & Traffic Services.

We have been engaged to undertake a traffic assessment and prepare a report for the proposed expansion of an existing quarry at Larbert Road, Larbert.

We are working with a planner, who has applied for SEARS requirements from the NSW Government (i.e. Department of Planning, Housing & Infrastructure).

The response included a number of requirements in regard to traffic, including:

- accurate predictions of the road traffic generated by the construction and operation of the development, including a description of the types of vehicles likely to be used for transportation of quarry products;
- an assessment of potential traffic impacts on the capacity, condition, safety and efficiency of the local and State road networks, detailing the nature of the traffic generated, transport routes, traffic volumes and potential impacts on local and regional roads;
- a description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road network (particularly the proposed transport routes) over the life of the development;
- evidence of any consultation with relevant roads authorities, regarding the establishment of agreed contributions towards road upgrades or maintenance
- a description of access roads, specifically in relation to nearby Crown roads and fire trails;

Are there any other matters that Council require to be assessed/discussed in our traffic report?

Regards

Andy Davis (Director)

StreetWise Road Safety & Traffic Services Pty Ltd



ABN: 45 604 145 315

PO BOX 1395

Appendix C

SIDRA Modelling Results (from Indesco report)



LANE SUMMARY

▼ Site: 101 [Larbert Rd / Kings Hwy-AM - Post Dev (Site Folder: 2032-Post Dev)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Lane Use and Performance													
	DEMAND FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total	HV]						[Veh	Dist]				
	veh/h	%	veh/h	v/c	%	sec			m		m	%	%
East: Kings Hwy - E													
Lane 1	247	7.2	1862	0.133	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	6	66.7	1041	0.006	100	10.4	LOS A	0.0	0.3	Short	160	0.0	NA
Approach	254	8.7		0.133		0.3	NA	0.0	0.3				
North: Larbert Rd													
Lane 1	13	83.3	721	0.018	100	8.6	LOS A	0.1	0.7	Full	500	0.0	0.0
Approach	13	83.3		0.018		8.6	LOS A	0.1	0.7				
West: Kings Hwy - W													
Lane 1	6	100.0	1084	0.006	100	10.4	LOS A	0.0	0.0	Short	160	0.0	NA
Lane 2	194	13.6	1792	0.108	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	200	16.3		0.108		0.3	NA	0.0	0.0				
Intersection	466	14.0		0.133		0.5	NA	0.1	0.7				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akgelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Organisation: INDESCO | Licence: NETWORK / 1PC | Processed: Wednesday, 2 November 2022 4:55:35 PM

Project: H:\9034 Larbert Quarry Traffic Impact Assessment\50 Design and PM\50.7 Reports\9034_TIA\SIDRA Model\Larbert Model.sip9

LANE SUMMARY

▽ Site: 101 [Larbert Rd / Kings Hwy-PM - Post Dev (Site Folder: 2032-Post Dev)]

New Site

Site Category: (None)

Give-Way (Two-Way)

Lane Use and Performance													
	DEMAND FLOWS		Cap.	Deg. Satn	Lane Util.	Aver. Delay	Level of Service	95% BACK OF QUEUE		Lane Config	Lane Length	Cap. Adj.	Prob. Block.
	[Total veh/h	HV %	veh/h	v/c	%	sec		[Veh	Dist] m		m	%	%
East: Kings Hwy - E													
Lane 1	171	8.2	1875	0.091	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 2	9	44.4	1011	0.009	100	10.2	LOS A	0.0	0.4	Short	160	0.0	NA
Approach	180	8.2		0.091		0.5	NA	0.0	0.4				
North: Larbert Rd													
Lane 1	14	69.2	664	0.021	100	9.1	LOS A	0.1	0.8	Full	500	0.0	0.0
Approach	14	69.2		0.021		9.1	LOS A	0.1	0.8				
West: Kings Hwy - W													
Lane 1	3	100.0	1084	0.003	100	10.4	LOS A	0.0	0.0	Short	160	0.0	NA
Lane 2	318	2.0	1925	0.165	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	321	3.0		0.165		0.1	NA	0.0	0.0				
Intersection	515	6.5		0.165		0.5	NA	0.1	0.8				

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Lane LOS values are based on average delay per lane.

Minor Road Approach LOS values are based on average delay for all lanes.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road lanes.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Project: H:\9034 Larbert Quarry Traffic Impact Assessment\50 Design and PM\50.7 Reports\9034_TIA\SIDRA Model\Larbert Model.sip9