

**CONSOLIDATION, REZONING AND SUBDIVISION OF
SEVERAL PORTIONS OF THE FARMS
HOOGKRAAL 238 AND BUFFELSDRIFT 227,
GEORGE**

**ROADS AND STORMWATER
SERVICES REPORT**

REPORT 2025-242-01-REV 2

AUGUST 2026

CLIENT: ATTWOOD PROPERTY DEVELOPMENTS (PTY) LTD

PREPARED BY:
EDS Engineering Design Services (Pty) Ltd
473 Lynnwood Road
Sussex Office Park, Block B Ground Floor
Lynnwood, Pretoria
P.O. Box 33920
GLENSTANTIA
0010
Tel (012) 991 1205
Fax (012) 991 1373

EDS Engineering Design Services (Pty) Ltd Reg. No: 2006/021564/07 VAT No: 4190230971

Directors: C.P. Bruyns Pr Eng (Chairman), H.J. Fekken Pr Eng, G.D. Joubert Pr Eng, J.P. Monahadi **, H.S. Steenkamp Pr Eng, G. van der Walt Pr Eng

Associates Partners: S. Maroya Pr Tech Eng, A.D.D van den Heever Pr Eng, F.H.B van Eyk Pr Eng, M.A. de Jager Pr Eng

Associates: A.A. Moffat Pr Eng, C.D. Botha Pr Eng, C.W. de Jager Pr Eng, J.C. de Jager Pr Eng

**** Non-Executive Director**



**Structural, Civil and
Transportation Engineers**

EDS Engineering Design Services (Pty) Ltd
473 Lynnwood Road
Sussex Office Park, Block B Ground Floor
Lynnwood, Pretoria
P.O Box 33920
GLENSTANTIA
0010
Tel (012) 991 1205
Fax (012) 991 1373

Services Report Information Sheet:

Report number : 2025-242-01-REV 2
Local authority : George Municipality
Proposed change : Consolidation, rezoning and subdivision
Development type : Agricultural I, General Residential I, Open Space Zone II, Open Space Zone III, Community Zone I, Utility zone, Transport Zone III (Private Roads)
Property description : Simultaneous consolidation, rezoning and subdivision of several portions of Hoogekraal Farm no 238 and Buffelsdrift 227
Reference Number : 3838251

Services Report compiled by:

Name : De Waal van den Heever
Signature : 
Date : AUGUST 2026
Qualifications : MSc Eng (Civil), B Eng (Civil)
ECSA Registration : Pr. Eng. 201705089
Email address : DeWaal@edseng.co.za

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1 INTRODUCTION

EDS Engineering Design Services (Pty) Ltd was appointed by Attwood Property Developments (Pty) Ltd to compile a services report for the application for the consolidation, rezoning and subdivision of several portions of the Hoogekraal Farm No 238 and the Farm Buffelsdrift 227, Division of George, to reorganise farm boundaries and to create a residential village for beneficiaries with settlement rights on the farms.

2 PURPOSE OF THE REPORT

The purpose of the report is outline the existing services in terms of roads and stormwater and to provide clarification on the road network operation and upgrades required as well as an evaluation of the stormwater infrastructure and management on site.

3 DETAILS OF THE APPLICANT AND CONSULTING ENGINEER

Details of the applicant:

Applicant Name:	Attwood Property Developments (Pty) Ltd
Address:	95 Dorpsstraat La Gratitude Herehuis Stellenbosch 7600
Contact person:	Mr Gerrit van den Berg
Telephone number:	084 470 3205
E-mail:	gerrit@atterbury.co.za

Details of the town planner:

Company Name:	Marike Vreken Town Planners CC
Postal Address:	PO Box 2180 Knysna 6750
Contact person:	Ms Marike Vreken
Telephone number:	082 927 5310
E-mail:	marike@vreken.co.za

Details of the consulting engineer:

Company Name:	EDS Engineering Design Services (Pty) Ltd
Company Registration:	2006/021564/07
Physical Address:	Sussex Office Park, Block B Ground 473 Lynnwood Road Lynnwood, Pretoria

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Postal Address:	P.O. Box 33920 Glenstantia Pretoria 0010
Contact person:	Mr. De Waal van den Heever (Pr. Eng 201705089)
Telephone number:	072 446 5099
E-mail:	DeWaal@edseng.co.za

4 DETAILS OF THE APPLICATION

4.1 Site location

The Application Site is on portions of the Hoogekraal Farm No 238 and the farm Buffelsdrift 227. The site is located immediately to the north east of Glentana. The site is bounded by Morrison Road to the west and the Maalgate River to the east. The N2 freeway intersects the site with approximately 15% of the site situated to the north of the N2 freeway with the remainder to the south of the Freeway up to the Indian Ocean.

The locality plan is included in **Annexure A**.

4.2 Background of the Application Area

Several portions of the Hoogekraal farms were previously part of a land development application, known as Lagoon Bay Lifestyle Estate, consisting of two 18-hole golf courses, 895 single residential houses, 320 single and fractional title lodges, 150 single and fractional title apartments, a hotel, wellness centre, spa and clubhouse precinct, a commercial area, conference centre and private nature reserve.

The land development application included applications for structure plan amendment, rezoning and sub-division. The then Minister for Local Government, Environmental Affairs and Development Planning of the Western Cape (The Minister), Ms Tsaneen Essop, deferred a decision on an applicant for the amendment of the George and Environs Urban Structure Plan from agriculture/forestry to township development. During this time the former urban structure plans were repealed and a decision on the structure plan amendment was never made.

The George Municipality approved an application for the rezoning and sub-division of the development application, but the Western Cape Minister of Local Government, Environmental Affairs and Development planning refused the rezoning and sub-division application. A Supreme Court of Appeal Judgement during March 2013 confirmed that the George Municipality was "... the competent authority to consider and determine the applicant's application for rezoning and sub-division in respect of the proposed Lagoon Bay development and its decision to approve that application on 17 July 2010...".

In September 2021, The National Department of Agriculture approved the consolidation and sub-division of the application area in terms of the sub-division of

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Agricultural Land Act, 1970 (Act 70 of 1970), to create 205 farms with sizes between 2 ha and 60 ha. This approval is still valid.

Several families currently reside on several of the farm portions that are included in the application area. These families were formerly employed as bona fide farm workers on the farms that form part of the application area and acquired permanent tenure rights to reside on the farms in terms of the Extension of Security of Tenure Act 62 of 1997. These are 110 families, and after several workshops with these settlers, they have confirmed that they wish to remain on the Hoogekraal Farms and relocated to George or Mossel Bay urban settlements.

Attwood Property Developments (Pty) Ltd acquired the rights to lodge land development applications for the development of a farming settlement, and the settlers with tenure rights have agreed to relocate to a new farming settlement in this area, but not to an urban settlement.

Attwood Property Developments (Pty) Ltd envisages developing a rural agricultural farmsteads development and a rural village where the settlers with valid ESTA tenure rights can be accommodated.

4.3 Existing land-use rights

The Hoogekraal Farms were previously part of a development application (Lagoon Bay). The application was never finalised. During 2021, the National Department of Agriculture approved the subdivision of these farms into 205 smaller erven the approval is still valid.

Lagoonbay Lifestyle Estate (Pty) Ltd owns several portions of the farm Hoogekraal No 238, and 2 portions of the farm Buffelsdrift No 227, in the Division and Municipality of George. The Applicant envisages including some of the neighbouring farms, and developing a farming estate. The application area consists of 32 Portions of the Farm Hoogekraal No 238 and 2 portions of the Farm Buffelsdrift No 227. The "Application Area" is shown in the figure below:

The following farms currently form part of the application area:

Farm Name	Portion	Size (ha)
Hoogekraal 238	Remainder	46.4954
Hoogekraal 238	5	29.5737
Hoogekraal 238	6	58.1224
Hoogekraal 238	17	23.9249
Hoogekraal 238	18	6.6304
Hoogekraal 238	19	2.2535
Hoogekraal 238	23	8.5653
Hoogekraal 238	41	31.263
Hoogekraal 238	42	6.9674
Hoogekraal 238	52	50.4855
Hoogekraal 238	64	10.3716
Hoogekraal 238	65	9.0611
Hoogekraal 238	66	15.6191
Hoogekraal 238	67	18.7278
Hoogekraal 238	68	18.0155

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Hoogekraal 238	69	31.5989
Hoogekraal 238	70	42.1196
Hoogekraal 238	72	1.3619
Hoogekraal 238	74	6.3038
Hoogekraal 238	75	20.9442
Hoogekraal 238	76	6.8181
Hoogekraal 238	79	10.8128
Hoogekraal 238	85	1.7131
Hoogekraal 238	88	24.3209
Hoogekraal 238	90	3.6465
Hoogekraal 238	102	24.1751
Hoogekraal 238	148	0.7984
Hoogekraal 238	160	15.1417
Hoogekraal 238	168	3.3744
Hoogekraal 238	178	15.4717
Hoogekraal 238	179	13.9646
Hoogekraal 238	180	4.1673
Buffelsdrift 227	5	23.0978
Buffelsdrift 227	9	88.6511
TOTAL AREA		674.5585

4.4 Proposed land-use rights

The application deals with a proposal to realign farm boundaries to create a better coordinated farm layout with communal horse and hiking trails and farm roads. Approximately 20 farms will be located north of the N2 freeway.

There are existing farm workers on the application area and these will be accommodated in a new village (Agri-village) that will be located between the railway and the N2 Freeway. The proposal will consist of 81 farm portions and “agri- / residential” village for the 110 beneficiaries.

The land-uses will include:

- Agriculture Zone I (Farms of ± 5 ha), with equestrian
- General Residential Zone I (Group Housing for the residential village)
- Open Space II (Private Open Space) for horse riding club, communal equestrian facilities & polo field
- Open Space Zone III (Nature Conservation Area), for the environmentally sensitive farms
- Community Zone (Place of instruction) to formalise the existing school
- Utility Zone (for utility services)
- Transport Zone III (Private Roads)

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4.4.1 Agricultural Units / Farms

The proposed Agricultural farms will consist of the following:

- The farms will be ± 5 ha in extent each
- Horse trails, equestrian facilities, dressage area, polo field, show jumping arena
- Communal Property Owner's Association will be established
- Raw water for Irrigation and household purposes will be supplied from the existing dams and water rights (pending) from the Maalgate River
- Rainwater harvesting will be compulsory for each plot, which can in turn be used to irrigate gardens
- Road reserves will either be planted with horticultural crops of mowed and baled
- Horse paddocks are planned for keeping and training horses
- Small space farming can be implemented such as microgreens and mushrooms, beehives, and fynbos nursery

There is an existing approval from the National Department of Agriculture, for 206 small holdings between 2 ha and 60 ha. The applicant does wish to implement this approval, should the George Municipality support the amended proposal, the Nation Department of Agriculture will be approached for an amendments of the current approval.

4.4.2 The Residential Village

The following will apply to the Residential Village

- The Residential Village will only be available for those 110 beneficiaries with established tenure rights on the farm.
- The beneficiaries will have ownership of their units via freehold title ownership. No further subdivision or expansion of the village will be allowed.
- The existing school will be retained, and additional recreational facilities will be provided for the beneficiaries.
- The existing cemetery will be formalised in its current location and will allow for additional capacity for the beneficiaries that reside in the village.
- The developer will install all services for the village (access roads, water treatment and sewer facilities). A Home Owner's Association will be established for the village. This HOA will be a member of the larger farmer owner's association.
- The HOA will be responsible for the maintenance of the infrastructure services (water, sewer, roads).

5 ROADS

5.1 Existing road network and proposed site access

The application site is accessed from Morrison Road to the west, approximately 500 m to the south of the southern terminal with the N2 Freeway.

There are several District Roads that bisect the application area. There are all Minor Roads (ondergeskikte Pad), with a proclaimed road reserve width of 10 m wide. The proposal is to de-proclaim these roads and to register right of way servitudes over newly constructed roads in favour of those farms that require the use of the roads for access. The proclaimed roads are:

- OP06843
- OP06844
- OP06847
- OP06848
- OP06845
- OP06842

Preliminary discussions with the Provincial Roads Authority confirmed that as long as no land owner's right to access is affected, and right of way servitudes are registered, there is in principle, no objection to the proposed de-proclamation of these roads.

The roads layout drawing shows the existing roads in the vicinity of the application site as well as the main access points and proposed internal private roads to service each of the farms.

The existing services layout can be seen in **Annexure D**.

5.2 Road Improvements from the Traffic Impact Assessment

A Traffic Impact Assessment (TIA) has been undertaken by EDS Engineers as part of the application. The following extracts are provided from the TIA:

- There are no planned external road network upgrades that will impact the proposed development.
- Several provincial roadways currently traversing the application site will be de-proclaimed.
- The development will have a single primary access point to the south of the N2 to serve the 81 farm units.
- The development will also be served by one service entrance that will also serve the agri-units
- The spacing between these access points will comply with the Western Cape Access Management Guidelines (2020).

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- The existing intersections at the N2 terminals and Morrison Road have adequate capacity to accommodate the expected traffic volumes.
- It is recommended that a dedicated right turn lanes with lengths of 30 m excluding taper lengths be provided at both accesses from Morrison Road to reduce friction along the road and to improve traffic safety at the access.

The TIA is included in **Annexure B**.

The proposed road upgrades can be seen in **Annexure A**.

5.3 Estimated development charges for roads

According to the Traffic Impact Assessment the proposed application will result in an additional 59 trips being generated. Development charges must be calculated accordingly and will be payable by the client to council as no additional upgrades are required except for access upgrades that are for the account of the applicant.

5.4 Estimated cost of the external road upgrades

All road upgrades costs will be for the account of the applicant.

The table below provides an estimated cost for the access upgrades that are described in the report:

Description	Unit	Quantity	Rate	Amount
Access Road Upgrades	m ²	2040	R 2 250	R 4 590 000
Sub Total A				R 4 590 000
Contingencies (5%)				R 229 500
Sub Total B				R 4 819 500
Professional Fees (10%)				R 481 950
TOTAL				R 5 301 450

6 STORMWATER

6.1 Existing stormwater drainage

The existing stormwater on the Application Site consists only of local stormwater crossings of District Roads. There is also a series of drainage lines and dams on the farm that conveys the majority of the stormwater to the south (the ocean) and the east (the Maalgate River). Smaller portions of the site drains towards Morrison Road in the west and towards the N2 in the via existing culvert structures beneath the railway line just to the south of the N2. This water also ultimately drains towards the Maalgate River in the east.

6.2 Stormwater Management

The stormwater on site is currently discharged to into the Indian Ocean. The northern catchments are discharged via culvert structures beneath the Transnet railway line to the north from where it is conveyed via an earth channel to the Maalgate River and ultimately into the ocean.

Catchments located in the north-eastern portion of the site discharges via culvert structures beneath the Transnet railway line and directly into the Maalgate River and ultimately into the ocean.

Catchments located in the eastern and south-eastern portion of the site discharges directly into the Maalgate River and ultimately into the ocean.

Catchments located in the southern and western portions of the site discharges directly into the ocean.

The proposed development will utilise the existing internal topography resulting in catchment delineations remaining the same post development. Low water crossings will be constructed on the roads to allow for stormwater to continue with overland flow to existing defined drainage lines.

Although there may be a slight increase in stormwater runoff (less than 10%) due to the proposed sub-division and rezoning, the functioning of the stormwater system will remain as is.

The catchment delineation can be seen in **Annexure A**.

6.3 Estimated Existing and Post-development stormwater runoff

The development does not constitute any significant increase in stormwater runoff as the majority of the application site remains farmland (Agricultural I).

It is report that there are approximately 80 families currently living on the proposed application site. These 80 families will be relocated to a village situate between the railway line and the N2 freeway. The existing structures will be demolished to create the proposed 5 ha farms. Each 5 ha farm will be limited to a footprint of hardened

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surface of 2000 m². This constitutes only 4% of the area to be impacted by the development.

The implementation of rainwater harvesting for irrigation purposes will assist in reducing stormwater runoff from the roofs of future farmhouses and mitigate the 4% increase in hardened surfaces. There is a series of dams on site will also assist with acting as a buffer to reduce peak flows that will be discharged from the site.

The residential village portion of the site comprises of a land area of approximately 4 ha. This is very low density and a runoff coefficient of 0.45 is expected resulting in some additional runoff from the site. Stormwater from this area will be discharged to the north- and south-east to a natural drainage line that ultimately discharges into the Maalgate River.

The proposed development will be designed to not have any effect on the functioning of the existing stormwater system due to the natural topography remaining as is.

6.3.1 Sub-regional stormwater Catchments

For the purposes of determining the pre- and post- development stormwater characteristics, the application site was divided into various catchments. These catchments can be seen in **Annexure A**.

(a) Northern Catchments

A series of catchments have been delineated in the northern portions of the site. These catchments discharge stormwater beneath the existing transnet railway line via existing culvert structures. These catchments ultimately discharge into the Maalgate river at one location via a channel located to the south of the N2 Freeway.

The table below indicates the delineated catchments that forms part of this discharge point:

Catchment ID	Area (m ²)	TC (min)*	Pre-Development		Post-Development	
			Q2 (m ³ /s)	Q20 (m ³ /s)	Q2 (m ³ /s)	Q20 (m ³ /s)
A1	433 974	14	1.273	2.879	1.392	3.147
A2	116 510	9	0.342	0.773	0.374	0.845
A3	32 683	8	0.096	0.217	0.105	0.237
A6	265 430	17	0.779	1.761	0.851	1.925
TOTAL			2.49	5.63	2.722	6.154

* The time of concentration that was calculated was largely under 15 min. A T_c of 15 min was therefore used for each catchment.

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(b) North eastern catchments

There are several catchments to the north east of the application site that discharges directly into the Maalgate River. These catchments are also intersected by the Transnet railway line and portions must also pass through the existing culverts beneath the railway line.

The table below indicates the delineated north eastern catchments

Catchment ID	Area (m ²)	TC (min)*	Pre-Development		Post-Development	
			Q2 (m ³ /s)	Q20 (m ³ /s)	Q2 (m ³ /s)	Q20 (m ³ /s)
A4	41 637	6	0.122	0.276	1.392	3.147
A5	81 061	8	0.238	0.537	0.260	0.588
B1	771 627	21	2.263	5.512	2.475	5.596
B2	294 261	8	0.443	1.003	0.485	1.096
B3	43 302	5	0.200	0.453	0.219	0.495

* The time of concentration that was calculated was largely under 15 min. A T_c of 15 min was therefore used for each catchment.

(c) Eastern Catchments

A series of catchments were delineated to the east and south east of the application site that discharges directly into the Maalgate River and finally into the ocean.

The table below indicates the delineated eastern catchments:

Catchment ID	Area (m ²)	TC (min)*	Pre-Development		Post-Development	
			Q2 (m ³ /s)	Q20 (m ³ /s)	Q2 (m ³ /s)	Q20 (m ³ /s)
C1&2	110 300	5	0.324	0.732	0.354	0.800
C3	761 593	17	2.234	5.052	2.443	5.523
C4	278 128	13	0.816	1.845	0.892	2.017
C5	378 924	10	1.112	2.514	1.215	2.748
C6	273 691	8	0.803	1.815	0.878	1.985
C7	30 713	4	0.090	0.204	0.099	0.223
C8	719 008	12	2.109	4.769	2.306	5.215
C9	155 835	11	0.457	1.034	0.500	1.130

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* The time of concentration that was calculated was largely under 15 min. A T_c of 15 min was therefore used for each catchment.

(d) **Southern and Western Catchments**

A series of catchments were delineated to the west, center and south of the of the application site. These catchments do not discharge into the Maalgate river but rather as overland flow directly into the ocean.

The table below indicates these delineated catchments:

Catchment ID	Area (m ²)	TC (min)*	Pre-Development		Post-Development	
			Q2 (m ³ /s)	Q20 (m ³ /s)	Q2 (m ³ /s)	Q20 (m ³ /s)
D1	163 452	6	0.480	1.084	0.524	1.185
D2	385 450	14	1.131	2.557	1.236	2.795
D3	98 053	6	0.288	0.650	0.314	0.711
D4	11 272	3	0.033	0.075	0.036	0.082
D5	66 831	4	0.196	0.443	0.214	0.485
D6	1132 819	20	3.323	7.514	3.633	8.216
D7	55 748	5	0.164	0.370	0.179	0.404
D8	65 790	4	0.193	0.436	0.211	0.477
D9	36 626	4	0.107	0.243	0.117	0.266
D10	280 750	10	0.824	1.862	0.900	2.036

* The time of concentration that was calculated was largely under 15 min. A T_c of 15 min was therefore used for each catchment.

From the tables above it can be seen that the increase in stormwater discharge is less than 10%. The calculations above does not take into account the requirements for stormwater harvesting. It also, does not take into account the dams that are located on the site and the buffer effect that they will serve during stormwater events. Furthermore, with the increased farming activity that is envisioned for the site after development, it is expected that the runoff will decrease even more to the current conditions.

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6.4 Railway line culvert crossing capacities

There are several existing culvert crossings beneath the Transnet railway line that intersects the site. The table below indicates the 2 and 20 year return period runoffs and the corresponding capacity of the culvert at the discharge locations:

Rail crossings	Catchments contributing	Area (m ²)	Q ₂ (m ³ /s)	Q ₂₀ (m ³ /s)	Culvert size	Culvert Slope (%)	Culvert Capacity (m ³ /s)
1	A1	433 974	1,273	2,879	1200 x 900 mm box culvert	1,5	3,012
2	A2	116 510	0,342	0,773	600 mm Ø pipe	2	0,919
3	A3	32 683	0,096	0,217	525 mm Ø pipe	5,3	1,048
4	A4	41 637	0,122	0,276	525 mm Ø pipe	4	0,910
5	A5	81 061	0,238	0,538	1200 x 1200 mm box culvert	7,4	9,727
6	B1	771 627	2,263	5,118	2 x 600 mm Ø pipes	1,4	1,078
7	B2	94 261	0,276	0,625	600 mm Ø pipe	6,7	1,682
8	B3	43 302	0,127	0,287	750 x 600 mm box culvert	6	2,778

From the table above it can be seen that there is adequate capacity in the culvert crossings to convey stormwater beneath the railway line to the drainage channel parallel to the N2 freeway.

6.5 Stormwater management and site interventions

The proposed consolidation, rezoning and sub-division will result in a minor increase in stormwater runoff (less than 10%). To alleviate the slight increase the following measures will be implemented:

- Development footprint of hardened surfaces will be limited to 2000 m² per 5 ha farm. This is only 4% of each farm.
- Rainwater harvesting will be implemented at all new dwellings.
- Increased farming activities and irrigation will result in more water being abstracted from the existing dams on site. There will therefore be additional attenuation capacity in the dams on site further decreasing the total runoff from the site.
- Low water crossings on new roads will be constructed to ensure that the stormwater system will continue to operate in a sustainable manner.

6.6 Estimated development charges for stormwater

Stormwater is discharged directly into the Maalgate River and into the ocean. There is a negligible increase in stormwater discharge from the site. Development charges must be calculated and will be payable by the applicant.

7 CONCLUSIONS AND RECOMMENDATION

It is concluded that there are existing roads and stormwater infrastructure in the precinct to the Application Site.

It is recommended that the application be supported as adequate municipal stormwater infrastructure can be provided and public roads are available that can serve the development.



DE WAAL VAN DEN HEEVER PR. ENG (201705089)

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ANNEXURE A: SITE LOCATION AND SERVICES LAYOUT FIGURES



A	19/08/26	FOR INFORMATION	RD
Rev: No:	Date:	Revision Details:	By:

e.d.s.
Structural, Civil and
Transportation Engineers

Sussex Office Park
473 Lynnwood Road
Lynnwood
Pretoria, Gauteng
Tel: 012 991 1205

20 On Krige Building
20 Krige Road
Stellenbosch
Western Cape
Tel: 021 891 0530

e-mail: info@edseng.co.za

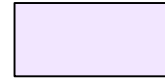
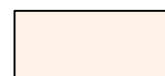
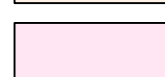
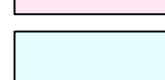
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STORMWATER LEGEND:

	NORTHERN CATCHMENTS
	NORTHERN EASTERN CATCHMENTS
	EASTERN CATCHMENTS
	SOUTHERN AND WESTERN CATCHMENTS
	NEW STORMWATER DISCHARGE POINTS FROM SITE
	EXISTING STORMWATER DISCHARGE POINTS FROM SITE
	EXISTING STORMWATER OULVERT BENEATH RAILWAY LINE
	EXISTING STORMWATER

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Architect:

HOOGLAND COUNTRY ESTATE

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CONSOLIDATION, REZONING AND SUBDIVISION OF SEVERAL PORTIONS OF
THE FARM HOOGEKRAAL 238 AND BUFFELSDRIFT 227, GEORGE

ANNEXURE B: TRAFFIC IMPACT ASSESSMENT

**HOOGELAND COASTAL FARMSTEADS
PORTIONS OF FARM HOOGEKRAAL NO 238
&
PORTIONS OF THE FARM BUFFELSDRIFT NO 227
GEORGE MUNICIPALITY
WESTERN CAPE**

TRAFFIC IMPACT ASSESSMENT

REPORT 2025-242 Rev 2

MARCH 2026

ATTERBURY PROPERTY GROUP



EDS Engineering Design Services (Pty) Ltd
473 Lynnwood Road,
Sussex Office Park
Lynnwood
P.O Box 34878
Glenstantia
0010
Tel (012) 991 1205
Fax (012) 991 1373

Report Information Sheet

Report number : 2025-242 Rev 2
Development name : Hoogeland Coastal Farmsteads
Development site : Several Portions Farm Hoogekraal No 238 and Buffelsdrift No 227
Road Authority : George Local Municipality
Approving Authority : Western Cape Government Transport Infrastructure Branch

Report undertaken by:

Name : A Maritz Pr. Eng.
Signature : 
Qualifications : B Eng (Civil), M Eng (Transportation)
ECSA Registration : Pr. Eng. 202402861

Report reviewed by:

Name : G van der Walt Pr. Eng.
Signature : 
Date : March 2026
Qualifications : B Eng (Civil), B Eng (Hons) (Transportation)
ECSA Registration : Pr. Eng. 990171

Hoogeland Coastal Farmsteads, George

TRAFFIC IMPACT ASSESSMENT

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1 INTRODUCTION AND BACKGROUND

1.1 Introduction

EDS Engineering Design Services (Pty) Ltd was appointed by the Atterbury Property Group to undertake a Traffic Impact Assessment (TIA) for the proposed development, *Hoogeland Coastal Farmsteads*.

The Hoogekraal Farms were previously part of a development application (Lagoon Bay). The application was never finalised. The application area is located south of the N2 National Road, west of the Malgate River, north of the ocean and east of Morrison Road. The development is situated in the Garden Route of the Western Cape Province just off of the N2 interchange to access the town of Glentana.

During 2021, the National Department of Agriculture approved the subdivision of these farms into 205 smaller erven. This approval is still valid. The 205 erven which will entail 123 agricultural / farm units and 80 residential village units. However, for the *Hoogeland Coastal Farmsteads* development now under consideration, **81 agricultural farm units** will be provided along with **110 residential village units**.

The 81 agricultural / farm units will operate as privately owned individual dwelling units. The 110 residential village units are to accommodate families of informal settlers that have acquired permanent occupation rights in terms of the Extension of Security of Tenure Act 62 of 1997 (ESTA).

This study investigates the existing and future operating conditions at the key intersections within the study area, it estimates the expected development trip generation whilst taking cognisance of the type of development proposed, it determines the anticipated traffic impact on the surrounding road network and determines whether it is necessary to implement any road and/or intersections improvements to mitigate the anticipated traffic impact.

The study was undertaken considering the requirements and guidelines as set out in the following:

- *TMH 16 Volume 2 (South African Traffic Impact and Site Impact Assessment Standards and Requirements Manual), COTO, Version 1 dated August 2012;*
- *George Integrated Zoning Scheme By-Law (2023).*
- *TMH 17 Volume 1 (South African Trip Data Manual of 2012);*

1.2 Site Location

The application area is located south of the N2 National Road, west of the Malgate River, north of the ocean and east of Morrison Road. The development is situated in the Garden Route of the Western Cape Province just off of the N2 interchange to access the town of Glentana as seen **Figure 1-1**.

The development site currently has multiple small access points to the various farmlands that make up the development area. The bulk of the development site will be situated south of the N2.



Figure 1-1: Hoogeland Coastal Farmsteads Locality Map

1.3 Context and Background

The proposed development involves the realignment of existing farm boundaries to create a more coordinated layout featuring communal horse and hiking trails and internal farm roads. The overall proposal for the development now underway comprises **81** farm portions (i.e. **agricultural units/farms**) and a **110-unit agri-residential village** for beneficiaries already residing on the parent farm to accommodate the existing farm workers within the application area. The Agri-Residential Village is proposed between the railway line and the N2

The agricultural units/farms will average ± 5 ha each. An existing approval by the National Department of Agriculture allows for 205 smallholdings ranging from 2–60 ha. However, the applicant intends to pursue the revised layout of 81 portions (as per the draft site layout plan provided in **Annexure A**) and an agri-village, subject to George Municipality's approval. If supported, the National Department of Agriculture will be approached for an amendment to the existing approval.

The agri-residential village is reserved for existing beneficiaries with established tenure rights. Beneficiaries will obtain freehold title ownership; no further subdivision or expansion will be permitted.

1.4 Methodology

The methodology of this TIA included the following:

- A site visit was undertaken;
- The relevant roads authority road network planning was considered;
- Traffic counts were obtained at relevant intersections within the study area;
- A trip generation, distribution, and assignment exercise was undertaken;
- The intersections capacity analysis for the worst-case scenario peak hour were undertaken where the background and development traffic demand was considered for the intersections included in the study;
- Alternatives to improve the road capacity were investigated where required;
- Public transport and non-motorised facilities were considered based on available information.

All findings, conclusions, and recommendations are captured in this report

1.5 Existing and Proposed Land-Use Rights

The following farms currently form part of the application area (total count of **31**):

- Remainder Farm Hoogekraal No 238
- Portion 5 of the Farm Hoogekraal No 238
- Portion 6 of the Farm Hoogekraal No 238
- Portion 17 of the Farm Hoogekraal No 238
- Portion 18 of the Farm Hoogekraal No 238
- Portion 19 of the Farm Hoogekraal No 238
- Portion 23 of the Farm Hoogekraal No 238
- Portion 41 of the Farm Hoogekraal No 238
- Portion 42 of the Farm Hoogekraal No 238
- Portion 52 of the Farm Hoogekraal No 238
- Portion 64 of the Farm Hoogekraal No 238
- Portion 65 of the Farm Hoogekraal No 238
- Portion 66 of the Farm Hoogekraal No 238
- Portion 67 of the Farm Hoogekraal No 238
- Portion 68 of the Farm Hoogekraal No 238
- Portion 69 of the Farm Hoogekraal No 238
- Portion 70 of the Farm Hoogekraal No 238
- Portion 72 of the Farm Hoogekraal No 238
- Portion 74 of the Farm Hoogekraal No 238
- Portion 75 of the Farm Hoogekraal No 238
- Portion 76 of the Farm Hoogekraal No 238
- Portion 79 of the Farm Hoogekraal No 238
- Portion 85 of the Farm Hoogekraal No 238
- Portion 88 of the Farm Hoogekraal No 238
- Portion 90 of the Farm Hoogekraal No 238
- Portion 102 of the Farm Hoogekraal No 238
- Portion 148 of the Farm Hoogekraal No 238
- Portion 160 of the Farm Hoogekraal No 238
- Portion 178 of the Farm Hoogekraal No 238
- Portion 179 of the Farm Hoogekraal No 238

- Portion 180 of the Farm Hoogekraal No 238
- Portion 5 of the Farm Buffelsdrift No 227
- Portion 9 of the Farm Buffelsdrift No 227

The current zoning for the development area is Farmlands - i.e. Portion 2470 Farm Hoogekraal No 238 which will undergo rezoning. The rezoning will include various land-uses as follows and as shown on **Annexure A**:

- **Agriculture Zone I:** ±5 ha farms with equestrian activities.
- **General Residential Zone I:** Group housing for the Agri-village.
- **Open Space Zone II:** Private open space for horse riding, communal equestrian facilities, and a polo field.
- **Open Space Zone III:** Nature conservation area for environmentally sensitive farms.
- **Community Zone I:** Formalisation of the existing school.
- **Utility Zone:** Provision of essential utility services.
- **Transport Zone III:** Private internal road network.

The ultimate development is therefore in accordance with the municipal development land-uses for the various land-uses as listed above.

2 DATA COLLECTION

2.1 Study Area and Traffic Counts

The “South African Traffic Impact and Site Traffic Assessment Manual” (TMH 16 Version 1.0 of August 2012) was used to define the extent of the study area. In line with the manual, analyses are required for both the base year and a five-year horizon year.

To establish the base year traffic operating conditions, manual traffic counts were conducted at key intersections. The surveys were undertaken for the Weekday AM peak from 06:00 - 09:00 and for the Weekday PM Peak from 16:00 - 18:00 on Tuesday, 30 September 2025 - which is representative of typical weekday traffic conditions. A summary of the key intersections within the study area, including their current control type, is provided in **Table 2-1**, with the location of each intersection shown on **Figure 2-1**.

Table 2-1: Intersections included in Traffic Statement

No	Intersection	Control Type
1.	N2 northern terminal	Side-road stop controlled for vehicles exiting the N2 eastwards.
2.	N2 southern terminal	Side-road stop controlled for vehicles exiting the N2 westwards.

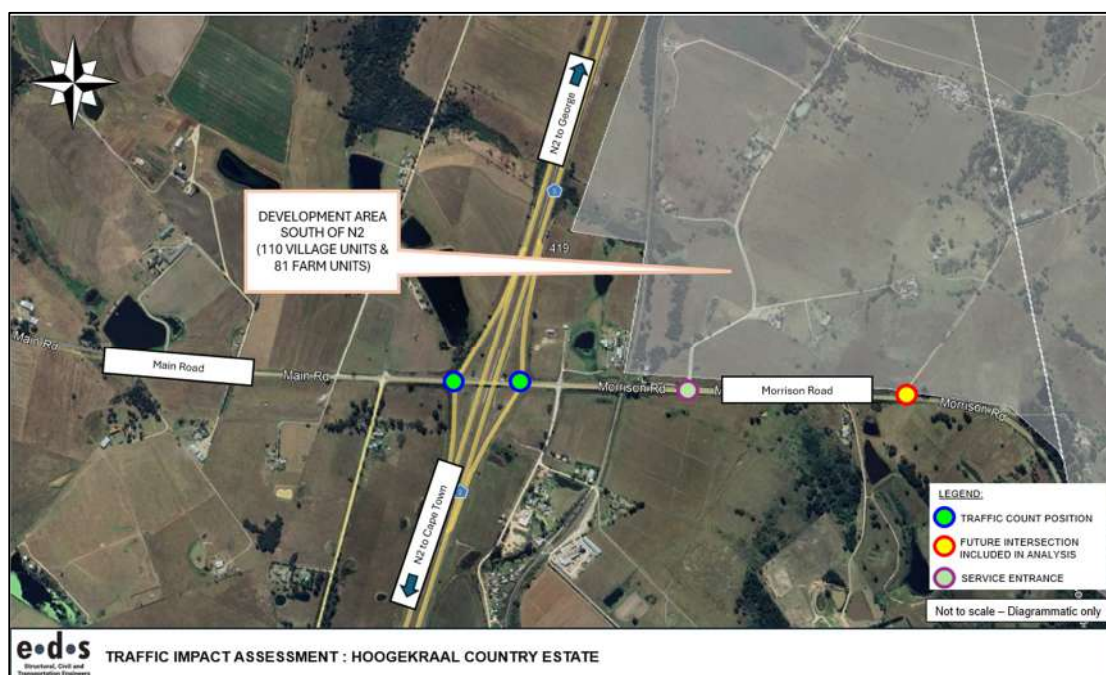


Figure 2-1: Location of Surveys Intersections

2.2 Latent Developments

There are no latent developments in the immediate vicinity of the development that are expected to generate traffic impacts or require road upgrades which could affect the development traffic of the proposed Hoogekraal Coastal Farmsteads.

3 ACCESS AND ROAD NETWORK

3.1 Existing Access and Road Network

The application area is located south of the N2 National Road, a Class 1 roadway under jurisdiction of SANRAL. Morrison Road and Main Road (Western Cape Government Main Road MR00348), a Class 2 road, traverses to the west of the development site and is under the jurisdiction of Western Cape Government as Approving Authority and George Municipality as Roads Authority.

Several District Roads bisect the application area. These are all Minor Roads, with a proclaimed road reserve of 10m wide. The proposal is to de-proclaim these roads and to register right-of-way servitudes over the newly constructed roads, in favour of those farms that still require the use of these roads for access purposes. These proclaimed roads are listed below and shown on **Figure 3-1**:

- OP06843
- OP06844
- OP06847
- OP06848
- OP06845
- OP06842

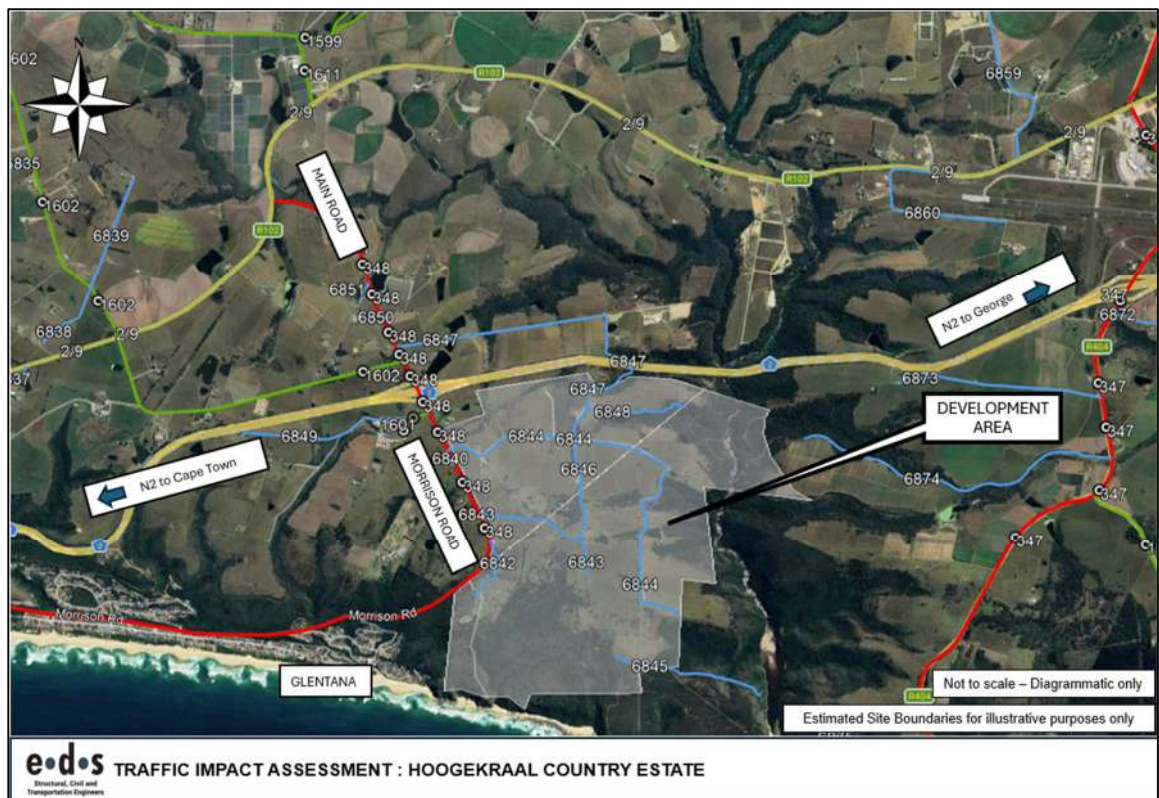


Figure 3-1: WCG in and around the development area

Preliminary discussions with the Provincial Roads Authority confirmed that if no landowner's right to access is affected, and right-of-way servitudes are registered, there is in principle, no objection to the proposed de-proclamation of the roads. Additional discussion will also be held with SANRAL as well as Transnet, due to railway line crossings in the development precinct, once the development is underway and when required.

3.2 Future Access and Road Network

There are currently no planned external road network changes or upgrades expected to impact the proposed development. As discussed in Chapter 3.1, the provincial roadways currently traversing the site will be de-proclaimed. The final alignment of internal roads will be determined during the geometric roadway design process as part of the detailed Site Development Plan.

The development will have a single primary access point south of the N2 to serve the ±81 farm units. Although the agri-village units will access through the identified service entrance, as a worst-case scenario, a single combined access point (i.e. Development Access) was analysed (refer to Chapter 5), for the southern farm units and the agri-residential village sharing a single access.

As Morrison Road and Main Road are under the jurisdiction of the Western Cape Government, all access spacing will comply with the Western Cape Access Management Guidelines (2020), to be confirmed during the detailed design phase of the internal road network for the development area. However, as proposed in the following chapters, 30m dedicated right turning lanes will be provided at both the development access and service access intersections.

4 TRAFFIC DEMAND

4.1 Trip Generation

The trip generation for the development is dependent on the existing land-uses in comparison with the proposed land uses as follows:

The Existing Land-Uses are:

- 31 farms with single dwelling units on each
- 80 internal units

The Proposed Land -Uses are:

- 81 farms with single dwelling units on each
- 110 internal units

The net effect of the development traffic impact is therefore:

- Farm units: 81 new single dwellings units less 31 existing single dwelling units
= 50 additional single dwelling units on development area
- Residential village units: 110 new single dwellings units less 80 existing single dwelling units
= 30 additional single dwelling units on development area.

The net effect is therefore **50 additional single dwelling units** in the development area.

The existing development consists of 31 farm positions which all have rights for a single residential house with the 80 households informally settled across the properties. It should be noted that the existing internal agri-residential village units represent the relocation of existing residents and therefore new trips are only associated with the additional 30 new agri-residential village residential units. Vehicle ownership among these residents is expected to remain very low, as the occupants comprise local farm workers and their families, whose employment and daily activities are largely located within or near the development area. In addition, it was reported that the employment rate for these residents is very low, further reducing the likelihood of regular private vehicle use for commuting. The trip adjustment factor for ***very low vehicle ownership*** for these units have therefore been applied accordingly.

The “South African Trip Data Manual” (TMH 17, Version 1.01, 2013 “South African Trip Data Manual) provides trip generation rates for dwelling units under the category of ***Single Dwelling Units (Land Use 210)*** - which best describes the existing and intended development of the Hoogeland Coastal Farmsteads.

The trip generation for the AM peak, PM peak, and Saturday midday peak hours were therefore calculated as set out in tables **Table 4-1** and **Table 4-2** below.

Table 4-1: Trip Rate Parameters

LAND-USE		UNIT FACTOR	GLA (m²) or UNITS	VERY LOW OWNERSHIP	COMBINED FACTOR (PC)	PEAK HOUR TRIP RATE			DIRECTIONAL SPLIT						FINAL FACTOR	ADJUSTED PEAK HOUR TRIP RATE		
									AM PEAK		PM PEAK		SAT PEAK					
						AM	PM	SAT	IN	OUT	IN	OUT	IN	OUT				
Existing Plots	Single Dwelling Units	1	31	N 0%	0	1	1	0.5	25	75	70	30	50	50	1.00	1.00	1.00	0.50
Village	Single Dwelling Units	1	80	Y 70%	0.7	1	1	0.5	25	75	70	30	50	50	0.30	0.30	0.30	0.15
New Plots (81 less 31)	Single Dwelling Units	1	50	N 0%	0	1	1	0.5	25	75	70	30	50	50	1.00	1.00	1.00	0.50
Village (110 less 80)	Single Dwelling Units	1	30	Y 70%	0.7	1	1	0.5	25	75	70	30	50	50	0.30	0.30	0.30	0.15

Table 4-2: Trip Generation

LAND-USE		UNIT FACTOR	GLA (m²) or UNITS	TOTAL TRIPS GENERATED								
				AM PEAK			PM PEAK			SAT PEAK		
				IN	OUT	TOT	IN	OUT	TOT	IN	OUT	TOT
Existing Plots	Single Dwelling Units	1	31	8	23	31	22	9	31	8	8	16
Village	Single Dwelling Units	1	80	6	18	24	17	7	24	6	6	12
EXISTING TRIPS				14	41	55	39	17	55	14	14	28
New Plots (81 less 31)	Single Dwelling Units	1	50	13	38	50	35	15	50	13	13	26
Village (110 less 80)	Single Dwelling Units	1	30	2	7	9	6	3	9	3	3	6
NEW TRIPS				15	44	59	41	18	59	16	16	32

The AM and PM peak hour trip generation exceeds that of the Saturday and was therefore taken forward in this report.

Other existing on-site uses include a small kiosk (Hoogekraal Superette), an informal preparatory school, and a cemetery. The school and cemetery will remain as part of the agri-residential village, while the Hoogekraal Superette is anticipated to cease operation once the new development is implemented. These activities are reflected in the background traffic volumes on Morrison Road and adjacent terminals. Although the superette's removal could justify a deduction in trips from the net new trips generated by the proposed development, a conservative approach was followed, and no deductions were made. This allows flexibility for potential future land uses within the development. The superette, with an approximate GLA of 385 m², is estimated to generate around 27 daily trips during the PM Peak based on an ITE rate of 7 trips per 100 m² for small retail developments – which is also very low.

The proposed development will introduce new recreational facilities, including a polo field, show-jumping arena, horse trails, and communal spaces. These facilities are expected to generate only occasional traffic peaks associated with events (e.g., polo matches), typically over weekends when residential trip generation is lowest. Other proposed uses, such as horse paddocks and small-scale farming (e.g., microgreens, mushrooms, beekeeping), are primarily for residents' private use and will not contribute to external traffic. Similar recreational activities already exist in the surrounding area; therefore, the proposed facilities are not expected to result in any notable change in traffic patterns once the Hoogeland Coastal Farmsteads is developed.

4.2 Trip Assignment and Distribution

The development traffic assignment for the proposed development is based on observations of the surrounding road network and land use patterns. From these observations the following patterns were derived:

- To/From east (George area) = 72%
- To/From west (Mossel Bay area) = 18%
- To/From Glentana area= 10%

The corresponding trip distribution and assignment pattern model is provided in **Figure 4-1**.

TRIP DISTRIBUTION & ASSIGNMENT

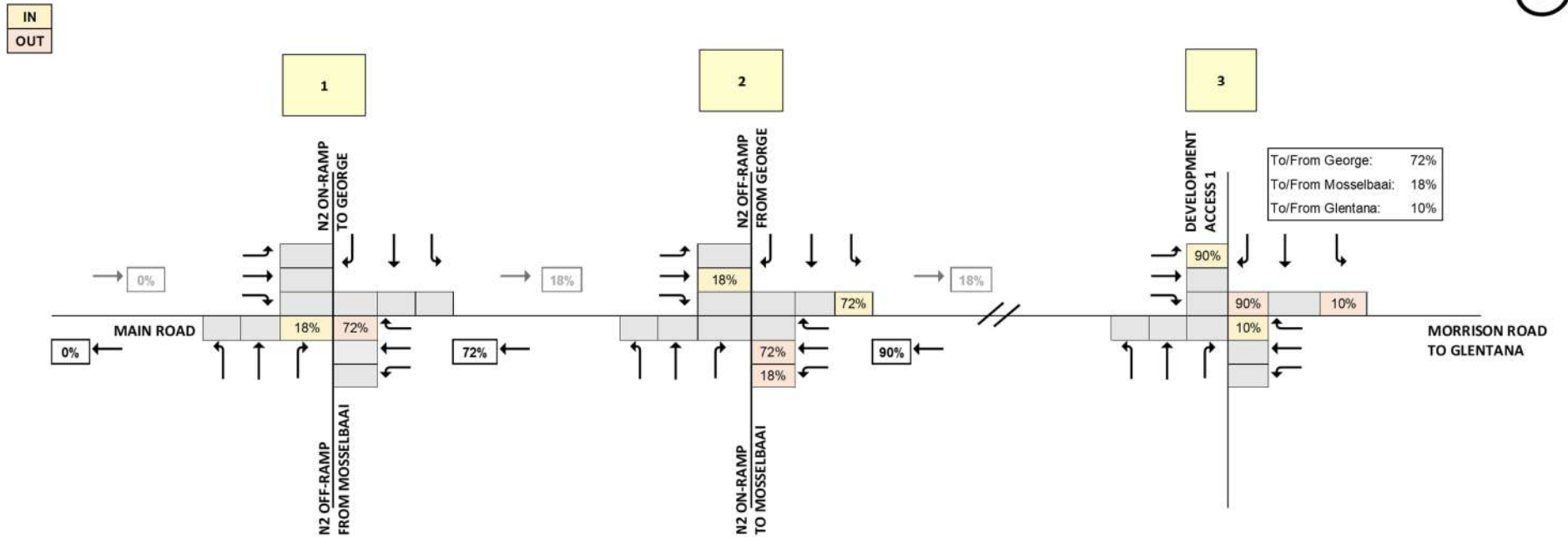


Figure 4-1: Trip Distribution and Assignment Pattern

5 INTERSECTION TRAFFIC ANALYSIS

The following intersections were included in the traffic analysis:

1. N2 Northern Terminal
2. N2 Southern Terminal
3. Development Access | Morrison Road

The following key factors were considered in the intersection traffic analysis to ensure that the operational assessment accurately reflects both existing and future traffic conditions associated with the proposed development.

1. Determination of the Worst-Case Scenario (Collated Traffic Volumes)

The analyses were undertaken for the two worst case trip generation scenarios which is the AM and PM weekday peak periods.

2. Application of Background Traffic Growth

The 2025 background traffic volumes at the surveyed intersections were projected to 2030 using a 2% annual growth rate. As the development is located within the established, semi-rural town area, the area falls within the low-growth category (0–3%) as defined in TMH 17. The selected 2% annual growth rate is therefore representative of the average growth rate for such an environment.

3. Consideration of Heavy Vehicle Traffic

A uniform heavy vehicle percentage of 2% was applied to all traffic volumes in the analyses, in line with the observed heavy vehicle presence from the manual traffic counts.

4. Dedicated right turning lanes

Dedicated right turning lanes are proposed to be provided along Morrison Road at the accesses to the development, as well as the service entrance (although this access was not analysed). The proposed turning lanes, of 30m length, have already been included in the intersection traffic analyses for the access in this chapter.

The following scenarios were analysed for the external and individual intersections under the AM and PM peak-hour conditions:

Scenario 1:

2025 Base Year Background Traffic Operating Conditions

Scenario 2:

2030 Horizon Year Background Traffic Operating Conditions

Scenario 3:

2030 Horizon Year Background Traffic + Development Traffic Operating Conditions.

The traffic volumes applied for each of the above analysis scenarios are captured in the following Figures that is presented in **Annexure B**:

- **Figure B-1:** 2025 Base Year – AM Peak Background Traffic
- **Figure B-2:** 2030 Horizon Year – AM Peak Background Traffic
- **Figure B-3:** AM Peak Trip Distribution and Assignment
- **Figure B-4:** AM Peak Development Traffic
- **Figure B-5:** 2030 Horizon Year – AM Peak Background Traffic + Development Traffic
- **Figure B-6:** 2025 Base Year – PM Peak Background Traffic
- **Figure B-7:** 2030 Horizon Year – PM Peak Background Traffic
- **Figure B-8:** PM Peak Trip Distribution and Assignment
- **Figure B-9:** PM Peak Development Traffic
- **Figure B-10:** 2030 Horizon Year – PM Peak Background Traffic + Development Traffic

The traffic impact expected from the proposed development at the key intersections within the study area was determined using SIDRA Intersection 9.1, a traffic engineering software package. The SIDRA outputs are included under **Annexure C**.

The existing intersection geometry was replicated as closely as possible in the SIDRA base case analysis, including all turning lanes and the spacing between intersections. A standard lane width of 3.5 metres was applied consistently throughout the analysis.

5.1 Intersection 1: N2 Northern Terminal

The intersection of Morrison (Main) Road and the N2 (i.e. N2 northern terminal) operates as a side-road stop-controlled intersection for the off-ramp from Mossel Bay. The major traffic movement along Morrison (Main) Road is free flowing. The intersection's current geometric layout is schematically shown on **Figure 5-1**.

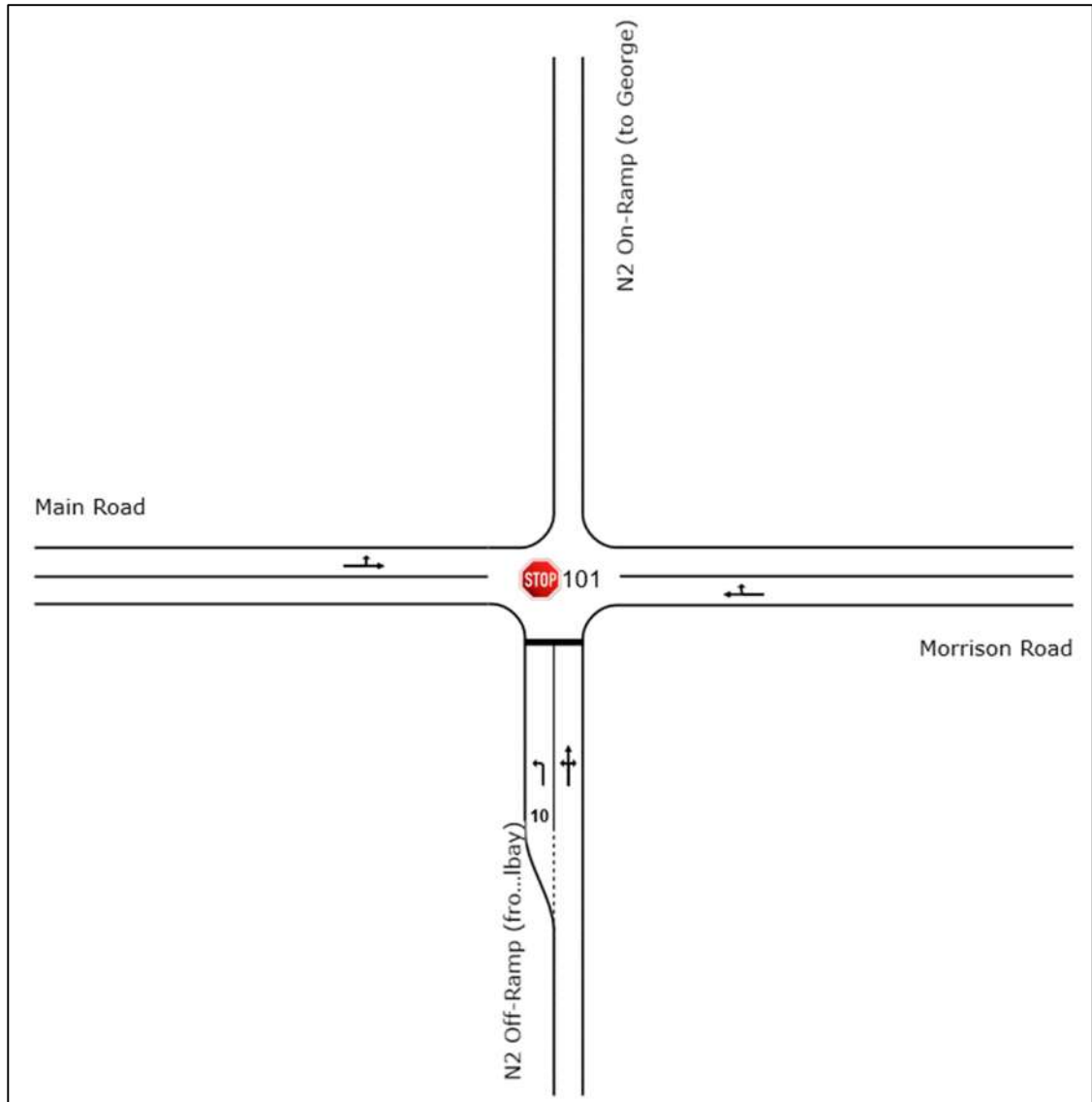


Figure 5-1: N2 Northern Terminal - Schematic Layout of Existing Geometry

The traffic operation conditions for all three analysis scenarios indicate that the intersection will be able to accommodate the existing and expected traffic volumes for all the analysis scenarios and therefore no upgrades to this intersection are required to accommodate the future traffic demand for the background traffic volumes or the development traffic.

Tabled below are the various *Traffic Operating Conditions* for each scenario analysis:

AM PEAK PERIOD:**Scenario 1:**

Approach	Movement	V/C	Delay (s)	LOS
South: N2 Off-Ramp (from Mosselbay)	Left	0,014	8,2	LOS A
	Through	0,014	8,9	LOS A
	Right	0,014	8,8	LOS A
East: Morrison Road	Through	0,112	0,1	LOS A
	Right	0,112	5,8	LOS A
West: Main Road	Left	0,021	5,6	LOS A
	Through	0,021	0	LOS A
Intersection		0,112	4,8	NA

Scenario 2:

Approach	Movement	V/C	Delay (s)	LOS
South: N2 Off-Ramp (from Mosselbay)	Left	0,016	8,2	LOS A
	Through	0,016	9	LOS A
	Right	0,016	8,9	LOS A
East: Morrison Road	Through	0,123	0,1	LOS A
	Right	0,123	5,8	LOS A
West: Main Road	Left	0,022	5,6	LOS A
	Through	0,022	0	LOS A
Intersection		0,123	4,9	NA

Scenario 3:

Approach	Movement	V/C	Delay (s)	LOS
South: N2 Off-Ramp (from Mosselbay)	Left	0,02	8,2	LOS A
	Through	0,02	9,3	LOS A
	Right	0,02	9,2	LOS A
East: Morrison Road	Through	0,143	0,1	LOS A
	Right	0,143	5,8	LOS A
West: Main Road	Left	0,022	5,6	LOS A
	Through	0,022	0	LOS A
Intersection		0,143	5	NA

PM PEAK PERIOD:**Scenario 1:**

Approach	Movement	V/C	Delay (s)	LOS
South: N2 Off-Ramp (from Mosselbay)	Left	0,015	8,2	LOS A
	Through	0,015	8,8	LOS A
	Right	0,015	8,6	LOS A
East: Morrison Road	Through	0,099	0,1	LOS A
	Right	0,099	5,7	LOS A
West: Main Road	Left	0,019	5,6	LOS A
	Through	0,019	0	LOS A
Intersection		0,099	4,6	NA

Scenario 2:

Approach	Movement	V/C	Delay (s)	LOS
South: N2 Off-Ramp (from Mosselbay)	Left	0,018	8,2	LOS A
	Through	0,018	8,9	LOS A
	Right	0,018	8,8	LOS A
East: Morrison Road	Through	0,11	0,1	LOS A
	Right	0,11	5,8	LOS A
West: Main Road	Left	0,021	5,6	LOS A
	Through	0,021	0	LOS A
Intersection		0,11	4,6	NA

Scenario 3:

Approach	Movement	V/C	Delay (s)	LOS
South: N2 Off-Ramp (from Mosselbay)	Left	0,027	8,2	LOS A
	Through	0,027	9	LOS A
	Right	0,027	8,9	LOS A
East: Morrison Road	Through	0,118	0,1	LOS A
	Right	0,118	5,8	LOS A
West: Main Road	Left	0,021	5,6	LOS A
	Through	0,021	0	LOS A
Intersection		0,118	4,8	NA

5.2 Intersection 2: N2 Southern Terminal

The intersection of Morrison (Main) Road and the N2 (i.e. N2 southern terminal) operates as a side-road stop-controlled intersection for the off-ramp from George. The major traffic movement along Morrison (Main) Road is free flowing. The intersection's current geometric layout is schematically shown on **Figure 5-2**.

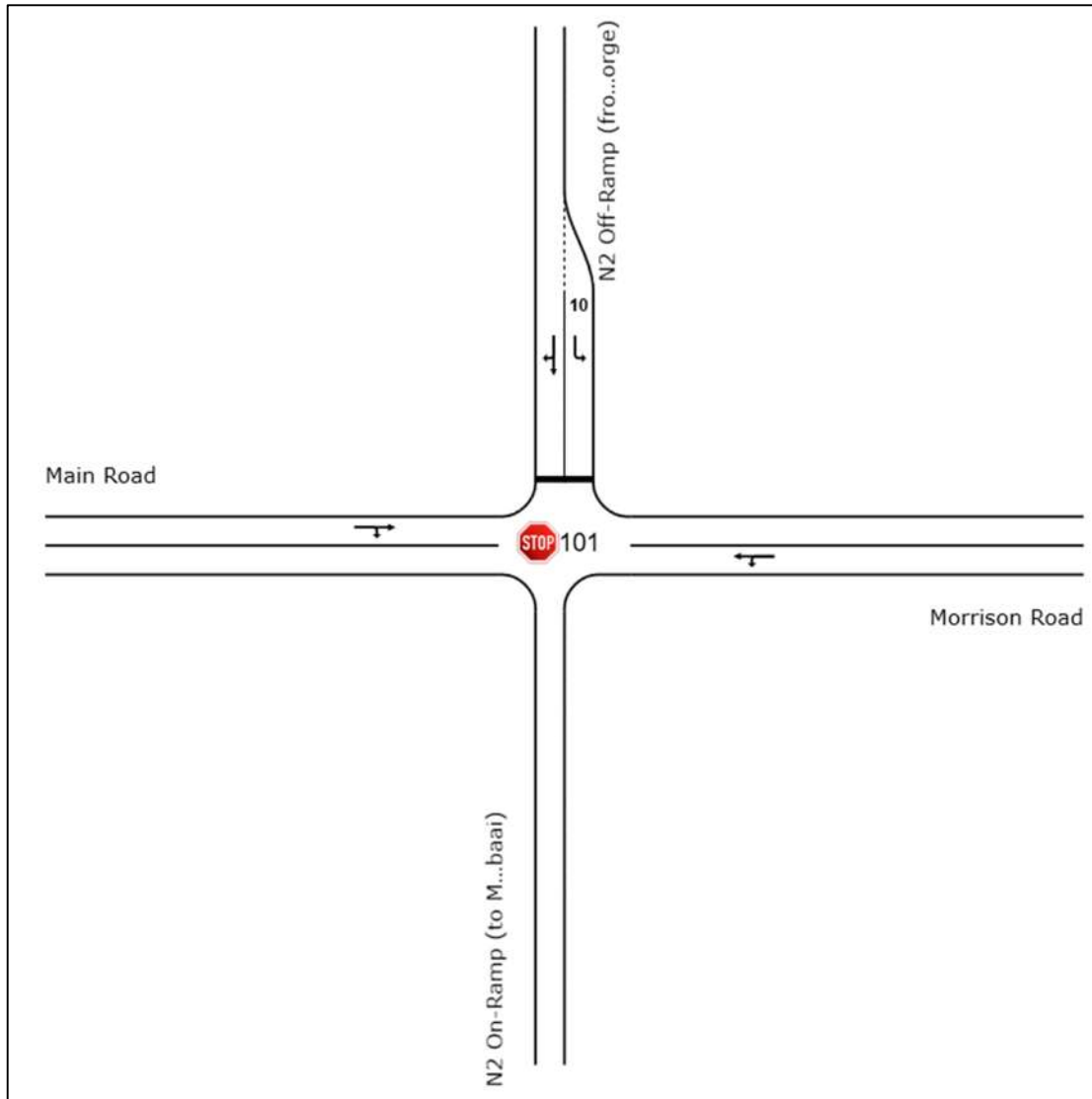


Figure 5-2: N2 Southern Terminal - Schematic Layout of Proposed Geometry

The traffic operation conditions for all three analysis scenarios indicate that the intersection will be able to accommodate the existing and expected traffic volumes for all the analysis scenarios and therefore no upgrades to this intersection are required to accommodate the future traffic demand for the background traffic volumes or the development traffic.

Tabled below is various *Traffic Operating Conditions* for each scenario analysis:

AM PEAK PERIOD:**Scenario 1:**

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Left	0,098	5,6	LOS A
	Through	0,098	0	LOS A
North: N2 Off-Ramp (from George)	Left	0,049	8,1	LOS A
	Through	0,017	8,8	LOS A
	Right	0,017	8,7	LOS A
West: Main Road	Through	0,011	0,3	LOS A
	Right	0,011	6,2	LOS A
Intersection		0,098	2,6	NA

Scenario 2:

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Left	0,108	5,6	LOS A
	Through	0,108	0	LOS A
North: N2 Off-Ramp (from George)	Left	0,054	8,1	LOS A
	Through	0,019	8,9	LOS A
	Right	0,019	8,9	LOS A
West: Main Road	Through	0,012	0,4	LOS A
	Right	0,012	6,3	LOS A
Intersection		0,108	2,6	NA

Scenario 3:

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Left	0,13	5,6	LOS A
	Through	0,13	0	LOS A
North: N2 Off-Ramp (from George)	Left	0,062	8,2	LOS A
	Through	0,02	9,2	LOS A
	Right	0,02	9,2	LOS A
West: Main Road	Through	0,017	0,4	LOS A
	Right	0,017	6,4	LOS A
Intersection		0,13	2,6	NA

PM PEAK PERIOD:**Scenario 1:**

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Left	0,068	5,6	LOS A
	Through	0,068	0	LOS A
North: N2 Off-Ramp (from George)	Left	0,095	8,2	LOS A
	Through	0,028	8,5	LOS A
	Right	0,028	8,4	LOS A
West: Main Road	Through	0,014	0,2	LOS A
	Right	0,014	6	LOS A
Intersection		0,095	4,5	NA

Scenario 2:

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Left	0,076	5,6	LOS A
	Through	0,076	0	LOS A
North: N2 Off-Ramp (from George)	Left	0,105	8,2	LOS A
	Through	0,031	8,6	LOS A
	Right	0,031	8,5	LOS A
West: Main Road	Through	0,016	0,2	LOS A
	Right	0,016	6,1	LOS A
Intersection		0,105	4,5	NA

Scenario 3:

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Left	0,085	5,6	LOS A
	Through	0,085	0	LOS A
North: N2 Off-Ramp (from George)	Left	0,128	8,2	LOS A
	Through	0,032	8,7	LOS A
	Right	0,032	8,6	LOS A
West: Main Road	Through	0,018	0,2	LOS A
	Right	0,018	6,1	LOS A
Intersection		0,128	4,6	NA

5.3 Intersection 3: Morrison Road | Development Access

The intersection of Morrison Road and the Development Access will operate as a side-road stop-controlled intersection for the Development Access. The major traffic movement along Morrison Road will remain free flowing, with a **30m dedicated turning right turn lane proposed**. This configuration is schematically illustrated in **Figure 5-3**.

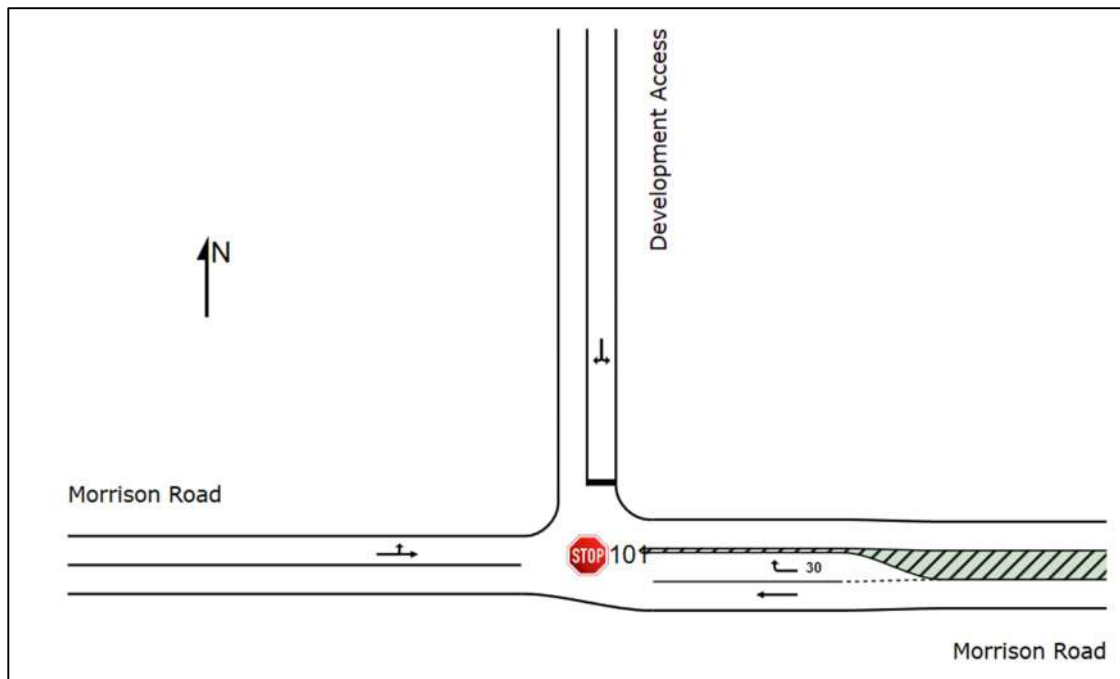


Figure 5-3: Morrison Road | Development Access - Schematic Layout of Proposed Geometry

The traffic operation conditions for all three analysis scenarios indicate the that the intersection will be able to accommodate the existing and expected traffic volumes for all the analysis scenarios and therefore no upgrades to this intersection are required to accommodate the future traffic demand for the background traffic volumes or the development traffic.

Tabled below is various *Traffic Operating Conditions* for each scenario analysis:

AM PEAK PERIOD:**Scenario 1:**

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Through	0,077	0	LOS A
	Right	0,001	5,7	LOS A
North: Development Access	Left	0,051	8,3	LOS A
	Right	0,051	9,2	LOS A
West: Morrison Road	Left	0,041	5,6	LOS A
	Through	0,041	0	LOS A
Intersection		0,077	1,7	NA

Scenario 2:

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Through	0,086	0	LOS A
	Right	0,001	5,7	LOS A
North: Development Access	Left	0,053	8,4	LOS A
	Right	0,053	9,4	LOS A
West: Morrison Road	Left	0,045	5,6	LOS A
	Through	0,045	0	LOS A
Intersection		0,086	1,6	NA

Scenario 3:

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Through	0,086	0	LOS A
	Right	0,002	5,8	LOS A
North: Development Access	Left	0,111	8,4	LOS A
	Right	0,111	9,6	LOS A
West: Morrison Road	Left	0,053	5,6	LOS A
	Through	0,053	0	LOS A
Intersection		0,111	2,9	NA

PM PEAK PERIOD:**Scenario 1:**

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Through	0,06	0	LOS A
	Right	0,003	5,9	LOS A
North: Development Access	Left	0,022	8,5	LOS A
	Right	0,022	9,3	LOS A
West: Morrison Road	Left	0,079	5,6	LOS A
	Through	0,079	0	LOS A
Intersection		0,079	1,4	NA

Scenario 2:

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Through	0,067	0	LOS A
	Right	0,003	5,9	LOS A
North: Development Access	Left	0,023	8,6	LOS A
	Right	0,023	9,5	LOS A
West: Morrison Road	Left	0,085	5,6	LOS A
	Through	0,085	0	LOS A
Intersection		0,085	1,3	NA

Scenario 3:

Approach	Movement	V/C	Delay (s)	LOS
East: Morrison Road	Through	0,067	0	LOS A
	Right	0,006	6,1	LOS A
North: Development Access	Left	0,047	8,6	LOS A
	Right	0,047	9,8	LOS A
West: Morrison Road	Left	0,106	5,6	LOS A
	Through	0,106	0	LOS A
Intersection		0,106	2,2	NA

6 CONCLUSIONS

Based on the content of this study, it is concluded from the investigations that:

1. The Traffic Study was conducted in terms of requirements provided in the following design guidelines and standards:
 - TMH 16 Volume 2 (South African Traffic Impact and Site Impact Assessment of 2012);
 - TMH 17 Volume 1 (South African Trip Data Manual of 2012);
 - George Integrated Zoning Scheme By-Law (2023).
2. The proposed development consists of 81 small farms and 110 formal housing for low-income residents to be retained on the development site within the agri-residential village. The latter have very low vehicle ownership and very low employment rates.
3. The existing development consists of 31 farm positions which all have rights for a single residential house, and 110 households informally settled across the properties.
4. The additional peak hour vehicular trip generation of the proposed development is estimated to be 59 trips during the morning and afternoon peak hours respectively. This is not significant from a traffic engineering perspective.
5. Access to the development is via a side road stop-controlled access to the development on Morrison Road. A second side-road stop-controlled service entrance is provided to the development on Morrison Road.
6. The impact of the development traffic on the operating conditions were evaluated at the following intersections using the SIDRA INTERSECTION software:
 - a. N2 Northern Terminal at Morrison (Main) Road
 - b. N2 Southern Terminal at Morrison (Main) Road
 - c. Development Access | Morrison Road
7. The analysis indicates that the intersections can accommodate the expected traffic demand without upgrades and with side road stop control.
8. Although the intersection traffic analyses indicate that no external road upgrades are required to accommodate the development traffic, from a safety perspective it is recommended that dedicated right turn lanes with a length of 30m be provided at the development accesses on Morrison Road (along Morrison Road), as well as the service entrance along Morrison Road, to reduce friction along the road and to improve traffic safety at the respective accesses (i.e. Development Access and Service Entrance).

7 RECOMMENDATIONS

It is recommended that the proposed Hoogeland Coastal Farmsteads development be approved from a traffic engineering perspective with the following conditions:

- a) A dedicated 30m right turning lane be provided along Morrison Road at all main access to the development as well as the service access.

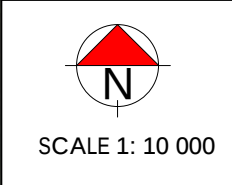


ANNERI MARITZ (PR. ENG. | 202402861)
TRAFFIC & TRANSPORT ENGINEER

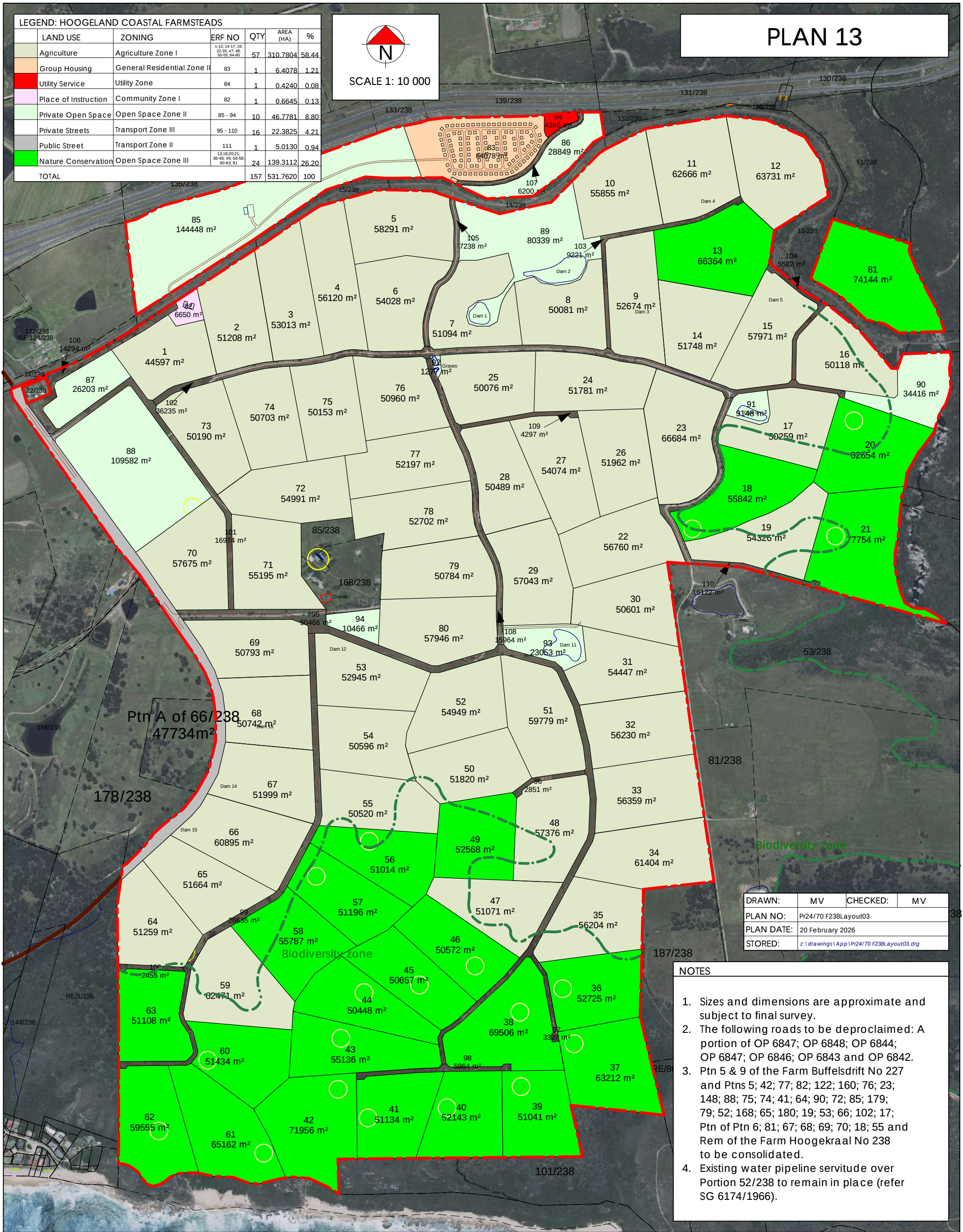
for **EDS ENGINEERING DESIGN SERVICES (PTY) LTD**

Annexure A: Site Layout Plan

LEGEND: HOOGELAND COASTAL FARMSTEADS						
LAND USE	ZONING	ERF NO	QTY	AREA (HA)	%	
Agriculture	Agriculture Zone I	1-12; 14-17; 19; 22-35; 47; 48; 50-55; 64-69	57	310.7804	58.44	
Group Housing	General Residential Zone II	83	1	6.4078	1.21	
Utility Service	Utility Zone	84	1	0.4240	0.08	
Place of Instruction	Community Zone I	82	1	0.6645	0.13	
Private Open Space	Open Space Zone II	85 - 94	10	46.7781	8.80	
Private Streets	Transport Zone III	95 - 110	16	22.3825	4.21	
Public Street	Transport Zone II	111	1	5.0130	0.94	
Nature Conservation	Open Space Zone III	113-120; 20; 21; 36-45; 49; 56-58; 60-63; 81	24	139.3112	26.20	
TOTAL			157	531.7620	100	



PLAN 13



DRAWN:	MV	CHECKED:	MV
PLAN NO:	Pr24/70 F238Layout03		
PLAN DATE:	20 February 2026		
STORED:	z:\drawings\app\Pr24/70 F238Layout03.dwg		

- NOTES
- Sizes and dimensions are approximate and subject to final survey.
 - The following roads to be deproclaimed: A portion of OP 6847; OP 6848; OP 6844; OP 6847; OP 6846; OP 6843 and OP 6842.
 - Ptn 5 & 9 of the Farm Buffelsdrift No 227 and Ptns 5; 42; 77; 82; 122; 160; 76; 23; 148; 88; 75; 74; 41; 64; 90; 72; 85; 179; 79; 52; 168; 65; 180; 19; 53; 66; 102; 17; Ptn of Ptn 6; 81; 67; 68; 69; 70; 18; 55 and Rem of the Farm Hoogekraal No 238 to be consolidated.
 - Existing water pipeline servitude over Portion 52/238 to remain in place (refer SG 6174/1966).

PORTIONS OF THE FARM HOOGEKRAAL
NO 238, DIVISION GEORGE

LAYOUT PLAN

MUNICIPAL MANAGER

DATE: _____



21 Trotter Street, PO Box 2180
KNYSNA 6570

(044) 382 0420
086-459-2987
e-mail: marike@vreken.co.za
www.vreken.co.za

Annexure B: Traffic Volume Figures

2025 BASE YEAR - WEEKDAY AM PEAK BACKGROUND TRAFFIC VOLUMES (06:45 - 07:45)
Scenario 1

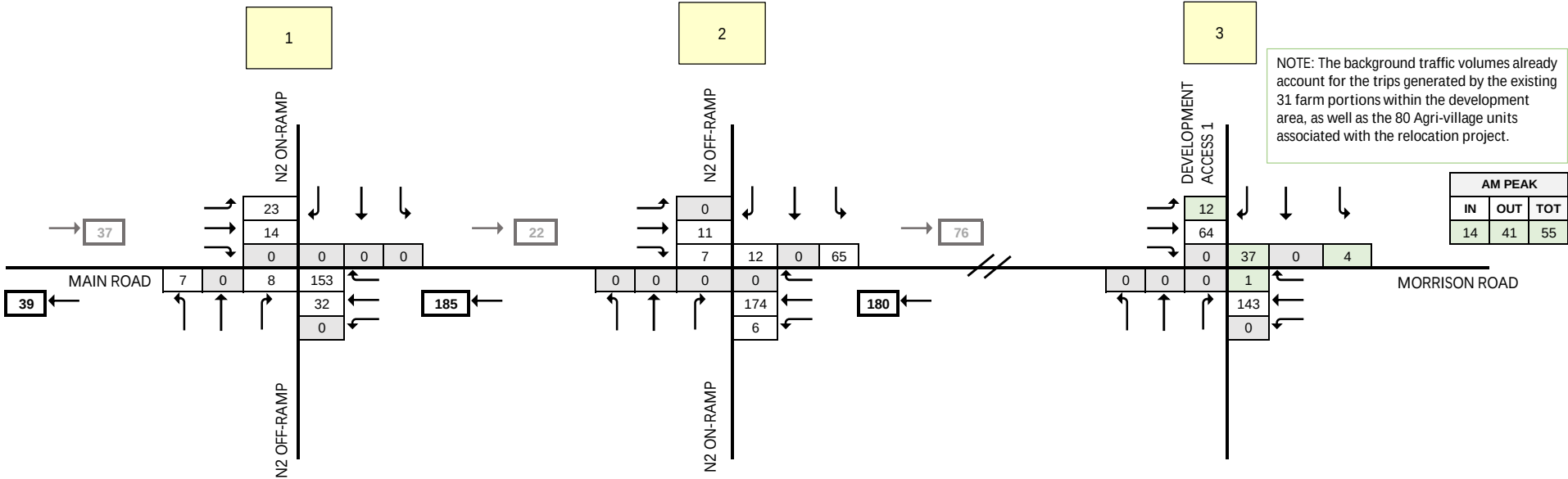


Figure B-1

2030 HORIZON YEAR - WEEKDAY AM PEAK BACKGROUND TRAFFIC VOLUMES (06:45 - 07:45)
Scenario 2

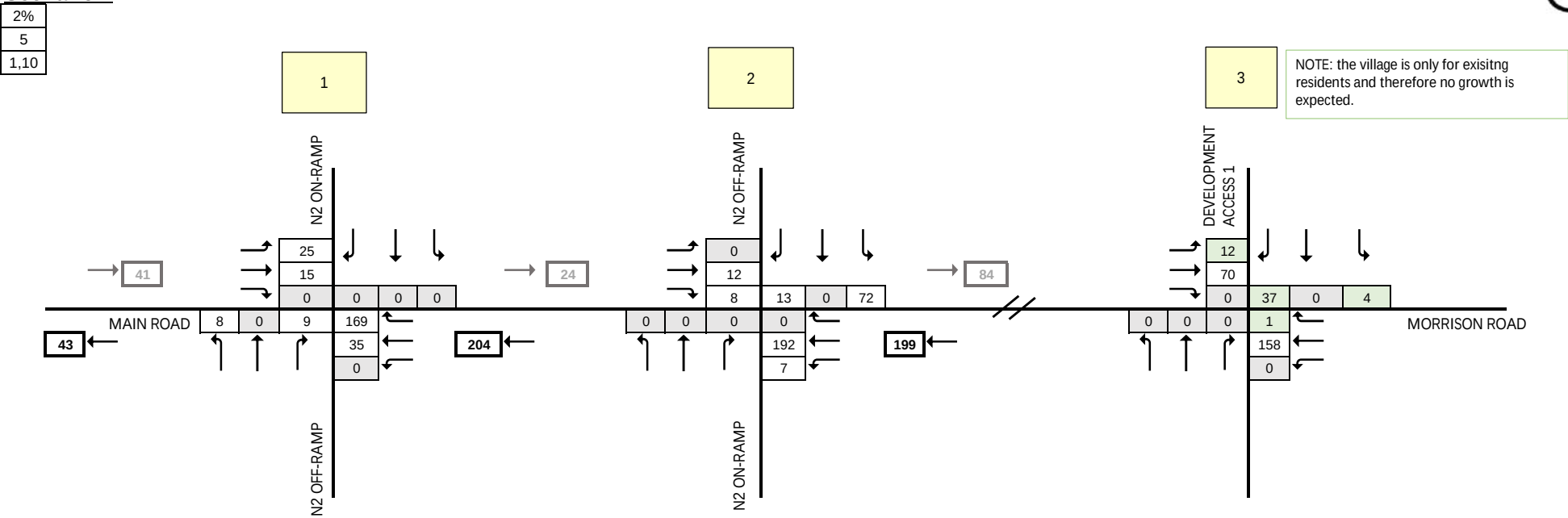


Figure B-2

TRIP DISTRIBUTION & ASSIGNMENT

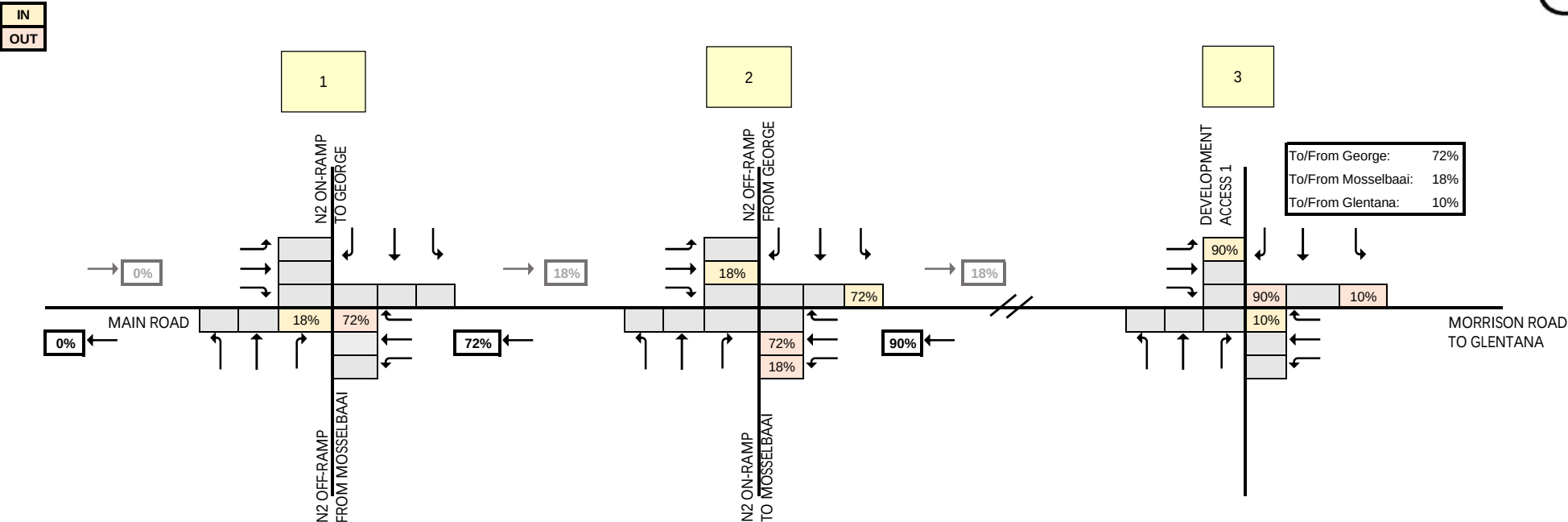


Figure B-3

WEEKDAY AM PEAK DEVELOPMENT TRIPS

15	INBOUND
44	OUTBOUND
59	

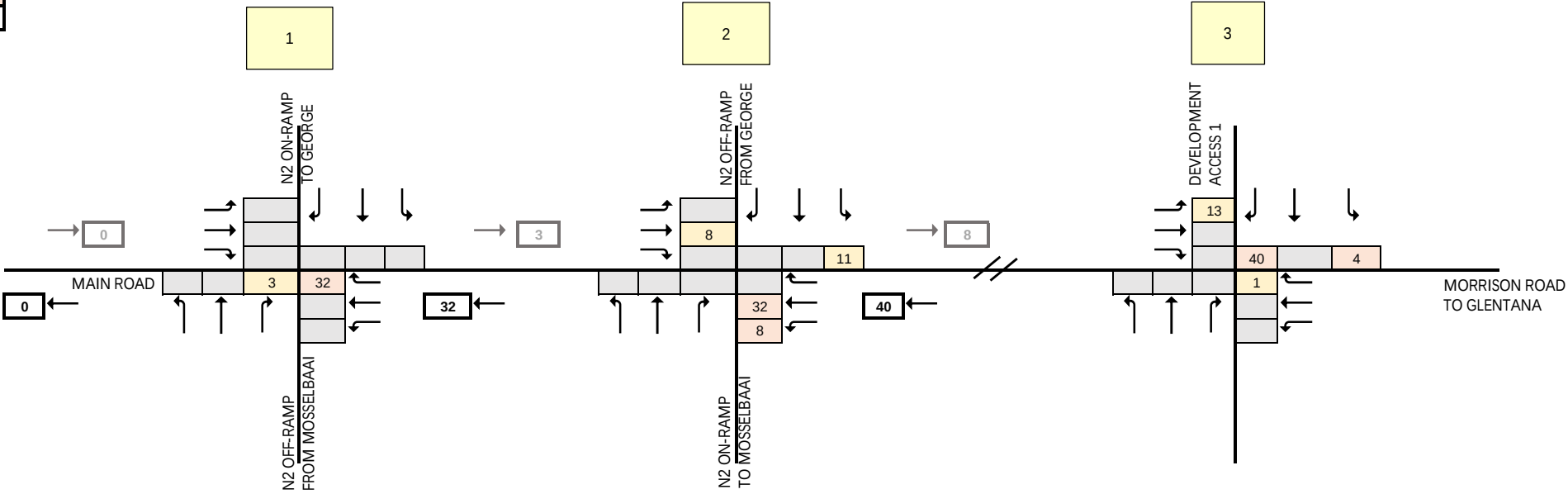


Figure B-4

2030 WEEKDAY AM PEAK HORIZON YEAR + DEVELOPMENT TRIPS
Scenario 3

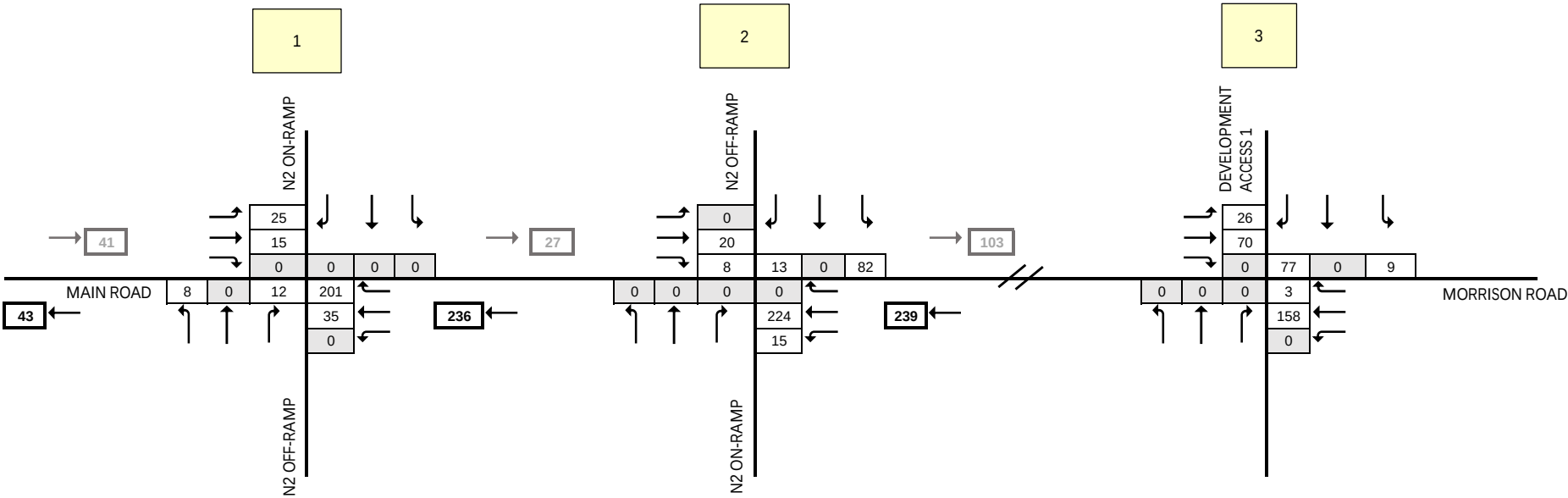


Figure B-5

2025 BASE YEAR - WEEKDAY PM PEAK BACKGROUND TRAFFIC VOLUMES (16:30 - 17:30)
Scenario 1

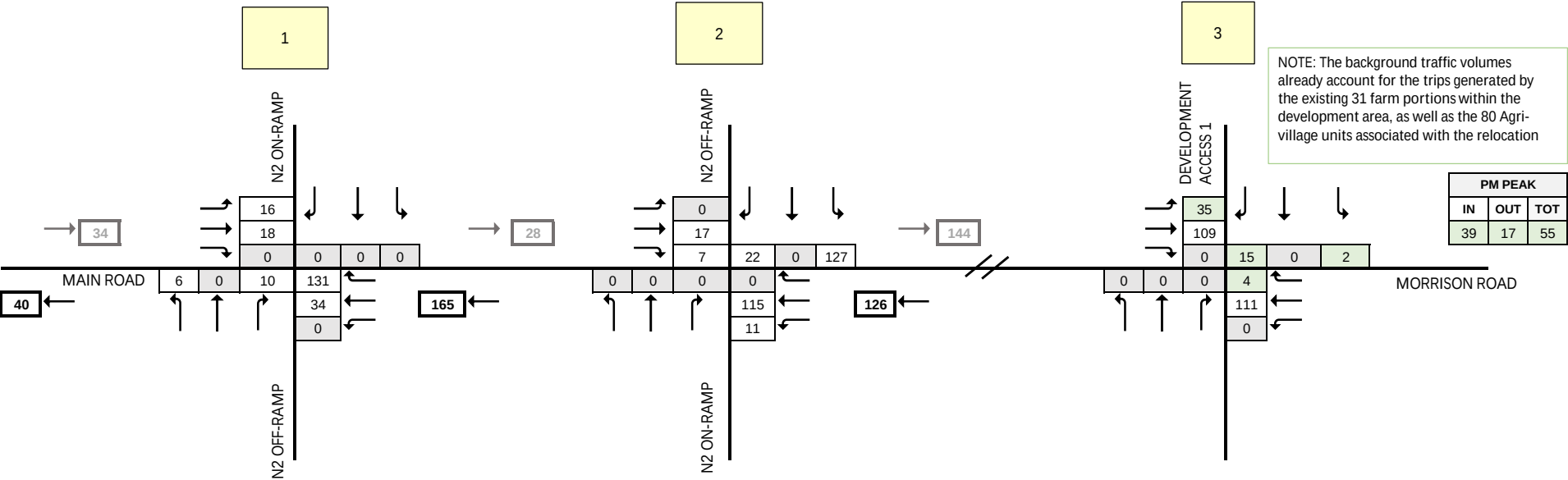


Figure B-6

2030 HORIZON YEAR - WEEKDAY AM PEAK BACKGROUND TRAFFIC VOLUMES (16:30 - 17:30)
Scenario 2

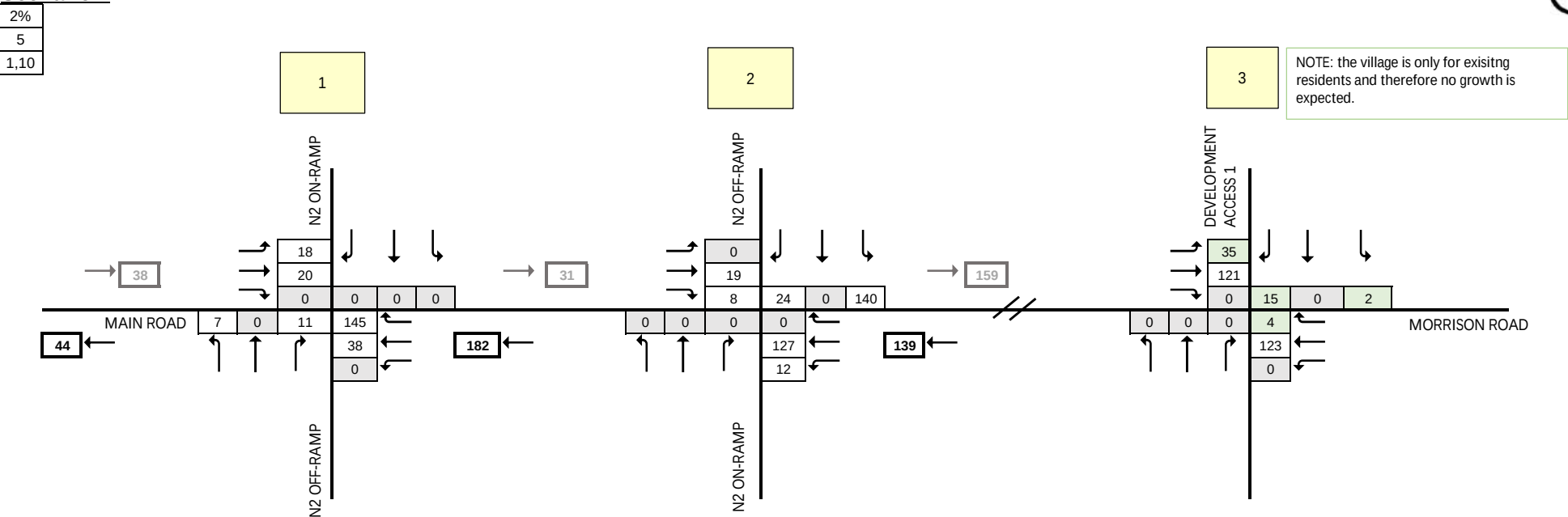


Figure B-7

TRIP DISTRIBUTION & ASSIGNMENT

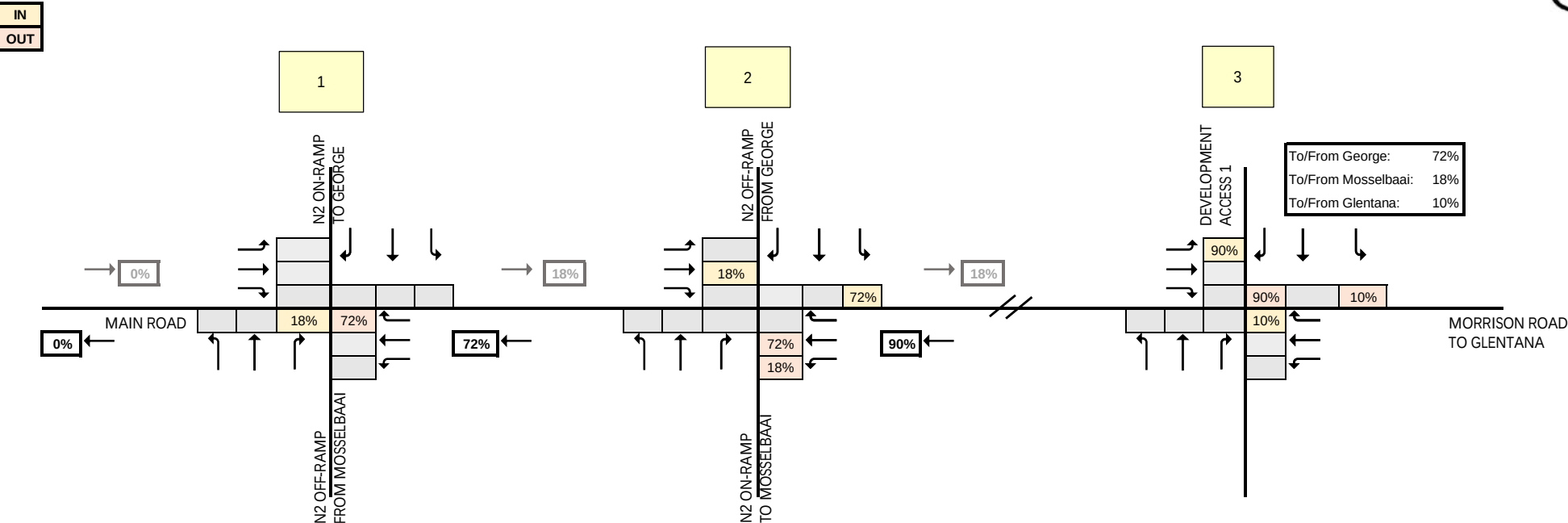


Figure B-8

WEEKDAY PM PEAK DEVELOPMENT TRIPS

41	INBOUND
18	OUTBOUND
59	

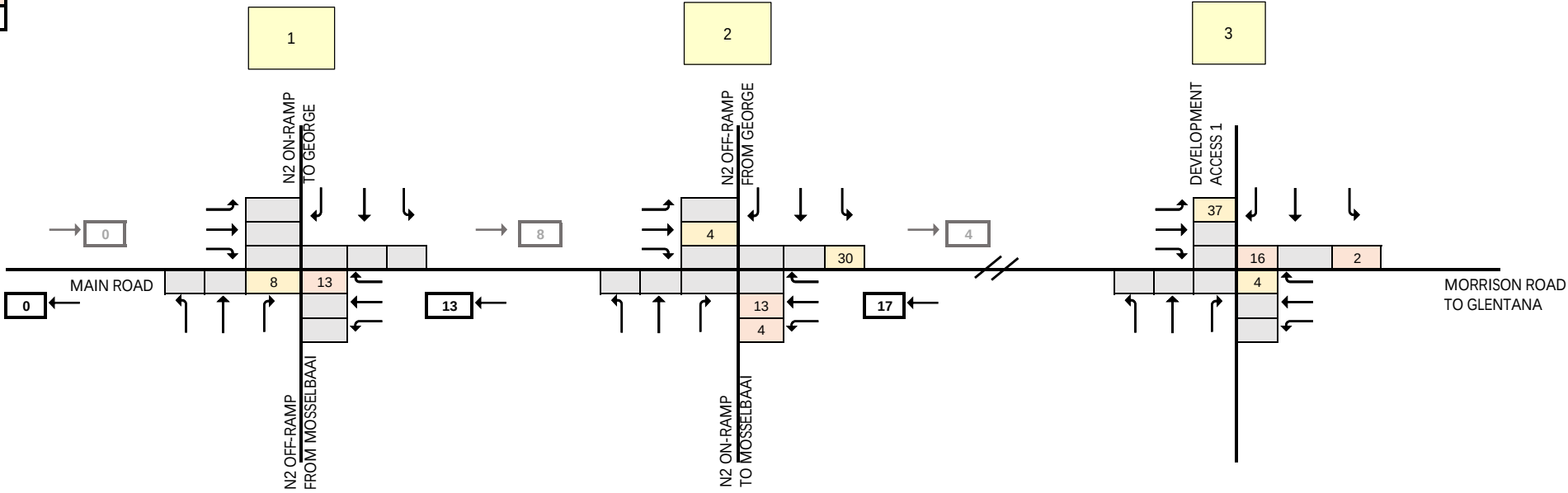


Figure B-9

2030 WEEKDAY PM PEAK HORIZON YEAR + DEVELOPMENT TRIPS
Scenario 3

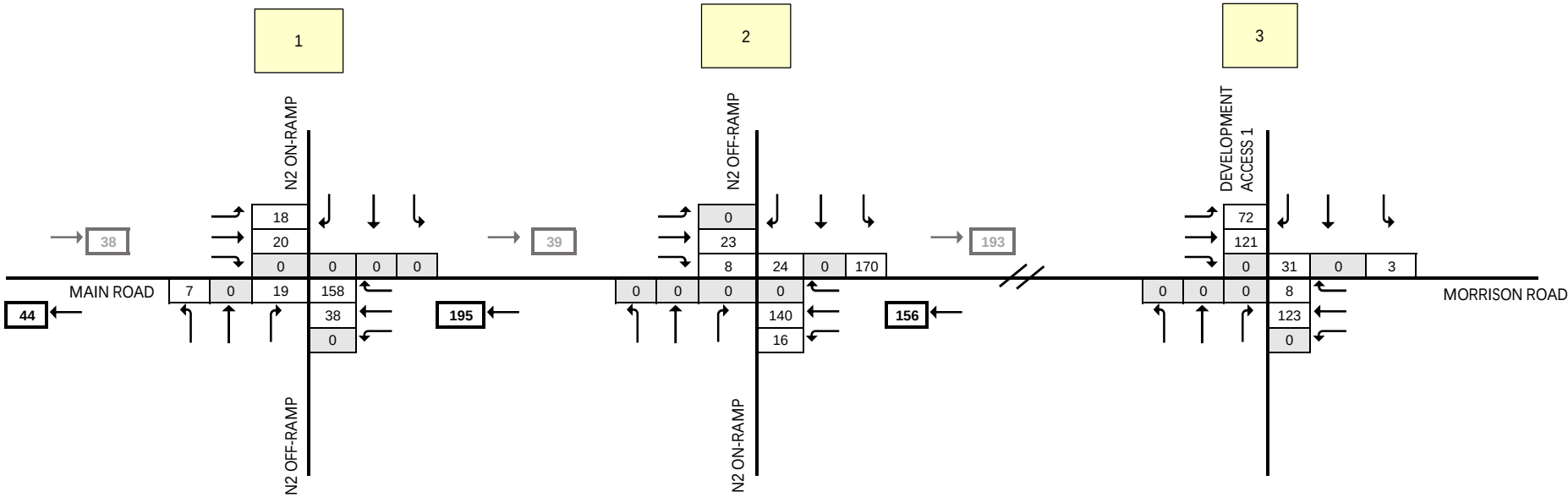


Figure B-10

Annexure C: SIDRA Analysis Extracts

MOVEMENT SUMMARY

 **Site: 101 [Int 1_S1: N2 Northern Terminal (Site Folder: AM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: N2 Off-Ramp (from Mosselbay)															
1	L2	All MCs	7	2,0	7	2,0	0,014	8,2	LOS A	0,0	0,3	0,15	0,90	0,15	50,9
2	T1	All MCs	1	2,0	1	2,0	0,014	8,9	LOS A	0,0	0,3	0,20	0,88	0,20	50,8
3	R2	All MCs	8	2,0	8	2,0	0,014	8,8	LOS A	0,0	0,3	0,20	0,88	0,20	47,1
Approach			17	2,0	17	2,0	0,014	8,5	LOS A	0,0	0,3	0,18	0,89	0,18	49,3
East: Morrison Road															
5	T1	All MCs	34	2,0	34	2,0	0,112	0,1	LOS A	0,6	3,9	0,12	0,49	0,12	53,6
6	R2	All MCs	161	2,0	161	2,0	0,112	5,8	LOS A	0,6	3,9	0,12	0,49	0,12	50,1
Approach			195	2,0	195	2,0	0,112	4,8	NA	0,6	3,9	0,12	0,49	0,12	50,7
West: Main Road															
10	L2	All MCs	24	2,0	24	2,0	0,021	5,6	LOS A	0,0	0,0	0,00	0,37	0,00	54,4
11	T1	All MCs	15	2,0	15	2,0	0,021	0,0	LOS A	0,0	0,0	0,00	0,37	0,00	55,5
Approach			39	2,0	39	2,0	0,021	3,5	NA	0,0	0,0	0,00	0,37	0,00	54,8
All Vehicles			251	2,0	251	2,0	0,112	4,8	NA	0,6	3,9	0,11	0,50	0,11	51,3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 1_S2: N2 Northern Terminal (Site Folder: AM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: N2 Off-Ramp (from Mosselbay)															
1	L2	All MCs	8	2,0	8	2,0	0,016	8,2	LOS A	0,1	0,4	0,16	0,90	0,16	50,9
2	T1	All MCs	1	2,0	1	2,0	0,016	9,0	LOS A	0,1	0,4	0,22	0,88	0,22	50,8
3	R2	All MCs	9	2,0	9	2,0	0,016	8,9	LOS A	0,1	0,4	0,22	0,88	0,22	47,0
Approach			19	2,0	19	2,0	0,016	8,6	LOS A	0,1	0,4	0,19	0,89	0,19	49,2
East: Morrison Road															
5	T1	All MCs	37	2,0	37	2,0	0,123	0,1	LOS A	0,6	4,4	0,13	0,49	0,13	53,5
6	R2	All MCs	178	2,0	178	2,0	0,123	5,8	LOS A	0,6	4,4	0,13	0,49	0,13	50,1
Approach			215	2,0	215	2,0	0,123	4,8	NA	0,6	4,4	0,13	0,49	0,13	50,7
West: Main Road															
10	L2	All MCs	26	2,0	26	2,0	0,022	5,6	LOS A	0,0	0,0	0,00	0,37	0,00	54,4
11	T1	All MCs	16	2,0	16	2,0	0,022	0,0	LOS A	0,0	0,0	0,00	0,37	0,00	55,5
Approach			42	2,0	42	2,0	0,022	3,5	NA	0,0	0,0	0,00	0,37	0,00	54,7
All Vehicles			276	2,0	276	2,0	0,123	4,9	NA	0,6	4,4	0,12	0,50	0,12	51,2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 1_S3: N2 Northern Terminal (Site Folder: AM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: N2 Off-Ramp (from Mosselbay)															
1	L2	All MCs	8	2,0	8	2,0	0,020	8,2	LOS A	0,1	0,5	0,16	0,90	0,16	50,9
2	T1	All MCs	1	2,0	1	2,0	0,020	9,3	LOS A	0,1	0,5	0,26	0,87	0,26	50,6
3	R2	All MCs	13	2,0	13	2,0	0,020	9,2	LOS A	0,1	0,5	0,26	0,87	0,26	46,8
Approach			22	2,0	22	2,0	0,020	8,8	LOS A	0,1	0,5	0,22	0,88	0,22	48,8
East: Morrison Road															
5	T1	All MCs	37	2,0	37	2,0	0,143	0,1	LOS A	0,7	5,2	0,13	0,50	0,13	53,4
6	R2	All MCs	212	2,0	212	2,0	0,143	5,8	LOS A	0,7	5,2	0,13	0,50	0,13	50,0
Approach			248	2,0	248	2,0	0,143	4,9	NA	0,7	5,2	0,13	0,50	0,13	50,4
West: Main Road															
10	L2	All MCs	26	2,0	26	2,0	0,022	5,6	LOS A	0,0	0,0	0,00	0,37	0,00	54,4
11	T1	All MCs	16	2,0	16	2,0	0,022	0,0	LOS A	0,0	0,0	0,00	0,37	0,00	55,5
Approach			42	2,0	42	2,0	0,022	3,5	NA	0,0	0,0	0,00	0,37	0,00	54,7
All Vehicles			313	2,0	313	2,0	0,143	5,0	NA	0,7	5,2	0,12	0,51	0,12	51,0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 2_S1: N2 Southern Terminal (Site Folder: AM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
4	L2	All MCs	6	2,0	6	2,0	0,098	5,6	LOS A	0,0	0,0	0,00	0,02	0,00	57,2
5	T1	All MCs	183	2,0	183	2,0	0,098	0,0	LOS A	0,0	0,0	0,00	0,02	0,00	59,7
Approach			189	2,0	189	2,0	0,098	0,2	NA	0,0	0,0	0,00	0,02	0,00	59,6
North: N2 Off-Ramp (from George)															
7	L2	All MCs	68	2,0	68	2,0	0,049	8,1	LOS A	0,2	1,4	0,06	0,96	0,06	51,0
8	T1	All MCs	1	2,0	1	2,0	0,017	8,8	LOS A	0,1	0,4	0,30	0,88	0,30	50,9
9	R2	All MCs	13	2,0	13	2,0	0,017	8,7	LOS A	0,1	0,4	0,30	0,88	0,30	47,1
Approach			82	2,0	82	2,0	0,049	8,2	LOS A	0,2	1,4	0,10	0,94	0,10	50,5
West: Main Road															
11	T1	All MCs	12	2,0	12	2,0	0,011	0,3	LOS A	0,0	0,3	0,22	0,29	0,22	55,9
12	R2	All MCs	7	2,0	7	2,0	0,011	6,2	LOS A	0,0	0,3	0,22	0,29	0,22	52,2
Approach			19	2,0	19	2,0	0,011	2,6	NA	0,0	0,3	0,22	0,29	0,22	54,4
All Vehicles			291	2,0	291	2,0	0,098	2,6	NA	0,2	1,4	0,04	0,30	0,04	55,8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 2_S2: N2 Southern Terminal (Site Folder: AM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
4	L2	All MCs	7	2,0	7	2,0	0,108	5,6	LOS A	0,0	0,0	0,00	0,02	0,00	57,2
5	T1	All MCs	202	2,0	202	2,0	0,108	0,0	LOS A	0,0	0,0	0,00	0,02	0,00	59,7
Approach			209	2,0	209	2,0	0,108	0,2	NA	0,0	0,0	0,00	0,02	0,00	59,5
North: N2 Off-Ramp (from George)															
7	L2	All MCs	76	2,0	76	2,0	0,054	8,1	LOS A	0,2	1,6	0,06	0,95	0,06	51,0
8	T1	All MCs	1	2,0	1	2,0	0,019	8,9	LOS A	0,1	0,4	0,32	0,88	0,32	50,8
9	R2	All MCs	14	2,0	14	2,0	0,019	8,9	LOS A	0,1	0,4	0,32	0,88	0,32	47,0
Approach			91	2,0	91	2,0	0,054	8,2	LOS A	0,2	1,6	0,10	0,94	0,10	50,5
West: Main Road															
11	T1	All MCs	13	2,0	13	2,0	0,012	0,4	LOS A	0,0	0,3	0,24	0,30	0,24	55,8
12	R2	All MCs	8	2,0	8	2,0	0,012	6,3	LOS A	0,0	0,3	0,24	0,30	0,24	52,1
Approach			21	2,0	21	2,0	0,012	2,7	NA	0,0	0,3	0,24	0,30	0,24	54,2
All Vehicles			321	2,0	321	2,0	0,108	2,6	NA	0,2	1,6	0,04	0,30	0,04	55,8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 2_S3: N2 Southern Terminal (Site Folder: AM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
4	L2	All MCs	16	2,0	16	2,0	0,130	5,6	LOS A	0,0	0,0	0,00	0,04	0,00	57,0
5	T1	All MCs	236	2,0	236	2,0	0,130	0,0	LOS A	0,0	0,0	0,00	0,04	0,00	59,5
Approach			252	2,0	252	2,0	0,130	0,4	NA	0,0	0,0	0,00	0,04	0,00	59,2
North: N2 Off-Ramp (from George)															
7	L2	All MCs	86	2,0	86	2,0	0,062	8,2	LOS A	0,3	1,8	0,08	0,94	0,08	51,0
8	T1	All MCs	1	2,0	1	2,0	0,020	9,2	LOS A	0,1	0,5	0,36	0,88	0,36	50,6
9	R2	All MCs	14	2,0	14	2,0	0,020	9,2	LOS A	0,1	0,5	0,36	0,88	0,36	46,8
Approach			101	2,0	101	2,0	0,062	8,3	LOS A	0,3	1,8	0,12	0,93	0,12	50,5
West: Main Road															
11	T1	All MCs	21	2,0	21	2,0	0,017	0,4	LOS A	0,1	0,4	0,21	0,25	0,21	56,7
12	R2	All MCs	8	2,0	8	2,0	0,017	6,4	LOS A	0,1	0,4	0,21	0,25	0,21	52,8
Approach			29	2,0	29	2,0	0,017	2,1	NA	0,1	0,4	0,21	0,25	0,21	55,5
All Vehicles			382	2,0	382	2,0	0,130	2,6	NA	0,3	1,8	0,05	0,29	0,05	55,8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: 101 [Int 3_S1: Development Access / Morrison Road
(Site Folder: AM PEAK PERIOD)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
5	T1	All MCs	151	2,0	151	2,0	0,077	0,0	LOS A	0,0	0,0	0,00	0,00	0,00	60,0
6	R2	All MCs	1	2,0	1	2,0	0,001	5,7	LOS A	0,0	0,0	0,17	0,53	0,17	52,1
Approach			152	2,0	152	2,0	0,077	0,1	NA	0,0	0,0	0,00	0,00	0,00	59,9
North: Development Access															
7	L2	All MCs	4	2,0	4	2,0	0,051	8,3	LOS A	0,2	1,4	0,33	0,87	0,33	50,7
9	R2	All MCs	39	2,0	39	2,0	0,051	9,2	LOS A	0,2	1,4	0,33	0,87	0,33	50,5
Approach			43	2,0	43	2,0	0,051	9,1	LOS A	0,2	1,4	0,33	0,87	0,33	50,5
West: Morrison Road															
10	L2	All MCs	13	2,0	13	2,0	0,041	5,6	LOS A	0,0	0,0	0,00	0,09	0,00	56,6
11	T1	All MCs	67	2,0	67	2,0	0,041	0,0	LOS A	0,0	0,0	0,00	0,09	0,00	59,1
Approach			80	2,0	80	2,0	0,041	0,9	NA	0,0	0,0	0,00	0,09	0,00	58,7
All Vehicles			275	2,0	275	2,0	0,077	1,7	NA	0,2	1,4	0,05	0,17	0,05	57,9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: 101 [Int 3_S2: Development Access / Morrison Road
(Site Folder: AM PEAK PERIOD)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
5	T1	All MCs	166	2,0	166	2,0	0,086	0,0	LOS A	0,0	0,0	0,00	0,00	0,00	60,0
6	R2	All MCs	1	2,0	1	2,0	0,001	5,7	LOS A	0,0	0,0	0,18	0,53	0,18	52,1
Approach			167	2,0	167	2,0	0,086	0,1	NA	0,0	0,0	0,00	0,00	0,00	59,9
North: Development Access															
7	L2	All MCs	4	2,0	4	2,0	0,053	8,4	LOS A	0,2	1,4	0,35	0,87	0,35	50,6
9	R2	All MCs	39	2,0	39	2,0	0,053	9,4	LOS A	0,2	1,4	0,35	0,87	0,35	50,4
Approach			43	2,0	43	2,0	0,053	9,3	LOS A	0,2	1,4	0,35	0,87	0,35	50,4
West: Morrison Road															
10	L2	All MCs	13	2,0	13	2,0	0,045	5,6	LOS A	0,0	0,0	0,00	0,09	0,00	56,7
11	T1	All MCs	74	2,0	74	2,0	0,045	0,0	LOS A	0,0	0,0	0,00	0,09	0,00	59,2
Approach			86	2,0	86	2,0	0,045	0,8	NA	0,0	0,0	0,00	0,09	0,00	58,8
All Vehicles			297	2,0	297	2,0	0,086	1,6	NA	0,2	1,4	0,05	0,15	0,05	58,0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 3_S3: Development Access / Morrison Road**
(Site Folder: AM PEAK PERIOD)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
5	T1	All MCs	166	2,0	166	2,0	0,086	0,0	LOS A	0,0	0,0	0,00	0,00	0,00	60,0
6	R2	All MCs	3	2,0	3	2,0	0,002	5,8	LOS A	0,0	0,1	0,20	0,54	0,20	52,1
Approach			169	2,0	169	2,0	0,086	0,1	NA	0,0	0,1	0,00	0,01	0,00	59,8
North: Development Access															
7	L2	All MCs	9	2,0	9	2,0	0,111	8,4	LOS A	0,4	3,2	0,37	0,88	0,37	50,5
9	R2	All MCs	81	2,0	81	2,0	0,111	9,6	LOS A	0,4	3,2	0,37	0,88	0,37	50,3
Approach			91	2,0	91	2,0	0,111	9,5	LOS A	0,4	3,2	0,37	0,88	0,37	50,3
West: Morrison Road															
10	L2	All MCs	27	2,0	27	2,0	0,053	5,6	LOS A	0,0	0,0	0,00	0,16	0,00	56,1
11	T1	All MCs	74	2,0	74	2,0	0,053	0,0	LOS A	0,0	0,0	0,00	0,16	0,00	58,5
Approach			101	2,0	101	2,0	0,053	1,5	NA	0,0	0,0	0,00	0,16	0,00	57,8
All Vehicles			361	2,0	361	2,0	0,111	2,9	NA	0,4	3,2	0,10	0,27	0,10	56,6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 1_S1: N2 Northern Terminal (Site Folder: PM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: N2 Off-Ramp (from Mosselbay)															
1	L2	All MCs	6	2,0	6	2,0	0,015	8,2	LOS A	0,1	0,4	0,15	0,91	0,15	51,0
2	T1	All MCs	1	2,0	1	2,0	0,015	8,8	LOS A	0,1	0,4	0,23	0,88	0,23	50,9
3	R2	All MCs	11	2,0	11	2,0	0,015	8,6	LOS A	0,1	0,4	0,23	0,88	0,23	47,2
Approach			18	2,0	18	2,0	0,015	8,5	LOS A	0,1	0,4	0,20	0,89	0,20	49,0
East: Morrison Road															
5	T1	All MCs	36	2,0	36	2,0	0,099	0,1	LOS A	0,5	3,4	0,12	0,47	0,12	53,8
6	R2	All MCs	138	2,0	138	2,0	0,099	5,7	LOS A	0,5	3,4	0,12	0,47	0,12	50,3
Approach			174	2,0	174	2,0	0,099	4,6	NA	0,5	3,4	0,12	0,47	0,12	51,0
West: Main Road															
10	L2	All MCs	17	2,0	17	2,0	0,019	5,6	LOS A	0,0	0,0	0,00	0,28	0,00	55,1
11	T1	All MCs	19	2,0	19	2,0	0,019	0,0	LOS A	0,0	0,0	0,00	0,28	0,00	56,5
Approach			36	2,0	36	2,0	0,019	2,6	NA	0,0	0,0	0,00	0,28	0,00	55,7
All Vehicles			227	2,0	227	2,0	0,099	4,6	NA	0,5	3,4	0,11	0,48	0,11	51,6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 1_S2: N2 Northern Terminal (Site Folder: PM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: N2 Off-Ramp (from Mosselbay)															
1	L2	All MCs	7	2,0	7	2,0	0,018	8,2	LOS A	0,1	0,4	0,16	0,90	0,16	50,9
2	T1	All MCs	1	2,0	1	2,0	0,018	8,9	LOS A	0,1	0,4	0,25	0,87	0,25	50,8
3	R2	All MCs	12	2,0	12	2,0	0,018	8,8	LOS A	0,1	0,4	0,25	0,87	0,25	47,1
Approach			20	2,0	20	2,0	0,018	8,6	LOS A	0,1	0,4	0,21	0,88	0,21	49,0
East: Morrison Road															
5	T1	All MCs	40	2,0	40	2,0	0,110	0,1	LOS A	0,5	3,9	0,13	0,47	0,13	53,8
6	R2	All MCs	153	2,0	153	2,0	0,110	5,8	LOS A	0,5	3,9	0,13	0,47	0,13	50,3
Approach			193	2,0	193	2,0	0,110	4,6	NA	0,5	3,9	0,13	0,47	0,13	51,0
West: Main Road															
10	L2	All MCs	19	2,0	19	2,0	0,021	5,6	LOS A	0,0	0,0	0,00	0,28	0,00	55,1
11	T1	All MCs	21	2,0	21	2,0	0,021	0,0	LOS A	0,0	0,0	0,00	0,28	0,00	56,5
Approach			40	2,0	40	2,0	0,021	2,6	NA	0,0	0,0	0,00	0,28	0,00	55,7
All Vehicles			253	2,0	253	2,0	0,110	4,6	NA	0,5	3,9	0,11	0,47	0,11	51,6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 1_S3: N2 Northern Terminal (Site Folder: PM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: N2 Off-Ramp (from Mosselbay)															
1	L2	All MCs	7	2,0	7	2,0	0,027	8,2	LOS A	0,1	0,6	0,12	0,92	0,12	51,0
2	T1	All MCs	1	2,0	1	2,0	0,027	9,0	LOS A	0,1	0,6	0,33	0,88	0,33	50,7
3	R2	All MCs	20	2,0	20	2,0	0,027	8,9	LOS A	0,1	0,6	0,33	0,88	0,33	47,0
Approach			28	2,0	28	2,0	0,027	8,7	LOS A	0,1	0,6	0,27	0,89	0,27	48,4
East: Morrison Road															
5	T1	All MCs	40	2,0	40	2,0	0,118	0,1	LOS A	0,6	4,2	0,13	0,48	0,13	53,7
6	R2	All MCs	166	2,0	166	2,0	0,118	5,8	LOS A	0,6	4,2	0,13	0,48	0,13	50,2
Approach			206	2,0	206	2,0	0,118	4,7	NA	0,6	4,2	0,13	0,48	0,13	50,9
West: Main Road															
10	L2	All MCs	19	2,0	19	2,0	0,021	5,6	LOS A	0,0	0,0	0,00	0,28	0,00	55,1
11	T1	All MCs	21	2,0	21	2,0	0,021	0,0	LOS A	0,0	0,0	0,00	0,28	0,00	56,5
Approach			40	2,0	40	2,0	0,021	2,6	NA	0,0	0,0	0,00	0,28	0,00	55,7
All Vehicles			275	2,0	275	2,0	0,118	4,8	NA	0,6	4,2	0,12	0,49	0,12	51,3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 2_S1: N2 Southern Terminal (Site Folder: PM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
4	L2	All MCs	12	2,0	12	2,0	0,068	5,6	LOS A	0,0	0,0	0,00	0,05	0,00	56,9
5	T1	All MCs	121	2,0	121	2,0	0,068	0,0	LOS A	0,0	0,0	0,00	0,05	0,00	59,3
Approach			133	2,0	133	2,0	0,068	0,5	NA	0,0	0,0	0,00	0,05	0,00	59,0
North: N2 Off-Ramp (from George)															
7	L2	All MCs	134	2,0	134	2,0	0,095	8,2	LOS A	0,4	2,9	0,08	0,94	0,08	51,0
8	T1	All MCs	1	2,0	1	2,0	0,028	8,5	LOS A	0,1	0,7	0,25	0,88	0,25	51,0
9	R2	All MCs	23	2,0	23	2,0	0,028	8,4	LOS A	0,1	0,7	0,25	0,88	0,25	47,4
Approach			158	2,0	158	2,0	0,095	8,2	LOS A	0,4	2,9	0,10	0,93	0,10	50,6
West: Main Road															
11	T1	All MCs	18	2,0	18	2,0	0,014	0,2	LOS A	0,0	0,3	0,15	0,21	0,15	57,0
12	R2	All MCs	7	2,0	7	2,0	0,014	6,0	LOS A	0,0	0,3	0,15	0,21	0,15	53,1
Approach			25	2,0	25	2,0	0,014	1,9	NA	0,0	0,3	0,15	0,21	0,15	55,8
All Vehicles			316	2,0	316	2,0	0,095	4,5	NA	0,4	2,9	0,06	0,51	0,06	53,7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 2_S2: N2 Southern Terminal (Site Folder: PM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
4	L2	All MCs	13	2,0	13	2,0	0,076	5,6	LOS A	0,0	0,0	0,00	0,05	0,00	56,9
5	T1	All MCs	134	2,0	134	2,0	0,076	0,0	LOS A	0,0	0,0	0,00	0,05	0,00	59,3
Approach			146	2,0	146	2,0	0,076	0,5	NA	0,0	0,0	0,00	0,05	0,00	59,0
North: N2 Off-Ramp (from George)															
7	L2	All MCs	147	2,0	147	2,0	0,105	8,2	LOS A	0,4	3,2	0,08	0,94	0,08	51,0
8	T1	All MCs	1	2,0	1	2,0	0,031	8,6	LOS A	0,1	0,7	0,27	0,88	0,27	51,0
9	R2	All MCs	25	2,0	25	2,0	0,031	8,5	LOS A	0,1	0,7	0,27	0,88	0,27	47,3
Approach			174	2,0	174	2,0	0,105	8,2	LOS A	0,4	3,2	0,11	0,93	0,11	50,6
West: Main Road															
11	T1	All MCs	20	2,0	20	2,0	0,016	0,2	LOS A	0,0	0,3	0,16	0,22	0,16	56,9
12	R2	All MCs	8	2,0	8	2,0	0,016	6,1	LOS A	0,0	0,3	0,16	0,22	0,16	53,0
Approach			28	2,0	28	2,0	0,016	1,9	NA	0,0	0,3	0,16	0,22	0,16	55,7
All Vehicles			348	2,0	348	2,0	0,105	4,5	NA	0,4	3,2	0,07	0,50	0,07	53,7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

 **Site: 101 [Int 2_S3: N2 Southern Terminal (Site Folder: PM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
4	L2	All MCs	17	2,0	17	2,0	0,085	5,6	LOS A	0,0	0,0	0,00	0,06	0,00	56,9
5	T1	All MCs	147	2,0	147	2,0	0,085	0,0	LOS A	0,0	0,0	0,00	0,06	0,00	59,2
Approach			164	2,0	164	2,0	0,085	0,6	NA	0,0	0,0	0,00	0,06	0,00	58,8
North: N2 Off-Ramp (from George)															
7	L2	All MCs	179	2,0	179	2,0	0,128	8,2	LOS A	0,6	4,0	0,10	0,93	0,10	51,0
8	T1	All MCs	1	2,0	1	2,0	0,032	8,7	LOS A	0,1	0,7	0,29	0,88	0,29	50,9
9	R2	All MCs	25	2,0	25	2,0	0,032	8,6	LOS A	0,1	0,7	0,29	0,88	0,29	47,2
Approach			205	2,0	205	2,0	0,128	8,2	LOS A	0,6	4,0	0,12	0,93	0,12	50,6
West: Main Road															
11	T1	All MCs	24	2,0	24	2,0	0,018	0,2	LOS A	0,1	0,4	0,15	0,20	0,15	57,2
12	R2	All MCs	8	2,0	8	2,0	0,018	6,1	LOS A	0,1	0,4	0,15	0,20	0,15	53,3
Approach			33	2,0	33	2,0	0,018	1,7	NA	0,1	0,4	0,15	0,20	0,15	56,1
All Vehicles			402	2,0	402	2,0	0,128	4,6	NA	0,6	4,0	0,07	0,51	0,07	53,6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



**Site: 101 [Int 3_S1: Development Access / Morrison Road
(Site Folder: PM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
5	T1	All MCs	117	2,0	117	2,0	0,060	0,0	LOS A	0,0	0,0	0,00	0,00	0,00	60,0
6	R2	All MCs	4	2,0	4	2,0	0,003	5,9	LOS A	0,0	0,1	0,25	0,53	0,25	51,9
Approach			121	2,0	121	2,0	0,060	0,2	NA	0,0	0,1	0,01	0,02	0,01	59,7
North: Development Access															
7	L2	All MCs	2	2,0	2	2,0	0,022	8,5	LOS A	0,1	0,6	0,36	0,85	0,36	50,6
9	R2	All MCs	16	2,0	16	2,0	0,022	9,3	LOS A	0,1	0,6	0,36	0,85	0,36	50,4
Approach			18	2,0	18	2,0	0,022	9,2	LOS A	0,1	0,6	0,36	0,85	0,36	50,4
West: Morrison Road															
10	L2	All MCs	37	2,0	37	2,0	0,079	5,6	LOS A	0,0	0,0	0,00	0,14	0,00	56,2
11	T1	All MCs	115	2,0	115	2,0	0,079	0,0	LOS A	0,0	0,0	0,00	0,14	0,00	58,7
Approach			152	2,0	152	2,0	0,079	1,4	NA	0,0	0,0	0,00	0,14	0,00	58,0
All Vehicles			291	2,0	291	2,0	0,079	1,4	NA	0,1	0,6	0,03	0,14	0,03	58,2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: 101 [Int 3_S2: Development Access / Morrison Road
(Site Folder: PM PEAK PERIOD)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
5	T1	All MCs	129	2,0	129	2,0	0,067	0,0	LOS A	0,0	0,0	0,00	0,00	0,00	60,0
6	R2	All MCs	4	2,0	4	2,0	0,003	5,9	LOS A	0,0	0,1	0,27	0,53	0,27	51,9
Approach			134	2,0	134	2,0	0,067	0,2	NA	0,0	0,1	0,01	0,02	0,01	59,7
North: Development Access															
7	L2	All MCs	2	2,0	2	2,0	0,023	8,6	LOS A	0,1	0,6	0,38	0,85	0,38	50,5
9	R2	All MCs	16	2,0	16	2,0	0,023	9,5	LOS A	0,1	0,6	0,38	0,85	0,38	50,3
Approach			18	2,0	18	2,0	0,023	9,4	LOS A	0,1	0,6	0,38	0,85	0,38	50,3
West: Morrison Road															
10	L2	All MCs	37	2,0	37	2,0	0,085	5,6	LOS A	0,0	0,0	0,00	0,13	0,00	56,3
11	T1	All MCs	127	2,0	127	2,0	0,085	0,0	LOS A	0,0	0,0	0,00	0,13	0,00	58,8
Approach			164	2,0	164	2,0	0,085	1,3	NA	0,0	0,0	0,00	0,13	0,00	58,2
All Vehicles			316	2,0	316	2,0	0,085	1,3	NA	0,1	0,6	0,02	0,12	0,02	58,3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



**Site: 101 [Int 3_S3: Development Access / Morrison Road
(Site Folder: PM PEAK PERIOD)]**

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

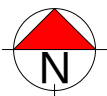
Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
East: Morrison Road															
5	T1	All MCs	129	2,0	129	2,0	0,067	0,0	LOS A	0,0	0,0	0,00	0,00	0,00	60,0
6	R2	All MCs	8	2,0	8	2,0	0,006	6,1	LOS A	0,0	0,2	0,30	0,54	0,30	51,8
Approach			138	2,0	138	2,0	0,067	0,4	NA	0,0	0,2	0,02	0,03	0,02	59,4
North: Development Access															
7	L2	All MCs	3	2,0	3	2,0	0,047	8,6	LOS A	0,2	1,3	0,41	0,87	0,41	50,4
9	R2	All MCs	33	2,0	33	2,0	0,047	9,8	LOS A	0,2	1,3	0,41	0,87	0,41	50,1
Approach			36	2,0	36	2,0	0,047	9,7	LOS A	0,2	1,3	0,41	0,87	0,41	50,2
West: Morrison Road															
10	L2	All MCs	76	2,0	76	2,0	0,106	5,6	LOS A	0,0	0,0	0,00	0,22	0,00	55,6
11	T1	All MCs	127	2,0	127	2,0	0,106	0,0	LOS A	0,0	0,0	0,00	0,22	0,00	58,0
Approach			203	2,0	203	2,0	0,106	2,1	NA	0,0	0,0	0,00	0,22	0,00	57,1
All Vehicles			377	2,0	377	2,0	0,106	2,2	NA	0,2	1,3	0,05	0,21	0,05	57,1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

CONSOLIDATION, REZONING AND SUBDIVISION OF SEVERAL PORTIONS OF
THE FARM HOOGEKRAAL 238 AND BUFFELSDRIFT 227, GEORGE

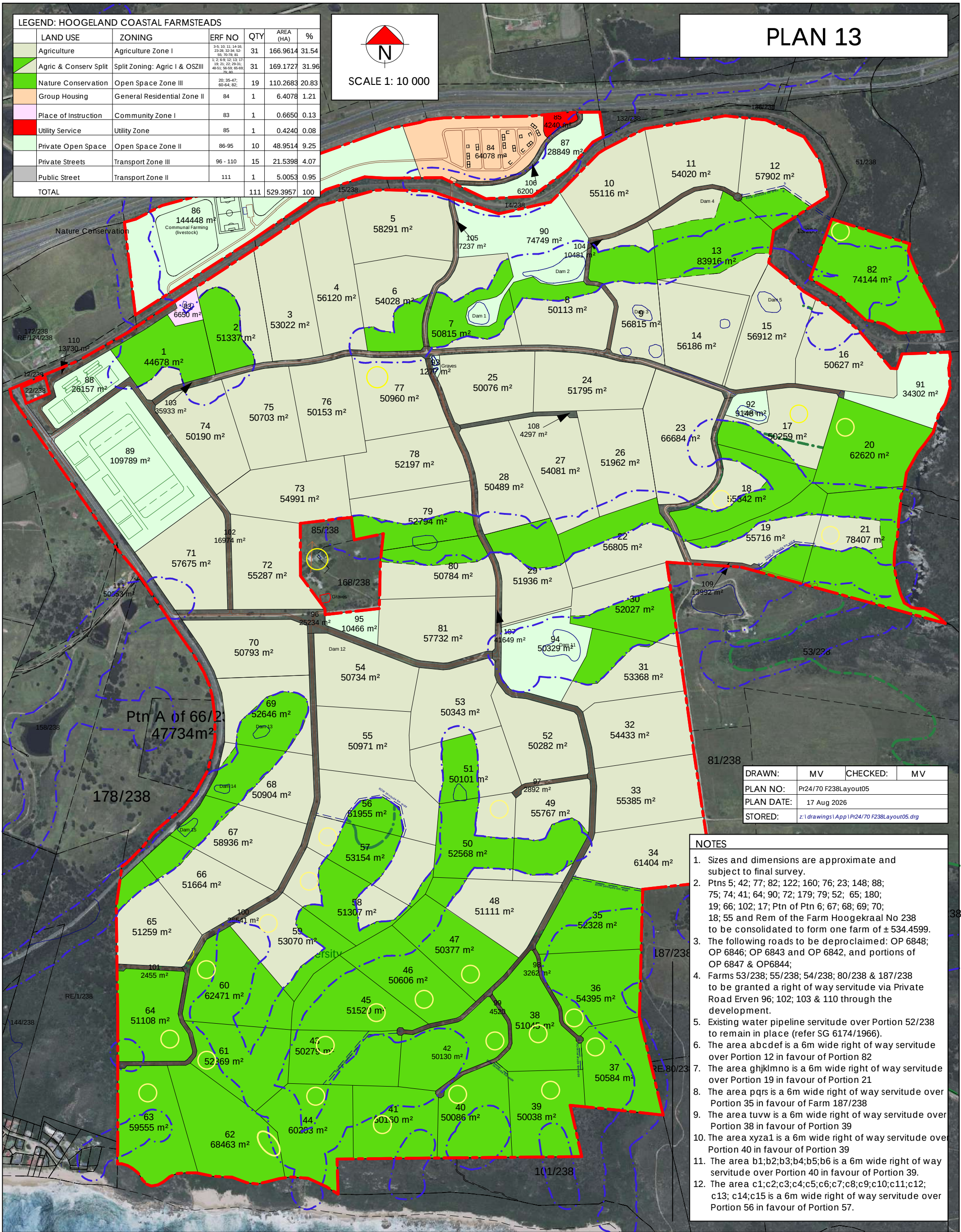
ANNEXURE C: PROPOSED SITE LAYOUT

LEGEND: HOOGELAND COASTAL FARMSTEADS						
LAND USE	ZONING	ERF NO	QTY	AREA (HA)	%	
Agriculture	Agriculture Zone I	3-5; 10; 11; 14-16; 23-28; 32-34; 52-55; 70-75; 85	31	166.9614	31.54	
Agric & Conserv Split	Split Zoning: Agric I & OSZIII	1; 2; 6-8; 12; 13; 17; 19; 21; 22; 29-31; 48-51; 56-58; 65-68; 76-80	31	169.1727	31.96	
Nature Conservation	Open Space Zone III	20; 35-47; 60-64; 82;	19	110.2683	20.83	
Group Housing	General Residential Zone II	84	1	6.4078	1.21	
Place of Instruction	Community Zone I	83	1	0.6650	0.13	
Utility Service	Utility Zone	85	1	0.4240	0.08	
Private Open Space	Open Space Zone II	86-95	10	48.9514	9.25	
Private Streets	Transport Zone III	96 - 110	15	21.5398	4.07	
Public Street	Transport Zone II	111	1	5.0053	0.95	
TOTAL			111	529.3957	100	



SCALE 1: 10 000

PLAN 13



DRAWN:	MV	CHECKED:	MV
PLAN NO:	Pr24/70 F238Layout05		
PLAN DATE:	17 Aug 2026		
STORED:	z:\drawings\Appl\Pr24/70 F238Layout05.dwg		

NOTES

- Sizes and dimensions are approximate and subject to final survey.
- Ptns 5; 42; 77; 82; 122; 160; 76; 23; 148; 88; 75; 74; 41; 64; 90; 72; 179; 79; 52; 65; 180; 19; 66; 102; 17; Ptn of Ptn 6; 67; 68; 69; 70; 18; 55 and Rem of the Farm Hoogekraal No 238 to be consolidated to form one farm of ± 534.4599.
- The following roads to be deproclaimed: OP 6848; OP 6846; OP 6843 and OP 6842, and portions of OP 6847 & OP6844;
- Farms 53/238; 55/238; 54/238; 80/238 & 187/238 to be granted a right of way servitude via Private Road Erven 96; 102; 103 & 110 through the development.
- Existing water pipeline servitude over Portion 52/238 to remain in place (refer SG 6174/1966).
- The area abcdef is a 6m wide right of way servitude over Portion 12 in favour of Portion 82
- The area ghijklmno is a 6m wide right of way servitude over Portion 19 in favour of Portion 21
- The area pqrs is a 6m wide right of way servitude over Portion 35 in favour of Farm 187/238
- The area tuvw is a 6m wide right of way servitude over Portion 38 in favour of Portion 39
- The area xyza1 is a 6m wide right of way servitude over Portion 40 in favour of Portion 39
- The area b1;b2;b3;b4;b5;b6 is a 6m wide right of way servitude over Portion 40 in favour of Portion 39.
- The area c1;c2;c3;c4;c5;c6;c7;c8;c9;c10;c11;c12; c13; c14;c15 is a 6m wide right of way servitude over Portion 56 in favour of Portion 57.

PORTIONS OF THE FARM HOOGEKRAAL
NO 238, DIVISION GEORGE

LAYOUT PLAN

MUNICIPAL MANAGER

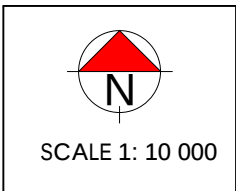
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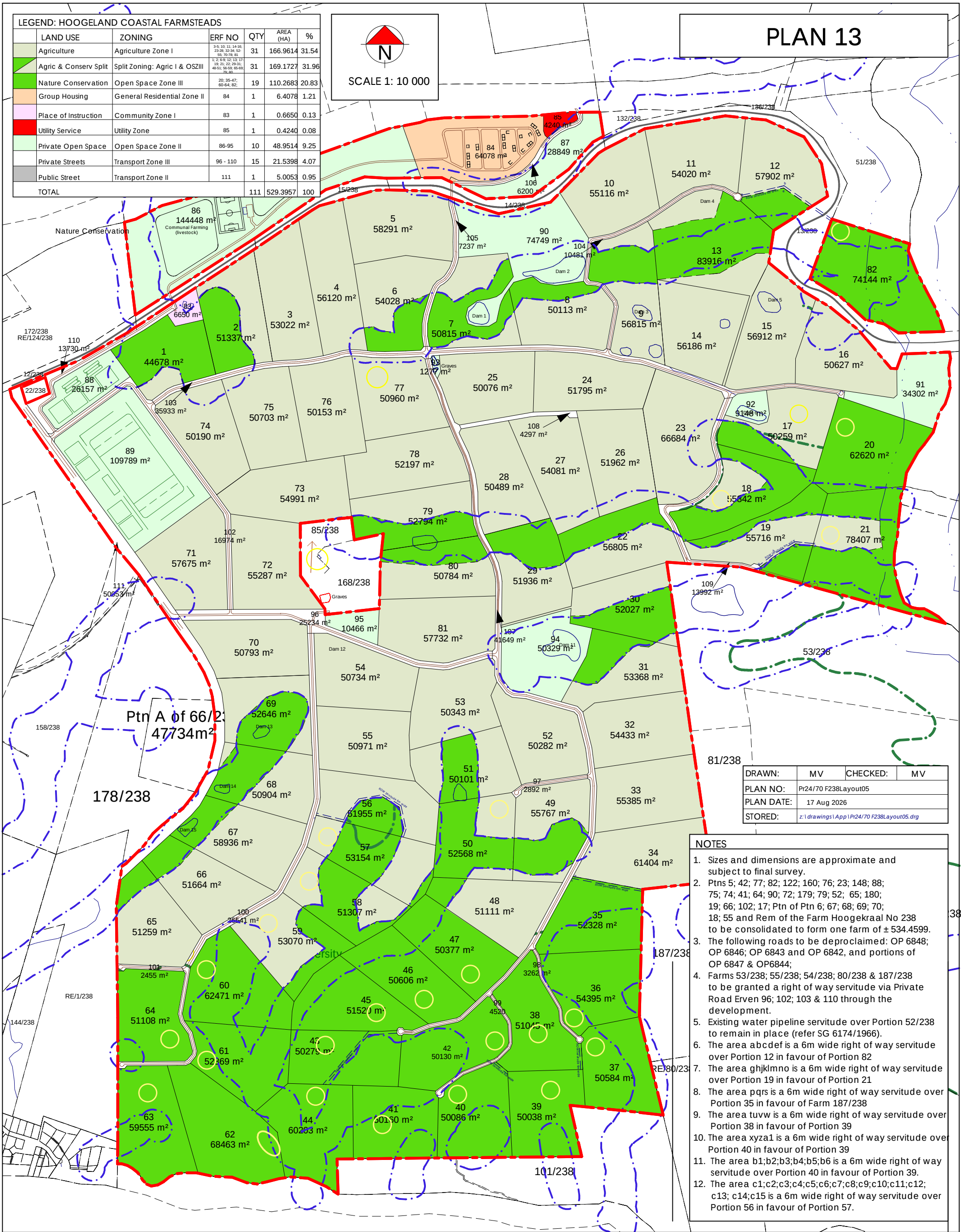
21 Trotter Street, PO Box 2180
KNYSNA 6570

(044) 382 0420
086-459-2987
e-mail: marike@vreken.co.za
www.vreken.co.za

LEGEND: HOOGELAND COASTAL FARMSTEADS						
LAND USE	ZONING	ERF NO	QTY	AREA (HA)	%	
Agriculture	Agriculture Zone I	3-5; 10; 11; 14-16; 23-28; 32-34; 52-55; 70-75; 85	31	166.9614	31.54	
Agric & Conserv Split	Split Zoning: Agric I & OSZIII	1; 2; 6-8; 12; 13; 17; 19; 21; 22; 29-31; 48-51; 56-58; 65-68; 76-80; 82	31	169.1727	31.96	
Nature Conservation	Open Space Zone III	20; 35-47; 60-64; 82;	19	110.2683	20.83	
Group Housing	General Residential Zone II	84	1	6.4078	1.21	
Place of Instruction	Community Zone I	83	1	0.6650	0.13	
Utility Service	Utility Zone	85	1	0.4240	0.08	
Private Open Space	Open Space Zone II	86-95	10	48.9514	9.25	
Private Streets	Transport Zone III	96 - 110	15	21.5398	4.07	
Public Street	Transport Zone II	111	1	5.0053	0.95	
TOTAL			111	529.3957	100	



PLAN 13



DRAWN:	MV	CHECKED:	MV
PLAN NO:	Pr24/70 F238Layout05		
PLAN DATE:	17 Aug 2026		
STORED:	z:\drawings\Appl\Pr24/70 F238Layout05.dwg		

- NOTES
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 - The area b1;b2;b3;b4;b5;b6 is a 6m wide right of way servitude over Portion 40 in favour of Portion 39.
 - The area c1;c2;c3;c4;c5;c6;c7;c8;c9;c10;c11;c12; c13; c14;c15 is a 6m wide right of way servitude over Portion 56 in favour of Portion 57.

PORTIONS OF THE FARM HOOGEKRAAL
NO 238, DIVISION GEORGE

LAYOUT PLAN

MUNICIPAL MANAGER

DATE: _____



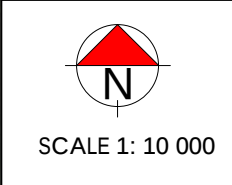
STADS & ONGEWINGSPLANNERS

URBAN & ENVIRONMENTAL PLANNERS

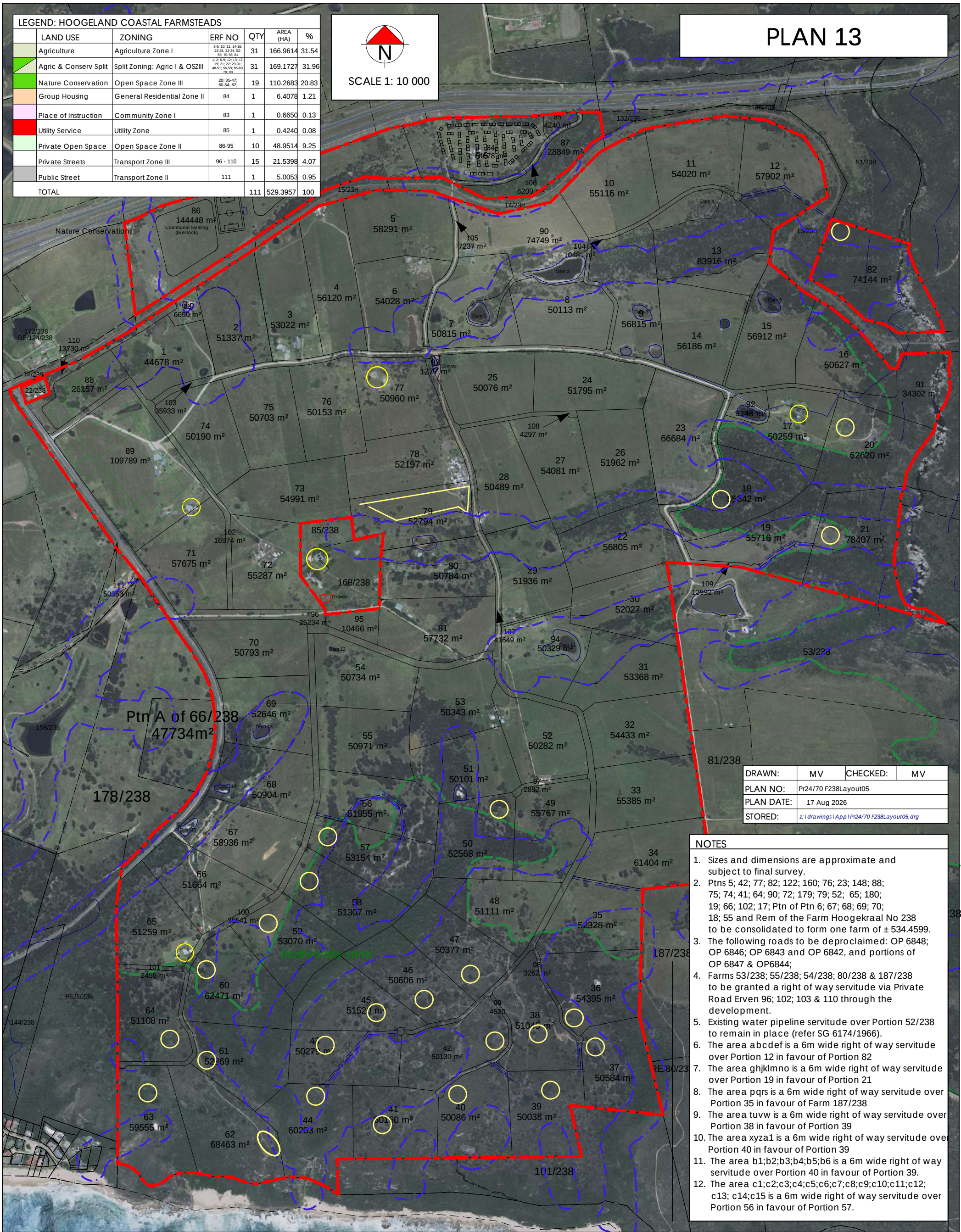
21 Trotter Street, PO Box 2180
KNYSNA 6570

(044) 382 0420
086-459-2987
e-mail: marike@vreken.co.za
www.vreken.co.za

LEGEND: HOOGELAND COASTAL FARMSTEADS						
LAND USE	ZONING	ERF NO	QTY	AREA (HA)	%	
Agriculture	Agriculture Zone I	3-5; 10; 11; 14-16; 23-28; 32-34; 52-55; 70-75; 85	31	166.9614	31.54	
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Public Street	Transport Zone II	111	1	5.0053	0.95	
TOTAL			111	529.3957	100	



PLAN 13



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PLAN NO:	Pr24/70 F238Layout05		
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PORTIONS OF THE FARM HOOGEKRAAL
NO 238, DIVISION GEORGE

LAYOUT PLAN

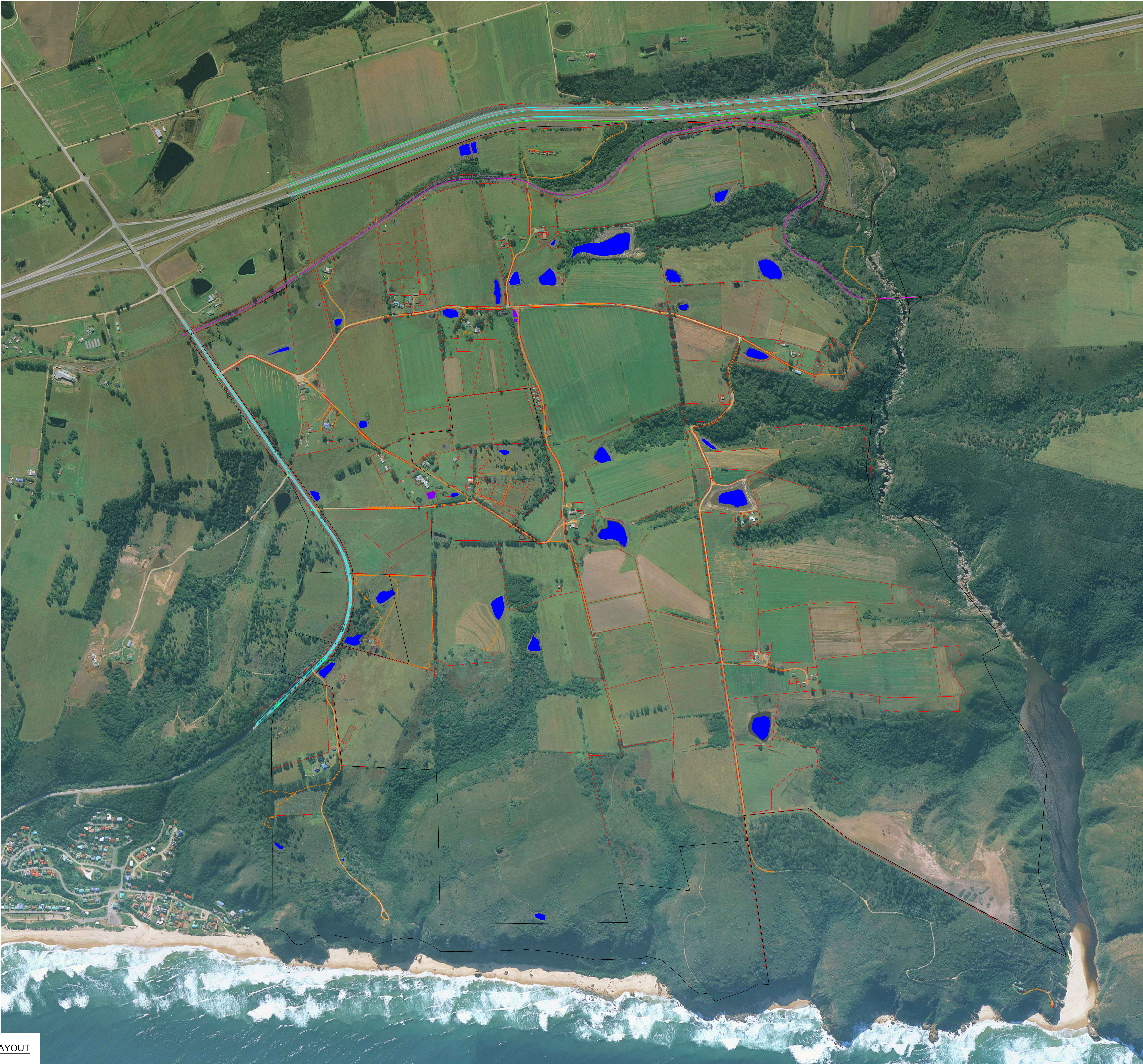
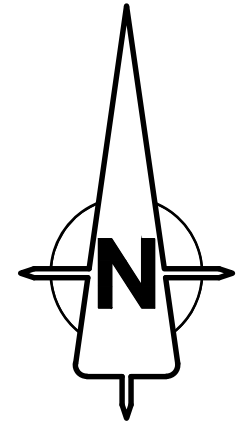
MUNICIPAL MANAGER
DATE:



21 Trotter Street, PO Box 2180
KNYSNA 6570
(044) 382 0420
086-459-2987
e-mail: marike@vreken.co.za
www.vreken.co.za

CONSOLIDATION, REZONING AND SUBDIVISION OF SEVERAL PORTIONS OF
THE FARM HOOGEKRAAL 238 AND BUFFELSDRIFT 227, GEORGE

ANNEXURE D: EXISTING SERVICES LAYOUT



EXISTING SERVICES: LAYOUT
SCALE: 1:5000

- GENERAL NOTES:
1. REFER TO ALL RELEVANT DRAWINGS & SPECIFICATIONS. DO NOT SCALE ANY DIMENSIONS.
 2. WHERE DISCREPANCIES OCCUR BETWEEN THE PROJECT DRAWINGS OR SPECIFICATIONS, THESE SHOULD BE REPORTED IMMEDIATELY TO THE ENGINEER.
 3. ALL DIMENSIONS AND LEVELS TO BE CHECKED ON SITE BEFORE CONSTRUCTION COMMENCES.
 4. ANY SOFTWARE MODEL SHARED BY EDS ENGINEERS TO ANY EXTERNAL COMPANY OR PARTY TO BE USED FOR INFORMATION ONLY.
 5. ALL CONSTRUCTION INFORMATION TO BE USED AS INDICATED ON DRAWINGS THAT WERE ISSUED FOR CONSTRUCTION.

EXISTING LEGEND:

- GRAVES
- EXISTING DAMS
- EXISTING RAIL LINE
- EXISTING ROADS
- EXISTING INFORMAL ROADS
- EXISTING STORMWATER
- EXISTING CHANNEL STORMWATER
- EXISTING FENCES
- PROPERTY BOUNDARY AS PER SURVEYOR

A 19/08/26 FOR INFORMATION

Revision Details: 50

By: Client:

Architect:

edos
Structural, Civil and
Transportation Engineers
Sussex Office Park
473 Lynwood Road
Lymington
Hants, GU50 2JY
Tel: 01293 12055
e-mail: info@edoseng.co.za

20 On Krige Building
28 Krige Road
Stellenbosch
Western Cape
Tel: 021 891 0530

HOOGLAND COUNTRY ESTATE

Description:
EXISTING SERVICES:
LAYOUT

Paper size:	Drawn:	Checked:	Designed:
A0	KB	DvdH	DvdH
Scale:	Project Number:	Drawing Number:	Revision:
5000	2025-242	0201	A