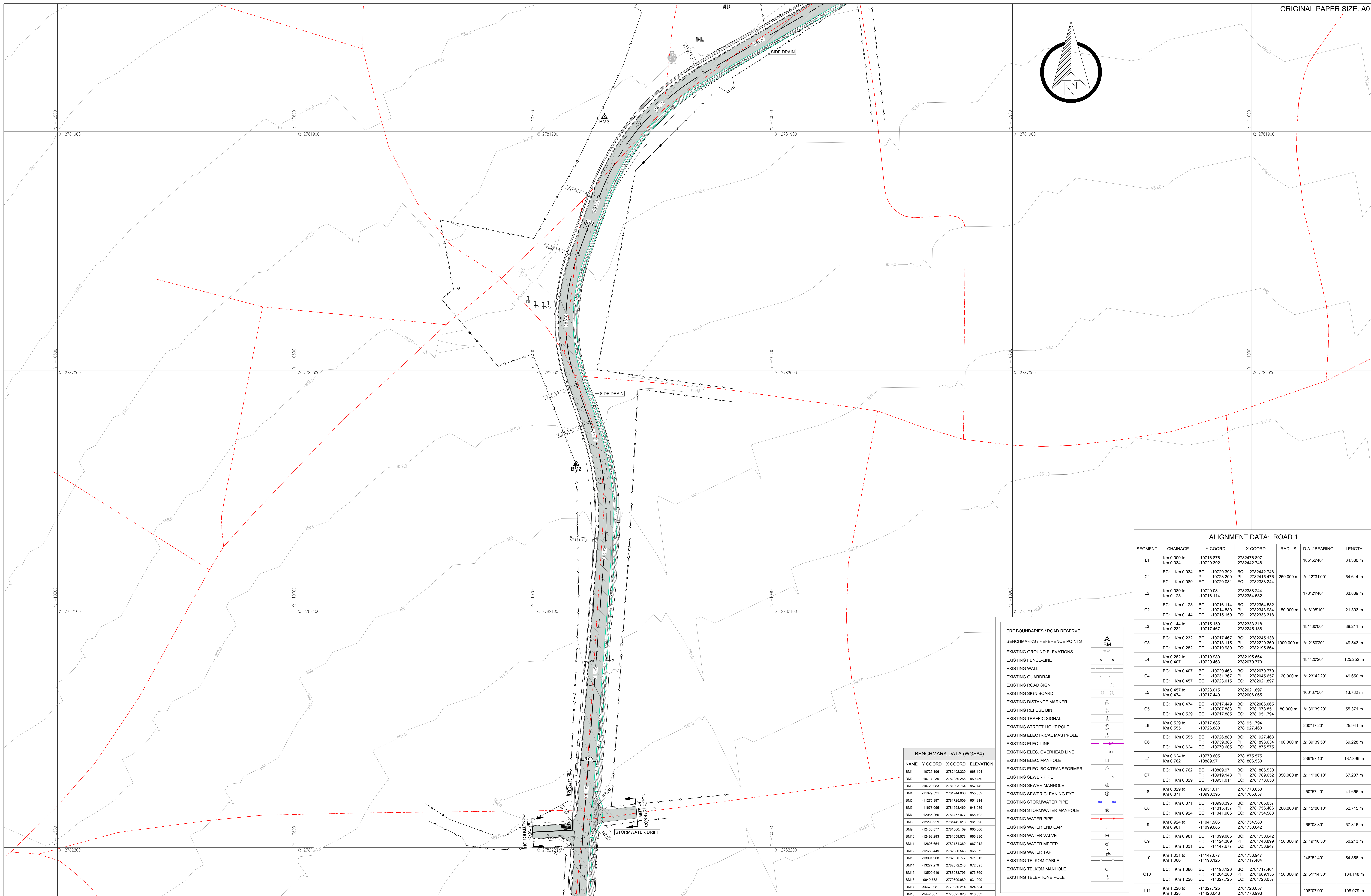


<div>DESIGNED BY: RALEMA CONSULTING ENGINEERS RALEMA CONSULTING ENGINEERS 34 MEZZANINE OXFORD OFFICE PARK 03 BAUHNIA STREET HIGHVELD PARK, CENTURION 0157 Tel: (012) 753 0744 Fax: (086) 537 7440 Email: admin@ralemacons.co.za</div>		<div>S. Bapela-Pr Tech Eng DESIGNED M. Jikwana DRAWN S. Bapela-Pr Tech Eng CHECKED</div>	<div>RALEMA CONSULTING ISSUED BY: DEPARTMENT RECEIVED BY: DATE: DATE:</div>	<div>CLIENT ADDRESS GROBLERSDAL PRIVATE BAG X5006 Groblersdal 0950 Tel: (013) 962 1828 Fax: (013) 962 1017</div>	<div>CLIENT ELIAS MOTSOLEDI LOCAL MUNICIPALITY</div> <div>PROJECT TITLE UPGRADING OF KGOBOKWANE-KGAPHAMADI ROADS, BRIDGES AND STORMWATER</div> <div>DRAWING TITLE ROAD 1: Km 0+000 to 0+300: LAYOUT PLAN AND SETTING OUT DATA</div>	<div>CONTRACT No. EMLM 20/2023</div> <div>IPW No. ----</div> <div>SHEET 1 of 4</div>	<div>SCALE 1:500</div> <div>TYPES OF PLANNING ● PLANNING ● CONSTRUCTION ● AS-BUILT</div> <div>STATUS ● PLANNING</div> <div>REVISION 00</div> <div>PLAN No. RCE73_EMLM_05_1LP_01</div>
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SEGMENT	CHAINAGE	Y-COORD	X-COORD	RADIUS	D.A. / BEARING	LENGTH
L1	Km 0.000 to Km 0.034	+0716.876 -10720.392	2782476.897 2782442.748		18°52'40"	34.300 m
C1	BC: Km 0.034	BC: -10720.392	BC: 2782442.748	250.000 m	Δ 12°31'00"	54.614 m
	EC: Km 0.089	EC: -10723.200 EC: -10720.031	EC: 2782415.476 EC: 2782398.244			
L2	Km 0.089 to Km 0.123	-10720.031 +0716.815	2782388.244 2782354.582		17°23'2140"	33.889 m
C2	BC: Km 0.123	BC: -10716.114	BC: 2782354.582	150.000 m	Δ 8°08'10"	21.303 m
	EC: Km 0.144	EC: -10714.880 EC: -10715.159	EC: 2782343.918 EC: 2782333.138			
L3	Km 0.144 to Km 0.232	-10715.159 -10717.467	2782333.138 2782245.138		181°30'00"	88.211 m
C3	BC: Km 0.232	BC: -10717.467	BC: 2782245.138	100.000 m	Δ 2°50'20"	49.543 m
	EC: Km 0.282	EC: -10718.115 EC: -10719.989	EC: 2782136.369 EC: 2782195.664			
L4	Km 0.282 to Km 0.407	-10719.989 -10729.463	2782195.664 2782070.770		184°20'20"	125.252 m
C4	BC: Km 0.407	BC: -10729.463	BC: 2782070.770	120.000 m	Δ 23°42'20"	49.650 m
	EC: Km 0.457	EC: -10731.367 EC: -10725.015	EC: 2782045.657 EC: 2782021.897			
L5	Km 0.457 to Km 0.474	-10723.015 -10717.449	2782021.897 2782006.065		160°37'50"	16.782 m
C5	BC: Km 0.474	BC: -10717.449	BC: 2782006.065	80.000 m	Δ 39°39'20"	55.371 m
	EC: Km 0.529	EC: -10707.883 EC: -10717.885	EC: 2781978.851 EC: 2781951.794			
L6	Km 0.529 to Km 0.555	-10717.885 -10726.880	2781951.794 2781927.463		200°17'20"	25.941 m
C6	BC: Km 0.555	BC: -10726.880	BC: 2781927.463	100.000 m	Δ 39°39'50"	69.228 m
	EC: Km 0.624	EC: -10726.366 EC: -10770.605	EC: 2781927.463 EC: 2781875.575			
L7	Km 0.624 to Km 0.762	-10770.605 -10889.971	2781875.575 2781806.530		239°57'10"	137.896 m
C7	BC: Km 0.762	BC: -10889.971	BC: 2781806.530	350.000 m	Δ 11°00'10"	67.207 m
	EC: Km 0.829	EC: -10919.148 EC: -10951.011	EC: 2781769.652 EC: 2781758.053			
L8	Km 0.829 to Km 0.871	-10951.011 -10990.396	2781776.653 2781765.057		250°57'20"	41.666 m
C8	BC: Km 0.871	BC: -10990.396	BC: 2781765.057	200.000 m	Δ 15°06'10"	52.716 m
	EC: Km 0.924	EC: -10915.457 EC: -11041.905	EC: 2781756.406 EC: 2781754.583			
L9	Km 0.924 to Km 0.981	-11041.905 -11099.085	2781754.583 2781750.642		266°03'30"	57.316 m
C9	BC: Km 0.981	BC: -11099.085	BC: 2781750.642	150.000 m	Δ 19°10'50"	50.213 m
	EC: Km 1.031	EC: -11104.369 EC: -11147.677	EC: 2781750.642 EC: 2781738.947			
L10	Km 1.031 to Km 1.086	-11147.677 -11198.126	2781738.947 2781717.404		246°52'40"	54.856 m
C10	BC: Km 1.086	BC: -11198.126	BC: 2781717.404	150.000 m	Δ 51°14'30"	134.148 m
	EC: Km 1.220	EC: -11264.280 EC: -11327.725	EC: 2781689.156 EC: 2781657.057			
L11	Km 1.220 to Km 1.328	+11327.725 +11324.048	2781723.057 2781773.993		298°07'00"	108.079 m

NAME	X COORD	Y COORD	ELEVATION
BM1	-10725.196	2784292.320	968.194
BM2	-10717.239	2780390.396	950.450
BM3	-10720.083	2781893.764	957.142
BM4	-11029.531	2781744.038	955.552
BM5	-11275.397	2781725.009	951.814
BM6	-11673.055	2781658.460	948.085
BM7	-12085.266	2781477.977	952.702
BM8	-12296.659	2781445.166	951.690
BM9	-12430.877	2781366.109	956.366
BM10	-12482.293	2781659.573	956.330
BM11	-12608.644	2782131.360	967.912
BM12	-12688.456	2782386.543	965.972
BM13	-13091.708	2782650.777	971.313
BM14	-13277.329	2782672.248	972.935
BM15	-13509.619	2783088.796	973.769
BM16	-9944.782	2779309.989	931.909
BM17	-9687.098	2779030.214	924.584
BM18	-9442.867	2778625.028	918.633

ERF BOUNDARIES / ROAD RESERVE	
BENCHMARKS / REFERENCE POINTS	
EXISTING GROUND ELEVATIONS	
EXISTING FENCE-LINE	
EXISTING WALL	
EXISTING GUARDRAIL	
EXISTING ROAD SIGN	
EXISTING SIGN BOARD	
EXISTING DISTANCE MARKER	
EXISTING REFUSE BIN	
EXISTING TRAFFIC SIGNAL	
EXISTING STREET LIGHT POLE	
EXISTING ELECTRICAL MAST/POLE	
EXISTING ELEC. LINE	
EXISTING ELEC. OVERHEAD LINE	
EXISTING ELEC. MANHOLE	
EXISTING ELEC. BOX/TRANSFORMER	
EXISTING SEWER PIPE	
EXISTING SEWER MANHOLE	
EXISTING SEWER CLEANING EYE	
EXISTING STORMWATER PIPE	
EXISTING STORMWATER MANHOLE	
EXISTING WATER PIPE	
EXISTING WATER END CAP	
EXISTING WATER VALVE	
EXISTING WATER METER	
EXISTING WATER TAP	
EXISTING TELKOM CABLE	
EXISTING TELKOM MANHOLE	
EXISTING TELEPHONE POLE	

[illegible]

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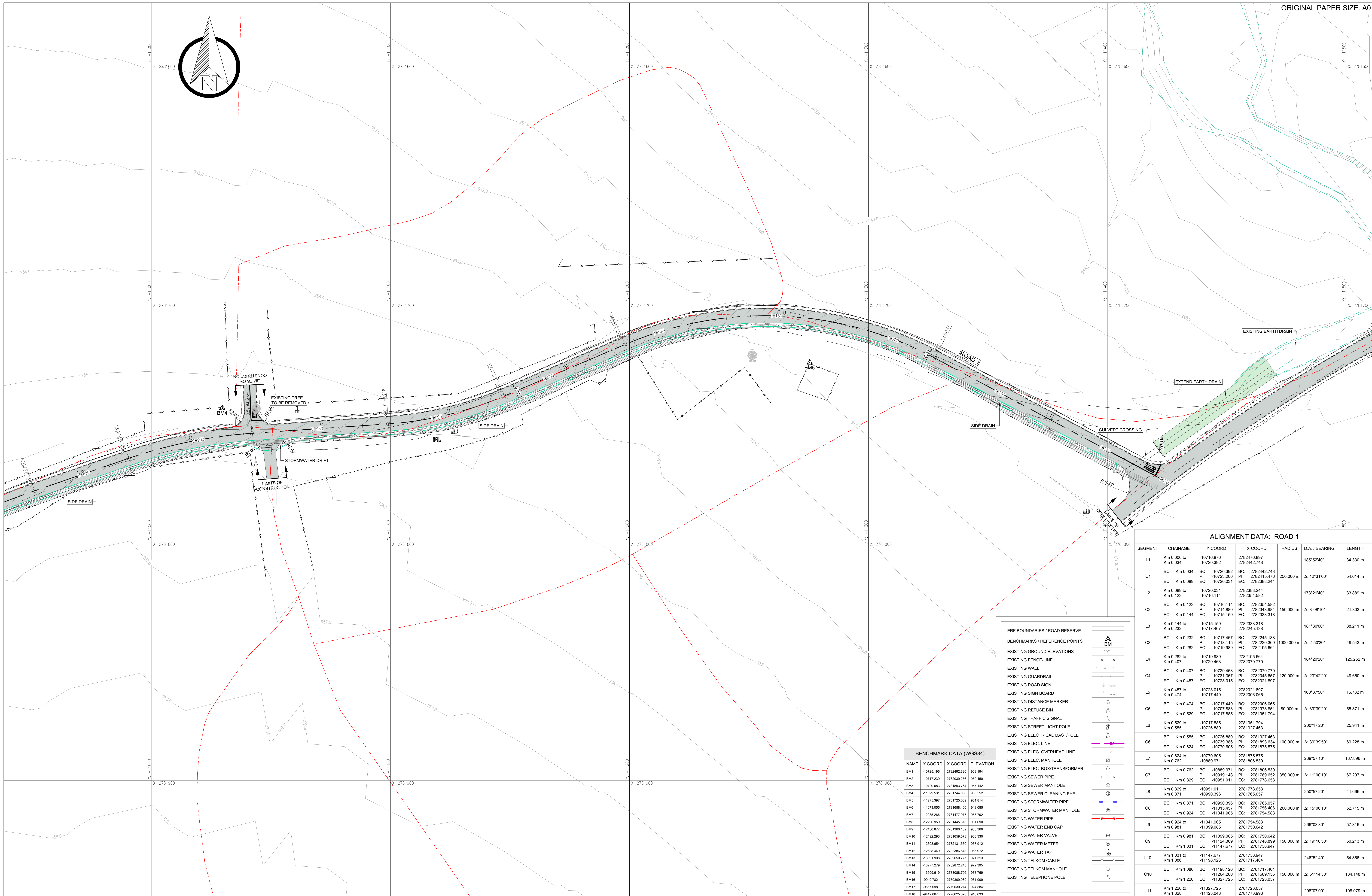
S. Bapela-Pr Tech Eng
DESIGNED
M. Jikwana
DRAWN
S. Bapela-Pr Tech Eng
CHECKED

RALEMA CONSULTING	DEPARTMENT
ISSUED BY:	RECEIVED BY:
.....
DATE:	DATE:

CLIENT ADDRESS  GROBLERSDAL PRIVATE BAG X5006 Groblersdal 0950 Tel: (013) 962 1828 Fax: (013) 962 1017	
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CLIENT	ELIAS MOTSOLEDI LOCAL MUNICIPALITY	CONTRACT No. EMLM 20/2023	IPW No. *****	SHEET 2 of 4
PROJECT TITLE	UPGRADING OF KGOBOKWANE-KGAPHAMADI ROADS, BRIDGES AND STORMWATER			
DRAWING TITLE	ROAD 1: Km 0+300 to 0+650: LAYOUT PLAN AND SETTING OUT DATA			

SCALE	TYPES OF PLANNING	STATUS
1:500	 PLANNING  CONSTRUCTION  AS-BUILT	 PLANNING
REVISION	PLAN No.	
00	RCE73_EMLM_05_1LP_02	



ALIGNMENT DATA: ROAD 1						
SEGMENT	CHAINAGE	Y-COORD	X-COORD	RADIUS	D.A. / BEARING	LENGTH
L1	Km 0.000 to Km 0.034	-10716.876 -10720.392	2782476.897 2782442.748		185°52'40"	34.330 m
C1	BC: Km 0.034	BC: -10720.392 PI: -10723.200	BC: 2782442.748 PI: 2782415.476	250.000 m	Δ 12°31'00"	54.614 m
	EC: Km 0.089	EC: -10720.031	EC: 2782458.244			
L2	Km 0.123 to Km 0.123	-10720.031 -10716.114	2783388.244 2782354.582		173°21'40"	33.889 m
C2	BC: Km 0.123	BC: -10716.114 PI: -10714.880	BC: 2782354.582 PI: 2782343.984	150.000 m	Δ 8°08'10"	21.303 m
	EC: Km 0.144	EC: -10715.159	EC: 2782333.318			
L3	Km 0.144 to Km 0.232	-10715.159 -10717.467	2782245.136 2782245.136		181°30'00"	88.211 m
C3	BC: Km 0.232	BC: -10717.467 PI: -10718.115	BC: 2782245.136 PI: 2782045.657	100.000 m	Δ 2°50'20"	49.543 m
	EC: Km 0.282	EC: -10719.989	EC: 2782195.684			
L4	Km 0.282 to Km 0.407	-10719.989 -10729.463	2782195.684 2782070.770		184°20'20"	125.252 m
C4	BC: Km 0.407	BC: -10729.463 PI: -10731.367	BC: 2782070.770 PI: 2782024.657	120.000 m	Δ 23°42'20"	49.650 m
	EC: Km 0.457	EC: -10733.015	EC: 2782021.897			
L5	Km 0.457 to Km 0.474	-10733.015 -10717.449	2782021.897 2782006.065		160°37'50"	16.782 m
C5	BC: Km 0.474	BC: -10717.449 PI: -10707.883	BC: 2782006.065 PI: 2781978.851	80.000 m	Δ 39°39'20"	55.371 m
	EC: Km 0.529	EC: -10717.885	EC: 2781951.794			
L6	Km 0.529 to Km 0.555	-10717.885 -10726.880	2781951.794 2781927.463		200°17'20"	25.941 m
C6	BC: Km 0.555	BC: -10726.880 PI: -10738.986	BC: 2781927.463 PI: 2781839.889	100.000 m	Δ 39°39'50"	69.228 m
	EC: Km 0.624	EC: -10770.605	EC: 2781875.575			
L7	Km 0.624 to Km 0.762	-10770.605 -10889.971	2781875.575 2781806.530		239°57'10"	137.896 m
C7	BC: Km 0.762	BC: -10889.971 PI: -10919.148	BC: 2781806.530 PI: 2781789.652	350.000 m	Δ 11°00'10"	67.207 m
	EC: Km 0.829	EC: -10951.011	EC: 2781763.653			
L8	Km 0.829 to Km 0.871	-10951.011 -10990.396	2781763.653 2781765.057		250°57'20"	41.666 m
C8	BC: Km 0.871	BC: -10990.396 PI: -11015.457	BC: 2781765.057 PI: 2781756.408	200.000 m	Δ 15°06'18"	52.715 m
	EC: Km 0.924	EC: -11041.905	EC: 2781754.583			
L9	Km 0.924 to Km 0.981	-11041.905 -11089.085	2781754.583 2781750.642		266°03'30"	57.316 m
C9	BC: Km 0.981	BC: -11089.085 PI: -11124.369	BC: 2781750.642 PI: 2781738.947	150.000 m	Δ 19°19'50"	50.213 m
	EC: Km 1.031	EC: -11147.677	EC: 2781738.947			
L10	Km 1.031 to Km 1.086	-11147.677 -11198.126	2781738.947 2781717.404		246°52'40"	54.856 m
C10	BC: Km 1.086	BC: -11198.126 PI: -11264.280	BC: 2781717.404 PI: 2781689.156	150.000 m	Δ 51°14'30"	134.148 m
	EC: Km 1.220	EC: -11327.725	EC: 2781689.156			
L11	Km 1.220 to Km 1.328	-11327.725 -11322.048	2781723.057 2781773.995		298°07'00"	108.079 m

	Y COORD	X COORD	ELEVATION
BM1	-10725.196	2788429.320	968.194
BM2	-107229.023	2780390.396	950.450
BM3	-1071729.638	2781693.764	957.142
BM4	-11029.531	2781744.036	955.552
BM5	-17257.397	2781725.009	951.814
BM6	-11673.055	2781658.440	948.085
BM7	-12085.266	2781477.977	955.702
BM8	-12296.599	2781445.618	951.690
BM9	-12430.877	2781360.109	955.365
BM10	-12482.293	2781659.573	956.330
BM11	-12608.654	2782135.360	957.912
BM12	-12688.449	2782136.463	955.972
BM13	-13019.908	2782650.777	971.313
BM14	-13277.279	2782852.248	972.395
BM15	-135056.619	2783088.796	973.769
BM16	-9984.782	2779300.989	931.909
BM17	-9667.008	2779300.214	924.584
BM18	-9442.867	2778925.028	918.633

ERF BOUNDARIES / ROAD RESERVE	
BENCHMARKS / REFERENCE POINTS	
EXISTING GROUND ELEVATIONS	
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EXISTING TELKOM CABLE	
EXISTING TELKOM MANHOLE	
EXISTING TELEPHONE POLE	

	*	-		*	-		*	-
No.	DATE	REVISIONS						CHECKED BY

DESIGNED BY: RALEMA CONSULTING ENGINEERS



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S. Bapela-Pr Tech Eng
DESIGNED





M. Jikwana
DRAWN

S. Bapela-Pr Tech Eng
CHECKED

RALEMA CONSULTING	DEPARTMENT
ISSUED BY:	RECEIVED BY:
.....
DATE:	DATE:

CLIENT ADDRESS  GROBLERSDAL PRIVATE BAG X5006 Groblersdal 0950 Tel: (013) 962 1828 Fax: (013) 962 1017	
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CLIENT	ELIAS MOTSOLEDI LOCAL MUNICIPALITY	CONTRACT No. EMLM 20/2023	IPW No. *****	SHEET 4 of 4
PROJECT TITLE	UPGRADING OF KGOBOKWANE-KGAPHAMADI ROADS, BRIDGES AND STORMWATER			
DRAWING TITLE	ROAD 1: Km 0+850 to 1+328: LAYOUT PLAN AND SETTING OUT DATA			

SCALE	TYPES OF PLANNING	STATUS
1:500	 PLANNING  CONSTRUCTION  AS-BUILT	 PLANNING
REVISION	PLAN No.	
00	RCE73_EMLM_05_1LP_04	