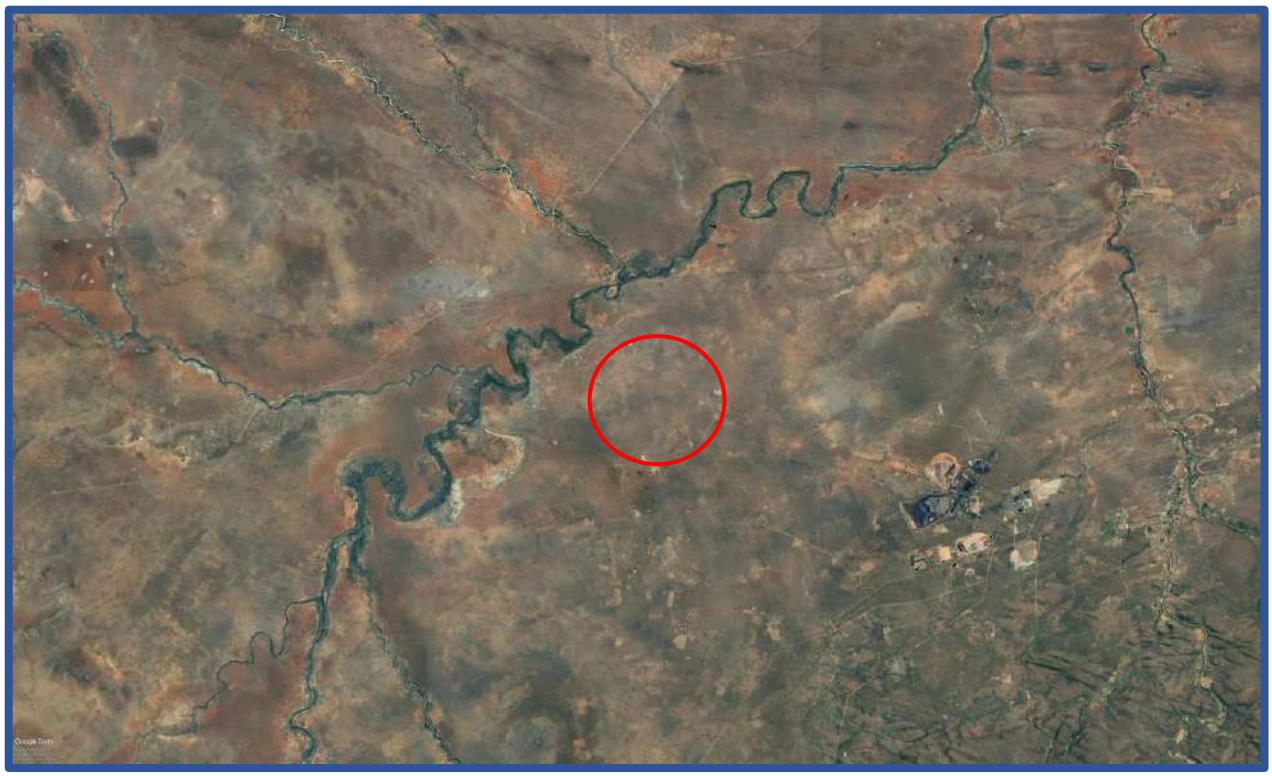

PROPOSED DALYSHOPE COAL MINING PROJECT, SITUATED IN THE MAGISTERIAL DISTRICT OF LEPHALALE, LIMPOPO PROVINCE

TRAFFIC IMPACT ASSESSMENT REPORT

SEPTEMBER 2020

EDL CONSULTING ENGINEERS

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Checked by	E.D. Kotze (Pr. Tech Eng)			
Signature				
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EDL Engineers (Pty) Ltd
1st Floor, Block D
The Village Office Park
c/o Glenwood Rd & Oberon Ave,
Fearie Glen, 0043
Cell: +27 (0)83 564 1563
Tel: +27 (0)87 897 5074/5/6
Email: eben@edlengineers.co.za
Website: www.edlengineers.co.za

ENGINEERING DESIGN LAB

B-BBEE LEVEL2 CONTRIBUTOR

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1 Introduction

EDL Engineers (Pty) Ltd have been appointed by Digby Wells Environmental to conduct a Traffic Impact Assessment for the proposed Dalyshope coal mining project, situated in the magisterial district of Lephalale, Limpopo province.

The purpose of this Traffic Impact Assessment Report is to investigate the passing and new traffic that will be generated by the colliery, and to quantify, as well as evaluate its impact on the existing road network. Road improvements are proposed for both the Steenbokpan Road (D1675) and the D175. For more information, please refer to Chapter 8.

This study also discusses the proposed access to and from the colliery as taken from the D175, with a discussion on its geometric layout, considering the number of heavy vehicles that will be using the D175 and the access.

The provision of non-motorised and public transport services and facilities near the proposed development is also investigated, evaluated, and discussed within this report. For more information, please refer to Chapter 9 of this report.

Included in this report is the classification of the relevant roads and the key intersections, with their characteristics discussed in Chapter 3 and 7, respectively. Details on the proposed development is set out in Chapter 4, **Table 1** and discussed in Chapter 4.1.

The appropriate trip generation is illustrated in **Table 2**, which is based on information provided to EDL Engineers (Pty) Ltd by the client for the specific colliery. Details regarding future trip generation and traffic flows, with the trip distribution, is discussed in Chapter 6. Please refer to **Figures 3** to **6**.

Details regarding the existing traffic flows, with their trip distribution, is discussed in Chapter 4. Please note that a correction factor was applied to the traffic counts done in June, as suggested by the South African Institute of Civil Engineers (SAICE) during a Zoom conference early in June 2020. Please refer to **Figure 2** for the adjusted Existing 2020 background Peak Hour Traffic at the key intersections.

As part of the impact evaluation, SIDRA 9™ analyses were undertaken at the key intersections for the existing and future 2025 (5-year horizon) scenarios only. The future scenarios regarding the increased output of the colliery and its increased trip generation, will be discussed in Chapter 4.

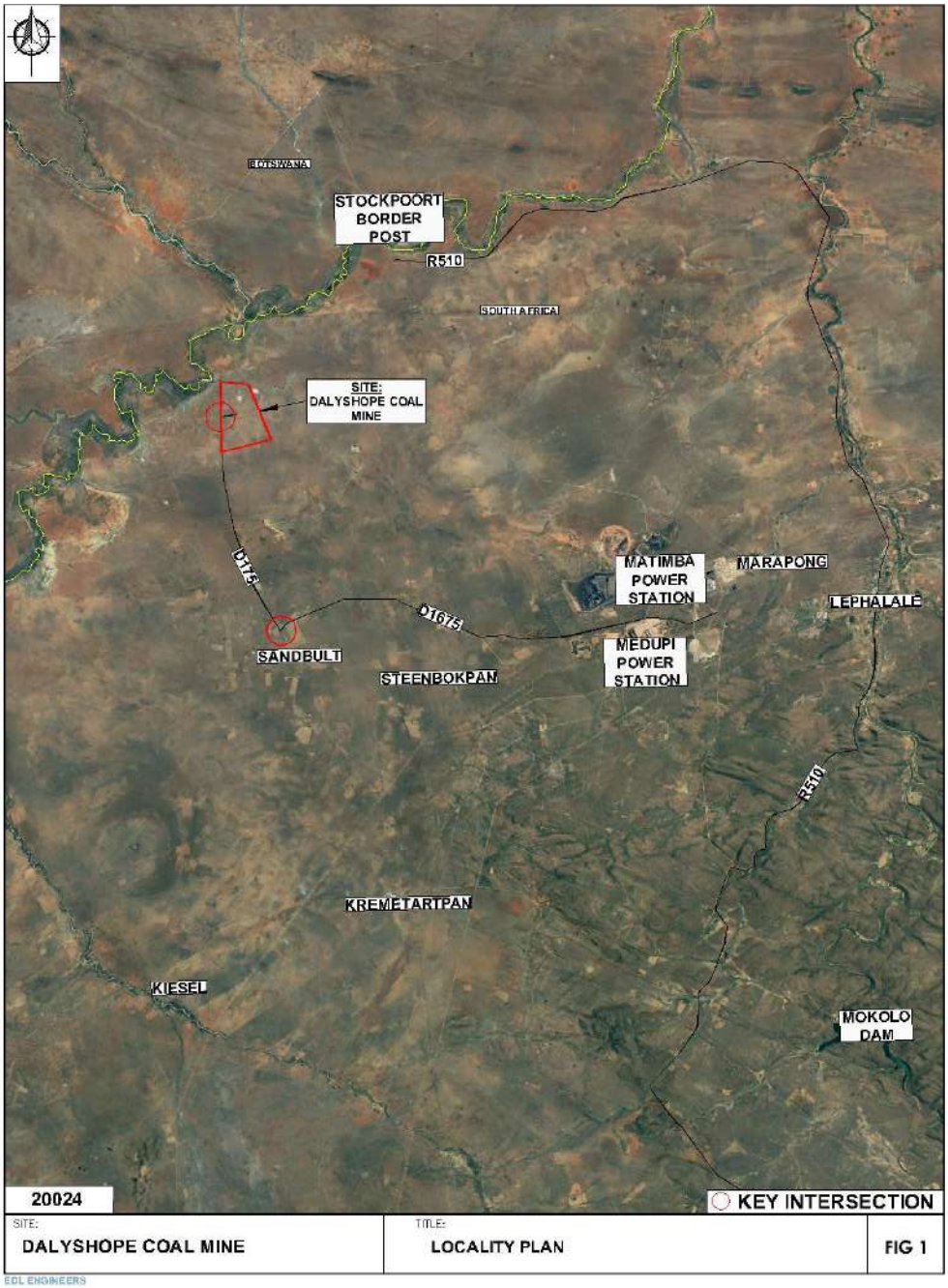
2 Site Location & Surrounding Road Network

2.1 Site Location

As shown in **Figure 1,** the site is located across the two Farms of Klaarwater 231-LQ and Dalyshope 232-LQ, about 55km north west of Lephalale, within the magisterial district of Lephalale, Limpopo province.

The site, as can be seen in **Figure 1** (below and attached) is surrounded by other game farms and agricultural farms stretching from Lephalale to the border of Botswana. Noticeable landmarks in the greater study area include the Medupi Power Station, as well as the Matimba Power Station, situated approximately 39km south east of the site, as well as the Stockpoort Border Post, located about 22km north east of the site.

Figure 1: Locality Plan showing the site (Also attached at the back of the report)



3 Surrounding Road Network & Traffic Flows

3.1 Surrounding Road Network

The following roads and streets are relevant to the study area.

Steenbokpan Road (D1675): This road, which serves as the only direct route from Lephalale to Sandbult, and subsequently, the study site, functions as a minor arterial for the area of and surrounding Sandbult, as per the criteria in Chapter 4.5.5. in the South African Road Classification and Access Management Manual (TRH26), despite almost only providing access to neighbouring farms. It runs in an east / west direction about 15km south of the southern boundary of the study site with a several large radius curves over its length, travelling towards Lephalale. The D1675 has an average slope of approx. 1.0% travelling eastbound to Lephalale. This road is a surfaced single carriageway road with no median and one (1) lane per direction. It should however be mentioned that this road is in a bad condition, resulting in unsafe driving conditions considering the vast number of potholes and unsurfaced patches along its length. This road intersects the D175 by means of a 2-Way "Stop" with the D1675 having the Right-Of-Way (R.O.W). The average speed on the D1675, according to data obtained by EDL Engineers (Pty) Ltd is 80km/h.

Traffic counts indicate that this road carries traffic volumes of between 10 vehicles per hour (vph) and 50 vehicles per hour (vph) per direction during the Weekday morning (AM) and afternoon (PM) peak hours.

Photo 1: D1675 looking west

Photo 2: The intersection of the D1675 & D175

D175: This road, which serves mainly as an access route for the farms situated near the study site, runs along the western boundary of the proposed colliery. This road links the town of Sandbult, to the south, with the R510, just south of the Stockpoort border post. This road is an unsurfaced (gravel) single carriageway road with no median and space for two (2) vehicles per direction. This road has a 2-Way "Stop" intersection with the Steenbokpan Road (D1675) with the last mentioned having the R.O.W.

Where the access to the colliery is proposed, this road mainly has a straight horizontal alignment with limited curves in its alignment. Regarding its vertical alignment, the D175 has an average gradient of approx. 1.0% southbound where the access to the study site is proposed, toward the town of Sandbult. Sight distance will be covered in more detail in Chapter 5 of this report. The average speed on the D175, according to data obtained by EDL Engineers (Pty) Ltd is 60km/h.

Traffic counts indicate that this road carries traffic volumes between 20vph and 60vph per direction during the Weekday morning (AM) and afternoon (PM)peak hours.

Photo 3: D175 looking north

Photo 4: D175 looking south

3.2 Future Road Network

According to the knowledge of EDL Engineers (Pty) Ltd, there are no new roads planned which will have an impact on the proposed Dalyshope coal mining project. Upgrades are however proposed for both the D1675 as well as the D175. Please refer to Chapter 8 for more information.

3.3 Existing Traffic Flows

The study area was defined to include two key intersections as required by COTO TMH 16. Weekday Traffic Count data were supplied to EDL Engineers (Pty) Ltd which were carried out during June of 2020 during the Weekday AM and PM commuter peak periods, at the following identified intersections:

Key Intersections: Steenbokpan Road (D1675) & the D175

D175 & Access to the proposed Colliery

EDL Engineers (Pty) Ltd acknowledges the fact that traffic patterns have been altered as a result of the Covid-19 outbreak (and lockdown) and has therefore adjusted the traffic count figures according to the proposals discussed by various municipalities during the Zoom meeting with the South African Institute of Civil Engineers (SAICE) early in June. It was estimated that, at the abovementioned key intersections, a correction factor of 3 for the Existing weekday AM and PM Peak Hour is to be applied. This was estimated by performing traffic counts at similar locations with available data which was provided to EDL Engineers (Pty) Ltd for the study area. By determining the percentage difference in Pre vs Post Covid-19 traffic flows, a correction factor could have been determined which was therefore added to the newly counted volumes at the key intersections mentioned above. The existing Weekday AM, and PM peak hour traffic volumes are summarised in **Figure 2**. Please refer to Chapter 7 for more information regarding the key intersections and their capacity analyses.

4 Proposed Development, Trip Generation & Parking

With reference to the proposed infrastructure layout attached as **Annexure B** the following sub-Chapters are relevant with respect to the proposed development's trip generation.

4.1 Proposed Development

The proposed Dalyshope Coal Mining project is situated across the Farms of Klaarwater 231-LQ and Dalyshope 232-LQ, near the town of Lephalale. According to information provided to EDL Engineers (Pty) Ltd by the client, Digby Wells, the Dalyshope coal resource is an inter-bedded sequence of about 75m thick. The total block consists of 5 billion MTIS (Mineable Tonnes In-Situ), with an average ROM (Runn Of Mine) strip ratio of 0.7. The colliery is proposed to have an initial average output of six million tonnes (6 000 000 ton) of ROM coal per annum. This production rate is proposed to be increased to thirty million tonnes (30 000 000 ton) of ROM coal per annum after the first five (5) years of operation, for the remainder of the life of the coal mine, which is estimated at thirty (30) years. It is furthermore estimated that a total of 1200 employees will form part of the overall workforce present at the proposed coal mine.

Please refer to **Annexure B** (Proposed Infrastructure Layout) for details of the proposed site layout.

Table 1: Extent of the Proposed Development

Description	Area (ha)
Coal Mine	1 645
Total	**1 645**

4.2 Trip Generation

The expected short term (first 5 operational years) trip generation for the proposed land use is discussed below:

Coal Mine (Heavy Vehicles): Considering the estimated output for the first five years of the coal mine, and the fact that the mine is proposed to operate for 24 hours per day, the trips can be calculated as follows:

Output: 6 000 000 tonnes / annum

Which calculates to 44 trucks per hour (22 trucks per hour "OUT" and therefore 22 trucks per hour "IN")

Personnel / Employees (Light Vehicles): For the employees, which forms a combination of office bound and site / operational staff, a trip rate of 0.5vph was deemed appropriate per employee. Directional splits of 85/15 for the Weekday morning (AM) peak hour and 20/80 for the Weekday afternoon (PM) peak hour were applied. Considering an estimated total of 1200 employees, working four (4) shifts, the trips could have been calculated on the following page.

Employees: 1 200 workers

Shifts: 4

If ¼ of the workforce arrives within the Weekday AM or PM Peak hours, a total of 300 employees will be used to calculate the number of vehicle trips within the relevant AM and PM peak hours.

Using the abovementioned parameters, it is estimated that the proposed coal mining project, will generate a combined total of approx. **194vph** during the critical **Weekday morning (AM)** and **194vph** during the critical **Weekday afternoon (PM)** peak hour.

Please refer to **Table 2** below for a detailed breakdown of the expected trip generation for the coal mine development:

Table 2: Summary of the Estimated Development Traffic (5 Year Horizon period)

Description	Peak Hour	Trip Rate	Reduction Factor	Split %	TRIPS		
					In	Out	Total
Coal mine HV (1 645ha)	Weekday AM	-	-	50/50	22	22	44
	Weekday PM	-	-	50/50	22	22	44
Coal mine LV (1 200 employees)	Weekday AM	0.5vph / employee	-	85/15	128	22	150
	Weekday PM	0.5vph / employee	-	20/80	30	120	150
Total Trips	**Weekday AM**				**150**	**44**	**194**
	Weekday PM				**52**	**142**	**194**

Figures 3 to 6 show the estimated trip generation and distribution for the proposed development taking both the existing and future background traffic volumes into consideration.

Considering a future scenario with an estimated production rate of thirty million (30 000 000) tonnes ROM coal per annum, a total of 107 heavy vehicles “IN” and 107 heavy vehicles “OUT” per hour will be generated by the colliery for the remainder of its production life. Assuming the workforce that influences the generation of light vehicles to and from site stays unaltered, the colliery will generate a combined total of approx. **366vph** during the critical **Weekday morning (AM)** and **366vph** during the critical **Weekday afternoon (PM)** peak hour. It should however also be mentioned that the mine is considering railway haulage of coal as an alternative to road haulage, in the future. This falls outside the scope of our Traffic Impact Assessment.

4.3 Parking

Regarding parking on the premises, it is proposed that two parking areas be constructed near the entrance of the coal mine for visitors as well as public transport vehicles as also shown on the attached proposed infrastructure layout in **Annexure B**. It is proposed that these parking areas be constructed separately and on both sides of the access road, with entrances to these parking areas situated far enough from the main entrance gate to the colliery to accommodate queue lengths that will be forming during the Weekday AM and PM peak hours for entering traffic. A total number of 70 bays are proposed for visitors on the southern side of the access road to the colliery. Regarding the public transport parking area, please refer to Chapter 9 and **Drawing No. 20024/AL/01** for more information.

5 Queueing Analysis and Site Access

5.1 Queueing Analysis

Calculations on the expected queue length for the short term scenario (first 5 operational years) were split into two scenarios and were based on a maximum arrival rate of 22vph for heavy vehicles and 128vph for light vehicles, in the worst peak hour for entering vehicles (Weekday AM) at the access. Please also refer to **Annexure B** for details regarding the proposed infrastructure layout.

The formula used for an exceedance of 95% is as follows:

$$\frac{\ln(0.05) - \ln(Qm)}{\ln(q)} - 1$$

Where:
Utilization factor (q):

$$\frac{\text{Arrival rate}}{(\text{Number of lanes}) * (\text{Service rate per lane})}$$

And by means of interpolation, Qm is determined by using **Table 3** below:

Table 3: Tabled values of the relationship between queue length, number of lanes and utilization factor (Qm)*

Table of Qm Values							
LANES	**1**	**2**	**3**	**4**	**6**	**8**	**10**
0,0	0,0000	0,0000	0,0000	0,0000			
0,1	0,1000	0,0182	0,0037	0,0008	0,0000	0,0000	0,0000
0,2	0,2000	0,0666	0,0247	0,0096	0,0015	0,0002	0,0000
0,3	0,3000	0,1385	0,0700	0,0370	0,0111	0,0036	0,0011
0,4	0,4000	0,2286	0,1411	0,0907	0,0400	0,0185	0,0088
0,5	0,5000	0,3333	0,2368	0,1739	0,0991	0,0591	0,0360
0,6	0,6000	0,4501	0,3548	0,2870	0,1965	0,1395	0,1013
0,7	0,7000	0,5766	0,4923	0,4286	0,3359	0,2706	0,2218
0,8	0,8000	0,7111	0,6472	0,5964	0,5178	0,4576	0,4093
0,9	0,9000	0,8526	0,8172	0,7878	0,7401	0,7014	0,6687
1	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000	1,0000

*Source: Transportation and Land Development (Vergil G Stover / Frank J Koepke)

Considering different scenarios with a 40vph service rate for heavy vehicles and 200 vph for light vehicles at a control gate or a security boom for the colliery and two (2) entrance lanes serving light and heavy vehicles respectively (1 lane each), at a control gate / boom, the utilization factors (q) equate to 0.640 and 0.550 for light and heavy vehicles respectively. By then using **Table 3** above, Qm can be solved by means of interpolation as 0.640 and 0.550. By solving for the exceedance of 95%, the queue length equates to 5 light vehicles and 4 heavy vehicles. This means the space required for vehicles queuing from the road edge of the D175 towards the Entrance Gate is a minimum length (or stacking distance) of 30m for light vehicles and 100m for heavy vehicles. Normally, an additional distance of 2m for pedestrians is added to the required queueing distance, concluding a total stacking distance of 102m. As per the proposed access layout appended, this distance is available on site.

Please refer to the enclosed **Drawing No. 20024/AL/01** for details.

5.2 Proposed Site Access

The proposed Dalyshope coal mining project, is proposed to be accessed by the following means only:

- A full access with an access road from the D175 situated about 18.5km north of the intersection of the D1675 and the D175.

As per the attached drawing it is proposed that the site be accessed by means of a full access, capable of handling heavy vehicles in both directions without obstructions. It is therefore proposed that 5m wide "IN" and 5m wide "OUT" lanes be constructed, resulting in an overall access road width of 10m. Considering the fact that mostly interlink trucks will be using this access, the bell mouth radii are proposed at 20m for the southern side, and 15m for the northern side of the bell mouth respectively. Please refer to **Drawing No. 20024/AL/01** as well as Chapter 8 for more information regarding the proposed layer works for this road.

According to COTO TMH 16, the South African Traffic Impact and Site Traffic Assessment Standards and Requirements Manual, a road with a speed limit of 60km/h must have a Stopping Sight Distance of at least 85m on a relatively flat road, i.e. a road with an average gradient of equal or less than ±3%. During the site inspection it was noted that more than the required sight distance is available to either side of where the access to the colliery is proposed, on the D175.

The access must be dust free (dust suppression spray to be applied periodically) and must comply with the relevant standards of the Lephalale Local Municipality / Waterberg District Municipality. Please refer to Chapter 8.3 for more information regarding the proposed pavement design. Traffic signs as proposed on the attached drawing is to be added to the access and access road adhering to the most relevant standards of the South African Road Signs and Traffic Signs Manual (SARTSM). Please refer to **Drawing No. 20024/AL/01** for the proposed access layout.

6 Traffic Flows & Trip Distribution

6.1 Total Future Traffic Flows

The site to be developed is near Lephalale, in Limpopo, an agricultural / game farm area with privately owned vehicles and public transport forming a significant part of the mode of the commuter's daily transport needs in the area.

With the addition of a mine in the study area, as well as other densification factors, it is estimated that the traffic growth in and around the area of Lephalale and Sandbult will be positive. However, considering the slowing down of the economy (almost zero growth currently and below 0,5% / annum forecasted), it is estimated that the traffic growth will be average in the area of and around of Lephalale and Sandbult, with a +2.5% per annum growth rate that was adopted for the background traffic over a 5-year horizon period, from 2020 to 2025 for this study.

Figure 5 shows the existing 2020 peak hour traffic plus estimated development traffic, which is the summation of **Figures 2** and **4.**

6.2 Trip Distribution

Assumptions on the expected trip distribution for the trips generated by this coal mine development were based on the location of the proposed site access / exit in relation to the surrounding road network as it leads to trip attractions such as residential areas, power stations and other commercial / industrial areas. The trips were therefore distributed as per the approximate percentages set out below:

For heavy Vehicles:

From the exit onto the D175 (100% of traffic to be distributed):

- 100% of total generated traffic will be turning left out of the colliery, heading south with the D175 toward the town of Sandbult.

Steenbokpan Road (D1675) & D175 (approx. 100% of traffic to be distributed):

- 100% of total generated traffic will be turning left, heading east with the D1675 toward Lephalale / Medupi and or Matimba Power Station.

For light Vehicles:

From the exit onto the D175 (100% of traffic to be distributed):

- 100% of total generated traffic will be turning left out of the colliery, heading south with the D175 toward the town of Sandbult.

Steenbokpan Road (D1675) & D175 (approx. 100% of traffic to be distributed):

- 60% of total generated traffic will be turning left, heading east with the D1675
- 21% of total generated traffic will continue to head south with the D175
- 19% of total generated traffic will be turning right heading west with the D1675

7 Traffic Impact & Capacity Analyses

To determine the expected traffic impact of the proposed coal mine development at the key intersections, capacity analyses were carried out by using SIDRA 9™, a well-known traffic engineering software package. The following intersections were analysed:

Key Intersections:

- Steenbokpan Road (D1675) & D175
- D175 & Access road to the proposed Colliery

The following scenarios were analysed at the abovementioned key intersections, namely:

- Existing 2020 Weekday morning (AM) and afternoon (PM) peak hours without the development traffic (as per **Figure 2**);
- Existing 2020 Weekday morning (AM) and afternoon (PM) peak hours with development traffic (as per **Figure 5**);
- Future 2025 Weekday morning (AM) and afternoon (PM) peak hours without development traffic (as per **Figure 3**);
- Future 2025 Weekday morning (AM) and afternoon (PM) peak hours with development traffic (as per **Figure 6**);

The next sub-Chapters illustrate the SIDRA 9™ results in two tables and briefly discusses the results and key conclusion at the analysed intersection, with the details of SIDRA 9™ Intersection Capacity Analyses appended in **Annexure A**.

7.1 Steenbokpan Road (D1675) & D175

Also refer to Annexures A1.1 to A1.8:

Table 4 – Results of Sidra Analyses (worst approach only)

Intersection		1. Steenbokpan Road (D1675) & D175			
Scenario		Existing 2020	Future 2025	Exist 2020 + Dev	Future 2025 + Dev
Level of Service	Weekday AM	A	A	A	A
	Weekday PM	A	A	A	A
Average Delays	Weekday AM	5.5	5.5	6.0	6.0
	Weekday PM	5.6	5.6	6.2	6.2
Remarks	This intersection operates acceptably under all scenarios and therefore this intersection is not proposed to be upgraded. This intersection is however proposed to be resurfaced and associated road markings to be repainted in accordance with the most relevant standards of the South African Road Traffic Signs Manual (SARTSM). Please refer to **Drawing No. 20024/ID/01** for more information.				

7.2 D175 & Access to the proposed Colliery

Also refer to Annexures A2.1 to A2.8:

Table 5 – Results of Sidra Analyses (worst approach only)

Intersection		2. D175 & Access to the proposed Colliery			
Scenario		Existing 2020	Future 2025	Exist 2020 + Dev	Future 2025 + Dev
Level of Service	Weekday AM	B	B	B	B
	Weekday PM	B	B	B	B
Average Delays	Weekday AM	11.2	11.2	11.3	11.3
	Weekday PM	11.5	11.6	11.7	11.8
Remarks	This intersection will operate acceptably under all scenarios.				

8 Road and/or Intersection Improvements

All analysed intersection scenarios during the Weekday morning (AM) and afternoon (PM) peak hours have acceptable Levels of Service (L.O.S.) and Average Delays according to SIDRA 9™ Analysis, as shown in **Chapter 7**. The intersection of the D1675 and D175 is however proposed to be resurfaced and repainted as discussed in Chapter7. Furthermore, considering the deteriorated condition that the Steenbokpan Road (D1675) is currently in, it is proposed that all potholes be patched, that drainage is improved, and that the road be resurfaced where needed.

Regarding the D175, as well as the access road to the colliery, the following is proposed:

8.1 Proposed Road Improvements (D175)

Currently, the D175 is an unpaved road, with characteristics as set in Chapter 3. It is proposed that this road be reconstructed with improved layer works and a 2% camber to cope with the increased number of heavy vehicles using this road once mining activities commences. The horizontal and vertical alignment is proposed to stay unchanged, but the drainage must be improved by installing pipe culverts with headwalls at regular intervals where needed. Please refer to **Drawing No. 20024/AL/01** for a layout of this road as well as a sectional view showing the proposed pavement design.

8.2 E80 Calculation

Considering a pavement appropriate for the first five (5) years of operation of the colliery, the cumulative E80s were calculated as described below:

For a structural design period of five (5) years, a lane distribution factor of 0.55 and 70% percent heavy vehicles on the D175, an average daily E80 / heavy vehicle / lane of 3.06 was calculated. It was assumed that the road will be used within one (1) year from the survey date. Considering an E80 Growth Rate of 5%, a cumulative E80 of 4.52 million over the design period was calculated. This corresponds to a Class 5 road as per the GAUTRANS Pavement Design Catalogue of 1998, Plan number GTP 9/2.

Refer to **Annexure C** for a breakdown of the calculations.

8.3 Pavement Design

As mentioned, the vertical and horizontal alignment is proposed to stay unchanged. For the layer works, of both the D175 as well as the proposed access road to the colliery, the following is proposed. Please refer to **Drawing No. 20024/AL/01** for specific parameters such as compaction effort, strength, and plasticity index per layer.

Table 6: Layer works for the proposed D175 & Access Road

First 5 operational years
Dust Suppression Layer
200mm G2 Base
150mm C3 Upper Subbase
150mm C4 Lower Subbase
200mm G5 Upper Selected
200mm G7 Lower Selected
In-Situ Layer

9 Public Transport Assessment

9.1 **Public Transport Facilities**

In terms of the National Land Transport Transition Act (NLTTA) 22 of 2000, Chapter 29, it is a requirement that an assessment of the public transport issues be included in the traffic impact assessments. The Act also requires that there be public transport facilities within 1km walking distance from a development.

Considering the location of the proposed coal mine, no formal public transport facility such as a bus stop / taxi rank will be present near the site.

As there will be a significant amount of public transport users once this colliery is operational, it is proposed that separate parking areas be constructed on both sides of the proposed access road coming from the D175. These parking areas are also proposed to serve as parking space for visitors on site and must simultaneously be large enough to accommodate the turning circles of public transport vehicles.

A total number of 10 busses and 25 mini-bus taxis will be accommodated by the proposed public transport parking area, as proposed on **Drawing No. 20024/AL/01**.

Constructing such a parking area will ensure that the requirements of the National Land Transport Transition Act (NLTTA) 22 of 2000, Chapter 29, are met.

9.2 **Pedestrian Facilities / Walkway**

Considering the public transport facilities proposed above, it is furthermore proposed that sidewalks be constructed around the parking areas, running up to the main entrance and inside on the proposed colliery premises. This will ensure pedestrian safety on site. The sidewalks are proposed to be paved to a width of 1.5m minimum. The paving is proposed to consist of grey interlocking pavers of 60mm thick. Please refer to enclosed **Drawing No. 20024/AL/01**.

10 Conclusions & Recommendations

Based on the content of this Traffic Impact Assessment report, the following key conclusions and recommendations are relevant:

- As shown in **Figure 1**, the site is located across the two Farms of Klaarwater 231-LQ and Dalyshope 232-LQ, about 55km north west of Lephalale, situated in the magisterial district of Lephalale, Limpopo province.
- The proposed colliery development is proposed to have an initial average output of six million tonnes (6 000 000 ton) of ROM coal per annum. This production rate is proposed to be increased to thirty million tonnes (30 000 000 ton) of ROM coal per annum after the first five (5) years of operation, for the remainder of the life of the coal mine, which is estimated at thirty (30) years. Please refer to Chapter 4 for more information.
- Traffic counts were undertaken during June in 2020, at the key intersections as mentioned in Chapter 3. EDL Engineers (Pty) Ltd has adjusted the traffic count figures according to the proposals discussed by various municipalities during the Zoom meeting with the South African Institute of Civil Engineers (SAICE) early in June.
- It is estimated that the proposed development will generate approx. 194vph trips (total 'In' plus 'Out') during the Weekday morning (AM) and afternoon (PM) peak hours. For more information regarding the full operational life of the colliery and the subsequent trip generation, please refer to Chapter 4.2.
- SIDRA 9™ Intersection Capacity Analyses were undertaken and were carried out for the peak periods at the key intersections as per Chapter 8, and although no additional lanes (widening) are proposed, the intersection of the D1675 and D175 is proposed to be resurfaced.
- Along with the new access road to the colliery, the D175 is proposed to be reconstructed to be able to handle the increased amount of heavy traffic and have space for heavy vehicles passing each other per direction. The layer works and other upgraders for this road is discussed in detail in Chapter 8. The D1675 (Steenbokpan Road) is in a bad condition and it is therefore also proposed that the potholes on this road be patched and that the road be resurfaced where needed to improve the condition and overall safety on this road.
- Regarding public transport, parking areas are proposed on both sides of the access road to the colliery. These parking areas will serve as a public transport facility and will also offer parking space for daily visitors. By constructing these parking areas, the requirements of the National Land Transport Transition Act (NLTTA) 22 of 2000, Chapter 29, are met. For more information, please refer to Chapter 9 and **Drawing No. 20024/AL/01.**
- Sidewalks are proposed to be constructed around the parking areas on both sides of the access road, running up to the main entrance and on the premises of the coal mine. The sidewalks are proposed to be paved to a width of 1.5m. Please refer to **Drawing No. 20024/AL/01**.

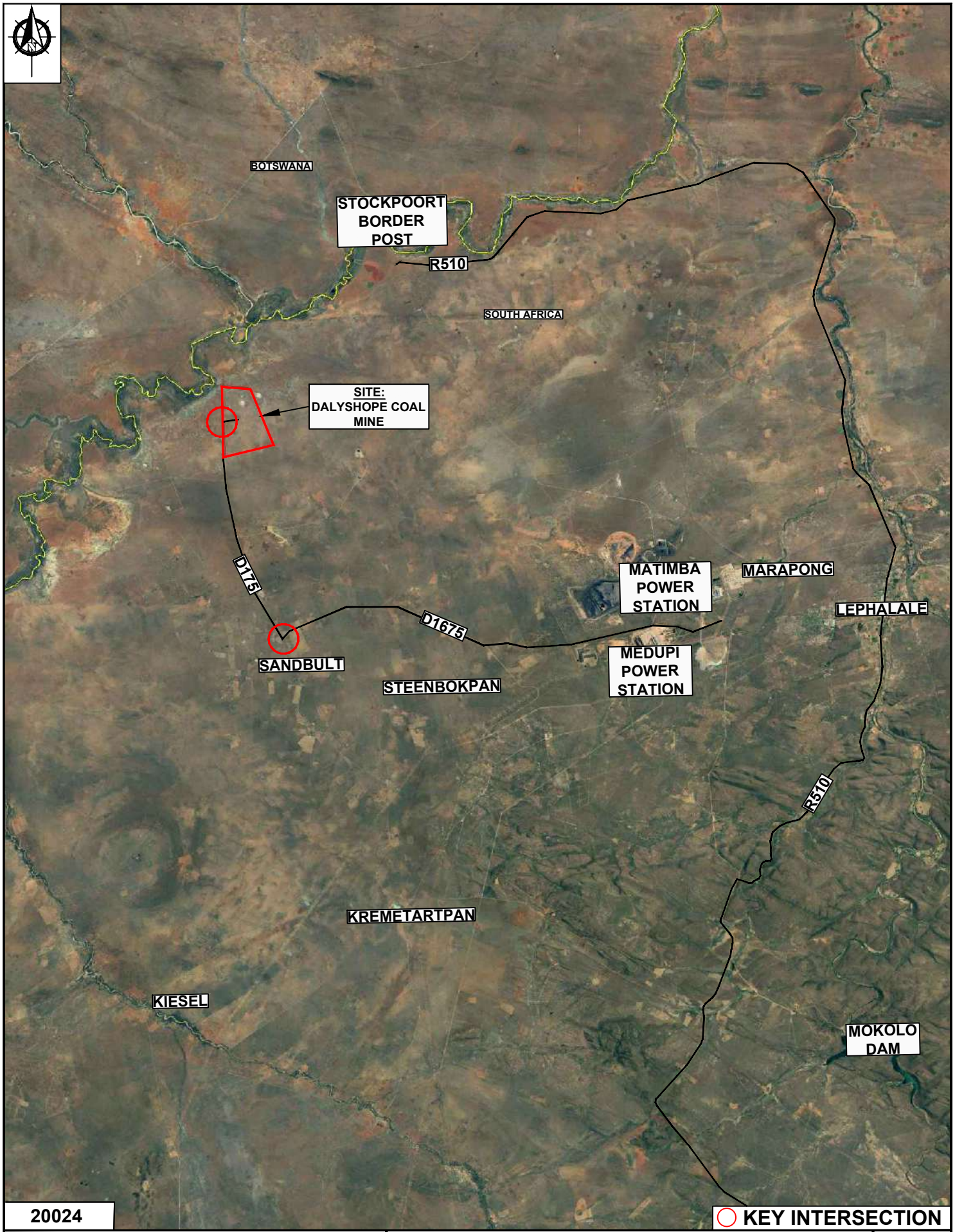
To conclude, it is recommended that the proposed Dalyshope coal mining project, situated in the magisterial district of Lephalale, Limpopo province, is supported from a traffic engineering perspective, provided that the road upgrades as proposed in this report be implemented as set out in the attached drawing (**Drawing 20024/AL/01**) and to the relevant standards of the Waterberg District Municipality / Lephalale Local Municipality.

11 Bibliography

The following relevant sources were used in conducting the Traffic Impact Assessment, enabling EDL Engineers (Pty) Ltd to reach the conclusions as set out in Chapter 10:

- TMH 17 - South African Trip Data Manual. (2013). South African Committee of Transport Officials.
- SIDRA Intersection 9™. (2020). Australia: Department of Planning Transport and Infrastructure.
- TRH 26 - South African Road Classification and Access Management Manual. (2012). 1st ed. South African Committee of Transport Officials.
- TMH 16 - Traffic Impact and Site Traffic Assessment Manual. (2012). 1st ed. South African Committee of Transport Officials.
- National Land Transport Transition Act (NLTTA) 22 of 2000, Chapter 29.

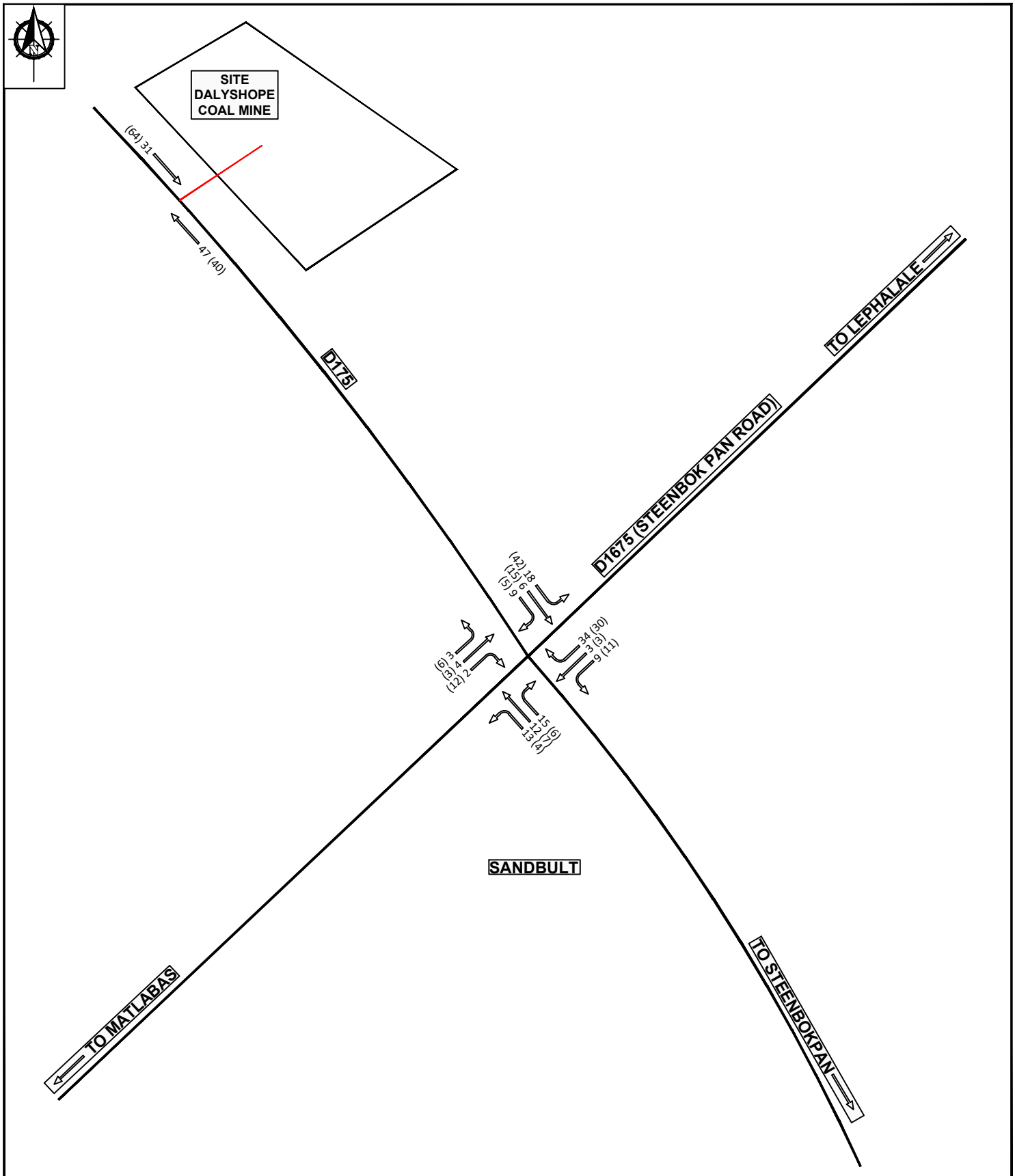
Figures



20024

SITE:	TITLE:	
DALYSHOPE COAL MINE	LOCALITY PLAN	FIG 1

EDL ENGINEERS

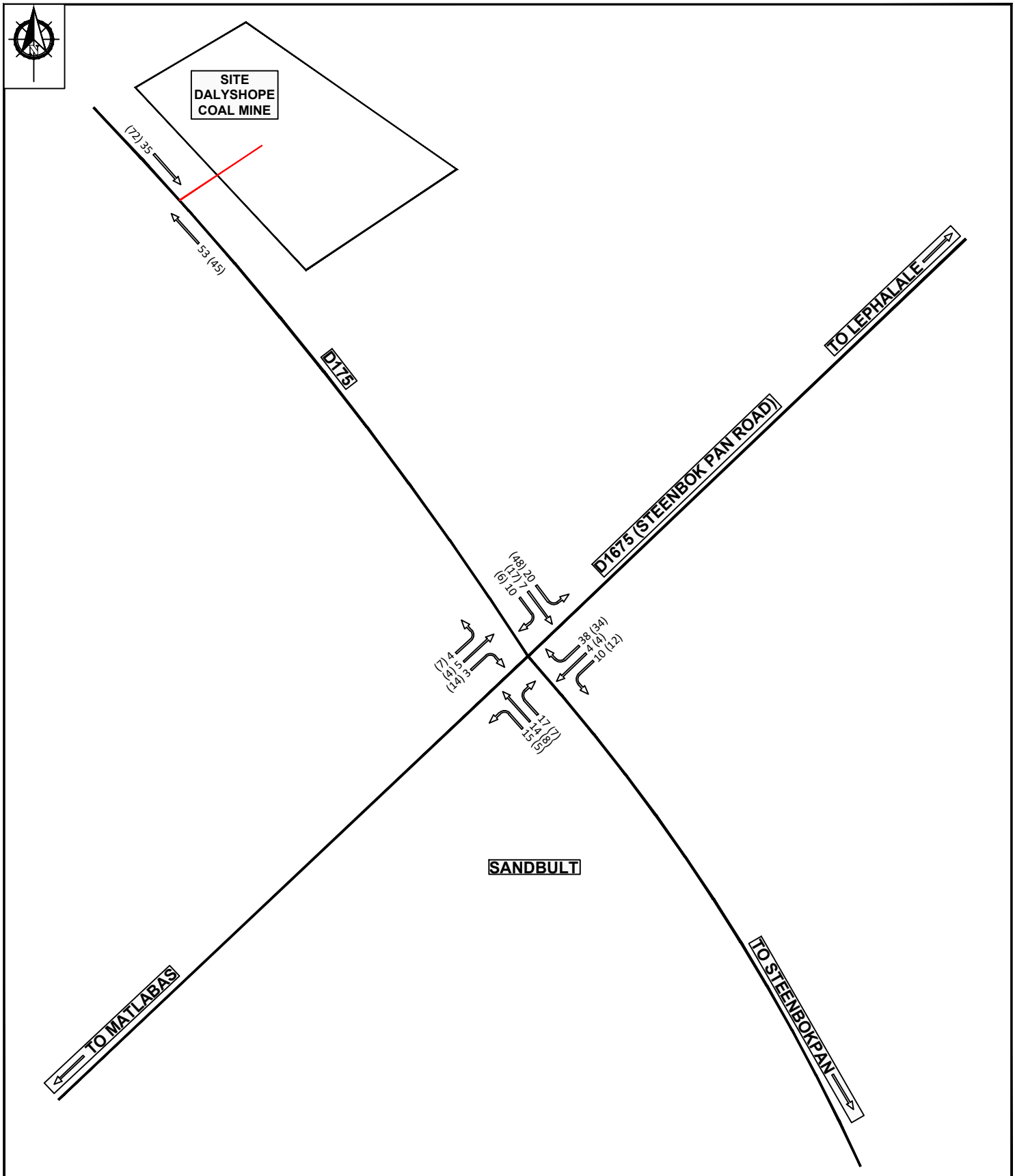


LEGEND
PEAK HOUR TRAFFIC
FRIDAY PM / SATURDAY (AM)

20024

SITE:	TITLE:	
DALYSHOPE COAL MINE	**EXISTING 2020 BACKGROUND PEAK HOUR TRAFFIC**	**FIG 2**

EDL ENGINEERS

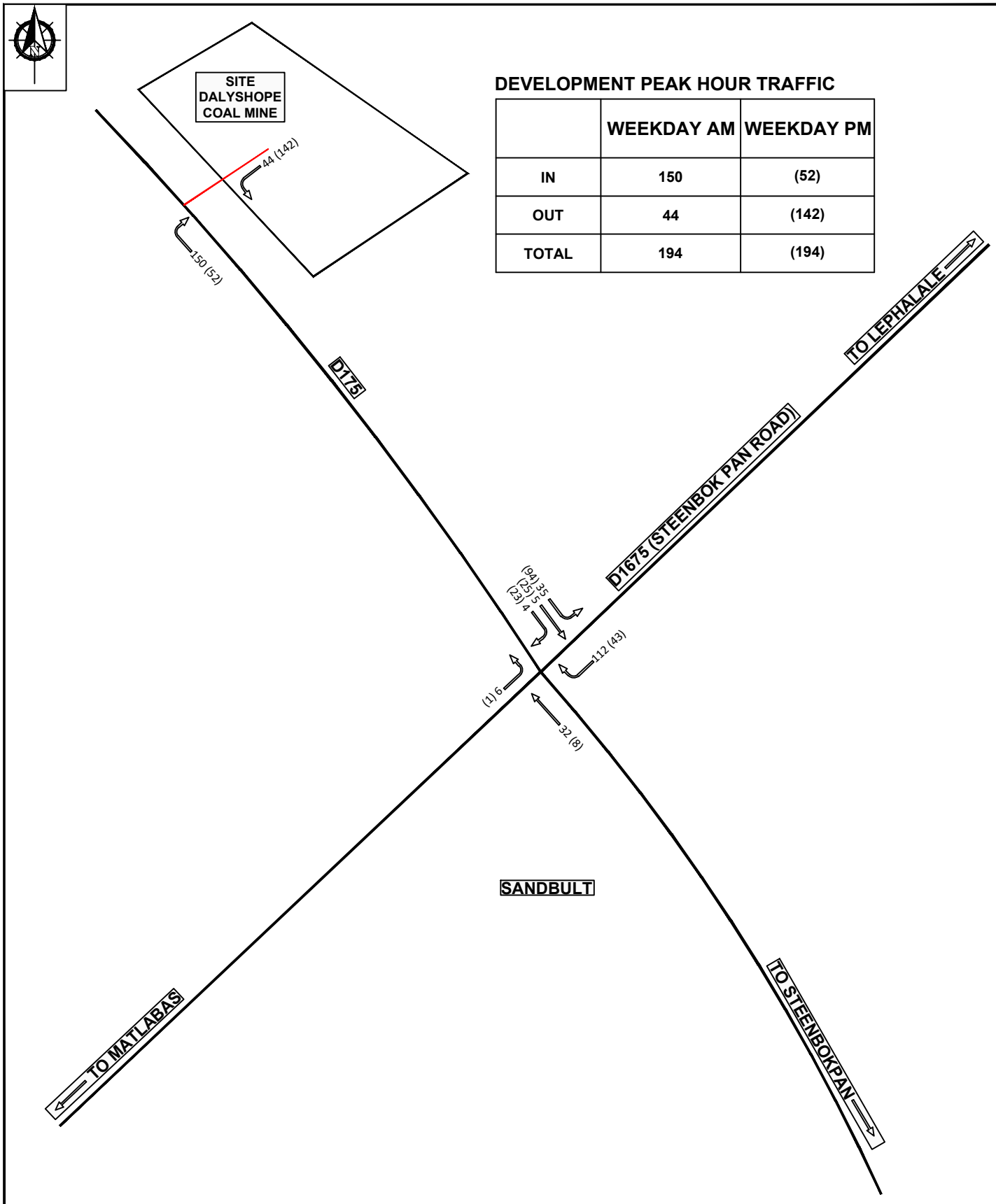


LEGEND
PEAK HOUR TRAFFIC
FRIDAY PM / SATURDAY (AM)

20024

SITE:	TITLE:	
DALYSHOPE COAL MINE	**FUTURE 2025 BACKGROUND PEAK HOUR TRAFFIC**	**FIG 3**

EDL ENGINEERS



DEVELOPMENT PEAK HOUR TRAFFIC

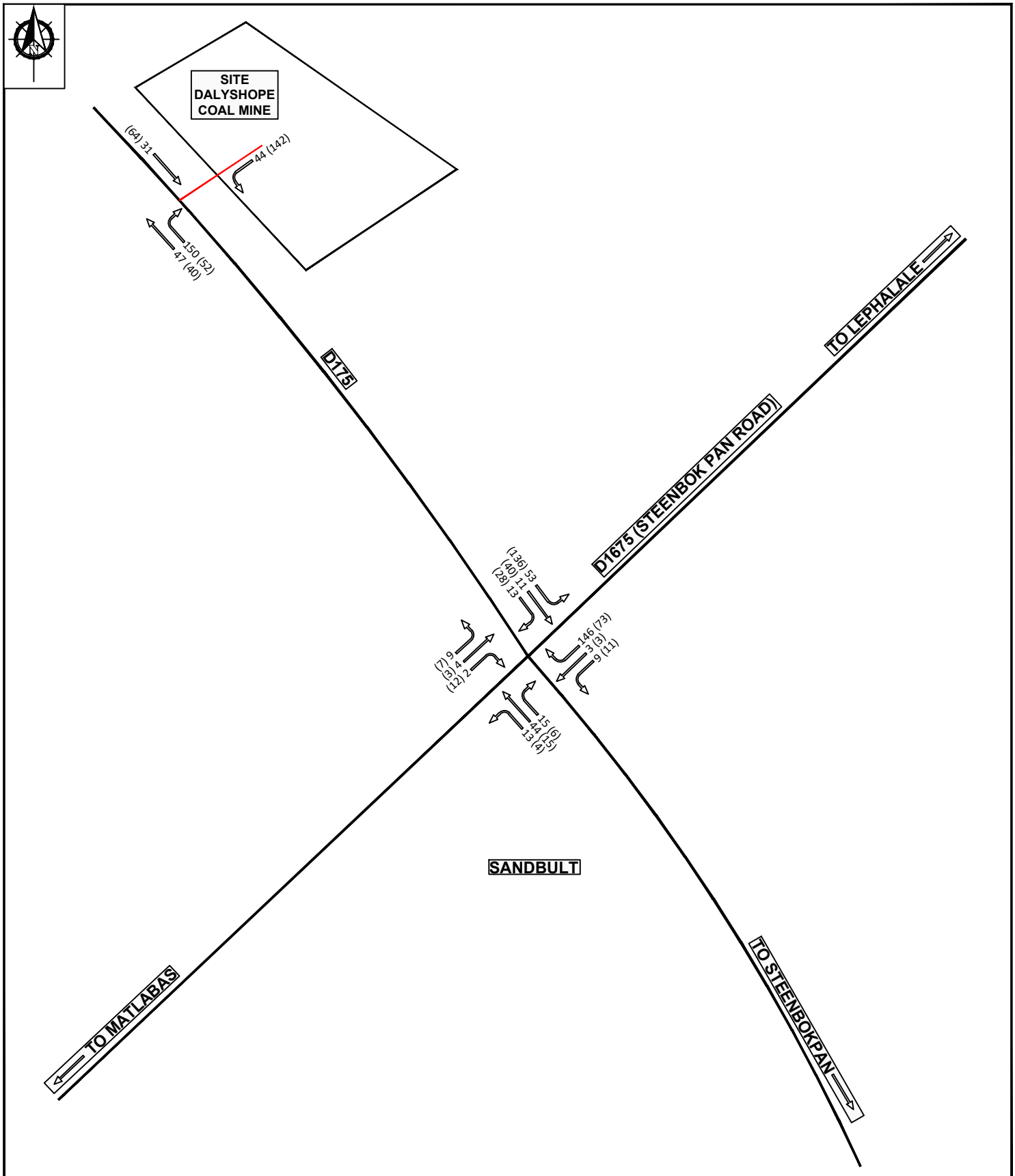
	WEEKDAY AM	WEEKDAY PM
IN	150	(52)
OUT	44	(142)
TOTAL	194	(194)

LEGEND
PEAK HOUR TRAFFIC
FRIDAY PM / SATURDAY (AM)

20024

SITE:	TITLE:	
DALYSHOPE COAL MINE	**DEVELOPMENT PEAK HOUR TRAFFIC**	**FIG 4**

EDL ENGINEERS

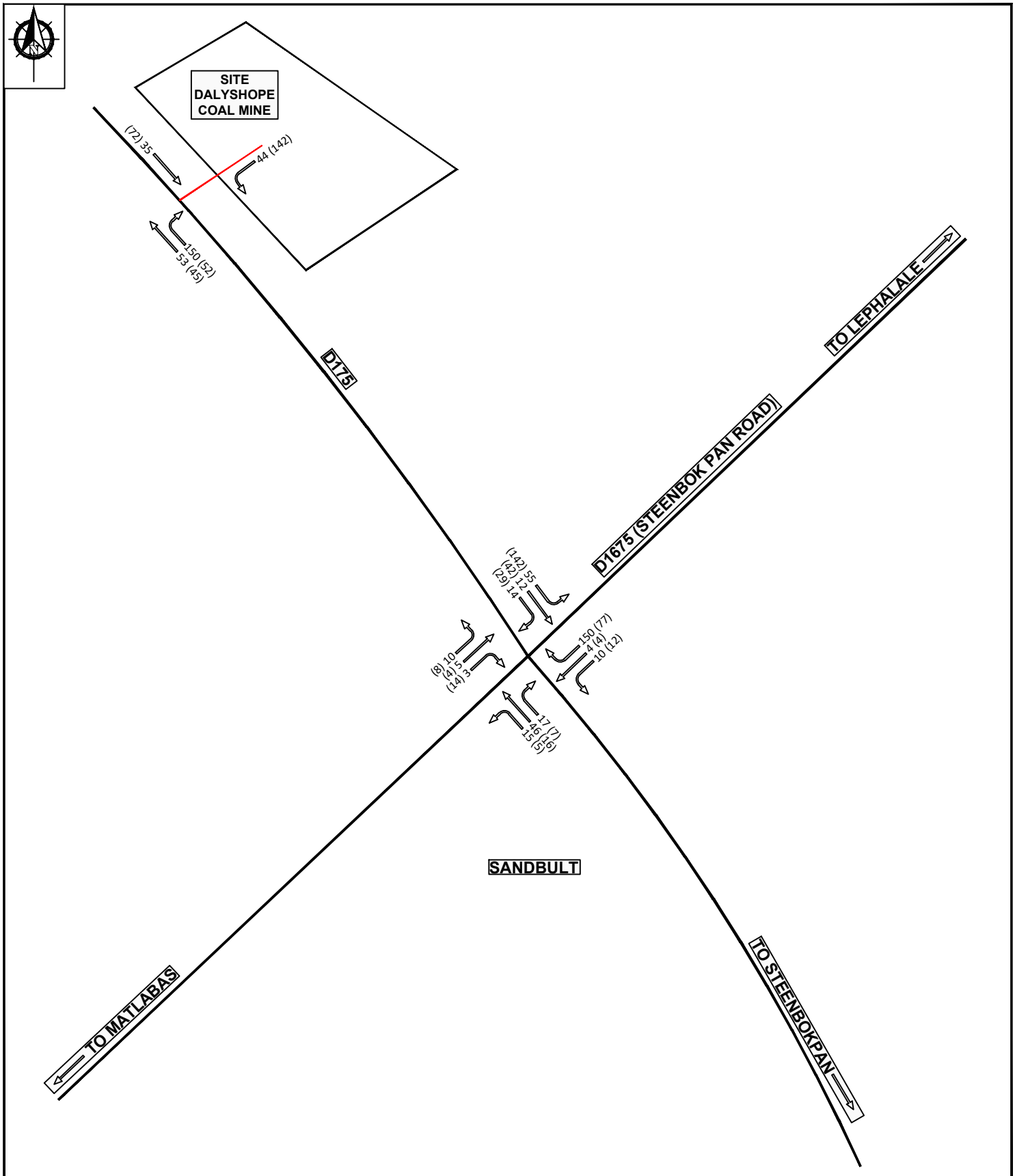


LEGEND
PEAK HOUR TRAFFIC
FRIDAY PM / SATURDAY (AM)

20024

SITE:	TITLE:	
DALYSHOPE COAL MINE	**EXISTING 2020 BACKGROUND + DEVELOPMENT PEAK HOUR TRAFFIC**	**FIG 5**

EDL ENGINEERS



LEGEND
PEAK HOUR TRAFFIC
FRIDAY PM / SATURDAY (AM)

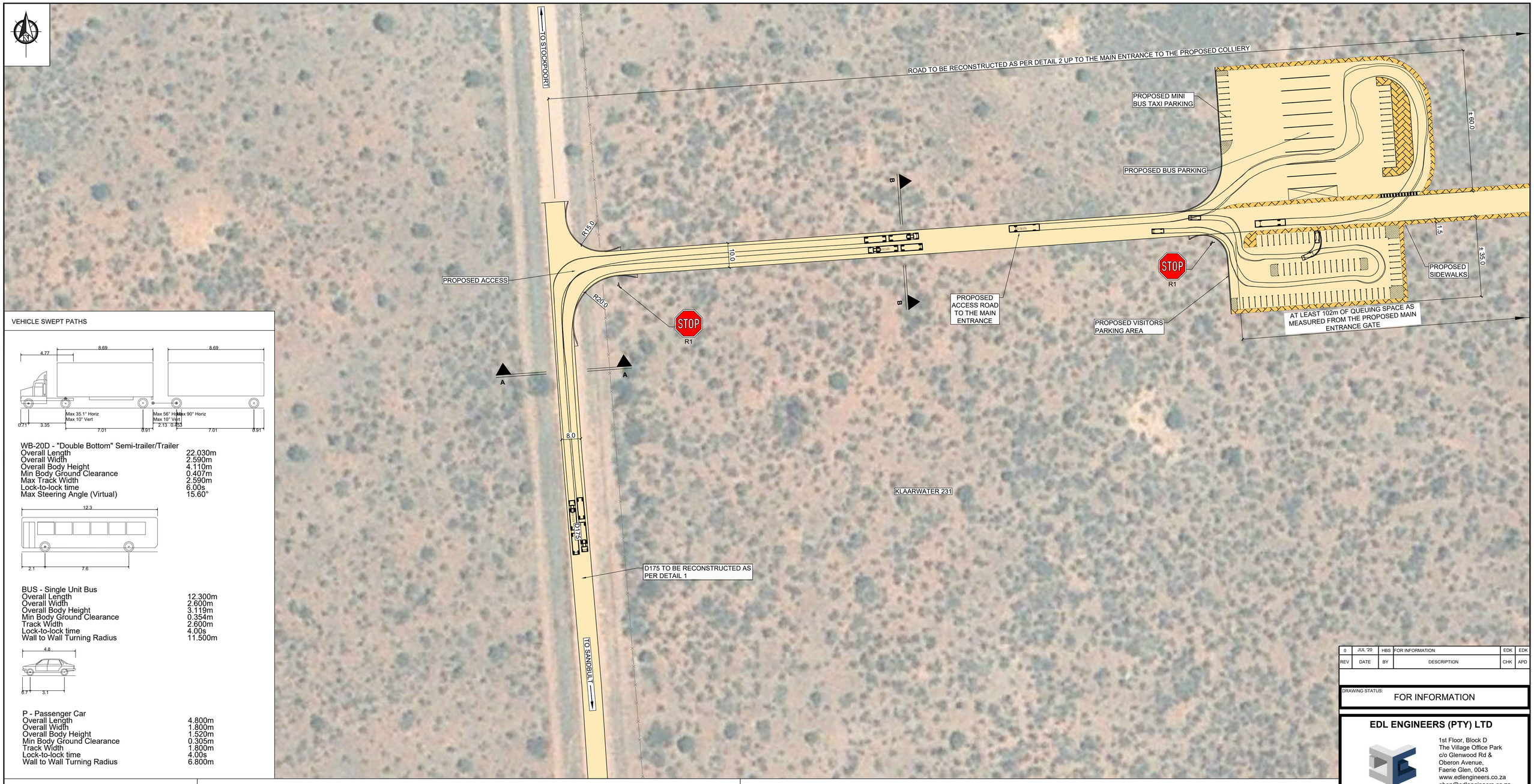
20024

SITE:	TITLE:	
DALYSHOPE COAL MINE	**FUTURE 2025 BACKGROUND + DEVELOPMENT PEAK HOUR TRAFFIC**	**FIG 6**

EDL ENGINEERS

Drawings

Drawing no: 20024/AL/01 (Proposed Access Layout Plan)
20024/ID/01 (Intersection Details)



VEHICLE SWEPT PATHS

WB-20D - "Double Bottom" Semi-trailer/Trailer

Overall Length	22.030m
Overall Width	2.590m
Overall Body Height	4.110m
Min Body Ground Clearance	0.407m
Max Track Width	2.590m
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	15.60°

BUS - Single Unit Bus

Overall Length	12.300m
Overall Width	2.600m
Overall Body Height	3.119m
Min Body Ground Clearance	0.354m
Track Width	2.600m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	11.500m

P - Passenger Car

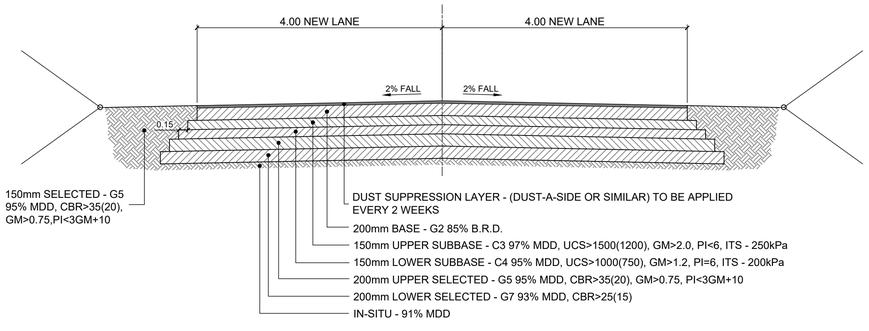
Overall Length	4.800m
Overall Width	1.800m
Overall Body Height	1.520m
Min Body Ground Clearance	0.305m
Track Width	1.800m
Lock-to-lock time	4.00s
Wall to Wall Turning Radius	6.800m

NOTES

PLEASE ALSO REFER TO THE PROPOSED INFRASTRUCTURE LAYOUT AS PREPARED BY DIGBY WELLS ENVIRONMENTAL. THE PROPOSED INFRASTRUCTURE LAYOUT CAN BE FOUND APPENDED AT THE BACK OF THE TRAFFIC IMPACT ASSESSMENT REPORT AS ANNEXURE B WITH REF # UCD617_SR_03_KR.

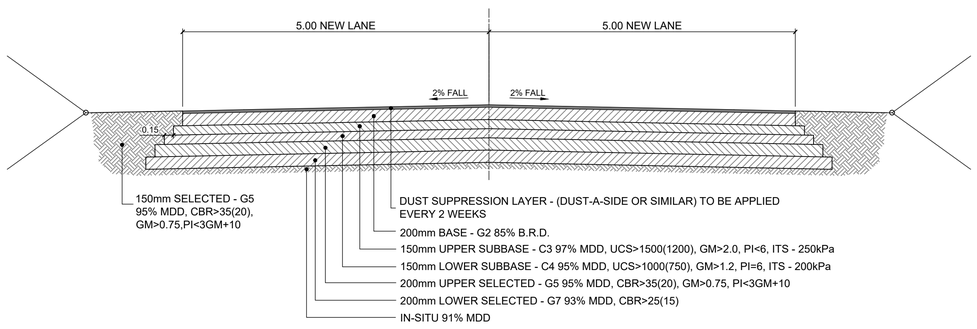
LEGEND

- PROPOSED UPGRADED SURFACE
- PROPOSED SIDEWALKS
- PROPOSED ROAD SHOULDER
- FENCE / SITE BOUNDARY



SECTION A-A: PAVEMENT DESIGN FOR D175 (5 Yr)
SCALE 1 : 50

DETAIL 1



SECTION B-B: PAVEMENT DESIGN FOR ACCESS ROAD (5 Yr)
SCALE 1 : 50

DETAIL 2

REV	DATE	BY	DESCRIPTION	CHK	APD
0	JUL '20	HBS	FOR INFORMATION	EDK	EDK

DRAWING STATUS: FOR INFORMATION

EDL ENGINEERS (PTY) LTD

ENGINEERING DESIGN LAB

1st Floor, Block D
The Village Office Park
c/o Glenwood Rd &
Oberon Avenue,
Faerie Glen, 0043
www.edlengineers.co.za
eben@edlengineers.co.za
+27 (0) 87 897 5074/5/6

CLIENT: DIGBY WELLS

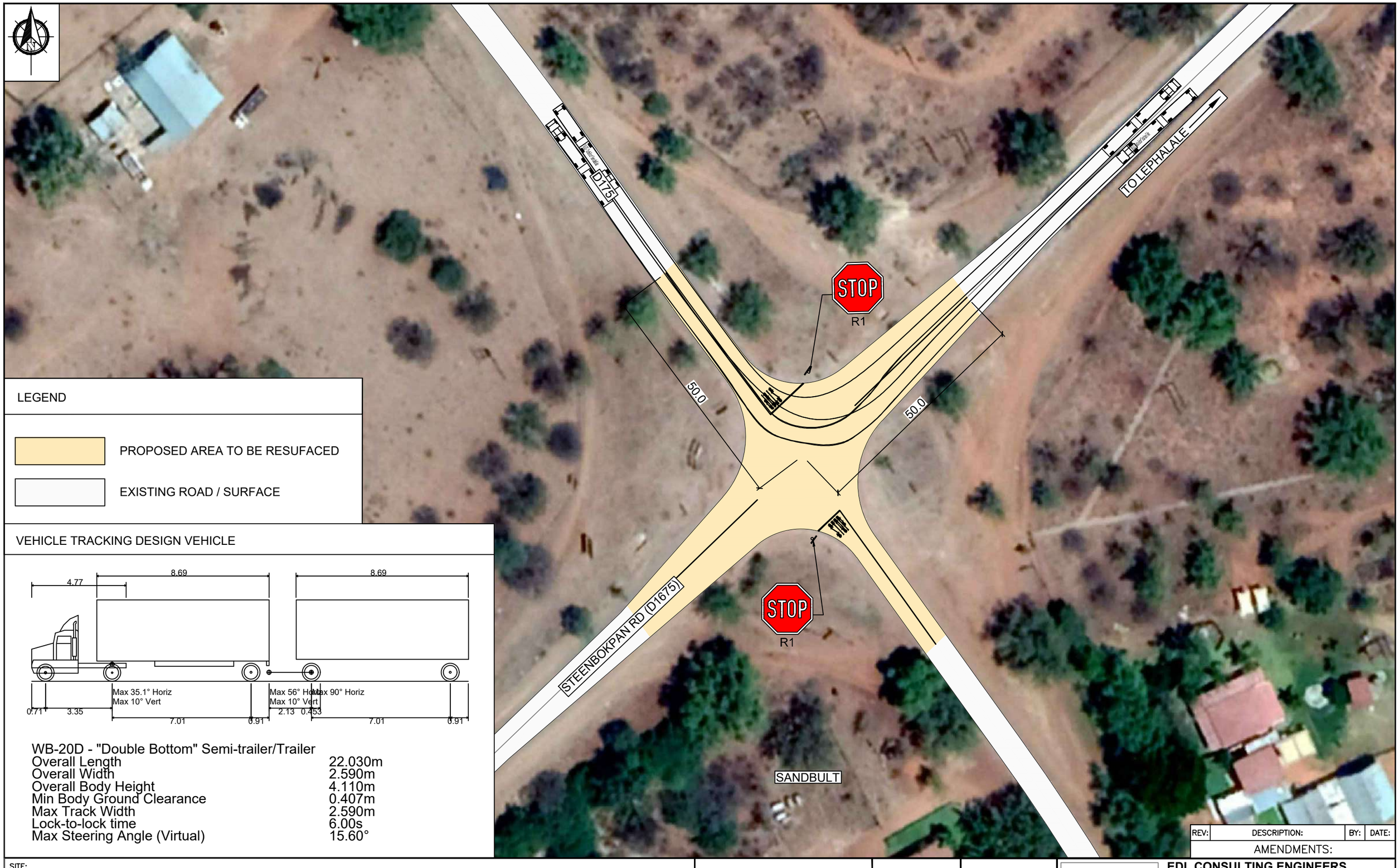
ARCHITECT: -

PROJECT: DALYSHOPE COAL MINE

TITLE: PROPOSED ACCESS LAYOUT

SCALE @ A1:	CHECKED:	APPROVED:
1 : 750	E.D. KOTZE	E.D. KOTZE
DESIGN: H.B. SENEKAL	DRAWN: H.B. SENEKAL	DATE: JUL '20

PROJECT No:	DRAWING No:	REV:
20024	20024/AL/01	0



LEGEND

PROPOSED AREA TO BE RESUFACED

EXISTING ROAD / SURFACE

VEHICLE TRACKING DESIGN VEHICLE

WB-20D - "Double Bottom" Semi-trailer/Trailer	
Overall Length	22.030m
Overall Width	2.590m
Overall Body Height	4.110m
Min Body Ground Clearance	0.407m
Max Track Width	2.590m
Lock-to-lock time	6.00s
Max Steering Angle (Virtual)	15.60°

REV:	DESCRIPTION:	BY:	DATE:
AMENDMENTS:			

SITE: **DALYSHOPE COAL MINE**

TITLE: **INTERSECTION DETAILS**

DRAWING NO.	PROJECT NO.	DATE.
20024/ID/01	20024	JUL '20

SCALE AT A3.	DRAWN.	CHECKED.	REVISION.
1:750	HB SENEKAL	ED KOTZE	0

ENGINEERING DESIGN LAB

EDL CONSULTING ENGINEERS
1st Floor, Block D
The Village Office Park
C/O Glenwood Rd & Oberon Ave,
Fearie Glen, 0043
Tel: 087 897 5074/5/6
eben@edlengineers.co.za
www.edlengineers.co.za

Annexure A

Relevant outputs of the SIDRA 9™ intersection capacity analyses at the key intersections

- A1 – Steenbokpan Road (D1675) & D175
- A2 – D175 & Access to the proposed colliery

Annexure A1: Steenbokpan Road (D1675) & D175

- A1.1 – Existing 2020 Weekday AM Peak Hour Traffic
- A1.2 – Existing 2020 Weekday PM Peak Hour Traffic
- A1.3 – Future 2025 Weekday AM Peak Hour Traffic
- A1.4 – Future 2025 Weekday PM Peak Hour Traffic
- A1.5 – Existing 2020 Plus Development Weekday AM Peak Hour Traffic
- A1.6 – Existing 2020 Plus Development Weekday PM Peak Hour Traffic
- A1.7 – Future 2025 Plus Development Weekday AM Peak Hour Traffic
- A1.8 – Future 2025 Plus Development Weekday PM Peak Hour Traffic

Annexure A1.1

Sidra Output: Steenbokpan Road (D1675) & D175

Existing 2020 Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D175														
4	L2	13	0.0	14	0.0	0.033	5.6	LOS A	0.1	0.8	0.02	0.57	0.02	53.9
5	T1	12	0.0	13	0.0	0.033	4.2	LOS A	0.1	0.8	0.02	0.57	0.02	54.0
6	R2	15	0.0	16	0.0	0.033	5.8	LOS A	0.1	0.8	0.02	0.57	0.02	53.3
Approach		40	0.0	42	0.0	0.033	5.2	LOS A	0.1	0.8	0.02	0.57	0.02	53.7
NorthEast: D1675														
7	L2	9	0.0	9	0.0	0.041	5.6	LOS A	0.1	1.0	0.06	0.57	0.06	53.6
8	T1	3	0.0	3	0.0	0.041	4.2	LOS A	0.1	1.0	0.06	0.57	0.06	53.7
9	R2	34	0.0	36	0.0	0.041	5.6	LOS A	0.1	1.0	0.06	0.57	0.06	53.0
Approach		46	0.0	48	0.0	0.041	5.5	LOS A	0.1	1.0	0.06	0.57	0.06	53.2
NorthWest: D175														
10	L2	18	0.0	19	0.0	0.025	5.6	LOS A	0.1	0.6	0.02	0.57	0.02	53.8
11	T1	6	0.0	6	0.0	0.025	4.2	LOS A	0.1	0.6	0.02	0.57	0.02	53.9
12	R2	9	0.0	9	0.0	0.025	5.6	LOS A	0.1	0.6	0.02	0.57	0.02	53.2
Approach		33	0.0	35	0.0	0.025	5.3	LOS A	0.1	0.6	0.02	0.57	0.02	53.6
SouthWest: D1675														
1	L2	3	0.0	3	0.0	0.007	5.6	LOS A	0.0	0.2	0.06	0.54	0.06	53.9
2	T1	4	0.0	4	0.0	0.007	4.2	LOS A	0.0	0.2	0.06	0.54	0.06	54.1
3	R2	2	0.0	2	0.0	0.007	5.7	LOS A	0.0	0.2	0.06	0.54	0.06	53.4
Approach		9	0.0	9	0.0	0.007	5.0	LOS A	0.0	0.2	0.06	0.54	0.06	53.9
All Vehicles		128	0.0	135	0.0	0.041	5.3	NA	0.1	1.0	0.04	0.57	0.04	53.5

Annexure A1.2

Sidra Output: Steenbokpan Road (D1675) & D175

Existing 2020 Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D175														
4	L2	4	0.0	4	0.0	0.014	5.6	LOS A	0.0	0.3	0.02	0.56	0.02	54.0
5	T1	7	0.0	7	0.0	0.014	4.2	LOS A	0.0	0.3	0.02	0.56	0.02	54.1
6	R2	6	0.0	6	0.0	0.014	5.9	LOS A	0.0	0.3	0.02	0.56	0.02	53.4
Approach		17	0.0	18	0.0	0.014	5.1	LOS A	0.0	0.3	0.02	0.56	0.02	53.8
NorthEast: D1675														
7	L2	11	0.0	12	0.0	0.039	5.6	LOS A	0.1	1.0	0.09	0.57	0.09	53.5
8	T1	3	0.0	3	0.0	0.039	4.3	LOS A	0.1	1.0	0.09	0.57	0.09	53.6
9	R2	30	0.0	32	0.0	0.039	5.7	LOS A	0.1	1.0	0.09	0.57	0.09	52.9
Approach		44	0.0	46	0.0	0.039	5.6	LOS A	0.1	1.0	0.09	0.57	0.09	53.1
NorthWest: D175														
10	L2	42	0.0	44	0.0	0.044	5.6	LOS A	0.2	1.2	0.02	0.56	0.02	53.8
11	T1	15	0.0	16	0.0	0.044	4.2	LOS A	0.2	1.2	0.02	0.56	0.02	54.0
12	R2	5	0.0	5	0.0	0.044	5.6	LOS A	0.2	1.2	0.02	0.56	0.02	53.3
Approach		62	0.0	65	0.0	0.044	5.2	LOS A	0.2	1.2	0.02	0.56	0.02	53.8
SouthWest: D1675														
1	L2	6	0.0	6	0.0	0.018	5.6	LOS A	0.1	0.4	0.05	0.57	0.05	53.7
2	T1	3	0.0	3	0.0	0.018	4.2	LOS A	0.1	0.4	0.05	0.57	0.05	53.8
3	R2	12	0.0	13	0.0	0.018	5.6	LOS A	0.1	0.4	0.05	0.57	0.05	53.1
Approach		21	0.0	22	0.0	0.018	5.4	LOS A	0.1	0.4	0.05	0.57	0.05	53.4
All Vehicles		144	0.0	152	0.0	0.044	5.3	NA	0.2	1.2	0.05	0.56	0.05	53.5

Annexure A1.3

Sidra Output: Steenbokpan Road (D1675) & D175

Future 2025 Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D175														
4	L2	15	0.0	16	0.0	0.038	5.6	LOS A	0.1	1.0	0.03	0.56	0.03	53.9
5	T1	14	0.0	15	0.0	0.038	4.2	LOS A	0.1	1.0	0.03	0.56	0.03	54.0
6	R2	17	0.0	18	0.0	0.038	5.8	LOS A	0.1	1.0	0.03	0.56	0.03	53.3
Approach		46	0.0	48	0.0	0.038	5.2	LOS A	0.1	1.0	0.03	0.56	0.03	53.7
NorthEast: D1675														
7	L2	10	0.0	11	0.0	0.047	5.6	LOS A	0.2	1.1	0.06	0.57	0.06	53.6
8	T1	4	0.0	4	0.0	0.047	4.2	LOS A	0.2	1.1	0.06	0.57	0.06	53.7
9	R2	38	0.0	40	0.0	0.047	5.7	LOS A	0.2	1.1	0.06	0.57	0.06	53.0
Approach		52	0.0	55	0.0	0.047	5.5	LOS A	0.2	1.1	0.06	0.57	0.06	53.2
NorthWest: D175														
10	L2	20	0.0	21	0.0	0.028	5.6	LOS A	0.1	0.7	0.03	0.56	0.03	53.8
11	T1	7	0.0	7	0.0	0.028	4.2	LOS A	0.1	0.7	0.03	0.56	0.03	53.9
12	R2	10	0.0	11	0.0	0.028	5.6	LOS A	0.1	0.7	0.03	0.56	0.03	53.2
Approach		37	0.0	39	0.0	0.028	5.3	LOS A	0.1	0.7	0.03	0.56	0.03	53.6
SouthWest: D1675														
1	L2	4	0.0	4	0.0	0.010	5.6	LOS A	0.0	0.2	0.07	0.54	0.07	53.9
2	T1	5	0.0	5	0.0	0.010	4.2	LOS A	0.0	0.2	0.07	0.54	0.07	54.1
3	R2	3	0.0	3	0.0	0.010	5.7	LOS A	0.0	0.2	0.07	0.54	0.07	53.4
Approach		12	0.0	13	0.0	0.010	5.0	LOS A	0.0	0.2	0.07	0.54	0.07	53.8
All Vehicles		147	0.0	155	0.0	0.047	5.3	NA	0.2	1.1	0.04	0.57	0.04	53.5

Annexure A1.4

Sidra Output: Steenbokpan Road (D1675) & D175

Future 2025 Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D175														
4	L2	5	0.0	5	0.0	0.017	5.6	LOS A	0.1	0.4	0.03	0.56	0.03	53.9
5	T1	8	0.0	8	0.0	0.017	4.2	LOS A	0.1	0.4	0.03	0.56	0.03	54.1
6	R2	7	0.0	7	0.0	0.017	6.0	LOS A	0.1	0.4	0.03	0.56	0.03	53.4
Approach		20	0.0	21	0.0	0.017	5.1	LOS A	0.1	0.4	0.03	0.56	0.03	53.8
NorthEast: D1675														
7	L2	12	0.0	13	0.0	0.045	5.6	LOS A	0.2	1.1	0.10	0.57	0.10	53.5
8	T1	4	0.0	4	0.0	0.045	4.3	LOS A	0.2	1.1	0.10	0.57	0.10	53.6
9	R2	34	0.0	36	0.0	0.045	5.8	LOS A	0.2	1.1	0.10	0.57	0.10	52.9
Approach		50	0.0	53	0.0	0.045	5.6	LOS A	0.2	1.1	0.10	0.57	0.10	53.1
NorthWest: D175														
10	L2	48	0.0	51	0.0	0.050	5.6	LOS A	0.2	1.4	0.03	0.56	0.03	53.8
11	T1	17	0.0	18	0.0	0.050	4.2	LOS A	0.2	1.4	0.03	0.56	0.03	54.0
12	R2	6	0.0	6	0.0	0.050	5.6	LOS A	0.2	1.4	0.03	0.56	0.03	53.3
Approach		71	0.0	75	0.0	0.050	5.2	LOS A	0.2	1.4	0.03	0.56	0.03	53.8
SouthWest: D1675														
1	L2	7	0.0	7	0.0	0.022	5.6	LOS A	0.1	0.5	0.05	0.57	0.05	53.7
2	T1	4	0.0	4	0.0	0.022	4.2	LOS A	0.1	0.5	0.05	0.57	0.05	53.8
3	R2	14	0.0	15	0.0	0.022	5.7	LOS A	0.1	0.5	0.05	0.57	0.05	53.1
Approach		25	0.0	26	0.0	0.022	5.4	LOS A	0.1	0.5	0.05	0.57	0.05	53.4
All Vehicles		166	0.0	175	0.0	0.050	5.4	NA	0.2	1.4	0.05	0.56	0.05	53.5

Annexure A1.5

Sidra Output: Steenbokpan Road (D1675) & D175

Existing 2020 Weekday AM Plus Development Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D175														
4	L2	13	0.0	14	0.0	0.061	5.6	LOS A	0.2	1.6	0.02	0.55	0.02	54.1
5	T1	44	0.0	46	0.0	0.061	4.2	LOS A	0.2	1.6	0.02	0.55	0.02	54.3
6	R2	15	0.0	16	0.0	0.061	6.6	LOS A	0.2	1.6	0.02	0.55	0.02	53.6
Approach		72	0.0	76	0.0	0.061	4.9	LOS A	0.2	1.6	0.02	0.55	0.02	54.1
NorthEast: D1675														
7	L2	9	0.0	9	0.0	0.161	5.6	LOS A	0.6	4.2	0.16	0.59	0.16	53.2
8	T1	3	0.0	3	0.0	0.161	4.3	LOS A	0.6	4.2	0.16	0.59	0.16	53.4
9	R2	146	0.0	154	0.0	0.161	6.0	LOS A	0.6	4.2	0.16	0.59	0.16	52.7
Approach		158	0.0	166	0.0	0.161	6.0	LOS A	0.6	4.2	0.16	0.59	0.16	52.8
NorthWest: D175														
10	L2	53	0.0	56	0.0	0.056	5.6	LOS A	0.2	1.5	0.02	0.57	0.02	53.7
11	T1	11	0.0	12	0.0	0.056	4.2	LOS A	0.2	1.5	0.02	0.57	0.02	53.9
12	R2	13	0.0	14	0.0	0.056	5.8	LOS A	0.2	1.5	0.02	0.57	0.02	53.2
Approach		77	0.0	81	0.0	0.056	5.4	LOS A	0.2	1.5	0.02	0.57	0.02	53.7
SouthWest: D1675														
1	L2	9	0.0	9	0.0	0.011	5.7	LOS A	0.0	0.3	0.12	0.53	0.12	53.6
2	T1	4	0.0	4	0.0	0.011	4.3	LOS A	0.0	0.3	0.12	0.53	0.12	53.7
3	R2	2	0.0	2	0.0	0.011	5.8	LOS A	0.0	0.3	0.12	0.53	0.12	53.0
Approach		15	0.0	16	0.0	0.011	5.3	LOS A	0.0	0.3	0.12	0.53	0.12	53.5
All Vehicles		322	0.0	339	0.0	0.161	5.6	NA	0.6	4.2	0.09	0.57	0.09	53.3

Annexure A1.6

Sidra Output: Steenbokpan Road (D1675) & D175

Existing 2020 Weekday PM Plus Development Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D175														
4	L2	4	0.0	4	0.0	0.022	5.6	LOS A	0.1	0.5	0.02	0.55	0.02	54.0
5	T1	15	0.0	16	0.0	0.022	4.2	LOS A	0.1	0.5	0.02	0.55	0.02	54.2
6	R2	6	0.0	6	0.0	0.022	6.8	LOS A	0.1	0.5	0.02	0.55	0.02	53.5
Approach		25	0.0	26	0.0	0.022	5.0	LOS A	0.1	0.5	0.02	0.55	0.02	54.0
NorthEast: D1675														
7	L2	11	0.0	12	0.0	0.091	5.7	LOS A	0.3	2.2	0.21	0.59	0.21	53.1
8	T1	3	0.0	3	0.0	0.091	4.6	LOS A	0.3	2.2	0.21	0.59	0.21	53.3
9	R2	73	0.0	77	0.0	0.091	6.3	LOS A	0.3	2.2	0.21	0.59	0.21	52.6
Approach		87	0.0	92	0.0	0.091	6.2	LOS A	0.3	2.2	0.21	0.59	0.21	52.7
NorthWest: D175														
10	L2	136	0.0	143	0.0	0.147	5.6	LOS A	0.6	4.4	0.02	0.56	0.02	53.8
11	T1	40	0.0	42	0.0	0.147	4.2	LOS A	0.6	4.4	0.02	0.56	0.02	53.9
12	R2	28	0.0	29	0.0	0.147	5.7	LOS A	0.6	4.4	0.02	0.56	0.02	53.2
Approach		204	0.0	215	0.0	0.147	5.3	LOS A	0.6	4.4	0.02	0.56	0.02	53.7
SouthWest: D1675														
1	L2	7	0.0	7	0.0	0.019	5.6	LOS A	0.1	0.5	0.07	0.56	0.07	53.6
2	T1	3	0.0	3	0.0	0.019	4.2	LOS A	0.1	0.5	0.07	0.56	0.07	53.8
3	R2	12	0.0	13	0.0	0.019	5.8	LOS A	0.1	0.5	0.07	0.56	0.07	53.1
Approach		22	0.0	23	0.0	0.019	5.5	LOS A	0.1	0.5	0.07	0.56	0.07	53.3
All Vehicles		338	0.0	356	0.0	0.147	5.5	NA	0.6	4.4	0.07	0.57	0.07	53.5

Annexure A1.7

Sidra Output: Steenbokpan Road (D1675) & D175

Future 2025 Weekday AM Plus Development Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D175														
4	L2	15	0.0	16	0.0	0.067	5.6	LOS A	0.2	1.7	0.02	0.55	0.02	54.0
5	T1	46	0.0	48	0.0	0.067	4.2	LOS A	0.2	1.7	0.02	0.55	0.02	54.2
6	R2	17	0.0	18	0.0	0.067	6.7	LOS A	0.2	1.7	0.02	0.55	0.02	53.5
Approach		78	0.0	82	0.0	0.067	5.0	LOS A	0.2	1.7	0.02	0.55	0.02	54.0
NorthEast: D1675														
7	L2	10	0.0	11	0.0	0.168	5.6	LOS A	0.6	4.4	0.16	0.59	0.16	53.2
8	T1	4	0.0	4	0.0	0.168	4.3	LOS A	0.6	4.4	0.16	0.59	0.16	53.4
9	R2	150	0.0	158	0.0	0.168	6.1	LOS A	0.6	4.4	0.16	0.59	0.16	52.7
Approach		164	0.0	173	0.0	0.168	6.0	LOS A	0.6	4.4	0.16	0.59	0.16	52.8
NorthWest: D175														
10	L2	55	0.0	58	0.0	0.059	5.6	LOS A	0.2	1.6	0.02	0.56	0.02	53.7
11	T1	12	0.0	13	0.0	0.059	4.2	LOS A	0.2	1.6	0.02	0.56	0.02	53.9
12	R2	14	0.0	15	0.0	0.059	5.8	LOS A	0.2	1.6	0.02	0.56	0.02	53.2
Approach		81	0.0	85	0.0	0.059	5.4	LOS A	0.2	1.6	0.02	0.56	0.02	53.7
SouthWest: D1675														
1	L2	10	0.0	11	0.0	0.014	5.7	LOS A	0.1	0.4	0.13	0.53	0.13	53.6
2	T1	5	0.0	5	0.0	0.014	4.3	LOS A	0.1	0.4	0.13	0.53	0.13	53.7
3	R2	3	0.0	3	0.0	0.014	5.9	LOS A	0.1	0.4	0.13	0.53	0.13	53.0
Approach		18	0.0	19	0.0	0.014	5.3	LOS A	0.1	0.4	0.13	0.53	0.13	53.5
All Vehicles		341	0.0	359	0.0	0.168	5.6	NA	0.6	4.4	0.10	0.57	0.10	53.3

Annexure A1.8

Sidra Output: Steenbokpan Road (D1675) & D175

Future 2025 Weekday PM Plus Development Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: D175														
4	L2	5	0.0	5	0.0	0.025	5.6	LOS A	0.1	0.6	0.02	0.55	0.02	54.0
5	T1	16	0.0	17	0.0	0.025	4.2	LOS A	0.1	0.6	0.02	0.55	0.02	54.1
6	R2	7	0.0	7	0.0	0.025	6.9	LOS A	0.1	0.6	0.02	0.55	0.02	53.4
Approach		28	0.0	29	0.0	0.025	5.1	LOS A	0.1	0.6	0.02	0.55	0.02	53.9
NorthEast: D1675														
7	L2	12	0.0	13	0.0	0.098	5.7	LOS A	0.3	2.4	0.22	0.59	0.22	53.1
8	T1	4	0.0	4	0.0	0.098	4.6	LOS A	0.3	2.4	0.22	0.59	0.22	53.2
9	R2	77	0.0	81	0.0	0.098	6.4	LOS A	0.3	2.4	0.22	0.59	0.22	52.6
Approach		93	0.0	98	0.0	0.098	6.2	LOS A	0.3	2.4	0.22	0.59	0.22	52.7
NorthWest: D175														
10	L2	142	0.0	149	0.0	0.154	5.6	LOS A	0.7	4.6	0.03	0.56	0.03	53.8
11	T1	42	0.0	44	0.0	0.154	4.2	LOS A	0.7	4.6	0.03	0.56	0.03	53.9
12	R2	29	0.0	31	0.0	0.154	5.7	LOS A	0.7	4.6	0.03	0.56	0.03	53.2
Approach		213	0.0	224	0.0	0.154	5.3	LOS A	0.7	4.6	0.03	0.56	0.03	53.7
SouthWest: D1675														
1	L2	8	0.0	8	0.0	0.023	5.6	LOS A	0.1	0.5	0.07	0.56	0.07	53.6
2	T1	4	0.0	4	0.0	0.023	4.2	LOS A	0.1	0.5	0.07	0.56	0.07	53.8
3	R2	14	0.0	15	0.0	0.023	5.8	LOS A	0.1	0.5	0.07	0.56	0.07	53.1
Approach		26	0.0	27	0.0	0.023	5.5	LOS A	0.1	0.5	0.07	0.56	0.07	53.3
All Vehicles		360	0.0	379	0.0	0.154	5.5	NA	0.7	4.6	0.08	0.57	0.08	53.4

Annexure A2: D175 & Access to the proposed colliery

- A1.1 – Existing 2020 Weekday AM Peak Hour Traffic
- A1.2 – Existing 2020 Weekday PM Peak Hour Traffic
- A1.3 – Future 2025 Weekday AM Peak Hour Traffic
- A1.4 – Future 2025 Weekday PM Peak Hour Traffic
- A1.5 – Existing 2020 Plus Development Weekday AM Peak Hour Traffic
- A1.6 – Existing 2020 Plus Development Weekday PM Peak Hour Traffic
- A1.7 – Future 2025 Plus Development Weekday AM Peak Hour Traffic
- A1.8 – Future 2025 Plus Development Weekday PM Peak Hour Traffic

Annexure A2.1

Sidra Output: D175 & Access to the proposed colliery

Existing 2020 Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total	HV]	DEMAND FLOWS [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh.	Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: D175														
2	T1	47	70.0	49	70.0	0.038	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
3	R2	1	70.0	1	70.0	0.038	6.5	LOS A	0.0	0.1	0.01	0.01	0.01	54.1
Approach		48	70.0	51	70.0	0.038	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.7
East: Access														
4	L2	1	70.0	1	70.0	0.002	11.2	LOS B	0.0	0.1	0.16	0.99	0.16	49.1
6	R2	1	70.0	1	70.0	0.002	11.1	LOS B	0.0	0.1	0.16	0.99	0.16	48.5
Approach		2	70.0	2	70.0	0.002	11.2	LOS B	0.0	0.1	0.16	0.99	0.16	48.8
North: D175														
7	L2	1	70.0	1	70.0	0.025	6.4	LOS A	0.0	0.0	0.00	0.02	0.00	54.8
8	T1	31	70.0	33	70.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		32	70.0	34	70.0	0.025	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles		82	70.0	86	70.0	0.038	0.4	NA	0.0	0.1	0.01	0.04	0.01	59.4

Annexure A2.2

Sidra Output: D175 & Access to the proposed colliery

Existing 2020 Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total	HV]	DEMAND FLOWS [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh.	Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: D175														
2	T1	40	70.0	42	70.0	0.032	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.8
3	R2	1	70.0	1	70.0	0.032	6.8	LOS A	0.0	0.1	0.01	0.01	0.01	54.0
Approach		41	70.0	43	70.0	0.032	0.2	NA	0.0	0.1	0.01	0.01	0.01	59.7
East: Access														
4	L2	1	70.0	1	70.0	0.003	11.5	LOS B	0.0	0.1	0.23	0.94	0.23	49.0
6	R2	1	70.0	1	70.0	0.003	11.4	LOS B	0.0	0.1	0.23	0.94	0.23	48.4
Approach		2	70.0	2	70.0	0.003	11.5	LOS B	0.0	0.1	0.23	0.94	0.23	48.7
North: D175														
7	L2	1	70.0	1	70.0	0.051	6.4	LOS A	0.0	0.0	0.00	0.01	0.00	54.9
8	T1	64	70.0	67	70.0	0.051	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		65	70.0	68	70.0	0.051	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		108	70.0	114	70.0	0.051	0.3	NA	0.0	0.1	0.01	0.03	0.01	59.5

Annexure A2.3

Sidra Output: D175 & Access to the proposed colliery

Future 2025 Weekday AM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total	HV]	DEMAND FLOWS [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh.	Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: D175														
2	T1	53	70.0	56	70.0	0.043	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.9
3	R2	1	70.0	1	70.0	0.043	6.6	LOS A	0.0	0.1	0.01	0.01	0.01	54.1
Approach		54	70.0	57	70.0	0.043	0.1	NA	0.0	0.1	0.01	0.01	0.01	59.8
East: Access														
4	L2	1	70.0	1	70.0	0.002	11.3	LOS B	0.0	0.1	0.17	0.98	0.17	49.1
6	R2	1	70.0	1	70.0	0.002	11.2	LOS B	0.0	0.1	0.17	0.98	0.17	48.4
Approach		2	70.0	2	70.0	0.002	11.2	LOS B	0.0	0.1	0.17	0.98	0.17	48.8
North: D175														
7	L2	1	70.0	1	70.0	0.028	6.4	LOS A	0.0	0.0	0.00	0.02	0.00	54.8
8	T1	35	70.0	37	70.0	0.028	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		36	70.0	38	70.0	0.028	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles		92	70.0	97	70.0	0.043	0.4	NA	0.0	0.1	0.01	0.03	0.01	59.4

Annexure A2.4

Sidra Output: D175 & Access to the proposed colliery

Future 2025 Weekday PM Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total	HV]	DEMAND FLOWS [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh.	Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: D175														
2	T1	45	70.0	47	70.0	0.036	0.0	LOS A	0.0	0.1	0.01	0.01	0.01	59.8
3	R2	1	70.0	1	70.0	0.036	6.8	LOS A	0.0	0.1	0.01	0.01	0.01	54.0
Approach		46	70.0	48	70.0	0.036	0.2	NA	0.0	0.1	0.01	0.01	0.01	59.7
East: Access														
4	L2	1	70.0	1	70.0	0.003	11.6	LOS B	0.0	0.1	0.25	0.93	0.25	49.0
6	R2	1	70.0	1	70.0	0.003	11.5	LOS B	0.0	0.1	0.25	0.93	0.25	48.3
Approach		2	70.0	2	70.0	0.003	11.6	LOS B	0.0	0.1	0.25	0.93	0.25	48.6
North: D175														
7	L2	1	70.0	1	70.0	0.057	6.4	LOS A	0.0	0.0	0.00	0.01	0.00	54.9
8	T1	72	70.0	76	70.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		73	70.0	77	70.0	0.057	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		121	70.0	127	70.0	0.057	0.3	NA	0.0	0.1	0.01	0.03	0.01	59.5

Annexure A2.5

Sidra Output: D175 & Access to the proposed colliery

Existing 2020 Weekday AM Plus Development Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total	HV]	DEMAND FLOWS [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh.	Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: D175														
2	T1	47	70.0	49	70.0	0.164	0.3	LOS A	0.8	9.4	0.17	0.43	0.17	55.6
3	R2	150	70.0	158	70.0	0.164	6.6	LOS A	0.8	9.4	0.17	0.43	0.17	50.6
Approach		197	70.0	207	70.0	0.164	5.1	NA	0.8	9.4	0.17	0.43	0.17	51.7
East: Access														
4	L2	44	70.0	46	70.0	0.048	11.3	LOS B	0.2	2.1	0.14	0.99	0.14	49.1
6	R2	1	70.0	1	70.0	0.048	13.5	LOS B	0.2	2.1	0.14	0.99	0.14	48.4
Approach		45	70.0	47	70.0	0.048	11.3	LOS B	0.2	2.1	0.14	0.99	0.14	49.0
North: D175														
7	L2	1	70.0	1	70.0	0.025	6.4	LOS A	0.0	0.0	0.00	0.02	0.00	54.8
8	T1	31	70.0	33	70.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		32	70.0	34	70.0	0.025	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.6
All Vehicles		274	70.0	288	70.0	0.164	5.5	NA	0.8	9.4	0.14	0.47	0.14	52.0

Annexure A2.6

Sidra Output: D175 & Access to the proposed colliery

Existing 2020 Weekday PM Plus Development Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total	HV]	DEMAND FLOWS [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh.	Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: D175														
2	T1	40	70.0	42	70.0	0.079	0.4	LOS A	0.3	3.9	0.22	0.32	0.22	56.3
3	R2	52	70.0	55	70.0	0.079	6.8	LOS A	0.3	3.9	0.22	0.32	0.22	51.2
Approach		92	70.0	97	70.0	0.079	4.0	NA	0.3	3.9	0.22	0.32	0.22	53.3
East: Access														
4	L2	142	70.0	149	70.0	0.159	11.7	LOS B	0.7	7.8	0.25	0.95	0.25	49.0
6	R2	1	70.0	1	70.0	0.159	12.5	LOS B	0.7	7.8	0.25	0.95	0.25	48.3
Approach		143	70.0	151	70.0	0.159	11.7	LOS B	0.7	7.8	0.25	0.95	0.25	49.0
North: D175														
7	L2	1	70.0	1	70.0	0.051	6.4	LOS A	0.0	0.0	0.00	0.01	0.00	54.9
8	T1	64	70.0	67	70.0	0.051	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		65	70.0	68	70.0	0.051	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		300	70.0	316	70.0	0.159	6.8	NA	0.7	7.8	0.19	0.55	0.19	52.3

Annexure A2.7

Sidra Output: D175 & Access to the proposed colliery

Future 2025 Weekday AM Plus Development Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total	HV]	DEMAND FLOWS [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh.	Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: D175														
2	T1	53	70.0	56	70.0	0.170	0.3	LOS A	0.9	9.7	0.18	0.42	0.18	55.7
3	R2	150	70.0	158	70.0	0.170	6.6	LOS A	0.9	9.7	0.18	0.42	0.18	50.6
Approach		203	70.0	214	70.0	0.170	5.0	NA	0.9	9.7	0.18	0.42	0.18	51.9
East: Access														
4	L2	44	70.0	46	70.0	0.048	11.3	LOS B	0.2	2.2	0.16	0.99	0.16	49.0
6	R2	1	70.0	1	70.0	0.048	13.6	LOS B	0.2	2.2	0.16	0.99	0.16	48.4
Approach		45	70.0	47	70.0	0.048	11.3	LOS B	0.2	2.2	0.16	0.99	0.16	49.0
North: D175														
7	L2	1	70.0	1	70.0	0.028	6.4	LOS A	0.0	0.0	0.00	0.02	0.00	54.8
8	T1	35	70.0	37	70.0	0.028	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.8
Approach		36	70.0	38	70.0	0.028	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.7
All Vehicles		284	70.0	299	70.0	0.170	5.4	NA	0.9	9.7	0.15	0.46	0.15	52.2

Annexure A2.8

Sidra Output: D175 & Access to the proposed colliery

Future 2025 Weekday PM Plus Development Peak Hour Traffic

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total	HV]	DEMAND FLOWS [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE [Veh.	Dist]	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: D175														
2	T1	45	70.0	47	70.0	0.083	0.5	LOS A	0.4	4.1	0.23	0.31	0.23	56.4
3	R2	52	70.0	55	70.0	0.083	6.9	LOS A	0.4	4.1	0.23	0.31	0.23	51.3
Approach		97	70.0	102	70.0	0.083	3.9	NA	0.4	4.1	0.23	0.31	0.23	53.5
East: Access														
4	L2	142	70.0	149	70.0	0.161	11.8	LOS B	0.7	7.9	0.27	0.95	0.27	48.9
6	R2	1	70.0	1	70.0	0.161	12.7	LOS B	0.7	7.9	0.27	0.95	0.27	48.3
Approach		143	70.0	151	70.0	0.161	11.8	LOS B	0.7	7.9	0.27	0.95	0.27	48.9
North: D175														
7	L2	1	70.0	1	70.0	0.057	6.4	LOS A	0.0	0.0	0.00	0.01	0.00	54.9
8	T1	72	70.0	76	70.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.9
Approach		73	70.0	77	70.0	0.057	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.8
All Vehicles		313	70.0	329	70.0	0.161	6.6	NA	0.7	7.9	0.19	0.53	0.19	52.5

Annexure B

Proposed Infrastructure Layout

Dalyshope Coal Mine

Infrastructure Layout

27°13'0"E 27°13'20"E 27°13'40"E 27°14'0"E

23°32'40"S 23°33'0"S 23°33'20"S

Infrastructure

- Berm
- Bowser Filling Point
- Brake Test Ramp
- Brine Pond
- Changehouse
- Clinic
- Contractors Laydown Area
- Crushed Coal Stockpile
- Discard
- Fire Water Tank
- Fuel Storage
- Electrical Substation
- Explosive Magazine
- HMV Hard Park
- Laboratory
- Main Security Guard House
- Office
- Offloading Area
- Parking Area
- Plant Area (Future Life of Mine)
- Plant Infrastructure
- Pollution Control Dam
- Potable Water Tank
- Product Stockpile
- Raw Water Storage Tanks
- Sewage Treatment Plant
- Silt Trap
- Stores Area
- Truck Parking
- Walkway
- Wash Bay
- Water Treatment Plant
- Weighbridge
- Workshop

D175

Hards Waste Dump

Softs Waste Dump

Topsoil Dump

Discard Dump

Legend

- Project Area

Infrastructure Layout

- Access Road
- Trunk Access Road
- Conveyor
- Haul Road
- Fence
- Fire Pipeline
- Overhead Powerline
- Potable Water Pipeline
- Bulk Water Pipeline (Supply Alternative)
- Pollution Drain
- Sewer
- Walkway
- Plant
- Discard Dump
- Hards Waste Dump
- Softs Waste Dump
- Topsoil Dump

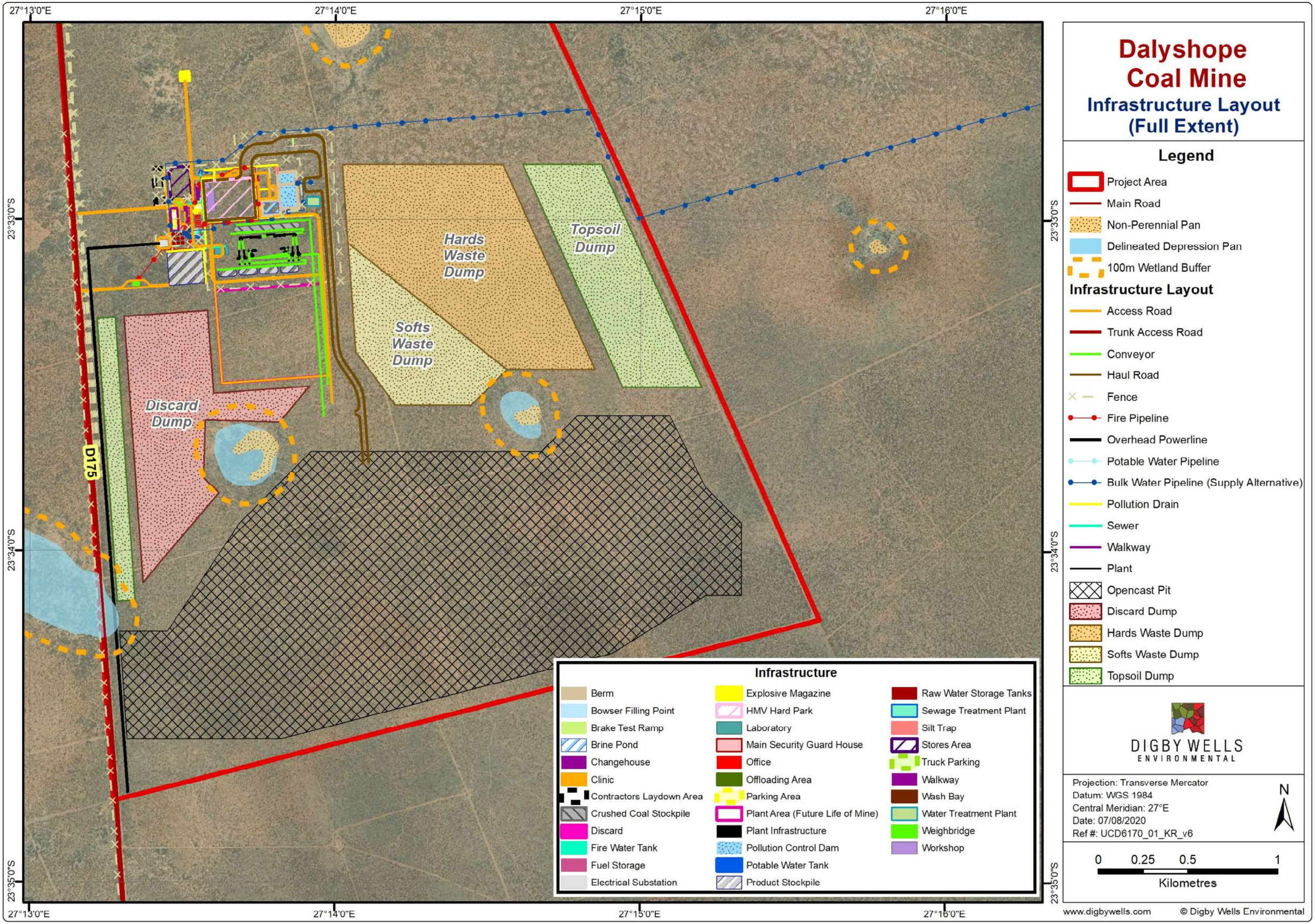
DIGBY WELLS ENVIRONMENTAL

Projection: Transverse Mercator
Datum: WGS 1984
Central Meridian: 27°E
Date: 07/08/2020
Ref #: UCD6170_01_KR_v6

N

0 100 200 400
Metres

www.digbywells.com



Dalyshope Coal Mine

Infrastructure Layout (Full Extent)

Legend

- Project Area
- Main Road
- Non-Perennial Pan
- Delineated Depression Pan
- 100m Wetland Buffer

Infrastructure Layout

- Access Road
- Trunk Access Road
- Conveyor
- Haul Road
- Fence
- Fire Pipeline
- Overhead Powerline
- Potable Water Pipeline
- Bulk Water Pipeline (Supply Alternative)
- Pollution Drain
- Sewer
- Walkway
- Plant
- Opencast Pit
- Discard Dump
- Hards Waste Dump
- Softs Waste Dump
- Topsoil Dump

DIGBY WELLS ENVIRONMENTAL

Projection: Transverse Mercator
Datum: WGS 1984
Central Meridian: 27°E
Date: 07/08/2020
Ref #: UCD6170_01_KR_v6

N

0 0.25 0.5 1
Kilometres

Annexure C

E80 Calculation Sheet

ROAD CLASSIFICATION OF ACCESS ROAD ON D175

Job No.: 20024
Done By: HB Senekal
Date: 29/06/2020
Page: 1 of 3

Traffic Classes According to TRH4 : 1985
and Gautrans/Mpumalanga Catalogue 1998 plan GTP 9/2

Design information	
Traffic Data for:	D175 Elliras
From survey to opening of road (years):	1
Average Daily Traffic (ADT, both directions):	1760
Percentage heavy vehicles:	70
Lane distribution factor (design lane):	0,55
Yearly traffic growth, survey to opening (%):	3
Structural design period (years):	**5**

Average daily E80's / heavy vehicle / lane				
Load	%	E80	/HV	E80s
Mostly Unladen	0,0	0,75	0,00	0,0
Half Laden	40,0	2,40	0,96	650,5
Mostly Fully Laden	60,0	3,50	2,10	1423,0
Totals	100,0		**3,06**	2073,5

Present and initial E80's	
Present average E80 per heavy vehicle:	3,06
Present design traffic at time of survey (E80/day/lane):	2073,5
Initial design traffic at time of opening (E80/day/lane):	2135,7

Road Classification			
E80 Growth Rate %	Cumulative E80 (millions)	**TRH4** 1985 Class	**Catalgue** 1998 Class
1	4,02	E3	V
2	4,14	E3	V
3	4,26	E3	V
4	4,39	E3	V
5	**4,52**	**E3**	**V**
6	4,66	E3	V
7	4,80	E3	V
8	4,94	E3	V
9	5,09	E3	V
10	5,24	E3	V
11	5,39	E3	V
12	5,55	E3	V
13	5,71	E3	V
14	5,87	E3	V
15	6,04	E3	V
16	6,22	E3	V

ROAD CLASSIFICATION OF ACCESS ROAD ON D175

Job No.: 20024
Done By: HB Senekal
Date: 29/06/2020
Page: 1 of 3

Traffic Classes According to TRH4 : 1985
and Gautrans/Mpumalanga Catalogue 1998 plan GTP 9/2

Design information	
Traffic Data for:	D175 Elliras
From survey to opening of road (years):	1
Average Daily Traffic (ADT, both directions):	1760
Percentage heavy vehicles:	70
Lane distribution factor (design lane):	0,55
Yearly traffic growth, survey to opening (%):	3
Structural design period (years):	**30**

Average daily E80's / heavy vehicle / lane				
Load	%	E80	/HV	E80s
Mostly Unladen	0,0	0,75	0,00	0,0
Half Laden	40,0	2,40	0,96	650,5
Mostly Fully Laden	60,0	3,50	2,10	1423,0
Totals	100,0		**3,06**	2073,5

Present and initial E80's	
Present average E80 per heavy vehicle:	3,06
Present design traffic at time of survey (E80/day/lane):	2073,5
Initial design traffic at time of opening (E80/day/lane):	2135,7

Road Classification			
E80 Growth Rate %	Cumulative E80 (millions)	**TRH4** 1985 Class	**Catalgue** 1998 Class
1	27,39	E4	VI
2	32,26	E4	VII
3	38,20	E4	VII
4	45,47	E4	VII
5	**54,38**	**>E4**	**VII**
6	65,33	>E4	VII
7	78,79	>E4	VII
8	95,37	>E4	VII
9	115,82	>E4	>VII
10	141,05	>E4	>VII
11	172,21	>E4	>VII
12	210,70	>E4	>VII
13	258,27	>E4	>VII
14	317,06	>E4	>VII
15	389,73	>E4	>VII
16	479,54	>E4	>VII