ARCELOR MITTAL

GAS-FIRED INDEPENDENT POWER PLANT TO SUPPORT SALDANHA STEEL AND OTHER INDUSTRIES IN SALDANHA BAY

COMBINED CYCLE GAS TURBINE POWER PLANT (CCGTPP)

REMAINING EXTENT PORTION 129 OF THE FARM YZERVARKENSRUG & PORTION 195 OF THE FARM JACKELSKLOOF, SALDANHA BAY

TRAFFIC IMPACT ASSESSMENT

JULY 2016

K&T PROJECT REFERENCE: 15047R

REVISION 1

K&T KANTEY & TEMPLER (PTY) LTD
CONSULTING ENGINEERS
REG. NO. 1966/09839/07
Engineering African Development

TEL: 021 405 9600
FAX: 021 419 6774
WEB: www.kanteys.co.za
E-MAIL: info@kanteys.co.za
P O BOX 3132, CAPE TOWN, 8000

Details of this report

Client Name	Arcelor Mittal
Document Title	Traffic Impact Statement (TIA)
K&T Project Reference	15047R
File Name	Arcelor Mittal Saldanha TIA Report - June 2016
Prepared by	Hoosain Cassoo and Dana Hagins

Report Revision Record

Revision	Date	Description
0	June 2016	Traffic Impact Assessment Report
1	July 2016	Traffic Impact Assessment Report Final

This report has been prepared by Kantey & Templer (Pty) Ltd, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.

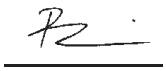
We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

For and on behalf of

Kantey & Templer (Pty) Ltd

Approved by: B A PHILLIPS

Signed: 

Position: Executive Associate

Date: 19 July 2016

Copyright

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

EXECUTIVE SUMMARY

This report documents the anticipated traffic impacts of the proposed gas-fired independent power plant to support Saldanha Steel and other industries in Saldanha Bay. The combined cycle gas turbine power plant (CCGTPP) is to be situated on remaining extent portion 129 of the farm Yzervarkensrug & portion 195 of the farm Jackelskloof, Saldanha Bay.

The pipeline construction from the Port of Saldanha to the site will need to be trenched beneath road crossings and/or thrust bored with conventional horizontal drilling. This is not a traffic consideration per say other than temporary traffic accommodation at road crossings and therefore is not reported on any further in this document.

PROJECT DESCRIPTION

The proposed development will be located on a green field site owned by Arcelor Mittal within the IDZ of the Port of Saldanha. The site is identified for industrial development in terms of the Saldanha SDF.

Arcelor Mittal (referred to herein as “the Client”), intends on developing the property for energy production in the form of a CCGTPP. A portion of the power produced will be used to establish sustainable steel production at Arcelor Mittal’s Saldanha Steel works and the balance of the energy produced will be fed back into the Eskom grid.

This Traffic Impact Assessment Report forms part of the engineering and built environment planning. The objective of this project is to provide a Combined Cycle gas Turbine for Saldanha Steel works and the surrounding areas.

The Power Plant shall consist of the following components:

- Access road to site;
- 132 kV and 400 kV switchyard;
- Control and electrical building;
- Central control room, warehouse and administrative buildings;
- Firefighting systems;
- Fuel/gas/diesel storage facilities
- Emergency backup generators (diesel or LPG); and demineralising resins, lubricants, grease and turbine cleaning detergents, fire extinguishing foams).

Construction for the proposed Power Plant will be implemented in two phases. Phase one and two combined is expected to produce approximately 1,507 MW of power to the Saldanha Industrial area and its surroundings.

STUDY AREA AND ANALYSIS SCENARIOS

The studied intersections listed below were selected in relation to the site and with reference to the Spatial Development Framework (2011) namely for the adjacent intersections in the TIA study area – Therefore three key intersections for the AM and PM peak hour traffic operations were selected for evaluation.

1. R27 (TR77/1) and R45 (TR21/2)
2. R27 (TR77/1) and TR 85/1
3. TR 85/1 and OP7644

For this study, the following scenarios were evaluated:

- ***Existing*** – Existing Conditions (2016)
- ***Future*** – Future Conditions during the construction phase (2018 and 2019)
- ***Future*** – Future Conditions with the operational phase (2020)

TRAFFIC IMPACT SIGNIFICANCE

The study found that the implementation of the proposed project is expected to have a low impact on the traffic operations at the above mentioned key intersections in both the construction and operational phases of the project. The site traffic is expected to be well absorbed within the road network which is currently operating at low volume to capacity (V/C) ratios. There are no mitigation measures required as a direct result of the project once operational, however, it is recommended that the accesses to the site be upgraded to incorporate turning movements in order to minimise / mitigate potential impacts from the construction traffic to the development. These measures may be beneficial in the long term given the significant development taking place north-east of the site in the Saldanha Bay IDZ.

SIGNIFICANCE RATINGS DEFINITIONS FOR IMPACT ASSESSMENTS[1]

No Impact: Zero impact

Slightly Significant (Low Impact): Impact is of a low order and therefore likely to have little real effect. In the case of adverse impacts, mitigation is either easily achieved or little will be required, or both.

Significant (Medium Impact): Impact is real, but not substantial in relation to other impacts that might take effect within the bounds of those that could occur. In the case of adverse impacts, mitigation is both feasible and fairly easily possible.

[1] Impact Significance, DEAT, 2002, ISBN 0797039767

Highly Significant (High Impact): Of the highest order possible within the bounds of impacts that could occur. In the case of adverse impacts, there is no mitigation that could offset the impact, or mitigation is difficult, expensive, time consuming or some combination of these.

1. INTRODUCTION

This chapter discusses the purpose of the traffic impact assessment, identifies the study area and criteria used to identify significant project impacts.

Kantey & Templer was appointed by ERM Southern Africa on behalf of Arcelor Mittal (herein referred to as "the Client") to prepare a Traffic Impact Assessment Report in respect of the proposed combined cycle gas turbine power plant on the remaining extent portion 129 of farm Yzervarkensrug and portion 195 of the farm Jackelskloof, Saldanha Bay, Western Cape (herein referred to as "the site").

Refer to Figure 1 for the locality plan.

The additional traffic resulting from the proposed development is the subject of this Traffic Impact Assessment (TIA). The TIA is a statutory requirement for developments generating more than 150 person trips during peak hours.

This TIA is prepared in accordance with standards set by the South African Committee of Transport Officials[2] (COTO) and the Saldanha Bay Municipal Regulations. The specific objectives of the report are to:

(i) Describe the extent of the proposed development

(ii) Assess the existing traffic operations on the road network in the vicinity of the site

(iii) Predict the extent of the traffic generated by the new development and estimate the distribution of that new traffic

(iv) Assess the effect that this generated traffic is likely to have on the existing road network

(v) Make recommendations for improvements to the existing road network and intersections affected by the generated traffic.

[2] COTO, TMH17 Vol 1, South African Trip Data Manual, Sep 2012.

2. LANDUSE & TRANSPORTATION

The site is located in the north-east direction of Saldanha and north of Langebaan. The site will serve the following land use purpose(s), namely:

- Industrial:
  - Access road to site;
  - 132 kV and 400 kV switch yard;
  - Control and electrical building;
  - Central control room, warehouse and administrative buildings;
  - Firefighting systems;
  - Fuel/gas/diesel storage facilities
  - Emergency backup generators (diesel or LPG); and demineralising resins, lubricants, grease and turbine cleaning detergents, fire extinguishing foams).

3. ROAD NETWORK

The site is well served by existing road infrastructure. The access to the development is via TR 85/1 coming from the east off the R27 (TR77/1). Provincial Road OP7644 abuts the site the west and links TR85/1 to MR559. OP7644 is a two lane undivided rural roadway from which access to the site is provided opposite the Arcelor Mittal entrance.

Figure 1: Site Locality Sketch

©Google Earth Aerial Image, 2016

4. EXISTING TRAFFIC CONDITIONS

Existing background traffic information was obtained from traffic counts conducted by Nick Venter Traffic Studies (NVTS) on the road network taken on Thursday, 12 May 2016. The key intersections in the study area was analysed in order to assess the existing traffic operations during the typical weekday AM and PM peak commuter periods.

The existing traffic data is illustrated in the traffic diagrams at the back of the report. The details of the traffic count are contained in Appendix A. The key intersections in the study area are as follows:

1. R27 (TR 77/1) and R45 (TR21/2)
2. R27 / TR85/1 and TR 85/1
3. TR 85/1 and OP7644

According to the results of the SIDRA analysis it appears that the traffic operations at the existing intersections are currently operating at a Level of Service (LOS) A[3] in the AM and PM peak hours, respectively.

5. BACKGROUND PROJECTS

There are a number of background projects planned within the Saldanha Bay IDZ which will increase the traffic in the study area. The anticipated increases are off a low base and hence it is unlikely that the combined effect will create further impacts to the key intersections within the study area. Especially, considering that turning lanes will be introduced at the two site access points.

[3] Level of Service (LOS) A is a measure of effectiveness of an intersection where "A" is good and depicts free flow conditions.

6. TRIP GENERATION

The trip generation requires an estimation of the additional traffic to be generated by the additional land uses.

CONSTRUCTION TRAFFIC

During the peak construction period, it is expected that up to approximately 450 workers will be employed during the development of the site. The private car, public transport and NMT percentages and person trips are shown in Table 1.

Table 1: Modal split of person trips during construction

Mode	Car	Taxi	Bus	Walk	Cycle
Percentage	55%	30%	10%	4%	1%
Person Trips	247	135	45	18	5
Vehicles	206	14	2	N/A	N/A

Note: Vehicle occupancy = 1,2, minibus taxi = 10, bus = 30

The anticipated traffic during the construction period is in the order of 450 person trips during the peak hour or 206 cars, 14 minibus taxis and two buses. The cars may enter the site and park in the open areas during construction. The minibus taxis and buses may collect and dispatch passengers in the vicinity of the site.

The documentation provided shows that the anticipated truck traffic is likely to be in the order of 246 trucks per day or 15 to 20 trucks per hour which equates to one every three minutes. This is considered to be intensive truck traffic and will need to be managed both in terms of surface damage as well as signage and marshalling at the delivery yard and at the site entrance. A road condition survey will need to be conducted prior to construction in order to gauge the damage to the road as a result of the intensive heavy traffic. Most of the damage is likely to occur within the proximity to the access to the site.

OPERATIONAL TRAFFIC

After completion of the project it is expected that traffic flowing into the development will decline and only operational staff will be moving in and out of the Power Plant.

During the operational phase 95 employees are expected to occupy the development, which shall consist of full-time and part-time employees. The private car, public transport and NMT percentages and person trips are shown in Table 2.

Table 2: Modal split of person trips during operations

Mode	Car	Taxi	Bus	Walk	Cycle
Percentage	55%	30%	10%	4%	1%
No. of Trips	52	28	10	4	1
Vehicles	43	3	1	N/A	N/A

Note: Vehicle occupancy = 1,2, minibus taxi = 10, bus = 30

The anticipated traffic during the operational phase of the project is in the order of 95 person trips during the peak hour or 43 cars, 3 minibus taxis and one bus. The cars may enter the site and park in the open areas during construction. The minibus taxis and buses may collect and dispatch passengers in the vicinity of the site.

7. SITE TRAFFIC DISTRIBUTION

Traffic that is expected to be generated by a development project must be distributed and assigned to the road network so that the impact of the proposed project on the roadway links and intersections within the study area can be analysed.

The gravity model is used to distribute the trips manually based on the likelihood that the number of trips between two zones is proportional to the magnitude of each zone, and inversely proportionate to the distance between the two zones.

The site traffic will be distributed 55% originating from the east of Vredenburg, Velddrif and Langebaanweg areas, 20% from the southern Yzerfontein and Melkbosstrand areas, 20% from the Langebaan and Saldanha areas and 5% from Vredenburg and Saldanha.

The trip distribution patterns are illustrated in Figures 8 and 9 at the back of the report.

8. POTENTIAL IMPACT

The traffic operations were analysed using Signalised and Unsignalised Intersection Design and Research Aid software package[4] (SIDRA). The software package determines the existing and future operational Levels of Service and expected average delays at the key intersections in the study area with the additional traffic from the proposed development.

ANALYSIS METHODOLOGY

Level of Service

Traffic operations at intersections are typically described in terms of "Level of Service" (LOS). LOS is a qualitative measure of the effect of several factors on traffic operating conditions, including speed, travel time, traffic interruptions, freedom to manoeuvre, safety, driving comfort, and convenience. It is generally measured quantitatively in terms of vehicular delay and described using a scale that ranges from LOS A to F, with LOS A representing essentially free-flow conditions and LOS F indicating over-capacity conditions with substantial congestion and delay.

Table 3 summarizes the relationships between the average control delay per vehicle and LOS for signalized intersections, roundabouts and stop and yield controls.

Table 3: Level-of-Service definitions based on delay (HCM[5] method)

Level of Service		Control delay per vehicle in seconds (d) (including geometric delay)	
		Signals and Roundabouts	Stop Signs and Give Way (Yield) Signs
A	Good progression, few stops, short cycle lengths	$d \leq 10$	$d \leq 10$
B	Good progression and/or short cycle lengths, more vehicle stops	$10 < d \leq 20$	$10 < d \leq 15$
C	Fair progression, significant proportion of vehicles must stop	$20 < d \leq 35$	$15 < d \leq 25$
D	Congestion becomes noticeable; longer delays, high v/c ratio	$35 < d \leq 55$	$25 < d \leq 35$
E	At or beyond acceptable delay, poor progression, long queues	$55 < d \leq 80$	$35 < d \leq 50$
F	Unacceptable to drivers. Arrival volumes greater than discharge capacity, unstable unpredictable flows	$80 < d$	$50 < d$

[4] SIDRA Version 5 Software, SidraSolutions, Australia, 2010.
[5] HCM Highway Capacity Manual of the Transport Research Board (TRB), 2010.

The traffic generated by the site can be expected to influence the key intersections of the study area, namely:

1. R27 (TR 77/1) and R45 (TR 22/1)
2. R27 (TR 77/1) and TR 85/1
3. TR 85/1 and OP7644

Figure 2: Existing Road Geometry of R27 & R45

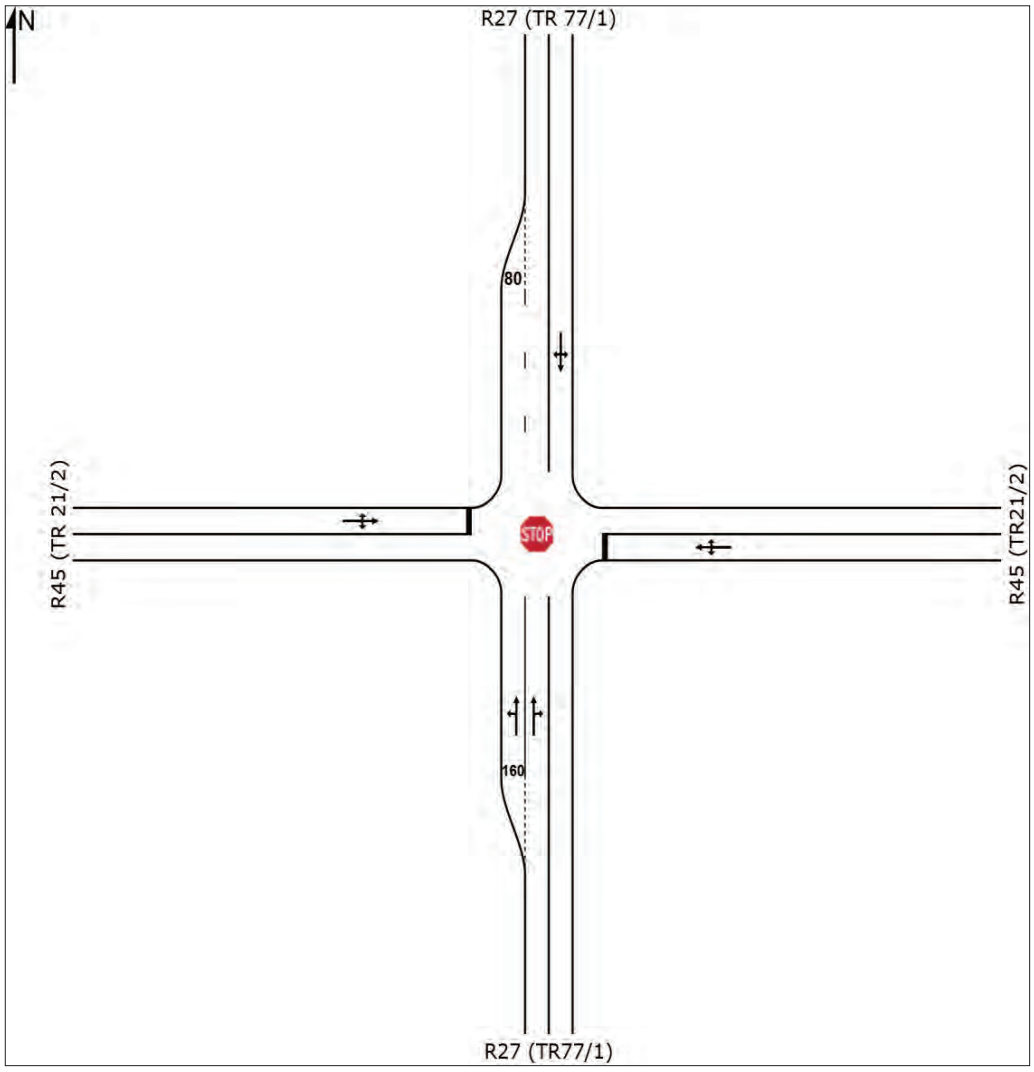


Figure 3: Existing Road Geometry of R27 & TR 85/1

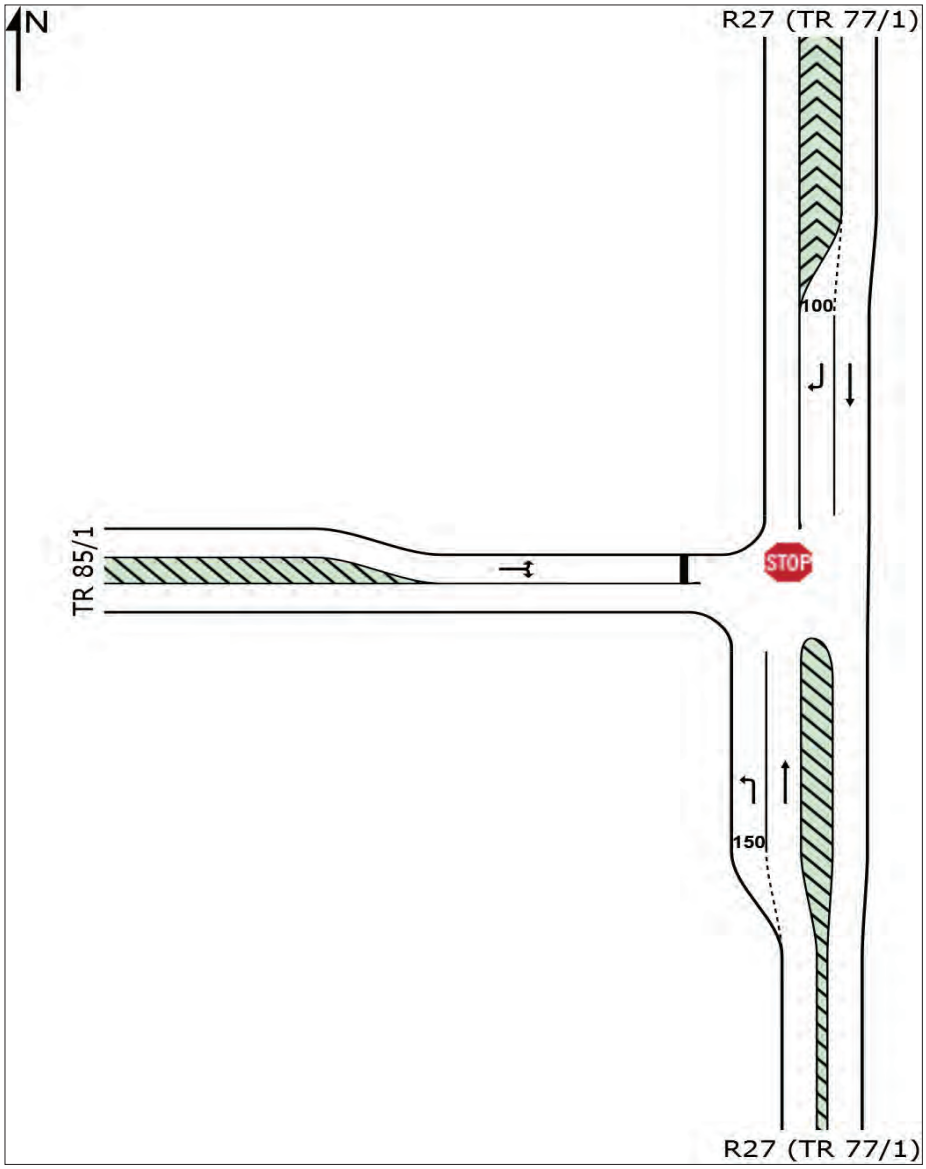
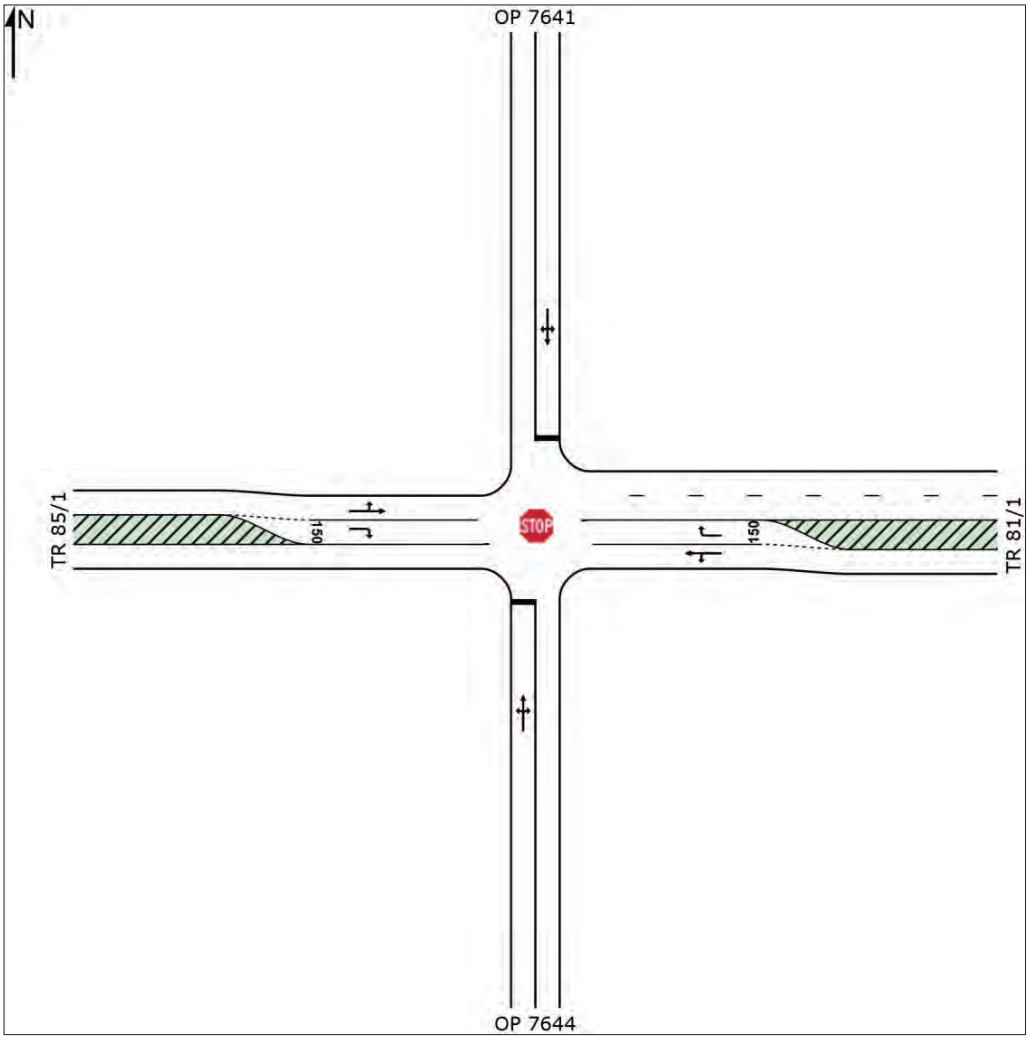


Figure 4: Existing Road Geometry of TR 85/1 & OP7644



CONSTRUCTION PHASE

Table 4: Traffic Operations at intersection of R27 (TR 77/1) / R45 (TR 21/2) during construction

Intersection of R27 (TR 77/1) / R45 (TR 21/2)						
Measures of Effectiveness	Intersection Type					
	Stop Controlled					
	Existing 2016 Scenario Without the project		Future 2018 Scenario Construction		Future 2019 Scenario Construction	
	Peak Hour		Peak Hour		Peak Hour	
	AM	PM	AM	PM	AM	PM
Levels of Service (LOS)	A	A	A	A	A	A
Delay (Sec) Overall	6.9	7.0	6.9	7.5	7.1	7.7
V/C Ratio	0.208	0.248	0.324	0.384	0.341	0.404

Table 5: Traffic Operations at intersection of R27 (TR 77/1) / TR 85/1 during construction

Intersection of R27 (TR 77/1) / TR 85/1						
Measures of Effectiveness	Intersection Type					
	Stop Controlled					
	Existing 2016 Scenario Without the project		Future 2018 Scenario Construction		Future 2019 Scenario Construction	
	Peak Hour		Peak Hour		Peak Hour	
	AM	PM	AM	PM	AM	PM
Levels of Service (LOS)	A	A	A	A	A	A
Delay (Sec) Overall	4.1	4.2	6.0	6.3	6.1	6.4
V/C Ratio	0.104	0.142	0.328	0.376	0.340	0.389

Table 6: Traffic Operations at intersection of TR 85/1 / OP7644 during construction

Intersection of TR 85/1 / OP7644				
Measures of Effectiveness	Intersection Type			
	Stop Controlled			
	Future 2018 Scenario		Future 2019 Scenario	
	Peak Hour		Peak Hour	
	AM	PM	AM	PM
Levels of Service (LOS)	A	A	A	A
Delay (Sec) Overall	5.3	5.2	5.3	5.3
V/C Ratio	0.338	0.322	0.346	0.328

OPERATIONAL PHASE

Table 7: Traffic Operations at intersection of R27 / R45 when operational

Intersection of R27 (TR 77/1) / R45 (TR 21/2)				
Measures of Effectiveness	Intersection Type			
	Stop Controlled			
	Existing 2016 Scenario		Future 2020 Scenario	
	Peak Hour		Peak Hour	
	AM	PM	AM	PM
Levels of Service (LOS)	A	A	A	A
Delay (Sec) Overall	6.9	7.0	7.1	7.4
V/C Ratio	0.208	0.248	0.273	0.334

Table 8: Traffic Operations at intersection of R27 / TR 85/1 when operational

Intersection of R27 (TR 77/1) / TR 85/1				
Measures of Effectiveness	Intersection Type			
	Stop Controlled			
	Existing 2016 Scenario		Future 2020 Scenario	
	Peak Hour		Peak Hour	
	AM	PM	AM	PM
Levels of Service (LOS)	A	A	A	A
Delay (Sec) Overall	4.1	4.2	4.7	4.8
V/C Ratio	0.104	0.142	0.173	0.221

Table 9: Traffic Operations at intersection of TR 85/1 / OP7644 when operational

Intersection of TR 85/1 / OP7644		
Measures of Effectiveness	Intersection Type	
	Stop Controlled	
	Future 2020 Scenario	
	Peak Hour	
	AM	PM
Levels of Service (LOS)	A	A
Delay (Sec) Overall	1.6	1.7
V/C Ratio	0.143	0.112

9. GEOMETRIC IMPROVEMENTS

There are no geometric improvements to the external road network attributable to the traffic generated by the proposed development of the power plant. There may, however, be some localised improvements at the access point in the form of turning lanes for road safety purpose and the addition of destination signage and regulatory road markings and signage at the entrance to the site. There may also be a requirement of additional destination signage to the site. The proposed turning lanes are shown on the preliminary site development plan found in Appendix C.

10. RISK ASSESSEMENT

The risk assessment of the proposed improvements to OP7644 should be the subject of a Road Safety Audit (RSA) at the detailed design stage. Provided that the design standards are adhered to and that the construction work zone and road works are monitored by a resident engineer, there should be no significant risk associated with the construction and operational traffic to the site. Well managed work zones and road works can be safely traversed without any impact on the through traffic.

11. ACCESS TO SITE

The development will gain access from the existing road network that extends towards the TR77/1 (R27) originating from Velddrift and Yzerfontein and south from the proposed development via the MR559 originating from Mykonos and Langebaan. OP7644 serves as the main access road parallel to the development connecting TR85/1 in the North and MR559 in the south.

There will be no road access from the existing road leading up to the existing substation to the north of the site.

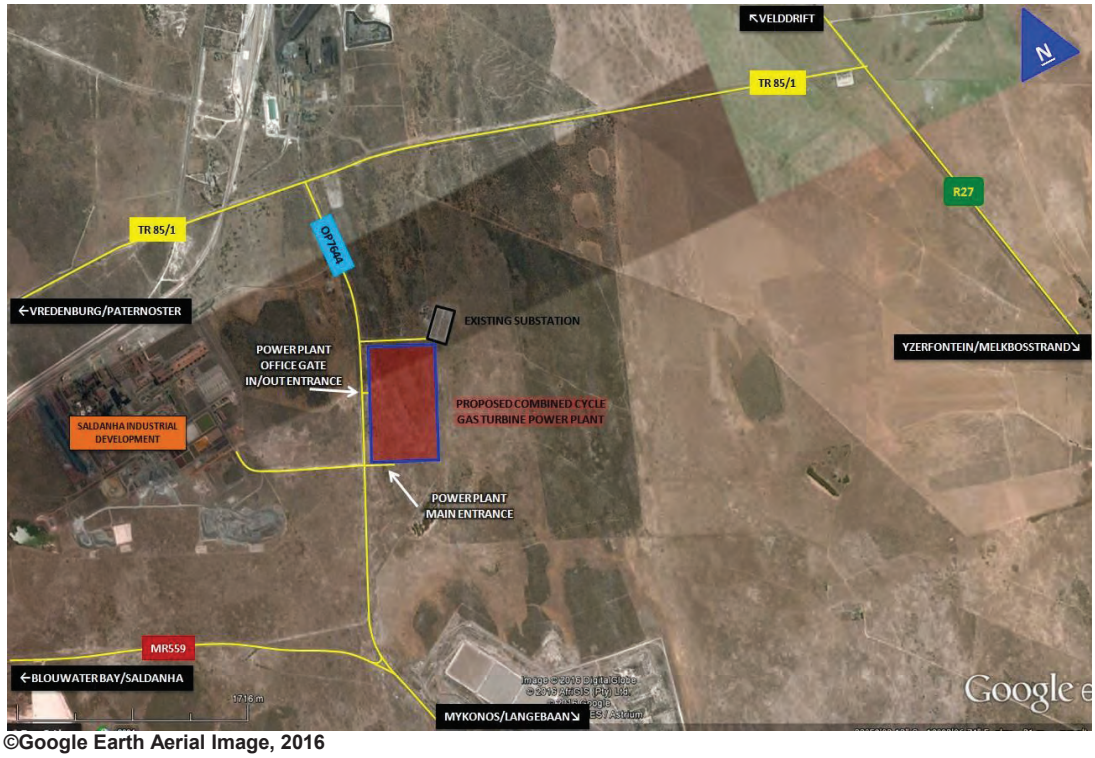
NORTHERN ACCESS

According to the preliminary site layout plan an in/out office gate is proposed on the west of the Power Plant off OP7644. Entrance to the office gate is located approximately 5.8km from the studied intersection of the TR77/1 (R27) and TR85/1.

SOUTHERN ACCESS

The southern access is the main entrance into the development via a new access road off OP7644. This main entrance is located approximately 6.35km from the intersection of TR85/1 and TR77/1 (R27).

Figure 5: Site access



©Google Earth Aerial Image, 2016

12. PARKING REQUIREMENTS

The minimum parking requirements for an industrial development of this nature are as follows:

Table 10: Construction Phase Parking

Mode of vehicle	Number of Construction Employees	Percentage Private Motor Vehicle	Parking Bays required (Temporary)
Car	450	55%	206

Note: Average Vehicle Occupancy is 1.2 persons per car.

The construction stage parking can be accommodated on site in an open area that is graded with a gravel surface wearing course.

Table 11: Operational Phase Parking

Mode of vehicle	Number of Construction Employees	Percentage Vehicle Usage	Parking Bays required (Permanent)
Car	95	55%	43

Note: Average Vehicle Occupancy is 1.2 persons per car.

13. PEDESTRIANS

It would be preferable for the project to be pedestrian friendly internally with adequate sidewalks and traffic calming devices that enables a conducive non-motorised transport environment.

14. PUBLIC TRANSPORT

The site will be well served by public transport, predominantly by minibus taxi but also by the local bus service. It may be advisable to place a public transport embayment downstream of the entrance to the power plant and on both sides of the OP7644 particularly to accommodate the Minibus Taxis that will stop in the vicinity of the site.

15. REFUSE COLLECTION

A refuse room is required in order to adequately serve the development. Municipal refuse collection or private refuse collection will need to be carefully planned in order to obtain a reasonable level of service. Recycling at the source should be encouraged.

16. CONCLUSIONS AND RECOMMENDATIONS

It can be concluded that:

1. The development of a Combined Cycle Gas Turbine Power Plant is planned for the site and is likely to be constructed over two years from 2018 to 2019 and become operational in 2020.

2. The access to the development will be from OP7644 directly opposite the access to Arcelor Mittal as shown on the SDP.

3. The main access has been planned to incorporate turning lanes to the development access intersection from OP7644, although these are not essential for the traffic operation, they would improve road safety and are therefore recommended.

4. The anticipated traffic during the construction period is in the order of 450 person trips during the peak hour or 206 cars, 14 minibus taxis and two buses.

5. The anticipated truck traffic of 246 trucks per day will impact on the road surface at the entrance to the site. Peak hour truck traffic is likely to be in the order of 20 trucks per hour and will not have a significant impact on operations. It will, however, be necessary to monitor the damage with a before and after survey of the roadway condition.

6. The anticipated traffic during the operational phase of the project is in the order of 95 person trips during the peak hour or 43 cars, 3 minibus taxis and one bus.

7. The background traffic on the road network is fairly low and recent traffic counts taken during the study show that there are no existing traffic problems at any of the key intersections during the peak hours.

8. The 4% per annum growth rate was used to estimate the 2020 scenario with implementation.

9. The key intersections were studied in detail and analysed in terms of the LOS, Delay and V/C ratios. The Level of Service (LOS) for the current traffic operations at the key intersections is operating at favourable levels of service during peak hours. The prevailing LOS A is indicative of good progression, few stops and average delays of less than 10 seconds.

10. The trip distribution adopted in this study is based on the anticipated pattern of travel to and from the site. The site traffic will be distributed 55% originating from the east of Vredenburg, Velddrif and Langebaanweg areas, 20% from the southern Yzerfontein and

Melkbosstrand areas, 20% from the Langebaan and Saldanha areas and 5% from Vredenburg and Saldanha.

11. The additional traffic generated by the proposed development is expected to have a low impact on the road network during the peak hours. Impact is of a low order and therefore likely to have little real effect on prevailing traffic operations.

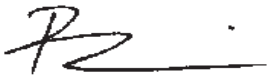
12. Combined effect of the project with the implementation of further projects in the Saldanha Bay IDZ were considered and were predicted to have no significant impact on the key intersections in the study area.

13. Access to the site has been carefully considered and the proposed access is from OP7644 with proposed turning lanes in the vicinity of the access to the site.

Accordingly it is recommended that: -

(i) The Road Authority should approve the proposed development, as the impact of the additional traffic can be mitigated by the improvements associated with the planned turning lanes on OP7644.

(ii) Minibus taxi embayment should be provided on either side of the main access as the number of taxis travelling to the site may increase during the construction and operational phases of the project.



B A PHILLIPS (Pr Tech Eng)
(Pr No. 200770081)

19 July 2016

H CASSOO

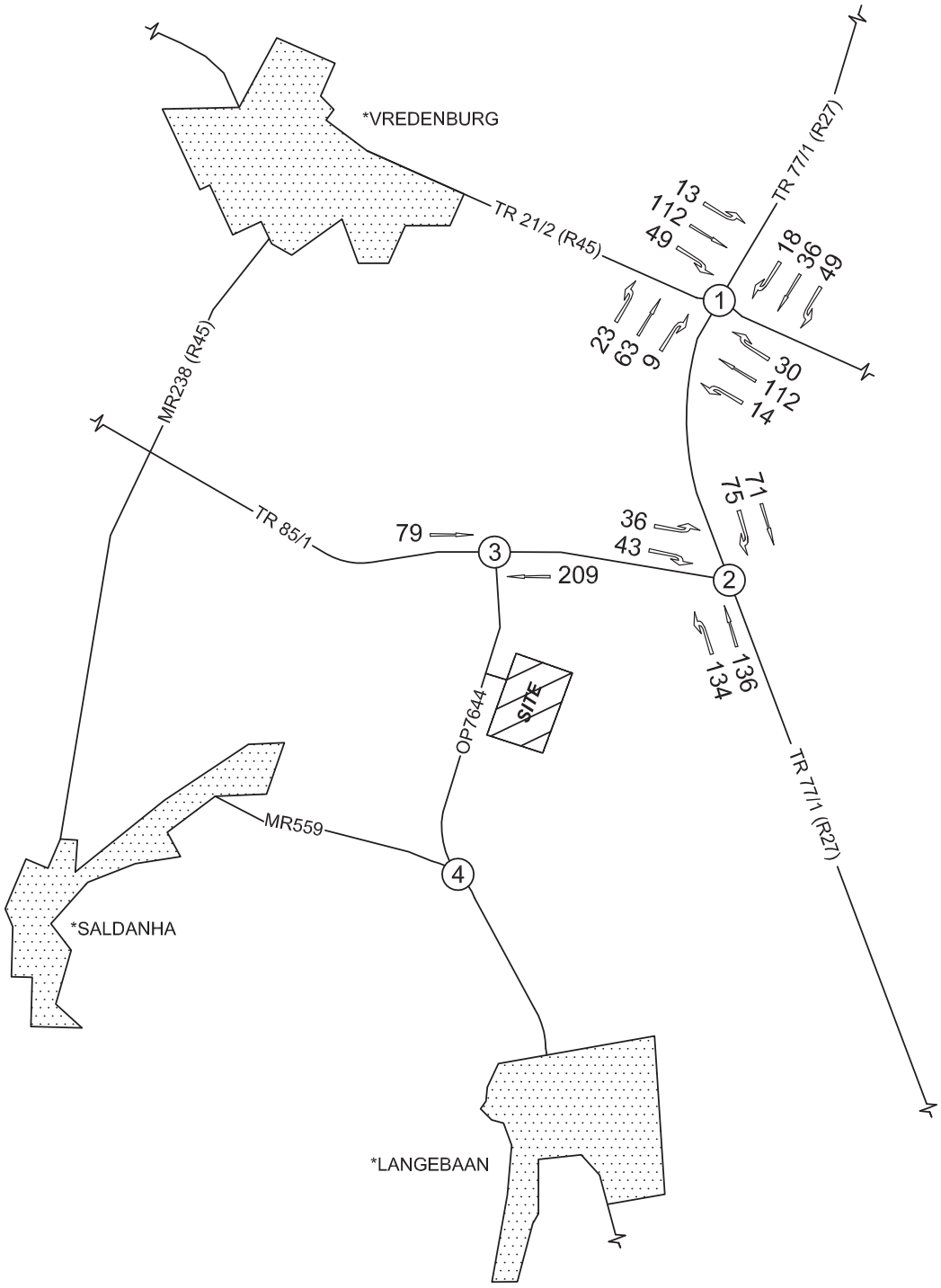
17. REFERENCES

NDOT, Manual for Traffic Impact Studies RR93/635, 1995

COTO, TMH17 Vol 1, “South African Trip Data Manual”, Sep 2012

DEAT, Impact Significance, 2002.

SALDANHA BAY MUNCIPALITY, Spatial Development Framework, 2011.



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

EXISTING AM PEAK HOUR
THURSDAY, 12 MAY 2016
07:00 - 08:00

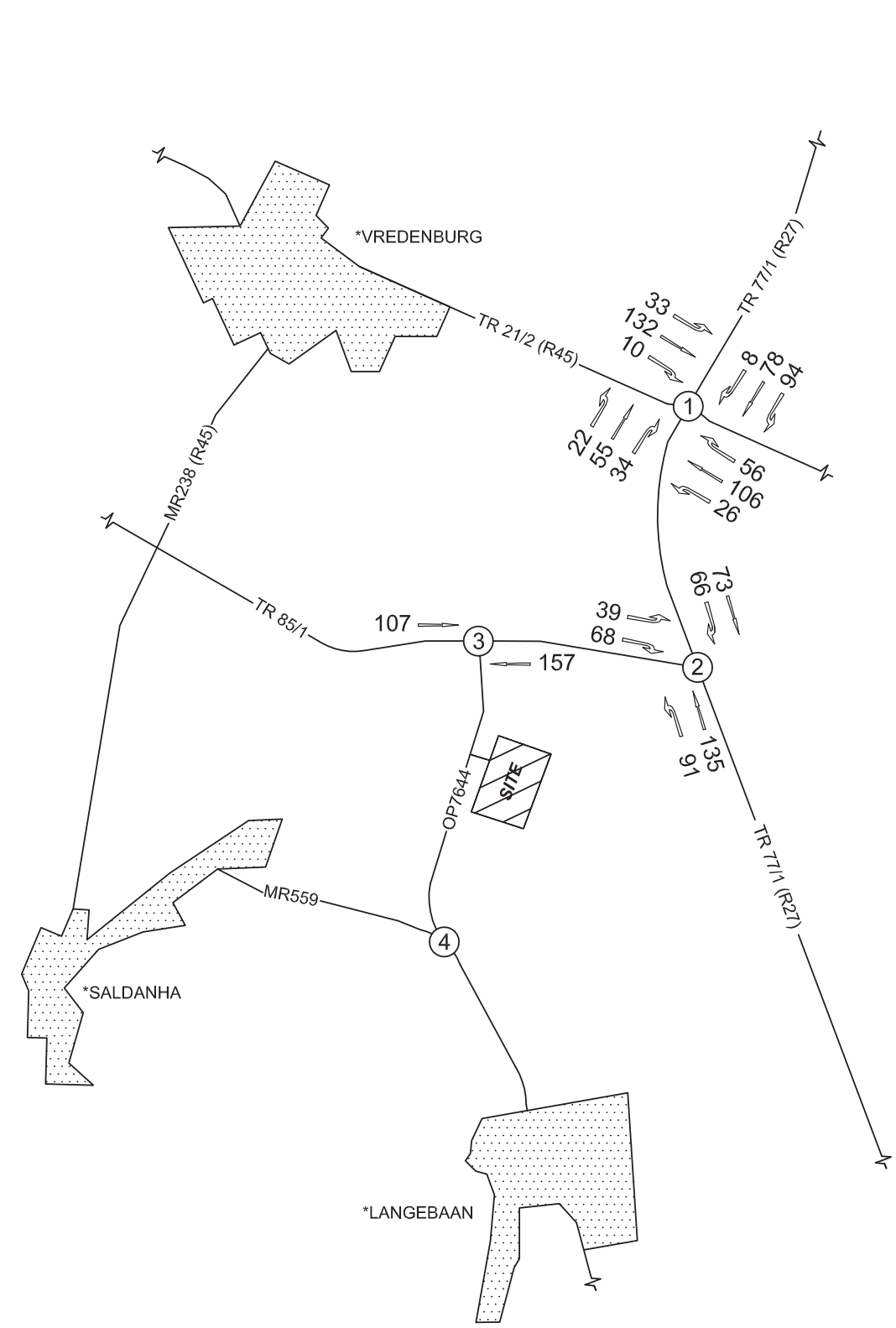
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: EXISTING AM PEAK TRAFFIC

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	6



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD	— — —	PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

EXISTING PM PEAK HOUR
THURSDAY, 12 MAY 2016
16:30 - 17:30

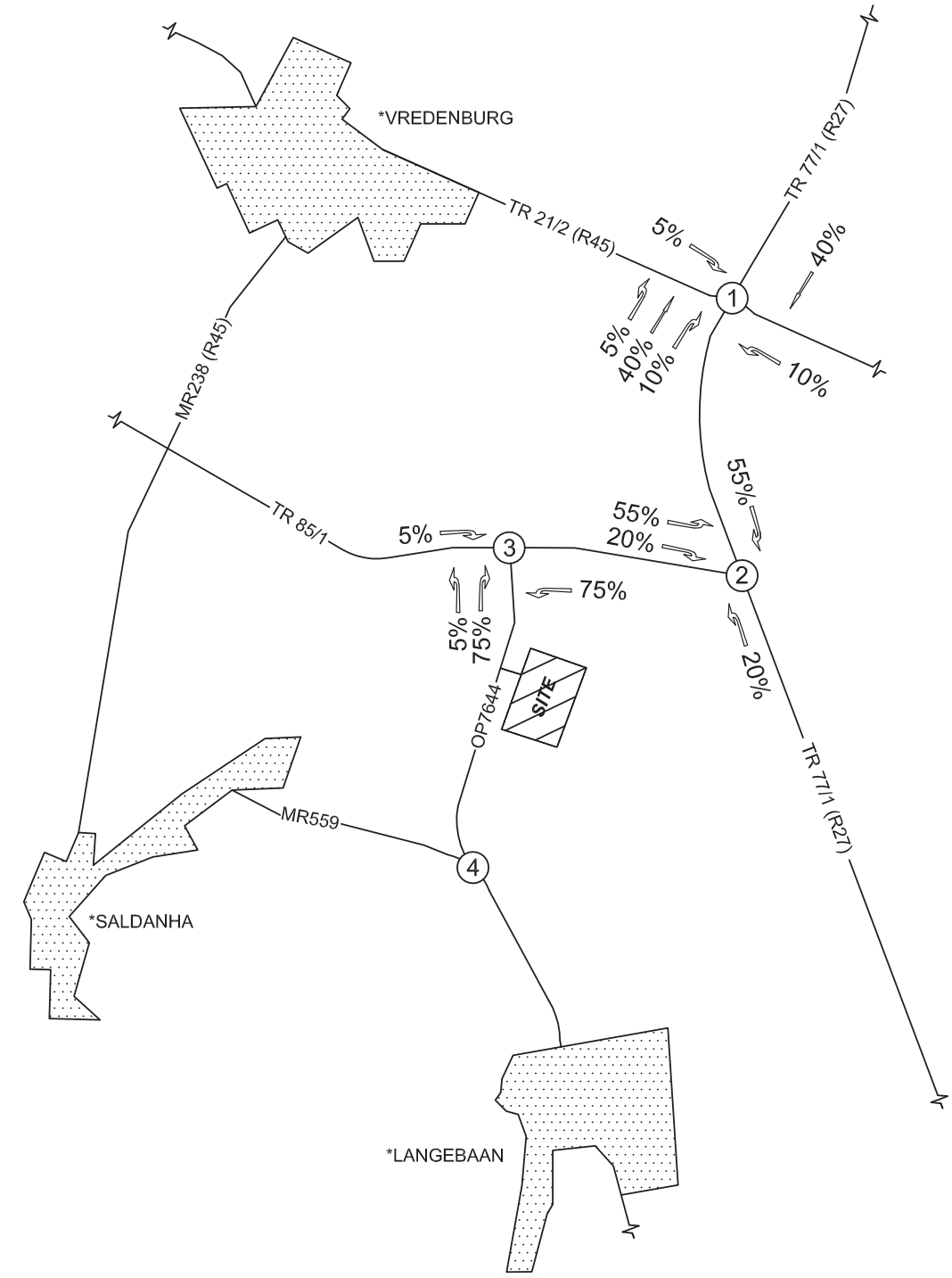
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: EXISTING PM PEAK TRAFFIC

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	7



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

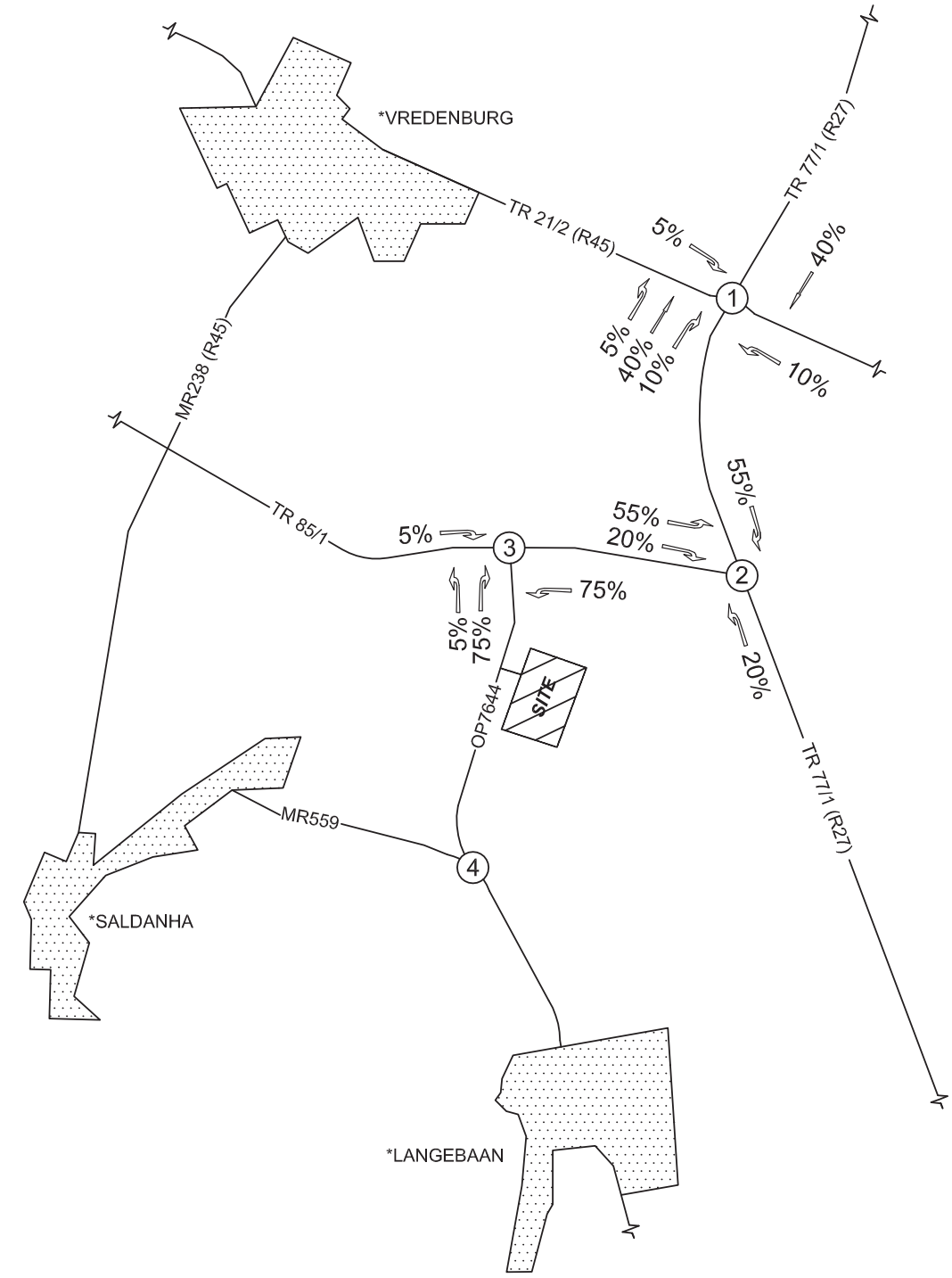
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016	
CHECKED	BAP	JUNE 2016	
APPROVED	BAP	JUNE 2016	

PROJECT: ARCELOR MITTAL

TITLE: PERCENTAGE DISTRIBUTION FOR AM PEAK

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	8



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

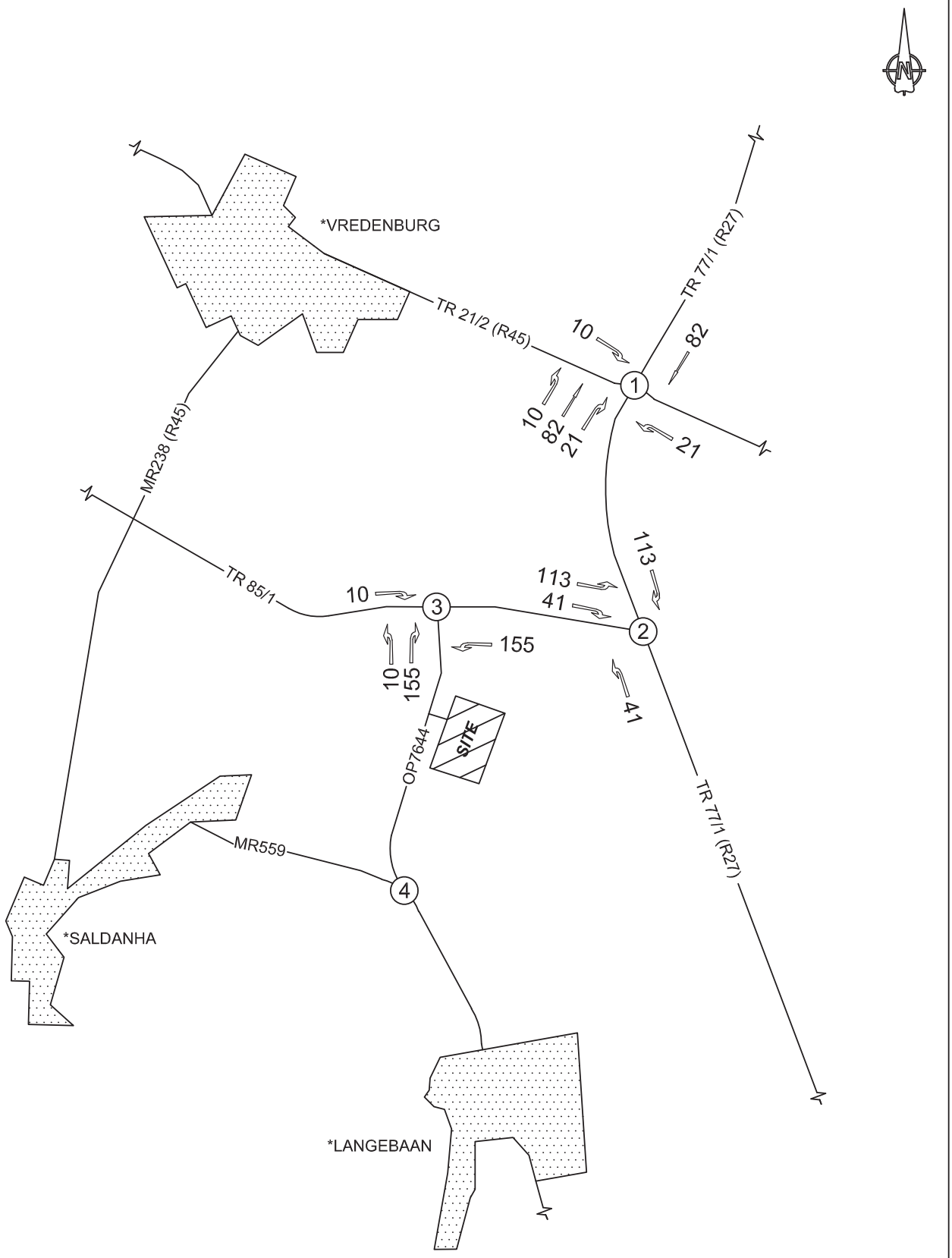
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016	
CHECKED	BAP	JUNE 2016	
APPROVED	BAP	JUNE 2016	

PROJECT: ARCELOR MITTAL

TITLE: PERCENTAGE DISTRIBUTION FOR PM PEAK

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	9



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

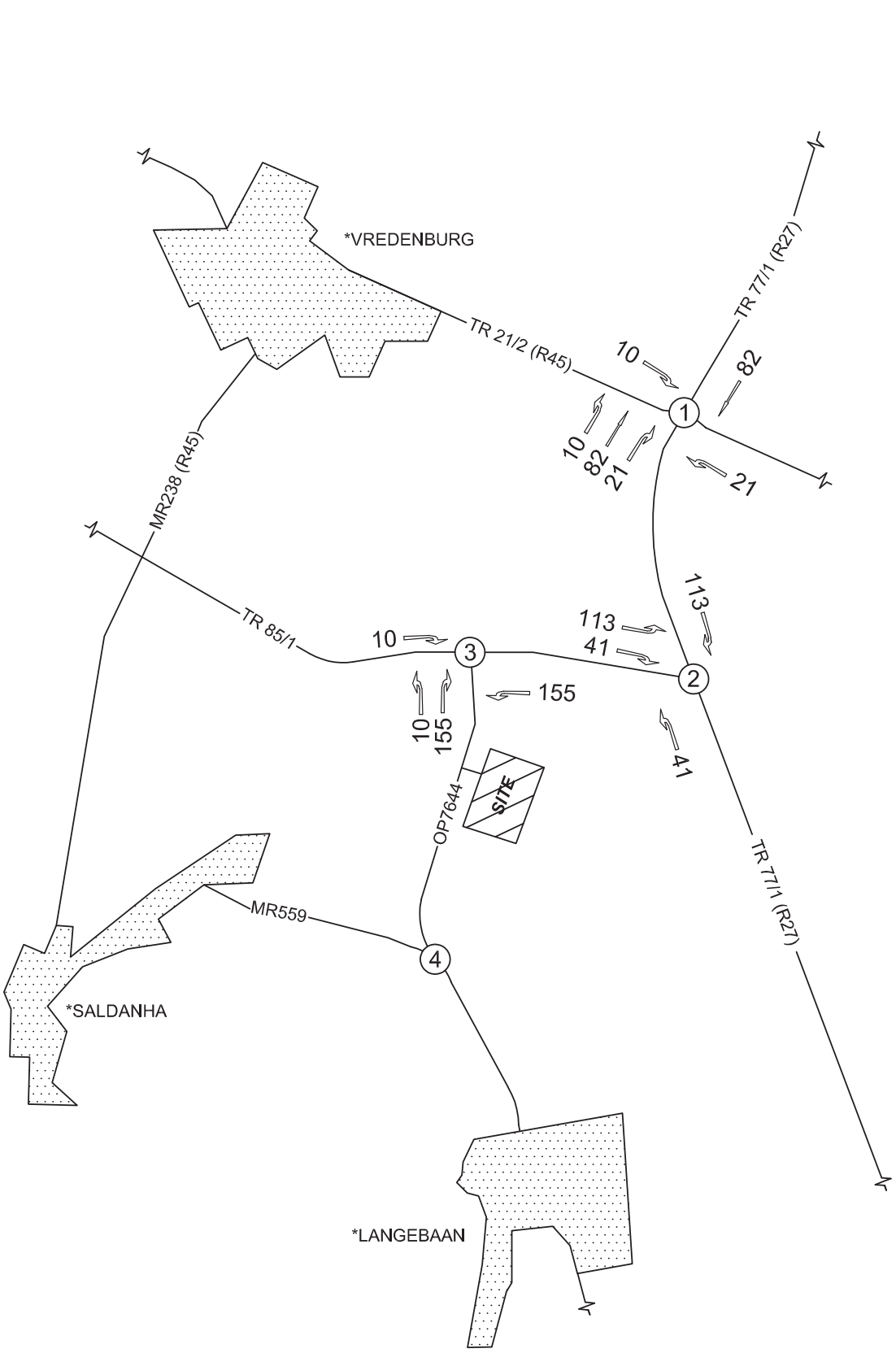
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: SITE TRAFFIC FOR CONSTRUCTION - AM PEAK FLOW

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	10



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

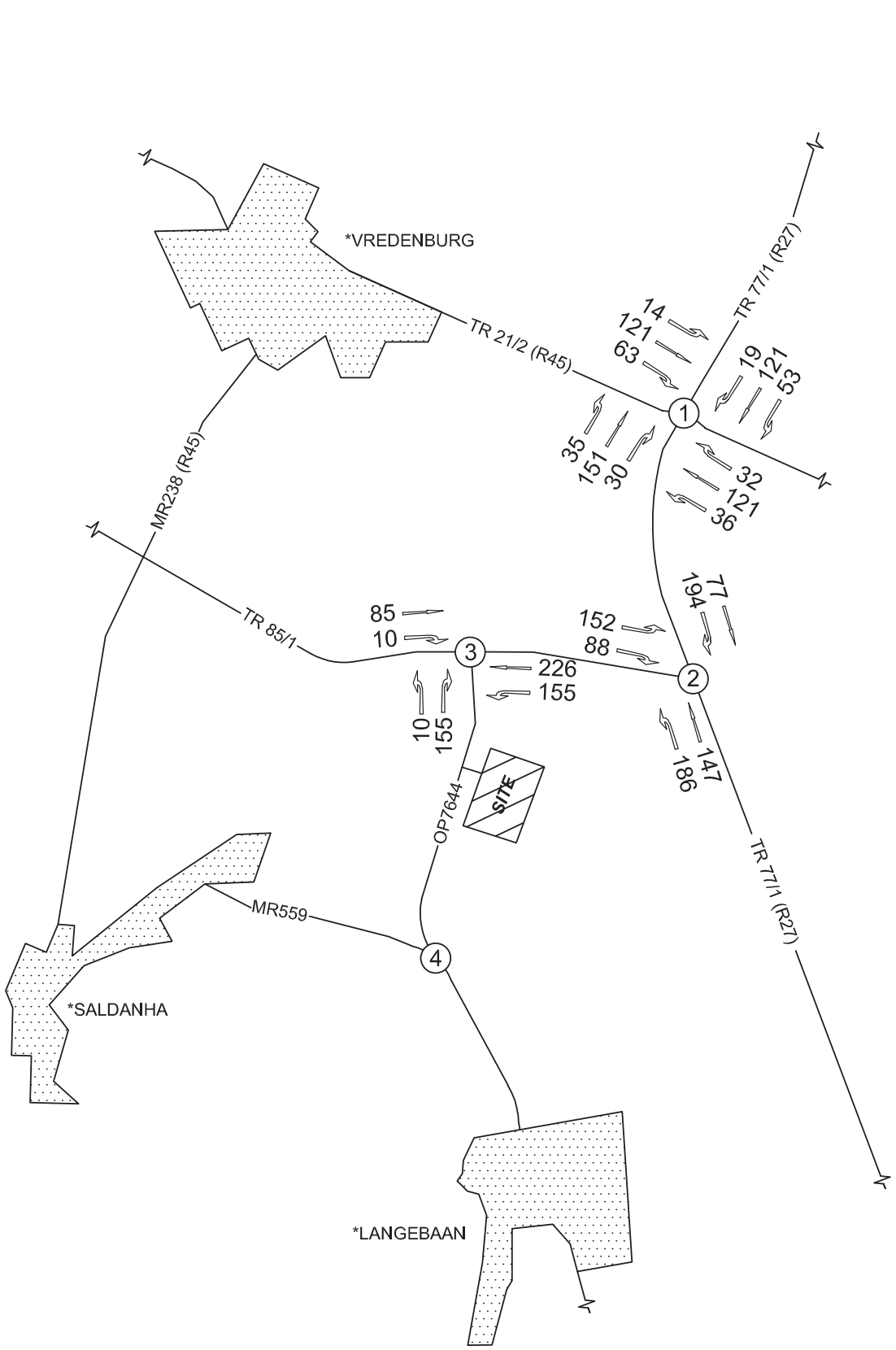
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: SITE TRAFFIC FOR CONSTRUCTION - PM PEAK FLOW

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	11



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

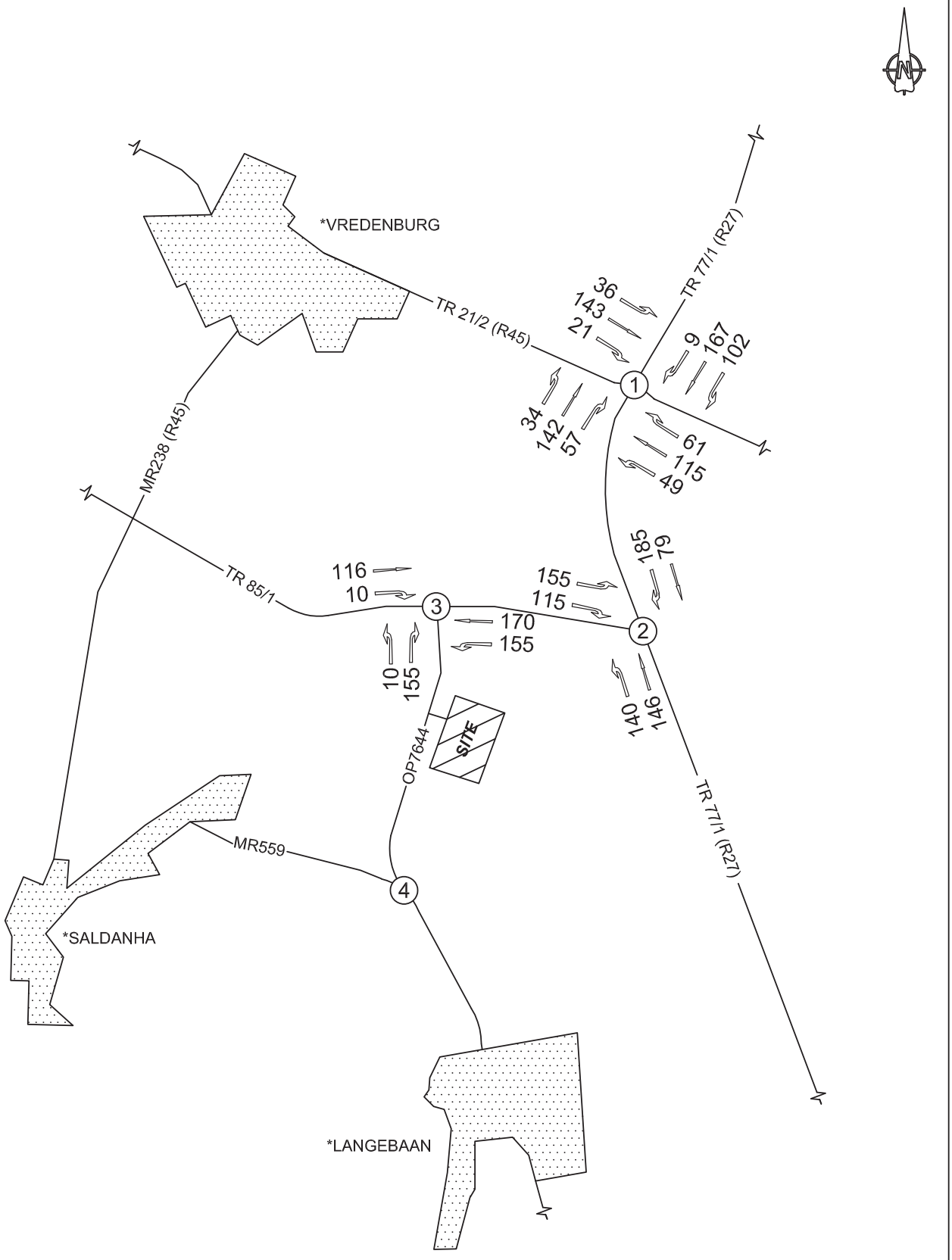
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: FUTURE 2018 AM TRAFFIC FOR CONSTRUCTION

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	12



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

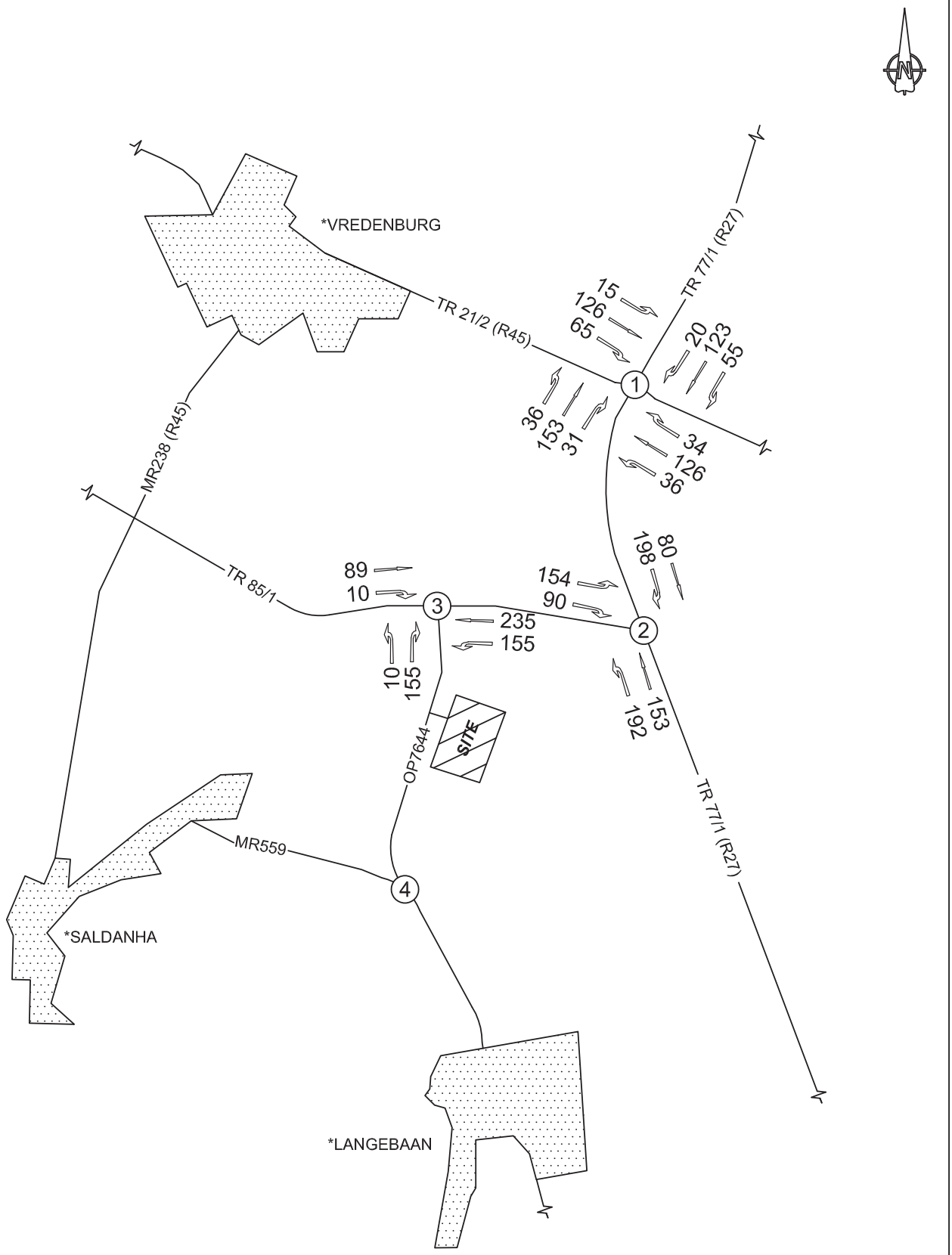
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: FUTURE 2018 PM TRAFFIC FOR CONSTRUCTION

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	13



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

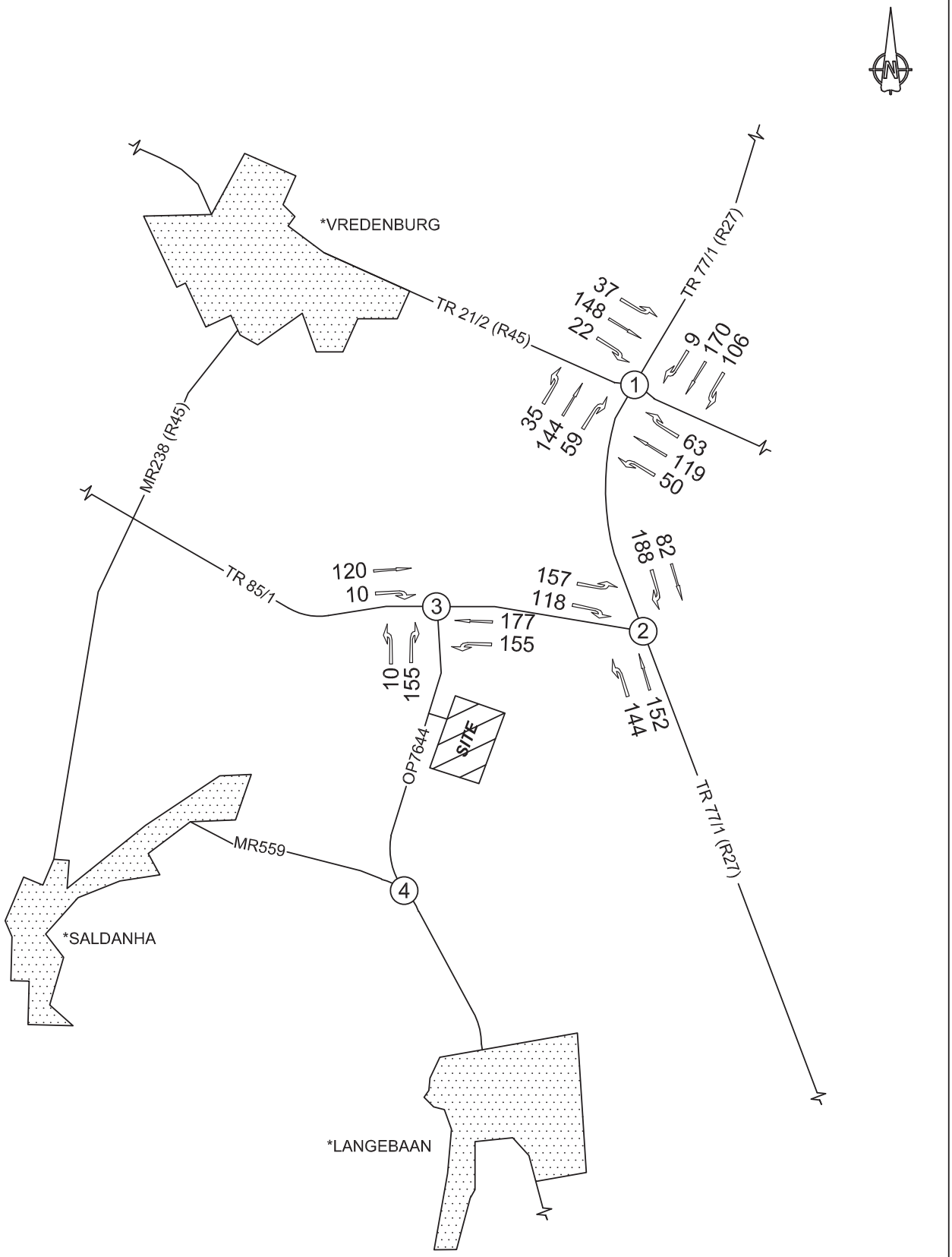
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: FUTURE 2019 AM TRAFFIC FOR CONSTRUCTION

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	14



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

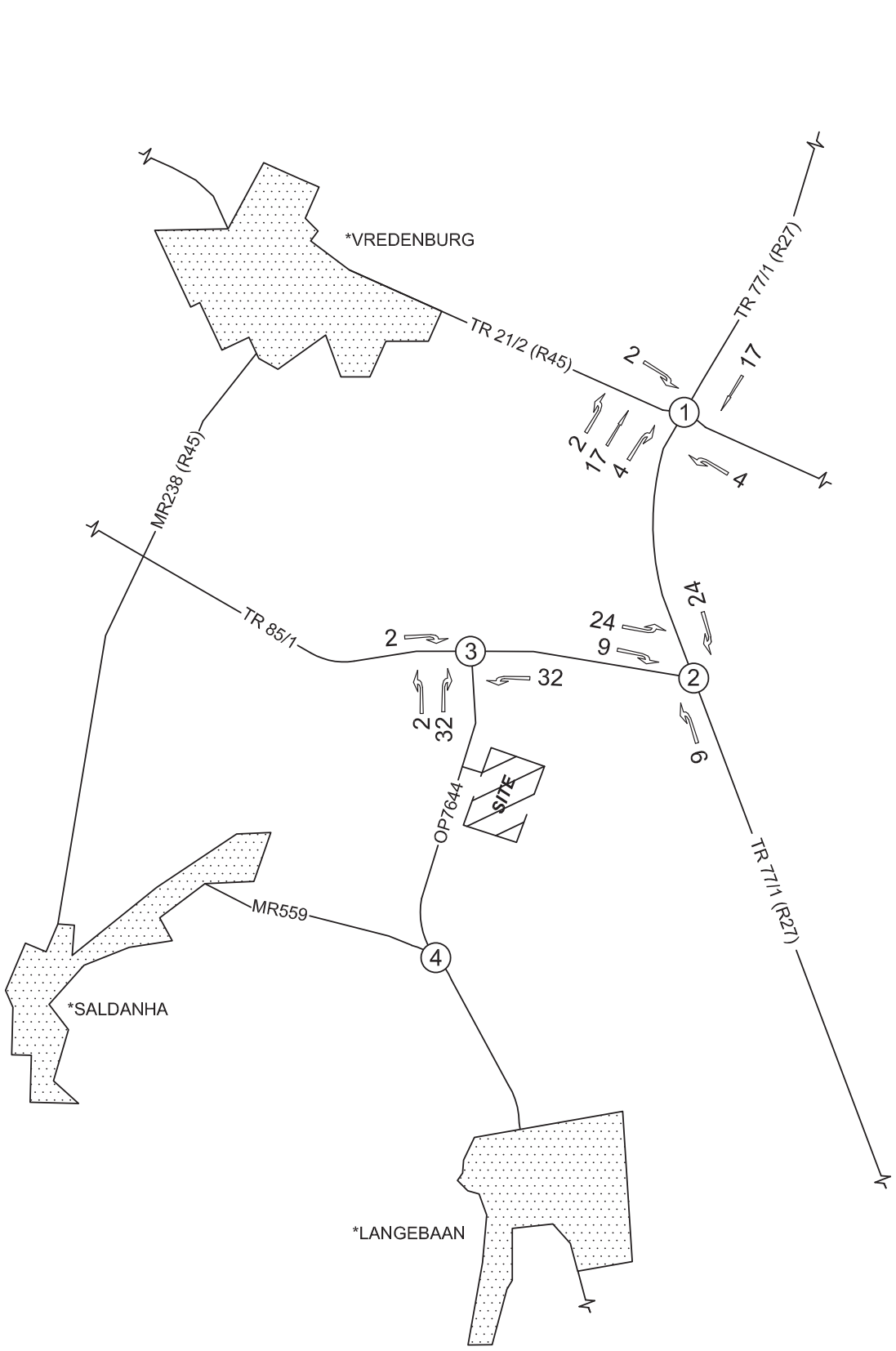
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: FUTURE 2019 PM TRAFFIC FOR CONSTRUCTION

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	15



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

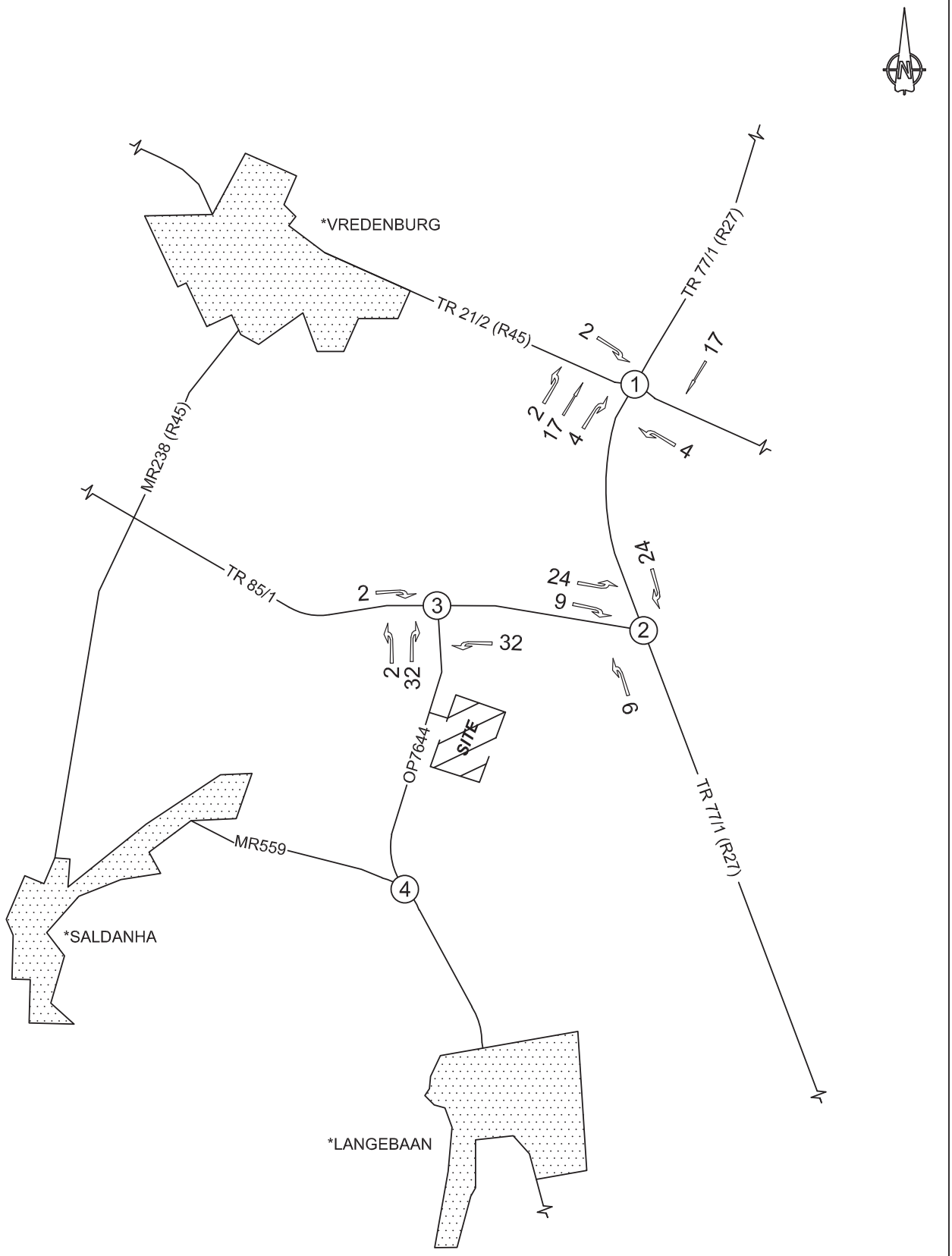
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: SITE TRAFFIC FOR AM PEAK FLOW

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	16



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

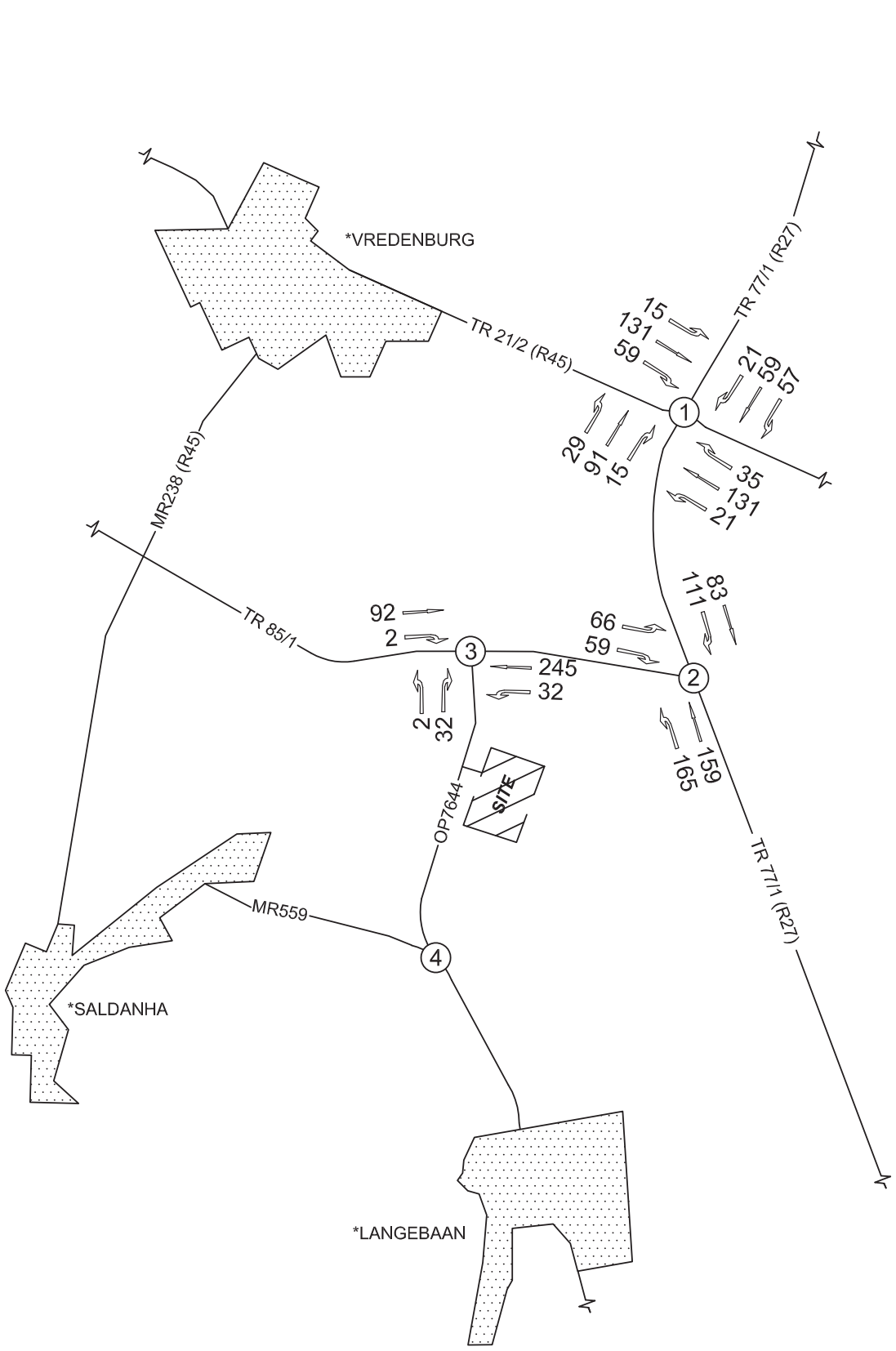
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: SITE TRAFFIC FOR PM PEAK FLOW

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	17



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

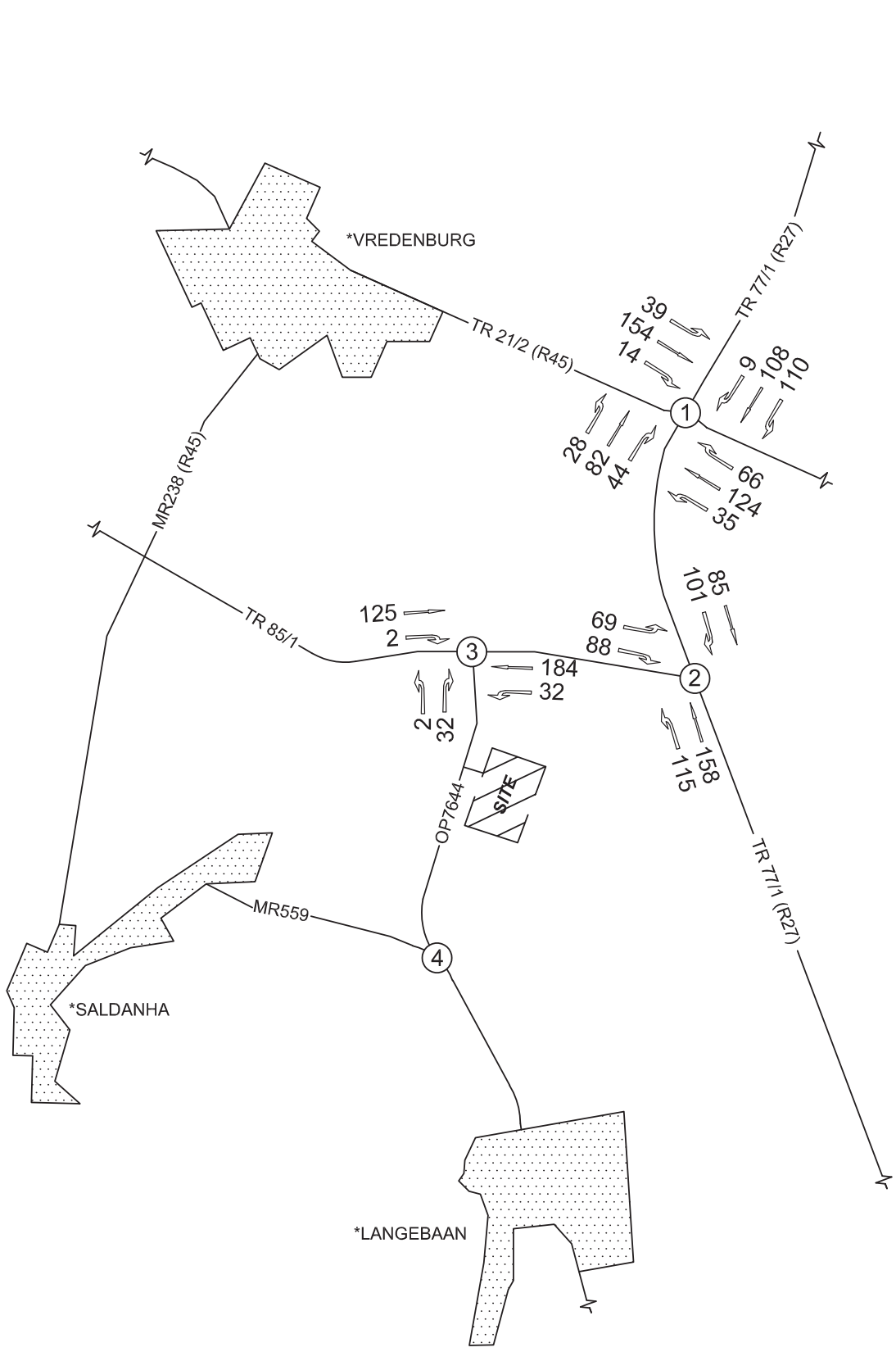
KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

PROJECT: ARCELOR MITTAL

TITLE: FUTURE AM 2020 TRAFFIC FLOW - OPERATIONAL

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	18



DEFINITIONS		LEGEND	
*	TOWN	10	TRAFFIC MOVEMENT
R	REGIONAL ROUTE	①	STOP CONTROLLED INTERSECTION
TR	TRUNK ROAD		EXISTING ROAD
OP	ONDERGESKIKTE PAD		PROPOSED ACCESS
MR	MAIN ROAD		CONTINUING ROAD

KANTEY & TEMPLER
CONSULTING ENGINEERS

DRAWN	DH	JUNE 2016
CHECKED	BAP	JUNE 2016
APPROVED	BAP	JUNE 2016

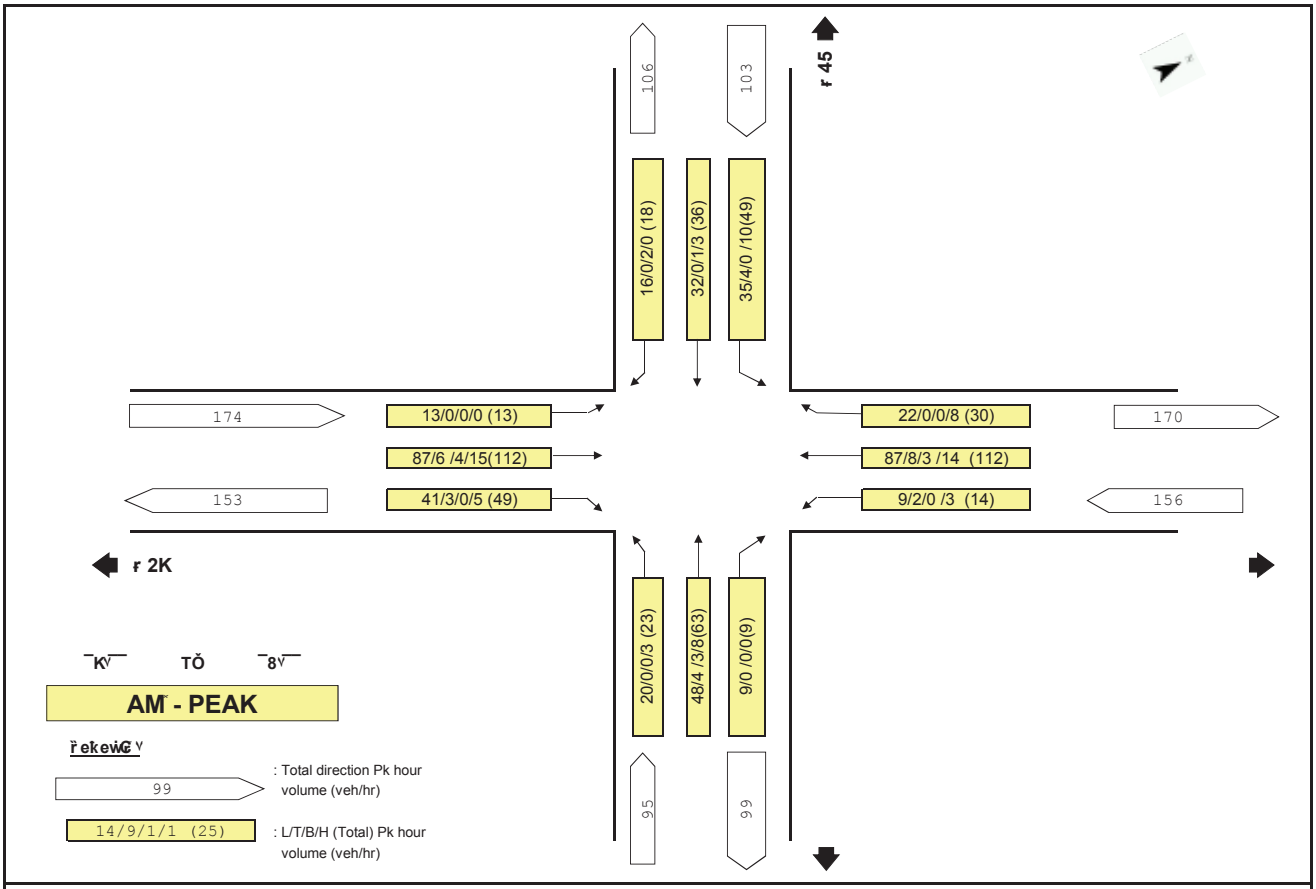
PROJECT: ARCELOR MITTAL

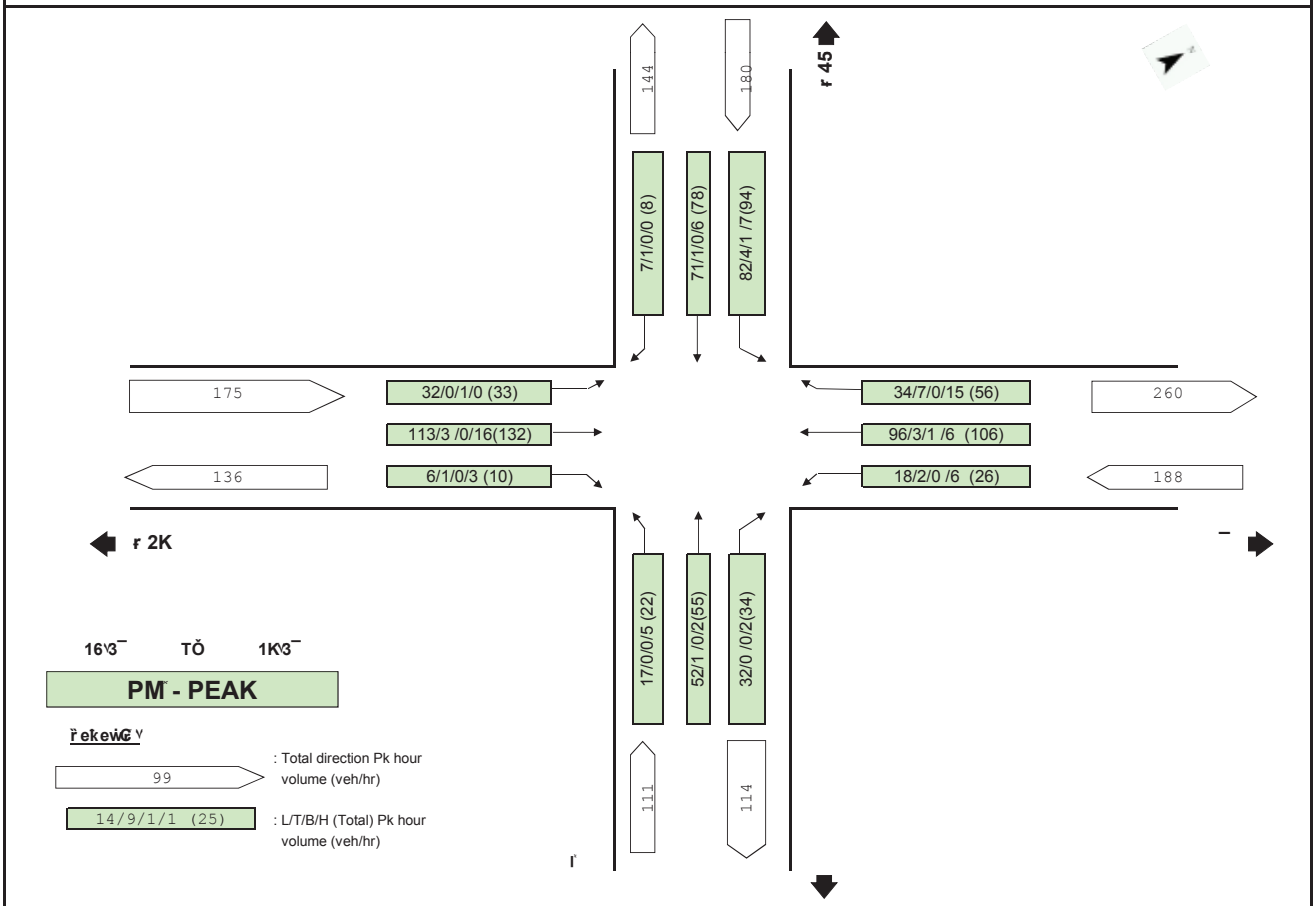
TITLE: FUTURE PM 2020 TRAFFIC FLOW - OPERATIONAL

PROJECT NO.	SCALE	FIGURE
15047R	N.T.S	19

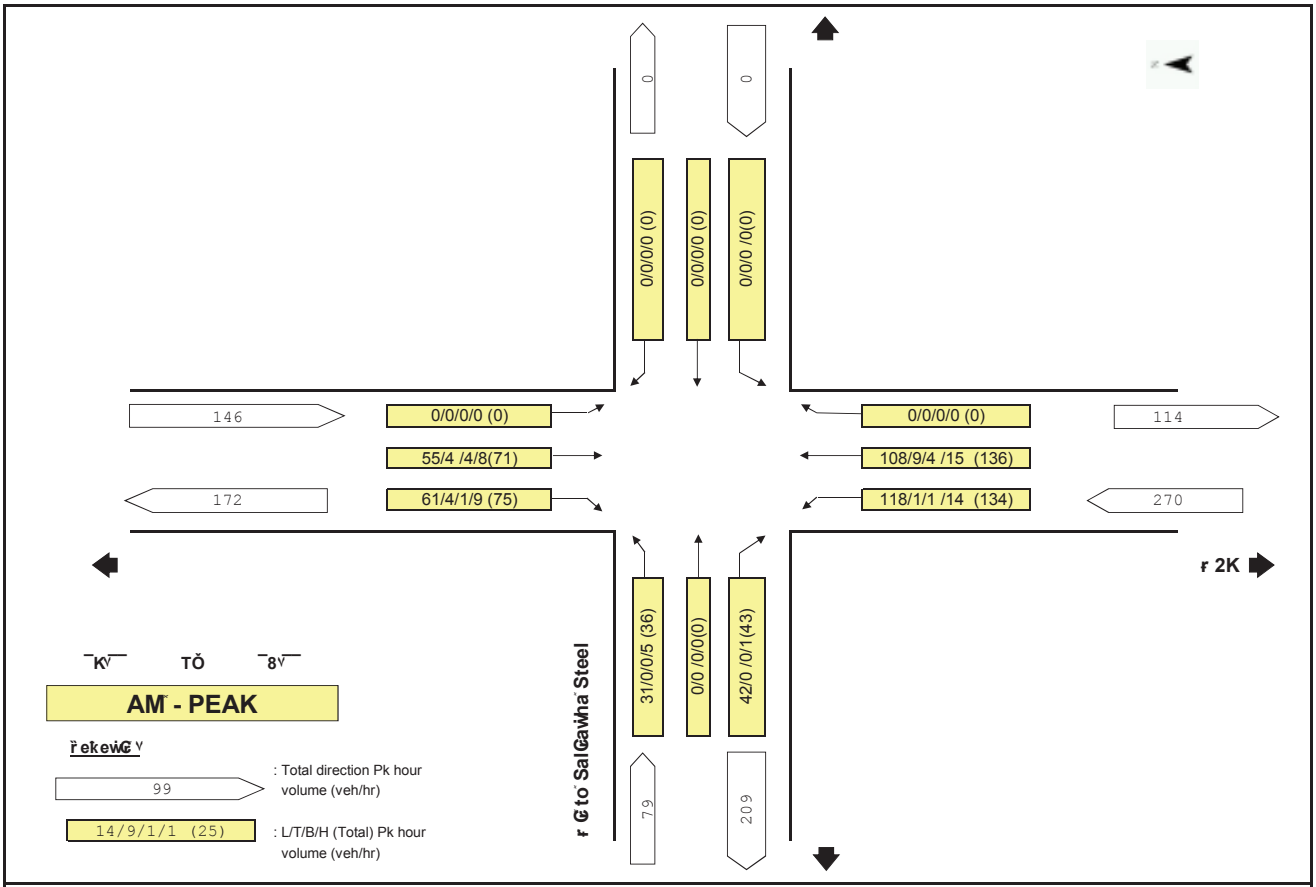
APPENDIX A

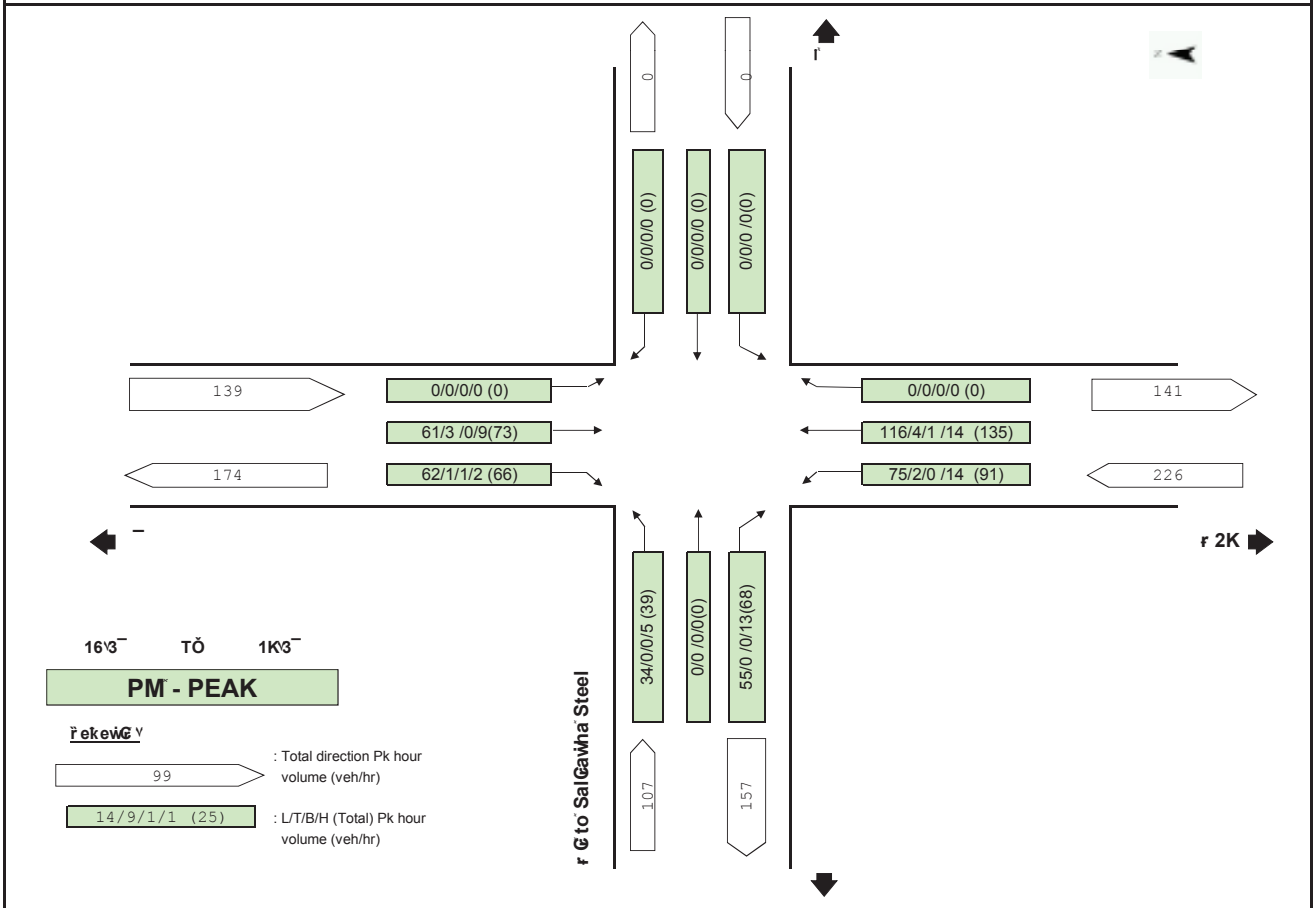
TRAFFIC COUNT DATA


106
103
16/0/2/0 (18)
32/0/1/3 (36)
35/4/0 /10(49)
174
13/0/0/0 (13)
87/6 /4/15(112)
153
41/3/0/5 (49)
22/0/0/8 (30)
87/8/3 /14 (112)
9/2/0 /3 (14)
170
156
20/0/0/3 (23)
48/4 /3/8(63)
9/0 /0/0(9)
95
99
AM - PEAK
: Total direction Pk hour volume (veh/hr)
99
14/9/1/1 (25)
: L/T/B/H (Total) Pk hour volume (veh/hr)


144
180
7/1/0/0 (8)
71/1/0/6 (78)
82/4/1 /7(94)
175
32/0/1/0 (33)
113/3 /0/16(132)
136
6/1/0/3 (10)
34/7/0/15 (56)
96/3/1 /6 (106)
18/2/0 /6 (26)
260
188
17/0/0/5 (22)
52/1 /0/2(55)
32/0 /0/2(34)
111
114
PM - PEAK
: Total direction Pk hour volume (veh/hr)
99
14/9/1/1 (25)
: L/T/B/H (Total) Pk hour volume (veh/hr)

Fikure





	%ite!&e$tiow2 Mr "' ' (Tr KK)1 *r 2K+	Fik !e
	1"#Kr A!$elo! Mittal	

APPENDIX B

SIDRA MOVEMENT SUMMARIES

(COPIES AVAILABLE ON REQUEST)

MOVEMENT SUMMARY

Site: 01 [01AM2016EX]

R27 (TR 77/1) & R45 (TR 21/2)
Existing AM Peak Hour Traffic
2016
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR77/1)											
1	L2	23	0.0	0.015	5.6	LOS A	0.0	0.0	0.00	0.47	58.8
2	T1	63	0.0	0.035	0.0	LOS A	0.1	0.4	0.05	0.11	59.8
3	R2	9	0.0	0.035	5.7	LOS A	0.1	0.4	0.06	0.08	59.4
Approach		95	0.0	0.035	1.9	NA	0.1	0.4	0.04	0.20	59.5
East: R45 (TR21/2)											
4	L2	14	0.0	0.179	8.2	LOS A	0.8	5.6	0.30	0.89	58.1
5	T1	112	0.0	0.179	9.1	LOS A	0.8	5.6	0.30	0.89	51.2
6	R2	30	0.0	0.179	10.3	LOS B	0.8	5.6	0.30	0.89	50.8
Approach		156	0.0	0.179	9.2	LOS A	0.8	5.6	0.30	0.89	53.2
North: R27 (TR 77/1)											
7	L2	49	0.0	0.059	5.7	LOS A	0.2	1.1	0.09	0.36	54.9
8	T1	36	0.0	0.059	0.1	LOS A	0.2	1.1	0.09	0.36	59.2
9	R2	18	0.0	0.059	5.8	LOS A	0.2	1.1	0.09	0.36	54.6
Approach		103	0.0	0.059	3.8	NA	0.2	1.1	0.09	0.36	58.0
West: R45 (TR 21/2)											
10	L2	13	0.0	0.208	8.0	LOS A	0.9	6.6	0.13	0.96	50.8
11	T1	112	0.0	0.208	9.3	LOS A	0.9	6.6	0.13	0.96	50.7
12	R2	49	0.0	0.208	10.5	LOS B	0.9	6.6	0.13	0.96	57.9
Approach		174	0.0	0.208	9.5	LOS A	0.9	6.6	0.13	0.96	55.3
All Vehicles		528	0.0	0.208	6.9	NA	0.9	6.6	0.16	0.68	56.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [01AM2018FU - CONSTRUCTION]

R27 (TR 77/1) & R45 (TR 21/2)
Future AM Peak Hour Traffic during Plant Construction Phase
2018
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR77/1)											
1	L2	35	0.0	0.035	5.6	LOS A	0.0	0.0	0.00	0.31	59.1
2	T1	151	0.0	0.081	0.1	LOS A	0.2	1.4	0.10	0.16	59.6
3	R2	30	0.0	0.081	6.0	LOS A	0.2	1.4	0.13	0.12	59.2
Approach		216	0.0	0.081	1.8	NA	0.2	1.4	0.09	0.18	59.5
East: R45 (TR21/2)											
4	L2	36	0.0	0.273	8.6	LOS A	1.2	8.6	0.47	0.93	57.8
5	T1	121	0.0	0.273	11.4	LOS B	1.2	8.6	0.47	0.93	50.0
6	R2	32	0.0	0.273	13.5	LOS B	1.2	8.6	0.47	0.93	49.7
Approach		189	0.0	0.273	11.2	LOS B	1.2	8.6	0.47	0.93	54.0
North: R27 (TR 77/1)											
7	L2	53	0.0	0.107	5.8	LOS A	0.2	1.5	0.09	0.21	56.1
8	T1	121	0.0	0.107	0.2	LOS A	0.2	1.5	0.09	0.21	59.5
9	R2	19	0.0	0.107	6.3	LOS A	0.2	1.5	0.09	0.21	55.9
Approach		193	0.0	0.107	2.3	NA	0.2	1.5	0.09	0.21	59.2
West: R45 (TR 21/2)											
10	L2	14	0.0	0.324	8.6	LOS A	1.6	11.5	0.42	0.98	49.1
11	T1	121	0.0	0.324	12.1	LOS B	1.6	11.5	0.42	0.98	49.0
12	R2	63	0.0	0.324	14.7	LOS B	1.6	11.5	0.42	0.98	57.5
Approach		198	0.0	0.324	12.7	LOS B	1.6	11.5	0.42	0.98	54.7
All Vehicles		796	0.0	0.324	6.9	NA	1.6	11.5	0.26	0.56	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [01AM2019FU - CONSTRUCTION]

R27 (TR 77/1) & R45 (TR 21/2)
Future AM Peak Hour Traffic during Plant Construction Phase
2019
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR77/1)											
1	L2	36	0.0	0.036	5.6	LOS A	0.0	0.0	0.00	0.31	59.1
2	T1	153	0.0	0.083	0.1	LOS A	0.2	1.4	0.10	0.16	59.6
3	R2	31	0.0	0.083	6.0	LOS A	0.2	1.4	0.13	0.12	59.2
Approach		220	0.0	0.083	1.9	NA	0.2	1.4	0.09	0.18	59.5
East: R45 (TR21/2)											
4	L2	36	0.0	0.288	8.6	LOS A	1.3	9.3	0.49	0.94	57.8
5	T1	126	0.0	0.288	11.6	LOS B	1.3	9.3	0.49	0.94	49.9
6	R2	34	0.0	0.288	13.9	LOS B	1.3	9.3	0.49	0.94	49.5
Approach		196	0.0	0.288	11.5	LOS B	1.3	9.3	0.49	0.94	53.8
North: R27 (TR 77/1)											
7	L2	55	0.0	0.110	5.8	LOS A	0.2	1.5	0.10	0.21	56.1
8	T1	123	0.0	0.110	0.2	LOS A	0.2	1.5	0.10	0.21	59.5
9	R2	20	0.0	0.110	6.3	LOS A	0.2	1.5	0.10	0.21	55.8
Approach		198	0.0	0.110	2.4	NA	0.2	1.5	0.10	0.21	59.1
West: R45 (TR 21/2)											
10	L2	15	0.0	0.341	8.8	LOS A	1.8	12.5	0.43	0.99	48.9
11	T1	126	0.0	0.341	12.4	LOS B	1.8	12.5	0.43	0.99	48.8
12	R2	65	0.0	0.341	15.1	LOS C	1.8	12.5	0.43	0.99	57.4
Approach		206	0.0	0.341	13.0	LOS B	1.8	12.5	0.43	0.99	54.6
All Vehicles		820	0.0	0.341	7.1	NA	1.8	12.5	0.27	0.57	57.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [01AM2020FU - OPERATIONAL]

R27 (TR 77/1) & R45 (TR 21/2)
Future AM Peak Hour Traffic for the Plant Operational Phase
2020
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR77/1)											
1	L2	29	0.0	0.022	5.6	LOS A	0.0	0.0	0.00	0.42	58.9
2	T1	91	0.0	0.050	0.1	LOS A	0.1	0.7	0.07	0.14	59.7
3	R2	15	0.0	0.050	5.8	LOS A	0.1	0.7	0.08	0.10	59.3
Approach		135	0.0	0.050	1.9	NA	0.1	0.7	0.06	0.19	59.5
East: R45 (TR21/2)											
4	L2	21	0.0	0.234	8.3	LOS A	1.1	7.5	0.38	0.90	58.0
5	T1	131	0.0	0.234	9.8	LOS A	1.1	7.5	0.38	0.90	50.7
6	R2	35	0.0	0.234	11.5	LOS B	1.1	7.5	0.38	0.90	50.4
Approach		187	0.0	0.234	10.0	LOS A	1.1	7.5	0.38	0.90	53.3
North: R27 (TR 77/1)											
7	L2	57	0.0	0.077	5.7	LOS A	0.2	1.4	0.10	0.31	55.2
8	T1	59	0.0	0.077	0.2	LOS A	0.2	1.4	0.10	0.31	59.3
9	R2	21	0.0	0.077	6.0	LOS A	0.2	1.4	0.10	0.31	55.0
Approach		137	0.0	0.077	3.4	NA	0.2	1.4	0.10	0.31	58.4
West: R45 (TR 21/2)											
10	L2	15	0.0	0.273	8.1	LOS A	1.3	8.9	0.24	0.95	50.3
11	T1	131	0.0	0.273	10.1	LOS B	1.3	8.9	0.24	0.95	50.2
12	R2	59	0.0	0.273	11.9	LOS B	1.3	8.9	0.24	0.95	57.8
Approach		205	0.0	0.273	10.4	LOS B	1.3	8.9	0.24	0.95	55.1
All Vehicles		664	0.0	0.273	7.1	NA	1.3	8.9	0.21	0.65	57.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [01PM2016EX]

R27 (TR 77/1) & R45 (TR 21/2)
Existing AM Peak Hour Traffic
2016
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR77/1)											
1	L2	22	0.0	0.019	5.6	LOS A	0.0	0.0	0.00	0.36	59.0
2	T1	55	0.0	0.044	0.3	LOS A	0.2	1.3	0.17	0.29	59.4
3	R2	34	0.0	0.044	6.0	LOS A	0.2	1.3	0.23	0.26	58.9
Approach		111	0.0	0.044	3.1	NA	0.2	1.3	0.16	0.29	59.2
East: R45 (TR21/2)											
4	L2	26	0.0	0.248	8.4	LOS A	1.1	7.9	0.40	0.91	57.9
5	T1	106	0.0	0.248	9.9	LOS A	1.1	7.9	0.40	0.91	50.5
6	R2	56	0.0	0.248	12.0	LOS B	1.1	7.9	0.40	0.91	50.2
Approach		188	0.0	0.248	10.3	LOS B	1.1	7.9	0.40	0.91	53.6
North: R27 (TR 77/1)											
7	L2	94	0.0	0.097	5.6	LOS A	0.1	0.6	0.03	0.33	55.5
8	T1	78	0.0	0.097	0.0	LOS A	0.1	0.6	0.03	0.33	59.4
9	R2	8	0.0	0.097	5.8	LOS A	0.1	0.6	0.03	0.33	55.2
Approach		180	0.0	0.097	3.2	NA	0.1	0.6	0.03	0.33	58.6
West: R45 (TR 21/2)											
10	L2	33	0.0	0.209	8.1	LOS A	0.9	6.6	0.14	0.96	50.6
11	T1	132	0.0	0.209	10.2	LOS B	0.9	6.6	0.14	0.96	50.5
12	R2	10	0.0	0.209	11.2	LOS B	0.9	6.6	0.14	0.96	57.9
Approach		175	0.0	0.209	9.9	LOS A	0.9	6.6	0.14	0.96	52.1
All Vehicles		654	0.0	0.248	7.0	NA	1.1	7.9	0.19	0.66	56.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [01PM2018FU - CONSTRUCTION]

R27 (TR 77/1) & R45 (TR 21/2)
Future PM Peak Hour Traffic during Plant Construction Phase
2018
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR77/1)											
1	L2	34	0.0	0.040	5.6	LOS A	0.0	0.0	0.00	0.27	59.2
2	T1	142	0.0	0.093	0.4	LOS A	0.4	2.6	0.19	0.24	59.4
3	R2	57	0.0	0.093	6.4	LOS A	0.4	2.6	0.27	0.22	59.0
Approach		233	0.0	0.093	2.6	NA	0.4	2.6	0.18	0.24	59.3
East: R45 (TR21/2)											
4	L2	49	0.0	0.384	9.9	LOS A	2.2	15.1	0.57	1.01	57.4
5	T1	115	0.0	0.384	13.8	LOS B	2.2	15.1	0.57	1.01	48.3
6	R2	61	0.0	0.384	17.5	LOS C	2.2	15.1	0.57	1.01	48.0
Approach		225	0.0	0.384	13.9	LOS B	2.2	15.1	0.57	1.01	53.2
North: R27 (TR 77/1)											
7	L2	102	0.0	0.148	5.6	LOS A	0.1	0.8	0.03	0.23	56.2
8	T1	167	0.0	0.148	0.1	LOS A	0.1	0.8	0.03	0.23	59.6
9	R2	9	0.0	0.148	6.3	LOS A	0.1	0.8	0.03	0.23	56.0
Approach		278	0.0	0.148	2.3	NA	0.1	0.8	0.03	0.23	59.2
West: R45 (TR 21/2)											
10	L2	36	0.0	0.326	8.7	LOS A	1.7	11.6	0.35	0.98	48.8
11	T1	143	0.0	0.326	13.7	LOS B	1.7	11.6	0.35	0.98	48.7
12	R2	21	0.0	0.326	15.9	LOS C	1.7	11.6	0.35	0.98	57.4
Approach		200	0.0	0.326	13.0	LOS B	1.7	11.6	0.35	0.98	51.6
All Vehicles		936	0.0	0.384	7.5	NA	2.2	15.1	0.27	0.58	57.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [01PM2019FU - CONSTRUCTION]

R27 (TR 77/1) & R45 (TR 21/2)
Future PM Peak Hour Traffic during Plant Construction Phase
2019
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR77/1)											
1	L2	35	0.0	0.041	5.6	LOS A	0.0	0.0	0.00	0.27	59.2
2	T1	144	0.0	0.095	0.4	LOS A	0.4	2.7	0.20	0.24	59.4
3	R2	59	0.0	0.095	6.4	LOS A	0.4	2.7	0.28	0.23	59.0
Approach		238	0.0	0.095	2.7	NA	0.4	2.7	0.19	0.24	59.3
East: R45 (TR21/2)											
4	L2	50	0.0	0.404	10.1	LOS B	2.3	16.3	0.58	1.02	57.3
5	T1	119	0.0	0.404	14.2	LOS B	2.3	16.3	0.58	1.02	48.1
6	R2	63	0.0	0.404	18.2	LOS C	2.3	16.3	0.58	1.02	47.7
Approach		232	0.0	0.404	14.4	LOS B	2.3	16.3	0.58	1.02	53.0
North: R27 (TR 77/1)											
7	L2	106	0.0	0.152	5.6	LOS A	0.1	0.8	0.03	0.23	56.2
8	T1	170	0.0	0.152	0.1	LOS A	0.1	0.8	0.03	0.23	59.5
9	R2	9	0.0	0.152	6.3	LOS A	0.1	0.8	0.03	0.23	56.0
Approach		285	0.0	0.152	2.3	NA	0.1	0.8	0.03	0.23	59.1
West: R45 (TR 21/2)											
10	L2	37	0.0	0.344	8.9	LOS A	1.8	12.7	0.36	0.98	48.5
11	T1	148	0.0	0.344	14.1	LOS B	1.8	12.7	0.36	0.98	48.4
12	R2	22	0.0	0.344	16.3	LOS C	1.8	12.7	0.36	0.98	57.3
Approach		207	0.0	0.344	13.4	LOS B	1.8	12.7	0.36	0.98	51.5
All Vehicles		962	0.0	0.404	7.7	NA	2.3	16.3	0.27	0.59	57.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 01 [01PM2020FU - OPERATIONAL]

R27 (TR 77/1) & R45 (TR 21/2)
Future PM Peak Hour Traffic for the Plant Operational Phase
2020
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR77/1)											
1	L2	28	0.0	0.026	5.6	LOS A	0.0	0.0	0.00	0.33	59.1
2	T1	82	0.0	0.061	0.3	LOS A	0.3	1.8	0.19	0.27	59.4
3	R2	44	0.0	0.061	6.1	LOS A	0.3	1.8	0.26	0.25	58.9
Approach		154	0.0	0.061	2.9	NA	0.3	1.8	0.17	0.28	59.2
East: R45 (TR21/2)											
4	L2	35	0.0	0.334	8.9	LOS A	1.7	12.1	0.49	0.95	57.7
5	T1	124	0.0	0.334	11.3	LOS B	1.7	12.1	0.49	0.95	49.6
6	R2	66	0.0	0.334	14.4	LOS B	1.7	12.1	0.49	0.95	49.3
Approach		225	0.0	0.334	11.8	LOS B	1.7	12.1	0.49	0.95	53.2
North: R27 (TR 77/1)											
7	L2	110	0.0	0.122	5.6	LOS A	0.1	0.7	0.03	0.30	55.7
8	T1	108	0.0	0.122	0.0	LOS A	0.1	0.7	0.03	0.30	59.4
9	R2	9	0.0	0.122	6.0	LOS A	0.1	0.7	0.03	0.30	55.4
Approach		227	0.0	0.122	3.0	NA	0.1	0.7	0.03	0.30	58.7
West: R45 (TR 21/2)											
10	L2	39	0.0	0.278	8.1	LOS A	1.3	9.0	0.21	0.95	50.0
11	T1	154	0.0	0.278	11.4	LOS B	1.3	9.0	0.21	0.95	49.9
12	R2	14	0.0	0.278	12.8	LOS B	1.3	9.0	0.21	0.95	57.7
Approach		207	0.0	0.278	10.9	LOS B	1.3	9.0	0.21	0.95	51.8
All Vehicles		813	0.0	0.334	7.4	NA	1.7	12.1	0.23	0.64	56.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 02 [02AM2016EX]

R27 (TR 77/1) & TR 85/1
Existing AM Peak Traffic
2016
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR 77/1)											
1	L2	134	0.0	0.072	5.5	LOS A	0.0	0.0	0.00	0.58	58.5
2	T1	136	0.0	0.070	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		270	0.0	0.072	2.8	NA	0.0	0.0	0.00	0.29	59.3
North: R27 (TR 77/1)											
8	T1	71	0.0	0.036	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	75	0.0	0.068	6.6	LOS A	0.3	1.9	0.36	0.61	59.0
Approach		146	0.0	0.068	3.4	NA	0.3	1.9	0.18	0.32	59.4
West: TR 85/1											
10	L2	36	0.0	0.104	8.7	LOS A	0.4	2.8	0.34	0.90	58.8
12	R2	43	0.0	0.104	11.0	LOS B	0.4	2.8	0.34	0.90	57.7
Approach		79	0.0	0.104	9.9	LOS A	0.4	2.8	0.34	0.90	58.4
All Vehicles		495	0.0	0.104	4.1	NA	0.4	2.8	0.11	0.39	59.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 02 [02AM2018FU - CONSTRUCTION]

R27 (TR 77/1) & TR 85/1
Future AM Peak Traffic for the Plant Construction Phase
2018
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR 77/1)											
1	L2	186	0.0	0.100	5.6	LOS A	0.0	0.0	0.00	0.58	58.5
2	T1	147	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		333	0.0	0.100	3.1	NA	0.0	0.0	0.00	0.32	59.2
North: R27 (TR 77/1)											
8	T1	77	0.0	0.039	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	194	0.0	0.187	7.1	LOS A	0.8	5.6	0.43	0.67	59.0
Approach		271	0.0	0.187	5.1	NA	0.8	5.6	0.31	0.48	59.2
West: TR 85/1											
10	L2	152	0.0	0.328	9.0	LOS A	1.5	10.5	0.39	0.92	58.7
12	R2	88	0.0	0.328	14.6	LOS B	1.5	10.5	0.39	0.92	57.5
Approach		240	0.0	0.328	11.1	LOS B	1.5	10.5	0.39	0.92	58.4
All Vehicles		844	0.0	0.328	6.0	NA	1.5	10.5	0.21	0.54	58.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 02 [02AM2019FU - CONSTRUCTION]

R27 (TR 77/1) & TR 85/1
Future AM Peak Traffic for the Plant Construction Phase
2019
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR 77/1)											
1	L2	192	0.0	0.103	5.6	LOS A	0.0	0.0	0.00	0.58	58.5
2	T1	153	0.0	0.078	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		345	0.0	0.103	3.1	NA	0.0	0.0	0.00	0.32	59.2
North: R27 (TR 77/1)											
8	T1	80	0.0	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	198	0.0	0.193	7.1	LOS A	0.8	5.8	0.44	0.68	59.0
Approach		278	0.0	0.193	5.1	NA	0.8	5.8	0.32	0.48	59.2
West: TR 85/1											
10	L2	154	0.0	0.340	9.2	LOS A	1.6	11.4	0.41	0.92	58.7
12	R2	90	0.0	0.340	15.0	LOS C	1.6	11.4	0.41	0.92	57.5
Approach		244	0.0	0.340	11.3	LOS B	1.6	11.4	0.41	0.92	58.4
All Vehicles		867	0.0	0.340	6.1	NA	1.6	11.4	0.22	0.54	58.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 02 [02AM2020FU - OPERATIONAL]

R27 (TR 77/1) & TR 85/1
Future AM Peak Traffic for the Plant Operational Phase
2020
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR 77/1)											
1	L2	165	0.0	0.089	5.5	LOS A	0.0	0.0	0.00	0.58	58.5
2	T1	159	0.0	0.082	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		324	0.0	0.089	2.8	NA	0.0	0.0	0.00	0.29	59.3
North: R27 (TR 77/1)											
8	T1	83	0.0	0.043	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	111	0.0	0.106	6.9	LOS A	0.4	3.0	0.40	0.65	59.0
Approach		194	0.0	0.106	3.9	NA	0.4	3.0	0.23	0.37	59.3
West: TR 85/1											
10	L2	66	0.0	0.173	8.9	LOS A	0.7	4.8	0.38	0.91	58.8
12	R2	59	0.0	0.173	12.4	LOS B	0.7	4.8	0.38	0.91	57.6
Approach		125	0.0	0.173	10.5	LOS B	0.7	4.8	0.38	0.91	58.4
All Vehicles		643	0.0	0.173	4.7	NA	0.7	4.8	0.14	0.44	59.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 02 [02PM2016EX]

R27 (TR 77/1) & TR 85/1
Existing AM Peak Traffic
2016
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR 77/1)											
1	L2	91	0.0	0.049	5.5	LOS A	0.0	0.0	0.00	0.58	58.5
2	T1	135	0.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		226	0.0	0.069	2.2	NA	0.0	0.0	0.00	0.23	59.4
North: R27 (TR 77/1)											
8	T1	73	0.0	0.037	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	66	0.0	0.057	6.3	LOS A	0.2	1.6	0.32	0.60	59.0
Approach		139	0.0	0.057	3.0	NA	0.2	1.6	0.15	0.28	59.4
West: TR 85/1											
10	L2	39	0.0	0.142	8.7	LOS A	0.6	3.9	0.37	0.90	58.8
12	R2	68	0.0	0.142	10.8	LOS B	0.6	3.9	0.37	0.90	57.7
Approach		107	0.0	0.142	10.0	LOS B	0.6	3.9	0.37	0.90	58.3
All Vehicles		472	0.0	0.142	4.2	NA	0.6	3.9	0.13	0.40	59.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 02 [02PM2018FU - CONSTRUCTION]

R27 (TR 77/1) & TR 85/1
Future PM Peak Traffic for the Plant Construction Phase
2018
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR 77/1)											
1	L2	140	0.0	0.075	5.5	LOS A	0.0	0.0	0.00	0.58	58.5
2	T1	146	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		286	0.0	0.075	2.7	NA	0.0	0.0	0.00	0.28	59.3
North: R27 (TR 77/1)											
8	T1	79	0.0	0.041	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	185	0.0	0.170	6.8	LOS A	0.7	5.1	0.40	0.65	59.0
Approach		264	0.0	0.170	4.8	NA	0.7	5.1	0.28	0.45	59.2
West: TR 85/1											
10	L2	155	0.0	0.376	9.4	LOS A	2.0	14.1	0.42	0.94	58.6
12	R2	115	0.0	0.376	14.6	LOS B	2.0	14.1	0.42	0.94	57.4
Approach		270	0.0	0.376	11.6	LOS B	2.0	14.1	0.42	0.94	58.3
All Vehicles		820	0.0	0.376	6.3	NA	2.0	14.1	0.23	0.55	58.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 02 [02PM2019FU - CONSTRUCTION]

R27 (TR 77/1) & TR 85/1
Future PM Peak Traffic for the Plant Operational Phase
2019
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR 77/1)											
1	L2	144	0.0	0.078	5.5	LOS A	0.0	0.0	0.00	0.58	58.5
2	T1	152	0.0	0.078	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		296	0.0	0.078	2.7	NA	0.0	0.0	0.00	0.28	59.3
North: R27 (TR 77/1)											
8	T1	82	0.0	0.042	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	188	0.0	0.174	6.8	LOS A	0.7	5.2	0.41	0.65	59.0
Approach		270	0.0	0.174	4.8	NA	0.7	5.2	0.28	0.45	59.2
West: TR 85/1											
10	L2	157	0.0	0.389	9.6	LOS A	2.2	15.2	0.43	0.95	58.6
12	R2	118	0.0	0.389	15.1	LOS C	2.2	15.2	0.43	0.95	57.4
Approach		275	0.0	0.389	11.9	LOS B	2.2	15.2	0.43	0.95	58.3
All Vehicles		841	0.0	0.389	6.4	NA	2.2	15.2	0.23	0.55	58.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 02 [02PM2020FU - OPERATIONAL]

R27 (TR 77/1) & TR 85/1
Future PM Peak Traffic for the Plant Operational Phase
2020
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: R27 (TR 77/1)											
1	L2	115	0.0	0.062	5.5	LOS A	0.0	0.0	0.00	0.58	58.5
2	T1	158	0.0	0.081	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		273	0.0	0.081	2.3	NA	0.0	0.0	0.00	0.24	59.4
North: R27 (TR 77/1)											
8	T1	85	0.0	0.044	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
9	R2	101	0.0	0.091	6.6	LOS A	0.4	2.6	0.37	0.62	59.0
Approach		186	0.0	0.091	3.6	NA	0.4	2.6	0.20	0.34	59.3
West: TR 85/1											
10	L2	69	0.0	0.221	8.9	LOS A	0.9	6.3	0.41	0.92	58.7
12	R2	88	0.0	0.221	12.1	LOS B	0.9	6.3	0.41	0.92	57.6
Approach		157	0.0	0.221	10.7	LOS B	0.9	6.3	0.41	0.92	58.3
All Vehicles		616	0.0	0.221	4.8	NA	0.9	6.3	0.17	0.44	59.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 03 [03AM2018FU - CONSTRUCTION]

TR 85/1 & OP 7644
Future AM Peak Traffic for the Plant Construction Phase
2018
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: OP 7644											
1	L2	10	0.0	0.338	10.2	LOS B	1.7	11.7	0.60	1.03	48.3
2	T1	1	0.0	0.338	13.9	LOS B	1.7	11.7	0.60	1.03	48.3
3	R2	155	0.0	0.338	14.5	LOS B	1.7	11.7	0.60	1.03	57.0
Approach		166	0.0	0.338	14.3	LOS B	1.7	11.7	0.60	1.03	56.8
East: TR 81/1											
4	L2	155	0.0	0.199	5.7	LOS A	0.0	0.0	0.00	0.24	59.1
5	T1	226	0.0	0.199	0.2	LOS A	0.0	0.0	0.00	0.24	59.5
6	R2	1	0.0	0.001	5.7	LOS A	0.0	0.0	0.18	0.52	58.3
Approach		382	0.0	0.199	2.4	NA	0.0	0.0	0.00	0.24	59.3
North: OP 7641											
7	L2	1	0.0	0.005	8.4	LOS A	0.0	0.1	0.32	0.86	57.6
8	T1	1	0.0	0.005	13.0	LOS B	0.0	0.1	0.32	0.86	50.2
9	R2	1	0.0	0.005	11.2	LOS B	0.0	0.1	0.32	0.86	50.0
Approach		3	0.0	0.005	10.8	LOS B	0.0	0.1	0.32	0.86	55.1
West: TR 85/1											
10	L2	1	0.0	0.044	5.5	LOS A	0.0	0.0	0.00	0.01	58.3
11	T1	85	0.0	0.044	0.0	LOS A	0.0	0.0	0.00	0.01	60.0
12	R2	10	0.0	0.008	6.7	LOS A	0.0	0.2	0.42	0.58	52.0
Approach		96	0.0	0.044	0.8	NA	0.0	0.2	0.04	0.07	59.8
All Vehicles		647	0.0	0.338	5.3	NA	1.7	11.7	0.16	0.42	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 03 [03AM2019FU - CONSTRUCTION]

TR 85/1 & OP 7644
Future AM Peak Traffic for the Plant Construction Phase
2019
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: OP 7644											
1	L2	10	0.0	0.346	10.3	LOS B	1.7	12.1	0.61	1.04	48.0
2	T1	1	0.0	0.346	14.2	LOS B	1.7	12.1	0.61	1.04	48.1
3	R2	155	0.0	0.346	14.9	LOS B	1.7	12.1	0.61	1.04	56.9
Approach		166	0.0	0.346	14.6	LOS B	1.7	12.1	0.61	1.04	56.8
East: TR 81/1											
4	L2	155	0.0	0.204	5.7	LOS A	0.0	0.0	0.00	0.24	59.2
5	T1	235	0.0	0.204	0.2	LOS A	0.0	0.0	0.00	0.24	59.5
6	R2	1	0.0	0.001	5.7	LOS A	0.0	0.0	0.18	0.52	58.3
Approach		391	0.0	0.204	2.4	NA	0.0	0.0	0.00	0.24	59.4
North: OP 7641											
7	L2	1	0.0	0.005	8.4	LOS A	0.0	0.1	0.33	0.85	57.6
8	T1	1	0.0	0.005	13.2	LOS B	0.0	0.1	0.33	0.85	50.1
9	R2	1	0.0	0.005	11.4	LOS B	0.0	0.1	0.33	0.85	49.9
Approach		3	0.0	0.005	11.0	LOS B	0.0	0.1	0.33	0.85	55.1
West: TR 85/1											
10	L2	1	0.0	0.046	5.5	LOS A	0.0	0.0	0.00	0.01	58.3
11	T1	89	0.0	0.046	0.0	LOS A	0.0	0.0	0.00	0.01	60.0
12	R2	10	0.0	0.008	6.7	LOS A	0.0	0.2	0.43	0.59	52.0
Approach		100	0.0	0.046	0.7	NA	0.0	0.2	0.04	0.06	59.8
All Vehicles		660	0.0	0.346	5.3	NA	1.7	12.1	0.16	0.41	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 03 [03AM2020FU - OPERATIONAL]

TR 85/1 & OP 7644
Future AM Peak Traffic for the Plant Operational Phase
2020
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: OP 7644											
1	L2	2	0.0	0.066	9.3	LOS A	0.2	1.7	0.50	0.91	49.8
2	T1	1	0.0	0.066	11.6	LOS B	0.2	1.7	0.50	0.91	49.8
3	R2	32	0.0	0.066	11.9	LOS B	0.2	1.7	0.50	0.91	57.4
Approach		35	0.0	0.066	11.8	LOS B	0.2	1.7	0.50	0.91	57.3
East: TR 81/1											
4	L2	32	0.0	0.143	5.7	LOS A	0.0	0.0	0.00	0.07	59.5
5	T1	245	0.0	0.143	0.1	LOS A	0.0	0.0	0.00	0.07	59.8
6	R2	1	0.0	0.001	5.7	LOS A	0.0	0.0	0.19	0.52	58.3
Approach		278	0.0	0.143	0.8	NA	0.0	0.0	0.00	0.07	59.8
North: OP 7641											
7	L2	1	0.0	0.004	8.4	LOS A	0.0	0.1	0.32	0.85	57.7
8	T1	1	0.0	0.004	11.5	LOS B	0.0	0.1	0.32	0.85	50.5
9	R2	1	0.0	0.004	11.3	LOS B	0.0	0.1	0.32	0.85	50.3
Approach		3	0.0	0.004	10.4	LOS B	0.0	0.1	0.32	0.85	55.3
West: TR 85/1											
10	L2	1	0.0	0.048	5.5	LOS A	0.0	0.0	0.00	0.01	58.3
11	T1	92	0.0	0.048	0.0	LOS A	0.0	0.0	0.00	0.01	60.0
12	R2	2	0.0	0.001	6.3	LOS A	0.0	0.0	0.35	0.53	52.2
Approach		95	0.0	0.048	0.2	NA	0.0	0.0	0.01	0.02	59.9
All Vehicles		411	0.0	0.143	1.6	NA	0.2	1.7	0.05	0.14	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 03 [03PM2018FU - CONSTRUCTION]

TR 85/1 & OP 7644
Future PM Peak Traffic for the Plant Construction Phase
2018
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: OP 7644											
1	L2	10	0.0	0.322	9.6	LOS A	1.6	10.9	0.57	1.01	48.7
2	T1	1	0.0	0.322	13.2	LOS B	1.6	10.9	0.57	1.01	48.8
3	R2	155	0.0	0.322	13.7	LOS B	1.6	10.9	0.57	1.01	57.1
Approach		166	0.0	0.322	13.5	LOS B	1.6	10.9	0.57	1.01	57.0
East: TR 81/1											
4	L2	155	0.0	0.171	5.7	LOS A	0.0	0.0	0.00	0.28	59.1
5	T1	170	0.0	0.171	0.1	LOS A	0.0	0.0	0.00	0.28	59.4
6	R2	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.22	0.52	58.3
Approach		326	0.0	0.171	2.8	NA	0.0	0.0	0.00	0.28	59.2
North: OP 7641											
7	L2	1	0.0	0.005	8.5	LOS A	0.0	0.1	0.36	0.84	57.7
8	T1	1	0.0	0.005	12.6	LOS B	0.0	0.1	0.36	0.84	50.4
9	R2	1	0.0	0.005	10.8	LOS B	0.0	0.1	0.36	0.84	50.2
Approach		3	0.0	0.005	10.6	LOS B	0.0	0.1	0.36	0.84	55.2
West: TR 85/1											
10	L2	1	0.0	0.060	5.5	LOS A	0.0	0.0	0.00	0.01	58.3
11	T1	116	0.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.01	60.0
12	R2	10	0.0	0.008	6.5	LOS A	0.0	0.2	0.39	0.57	52.1
Approach		127	0.0	0.060	0.6	NA	0.0	0.2	0.03	0.05	59.8
All Vehicles		622	0.0	0.322	5.2	NA	1.6	10.9	0.16	0.43	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 03 [03PM2019FU - CONSTRUCTION]

TR 85/1 & OP 7644
Future PM Peak Traffic for the Plant Construction Phase
2019
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: OP 7644											
1	L2	10	0.0	0.328	9.7	LOS A	1.6	11.2	0.58	1.02	48.6
2	T1	1	0.0	0.328	13.5	LOS B	1.6	11.2	0.58	1.02	48.6
3	R2	155	0.0	0.328	14.0	LOS B	1.6	11.2	0.58	1.02	57.1
Approach		166	0.0	0.328	13.8	LOS B	1.6	11.2	0.58	1.02	56.9
East: TR 81/1											
4	L2	155	0.0	0.174	5.7	LOS A	0.0	0.0	0.00	0.28	59.1
5	T1	177	0.0	0.174	0.1	LOS A	0.0	0.0	0.00	0.28	59.4
6	R2	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.22	0.52	58.3
Approach		333	0.0	0.174	2.7	NA	0.0	0.0	0.00	0.28	59.3
North: OP 7641											
7	L2	1	0.0	0.005	8.5	LOS A	0.0	0.1	0.36	0.84	57.6
8	T1	1	0.0	0.005	12.7	LOS B	0.0	0.1	0.36	0.84	50.4
9	R2	1	0.0	0.005	11.0	LOS B	0.0	0.1	0.36	0.84	50.1
Approach		3	0.0	0.005	10.7	LOS B	0.0	0.1	0.36	0.84	55.2
West: TR 85/1											
10	L2	1	0.0	0.062	5.5	LOS A	0.0	0.0	0.00	0.00	58.3
11	T1	120	0.0	0.062	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	10	0.0	0.008	6.5	LOS A	0.0	0.2	0.39	0.57	52.1
Approach		131	0.0	0.062	0.5	NA	0.0	0.2	0.03	0.05	59.8
All Vehicles		633	0.0	0.328	5.2	NA	1.6	11.2	0.16	0.43	58.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 03 [03PM2020FU - OPERATIONAL]

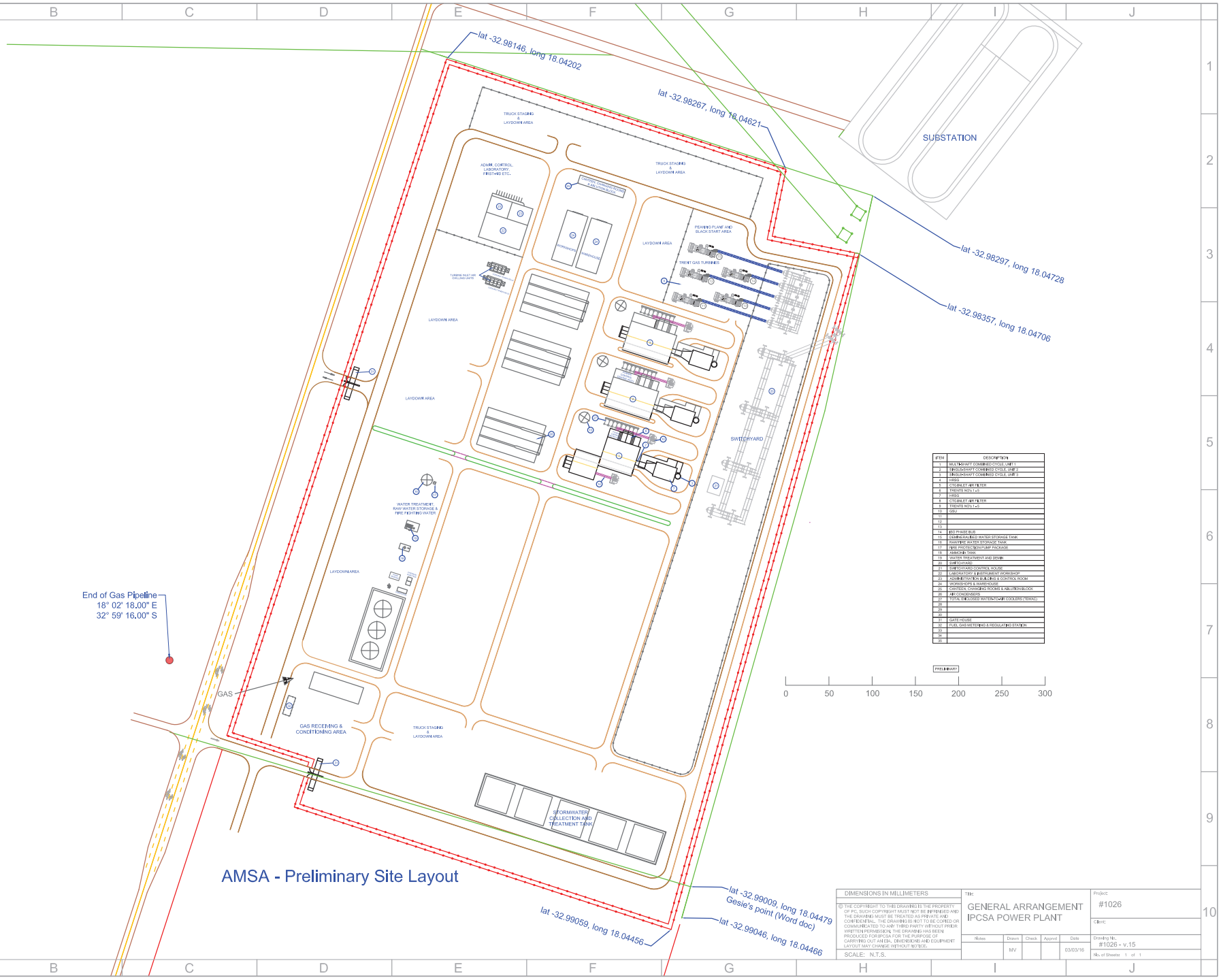
TR 85/1 & OP 7644
Future PM Peak Traffic for the Plant Operation Phase
2020
Stop (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: OP 7644											
1	L2	2	0.0	0.063	8.9	LOS A	0.2	1.6	0.47	0.90	50.1
2	T1	1	0.0	0.063	11.2	LOS B	0.2	1.6	0.47	0.90	50.1
3	R2	32	0.0	0.063	11.4	LOS B	0.2	1.6	0.47	0.90	57.5
Approach		35	0.0	0.063	11.3	LOS B	0.2	1.6	0.47	0.90	57.3
East: TR 81/1											
4	L2	32	0.0	0.112	5.6	LOS A	0.0	0.0	0.00	0.09	59.5
5	T1	184	0.0	0.112	0.1	LOS A	0.0	0.0	0.00	0.09	59.8
6	R2	1	0.0	0.001	5.8	LOS A	0.0	0.0	0.22	0.52	58.3
Approach		217	0.0	0.112	0.9	NA	0.0	0.0	0.00	0.09	59.7
North: OP 7641											
7	L2	1	0.0	0.004	8.5	LOS A	0.0	0.1	0.35	0.83	57.7
8	T1	1	0.0	0.004	11.1	LOS B	0.0	0.1	0.35	0.83	50.7
9	R2	1	0.0	0.004	10.9	LOS B	0.0	0.1	0.35	0.83	50.5
Approach		3	0.0	0.004	10.2	LOS B	0.0	0.1	0.35	0.83	55.4
West: TR 85/1											
10	L2	1	0.0	0.065	5.5	LOS A	0.0	0.0	0.00	0.00	58.3
11	T1	125	0.0	0.065	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
12	R2	2	0.0	0.001	6.0	LOS A	0.0	0.0	0.31	0.53	52.3
Approach		128	0.0	0.065	0.1	NA	0.0	0.0	0.00	0.01	59.9
All Vehicles		383	0.0	0.112	1.7	NA	0.2	1.6	0.05	0.14	59.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
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 movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

APPENDIX C

PRELIMINARY SITE LAYOUT PLAN


lat -32.98146, long 18.04202
lat -32.98267, long 18.04621
lat -32.98297, long 18.04728
lat -32.98357, long 18.04706
SUBSTATION
TRUCK STAGING & LAYDOWN AREA
ADMIN, CONTROL, LABORATORY, FIRST-AID ETC.
CANTEEN, CHANGING ROOMS & ABLUTION BLOCK
WORKSHOPS
WAREHOUSE
LAYDOWN AREA
PEAKING PLANT AND BLACK START AREA
TRENT GAS TURBINES
TURBINE INLET AIR CHILLING UNITS
CONTROL
SWITCHYARD
WATER TREATMENT: RAW WATER STORAGE & FIRE FIGHTING WATER
End of Gas Pipeline
18° 02' 18.00" E
32° 59' 16.00" S
GAS
GAS RECEIVING & CONDITIONING AREA
STORMWATER COLLECTION AND TREATMENT TANK
lat -32.99009, long 18.04479
Gesie's point (Word doc)
lat -32.99046, long 18.04466
lat -32.99059, long 18.04456
ITEM
DESCRIPTION
1 MULTI-SHAFT COMBINED CYCLE, UNIT 1
2 SINGLE-SHAFT COMBINED CYCLE, UNIT 2
3 SINGLE-SHAFT COMBINED CYCLE, UNIT 3
4 HRSG
5 CTG INLET AIR FILTER
6 TRENTS NO's 1 - 5
7 HRSG
8 CTG INLET AIR FILTER
9 TRENTS NO's 1 - 5
10 GSU
14 132 PHASE BUS
15 DEMINERALISED WATER STORAGE TANK
16 RAW/FIRE WATER STORAGE TANK
17 FIRE PROTECTION PUMP PACKAGE
18 AMMONIA TANK
19 WATER TREATMENT AND DEMIN
20 SWITCHYARD
21 SWITCHYARD CONTROL HOUSE
22 LABORATORY & INSTRUMENT WORKSHOP
23 ADMINISTRATION BUILDING & CONTROL ROOM
24 WORKSHOPS & WAREHOUSE
25 CANTEEN, CHANGING ROOMS & ABLUTION BLOCK
26 AIR CONDENSERS
27 TOTAL ENCLOSED WATER-TO-AIR COOLERS (TEWAC)
32 GATE HOUSE
33 FUEL GAS METERING & REGULATING STATION
PRELIMINARY
0 50 100 150 200 250 300
AMSA - Preliminary Site Layout
DIMENSIONS IN MILLIMETERS
SCALE: N.T.S.
GENERAL ARRANGEMENT
IPCSA POWER PLANT
#1026
#1026 - v.15
MV
03/03/16

environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/ or 12/9/11/L
NEAS Reference Number:	DEA/EIA
Date Received:	

Application for environmental authorisation National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014

PROJECT TITLE

Environmental Impact Assessment for a Gas-fired Independent Power Plant to Support Saldanha Steel and Other Industries in Saldanha Bay

Specialist:	Traffic and Transportation		
Contact person:	Mr Bertie Phillips		
Postal address:	119 Hertzog Boulevard, Cape Town		
Postal code:	8001	Cell:	082 5091064
Telephone:	021 4059600	Fax:	021 4196774
E-mail:	bertiep@ct.kanteys.co.za		
Professional affiliation(s) (if any)	MIPET, PrTechEng		

Project Consultant:	Environmental Resources Management		
Contact person:	Stephan van den Berg		
Postal address:	ERM Cape Town – 2nd Floor, Great Westerford, 240 Main Road, Rondebosch		
Postal code:	7800	Cell:	
Telephone:	021 681 5400	Fax:	
E-mail:	stephan.vandenberg@erm.com		

4.2 The specialist appointed in terms of the Regulations_

I, Bertie Phillips , declare that --

General declaration:

I act as the independent specialist in this application;
I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
I declare that there are no circumstances that may compromise my objectivity in performing such work;
I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
I will comply with the Act, Regulations and all other applicable legislation;
I have no, and will not engage in, conflicting interests in the undertaking of the activity;
I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
all the particulars furnished by me in this form are true and correct; and
I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the specialist:

Kantey & Templer (Pty) Ltd

Name of company (if applicable):

11 July 2016

Date:

KANTEY & TEMPLER (PTY) LTD
CONSULTING ENGINEERS
REG NO. 1966/009839/07

K&T Established 1953

Engineering African Development

12 September 2016

3rd Floor Grant Thornton House
119 Hertzog Boulevard
Cape Town, 8001
P O Box 3132
Cape Town, 8000

Tel: +27 21 405 9600
Fax: +27 21 419 6774

Our Ref: 15047R
Your Ref:

ERM Southern Africa (Pty) Ltd
2nd Floor, Great Westerford
240 Main Road,
RONDEBOSCH
7700

Attention: Ms L Bungartz

Dear Lindsey,

ARCELOR MITAL SALDANHA BAY: COMBINED CYCLE GAS TURBINE POWER PLANT: TRAFFIC AND TRANSPORT SPECIALIST STUDY – CUMULATIVE IMPACTS

Cumulative effect of the project with the implementation of further background projects in the Saldanha Bay IDZ were considered and were predicted to have no significant impact on the key intersections in the study area.

The road infrastructure is planned to be expanded with dualling of links as per the plan attached prepared by AECOM. The plan shows the future dualling of the OP7644 and the planned interchange of the TR85/1 and the realigned OP7644. This project will provide additional network capacity in the study area.

The additional capacity provided by the new infrastructure is adequate to accommodate the future travel demands of the site and the surrounding development consisting of the immediate Vredenberg Industrial Development (located between Namaqua Sands and Fossil Park).

The rest of the background projects are more remote from the site and are unlikely to have any significant impact on the traffic in the immediate study area.

The modal split of travel associated with the project is likely to produce a significant number of public transport trips and predominantly MBT and Bus patronage. This in itself is a travel demand measure that will enhance the sustainability index of the project.

In conclusion, the cumulative impacts are unlikely to be significant as the current traffic is fairly light and the planned infrastructure will be robust in order to accommodate the additional traffic from the project in combination with the background projects.

Yours faithfully
KANTEY & TEMPLER

B A PHILLIPS

Z:\ADMIN\Jobs-R\15047R Arcelor Mittal\1. Admin\001-BAP-LB-Combined.docx

AECOM

WESTERN CAPE GOVERNMENT
C975: SALDANHA MUNICIPAL AREA ROAD NETWORK IMPROVEMENTS
FIGURE 2: **TR85/1 (R79) PROPOSED ROAD IMPROVEMENTS**

AECOM DETAIL/FIGURE No.

SCALE 1:7500 mm