

ISWIM
International Society for Weigh in Motion



**Mikros Systems show case project
Namibia ASOD-WIM Integration
Rob Sik & Aaron Moodley
Mikros Traffic Monitoring KZN
SATC 2025 Session 4E
ISWIM Weigh In Motion Workshop**

Special thanks to the Namibian Roads Authority for allowing us to share this with you

AVERAGE SPEED OVER DISTANCE-WIM PILOT PROJECT



Project Purpose

- Reduce speeds over long sections of road
- Reduce the accident rate
- Integrate the ASOD with the Weigh-In-Motion data
- Generate violation sets for speeding and overloading
- Feed the data in real time to the RA dashboard
- Prosecute offenders



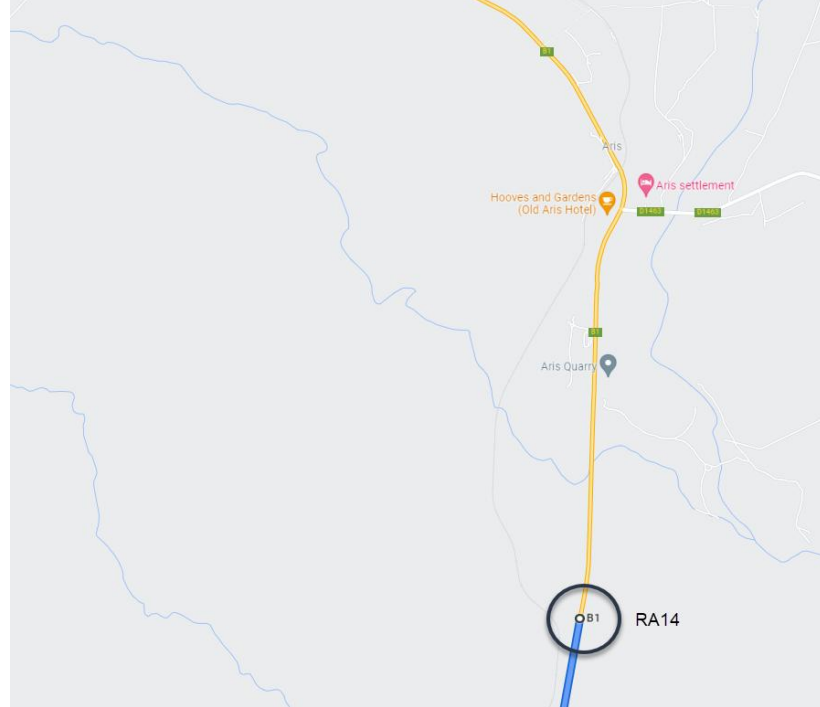
Pilot Project Section:
B1 – 56,3 km
Windhoek
to
Rehoboth
(weighbridge at Aris)



SAFE ROADS TO PROSPERITY

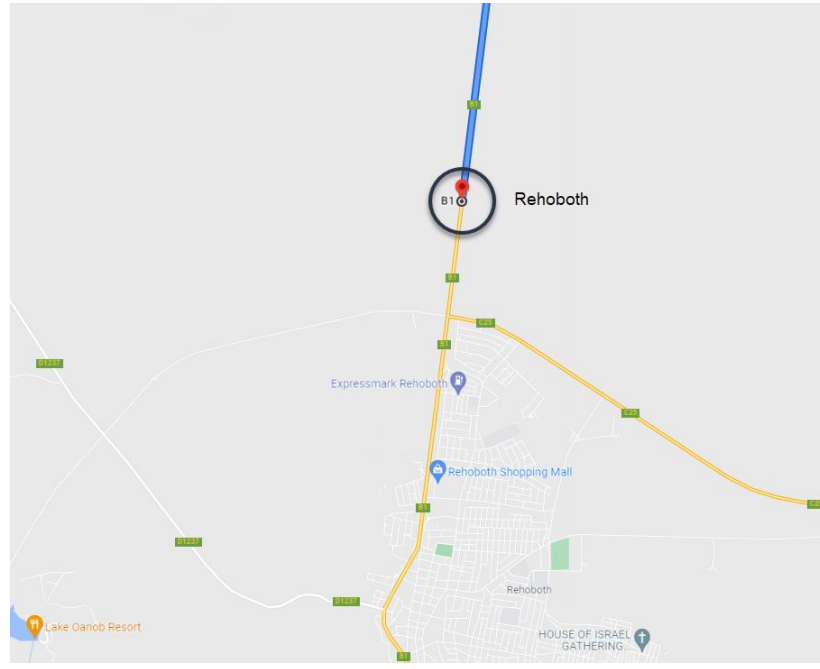
B1 – RA14

Bi-Directional – HSWIM & ASOD



B1 – Rehoboth

Bi-Directional – ASOD Only



B1 – RA14

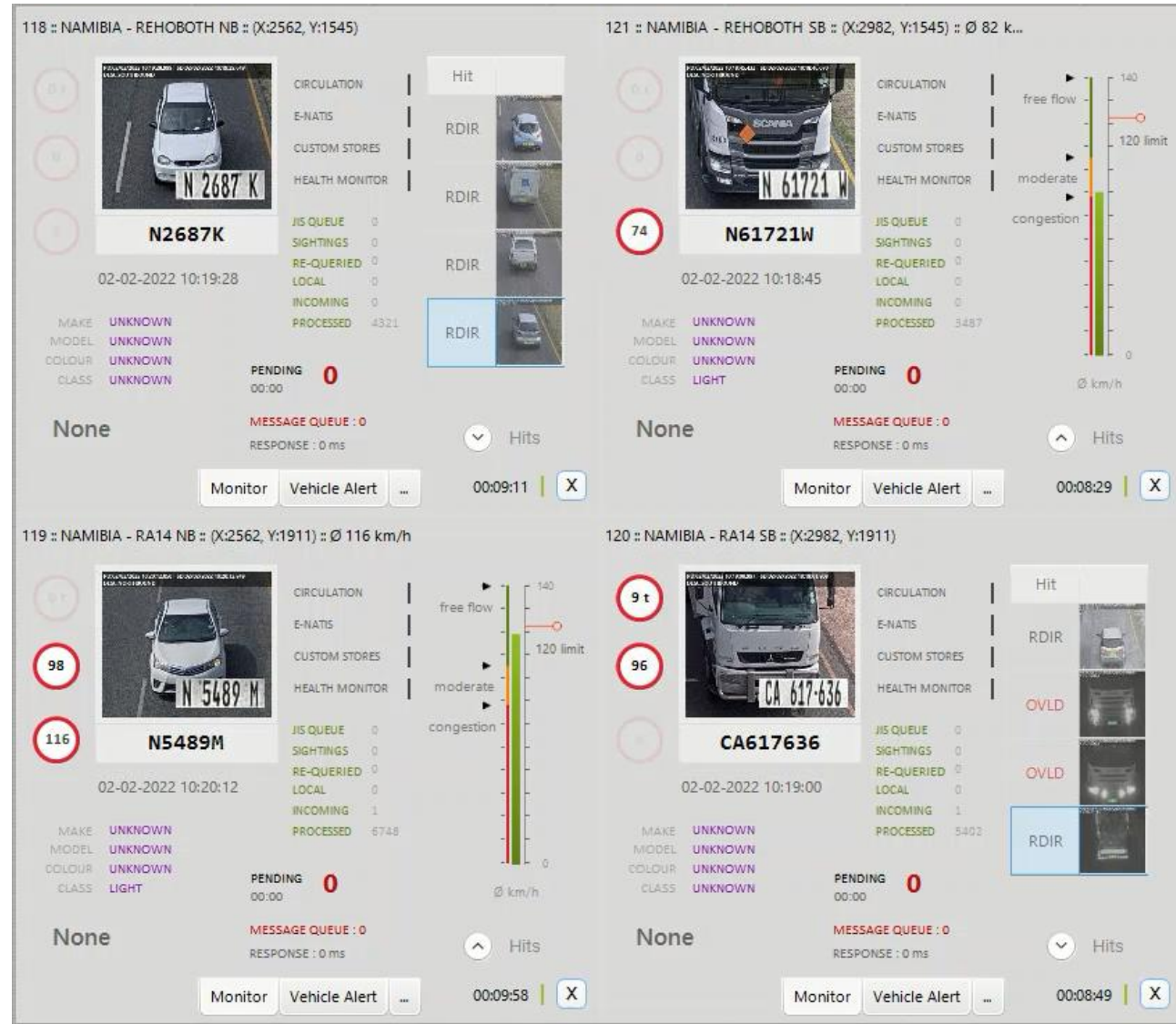
Bi-Directional – HSWIM & ASOD



B1 – Rehoboth


Bi-Directional – ASOD Only






Live Feed : Main Datacenter: Video Wall

MTMKZN.ASD DataViewer :: Version 2.2506.9.6



MCKINKZWP Site A



MCKINKZWP Site B

SECTION DESCRIPTION

Namibia B1: Between RA14 and Rehoboth
 Section Distance: 56300 m Frame Number: 64

Drag a column here to group by this column.

Frame	Primary Date & Time	Secondary Date & Time	Time Difference	Speed	Speed Limit...	Classification	ANPR
▶ 64	02/02/2025 07:13:03.920	02/02/2025 07:32:16.427	1153 sec	175 km/h	120	Light	MCKINKZWP
544	12/02/2025 17:19:42.813	12/02/2025 17:38:55.647	1153 sec	175 km/h	120	Light	N3914R
389	08/02/2025 15:59:27.300	08/02/2025 16:19:10.800	1183 sec	171 km/h	120	Light	N161341W
77	02/02/2025 08:42:46.940	02/02/2025 09:02:42.707	1196 sec	169 km/h	120	Light	N131319W
1078	26/02/2025 09:06:55.120	26/02/2025 09:27:58.873	1263 sec	160 km/h	120	Light	LC05SLGP
408	09/02/2025 08:35:18.970	09/02/2025 08:56:27.023	1269 sec	159 km/h	120	Light	N221145W
60	02/02/2025 06:18:25.903	02/02/2025 06:39:46.217	1281 sec	158 km/h	120	Light	N210312W
220	05/02/2025 09:39:02.233	05/02/2025 10:00:28.800	1286 sec	157 km/h	120	Light	N48MA
901	22/02/2025 16:41:59.467	22/02/2025 17:03:37.750	1298 sec	156 km/h	120	Light	N83ND
209	05/02/2025 07:18:16.730	05/02/2025 07:39:59.230	1303 sec	155 km/h	120	Light	N205653W
799	20/02/2025 16:38:01.217	20/02/2025 16:59:57.657	1316 sec	154 km/h	120	Light	N331M

SPEED CRITERIA APPLIED

Limit


- Light Motor Vehicles : 120 (km/h)
- Minibuses : 100 (km/h)
- Buses : 100 (km/h)
- Heavy Motor Vehicles : 80 (km/h)
- Speed Limit Applied : 120 (km/h)

Primary Date and Time: 02/02/2025 07:13:03.920
 Secondary Date and Time: 02/02/2025 07:32:16.427 } 00h:19m:13s

Heavy speeds split by GVM Split Threshold: 0 kgs
 eNatis GVM: 0 kgs

Violations ASD File Header <XML>

175 km/h

Load  Print

Make (eNatis):
 Model (eNatis):
 Colour (eNatis):

← →

ASD Violations BMT Violations JIS Violations TRF Viewer

Loading Complete

Violation Viewing & Processing

TRAFFIC STATISTICS | NAMIBIA B1: BETWEEN REHOBOTH AND RA14

Date	VOLUME		SPEED DISTRIBUTION							CLASSES				TOTAL
	SITE A	SITE B	0 - 60	61 - 80	81 - 100	101 - 120	121 - 130	131 - 140	> 140	LMV	MINIBUS	BUS	HMV	
01/01/2025	738	1369	35	67	79	202	39	20	2	444	0	0	0	444
02/01/2025	916	1936	73	65	132	327	82	22	4	705	0	0	0	705
03/01/2025	1237	2257	218	97	222	495	79	18	2	1131	0	0	0	1131
04/01/2025	1086	1960	149	107	208	415	62	13	3	957	0	0	0	957
05/01/2025	1161	2046	150	89	181	479	88	18	5	1010	0	0	0	1010
06/01/2025	1020	2316	191	60	117	457	109	21	5	960	0	0	0	960
07/01/2025	994	2352	246	87	123	396	90	16	6	964	0	0	0	964
08/01/2025	1054	2483	307	101	141	408	78	19	1	1055	0	0	0	1055
09/01/2025	1112	2462	293	130	125	422	79	14	3	1066	0	0	0	1066
10/01/2025	1086	2645	328	111	169	372	53	16	3	1052	0	0	0	1052
11/01/2025	843	2086	148	90	123	251	54	13	6	685	0	0	0	685
12/01/2025	1039	2292	119	124	160	304	65	11	4	787	0	0	0	787
13/01/2025	940	2400	168	88	88	367	64	16	5	796	0	0	0	796
14/01/2025	861	2362	245	82	97	323	85	15	4	851	0	0	0	851
15/01/2025	900	2350	282	95	131	307	56	14	1	886	0	0	0	886
16/01/2025	913	2363	285	140	144	298	65	9	2	943	0	0	0	943
17/01/2025	1038	2550	323	125	156	367	72	15	4	1062	0	0	0	1062
18/01/2025	731	1943	132	83	99	220	45	20	8	607	0	0	0	607
19/01/2025	802	1941	108	133	129	227	56	11	4	668	0	0	0	668
20/01/2025	894	2367	152	105	103	336	73	17	5	791	0	0	0	791
21/01/2025	989	2365	231	114	150	390	52	14	3	954	0	0	0	954
22/01/2025	1060	2505	309	153	159	369	74	17	2	1083	0	0	0	1083
23/01/2025	978	2474	348	139	133	362	77	18	3	1080	0	0	0	1080
24/01/2025	1240	2755	356	157	212	422	77	9	3	1236	0	0	0	1236
25/01/2025	897	2027	170	104	115	283	72	8	4	756	0	0	0	756
26/01/2025	1119	2268	126	139	151	357	67	16	8	864	0	0	0	864
27/01/2025	1138	2557	173	145	151	434	74	14	6	997	0	0	0	997
28/01/2025	965	2328	252	88	132	374	87	14	4	951	0	0	0	951
29/01/2025	1046	2510	360	152	138	400	63	11	3	1127	0	0	0	1127
30/01/2025	1169	2563	323	151	183	423	82	25	3	1190	0	0	0	1190
31/01/2025	1373	3019	377	206	234	383	79	20	8	1307	0	0	0	1307
TOTAL	31339	71851	6 977	3 527	4 485	11 170	2 198	484	124	28965	0	0	0	28965

Total Prosecutable: 2806 (10%)

TRAFFIC STATISTICS | NAMIBIA B1: BETWEEN RA14 AND REHOBOTH

Date	VOLUME		SPEED DISTRIBUTION							CLASSES				TOTAL
	SITE A	SITE B	0 - 60	61 - 80	81 - 100	101 - 120	121 - 130	131 - 140	> 140	LMV	MINIBUS	BUS	HMV	
01/01/2025	1168	606	22	41	69	186	59	16	3	396	0	0	0	396
02/01/2025	1961	1045	54	61	133	441	110	22	2	823	0	0	0	823
03/01/2025	2715	1546	200	105	235	683	96	20	1	1340	0	0	0	1340
04/01/2025	2101	1129	149	103	197	467	93	25	10	1044	0	0	0	1044
05/01/2025	1740	893	111	57	118	362	97	36	7	788	0	0	0	788
06/01/2025	2356	1165	131	80	156	551	96	23	0	1037	0	0	0	1037
07/01/2025	2427	1207	238	111	216	443	58	20	2	1088	0	0	0	1088
08/01/2025	2624	1291	290	99	199	508	77	20	1	1194	0	0	0	1194
09/01/2025	2542	1233	252	98	144	405	69	14	4	986	0	0	0	986
10/01/2025	3004	1559	245	79	222	629	89	24	1	1289	0	0	0	1289
11/01/2025	2237	1078	135	84	135	365	103	29	9	860	0	0	0	860
12/01/2025	1746	857	125	88	151	267	56	23	6	716	0	0	0	716
13/01/2025	2408	1109	153	95	141	458	76	8	2	933	0	0	0	933
14/01/2025	2297	1061	221	89	132	409	95	17	6	969	0	0	0	969
15/01/2025	2466	1121	287	126	161	354	74	17	6	1025	0	0	0	1025
16/01/2025	2276	1054	238	111	143	480	84	19	2	1077	0	0	0	1077
17/01/2025	2825	1429	294	100	228	594	88	16	6	1326	0	0	0	1326
18/01/2025	1996	936	145	96	128	300	104	18	7	798	0	0	0	798
19/01/2025	1274	592	87	54	87	177	51	18	9	483	0	0	0	483
20/01/2025	2420	1084	103	105	139	494	73	19	6	939	0	0	0	939
21/01/2025	2431	1147	253	107	171	500	92	28	7	1158	0	0	0	1158
22/01/2025	2534	1158	318	131	216	491	57	6	4	1223	0	0	0	1223
23/01/2025	2551	1147	317	122	169	511	107	18	6	1250	0	0	0	1250
24/01/2025	3156	1534	369	109	238	724	119	25	6	1590	0	0	0	1590
25/01/2025	2298	1038	192	70	133	364	80	26	7	872	0	0	0	872
26/01/2025	1499	720	104	48	94	233	54	18	8	559	0	0	0	559
27/01/2025	2531	1207	135	107	194	480	68	20	3	1007	0	0	0	1007
28/01/2025	2509	1134	263	137	233	436	62	27	9	1167	0	0	0	1167
29/01/2025	2585	1187	324	128	205	516	80	12	4	1269	0	0	0	1269
30/01/2025	2623	1249	327	114	200	565	89	12	9	1316	0	0	0	1316
31/01/2025	3437	1709	403	254	579	384	54	15	2	1691	0	0	0	1691
TOTAL	72737	35225	6 485	3 109	5 566	13 777	2 510	611	155	32213	0	0	0	32213

Total Prosecutable: 3276 (10%)

AVERAGE SPEED MEASUREMENT - INFRINGEMENT PRINTOUT

Image 1 - Beginning of section



Image 2 - End of section



Violation Details:

Measurement Section: Namibia B1: Between RA14 and Rehoboth
 Time Difference: 1166 seconds (19:26 minutes)
 Section Distance: 56.3 kilometers
 Speed Limit: 120 Km/h
 Average Speed: 173 Km/h

173 !

Calculation:

$$\text{Average Speed} = \frac{\text{Distance}}{\text{Time}} = 173 \text{ Km/h} \quad (\text{rounded down})$$

AVERAGE SPEED MEASUREMENT - INFRINGEMENT PRINTOUT

Image 1 - Beginning of section



Image 2 - End of section



Violation Details:

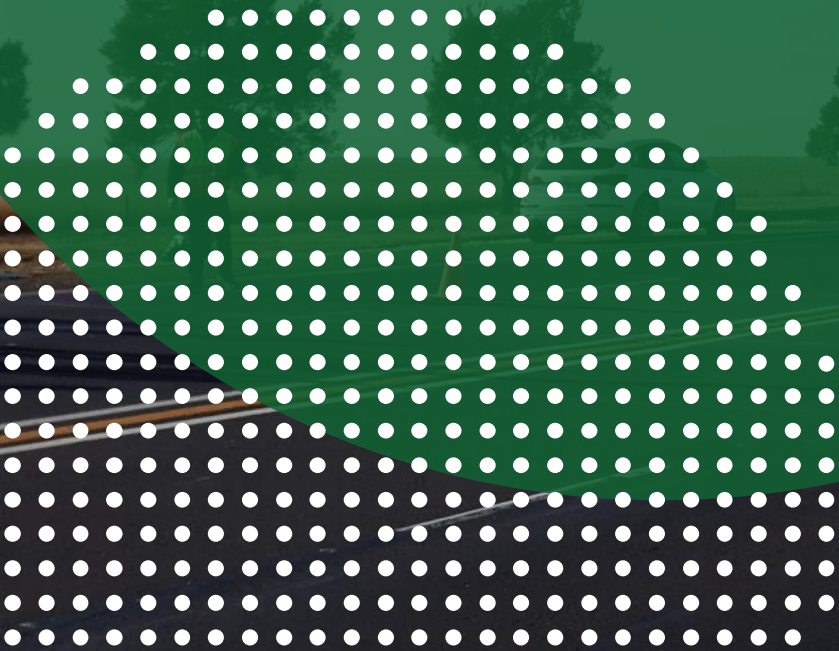
Measurement Section: Namibia B1: Between RA14 and Rehoboth
 Time Difference: 1173 seconds (19:33 minutes)
 Section Distance: 56.3 kilometers
 Speed Limit: 120 Km/h
 Average Speed: 172 Km/h

172 !

Calculation:

$$\text{Average Speed} = \frac{\text{Distance}}{\text{Time}} = 172 \text{ Km/h} \quad (\text{rounded down})$$

INTEGRATION WITH HIGH-SPEED WEIGH-IN-MOTION (HSWIM)





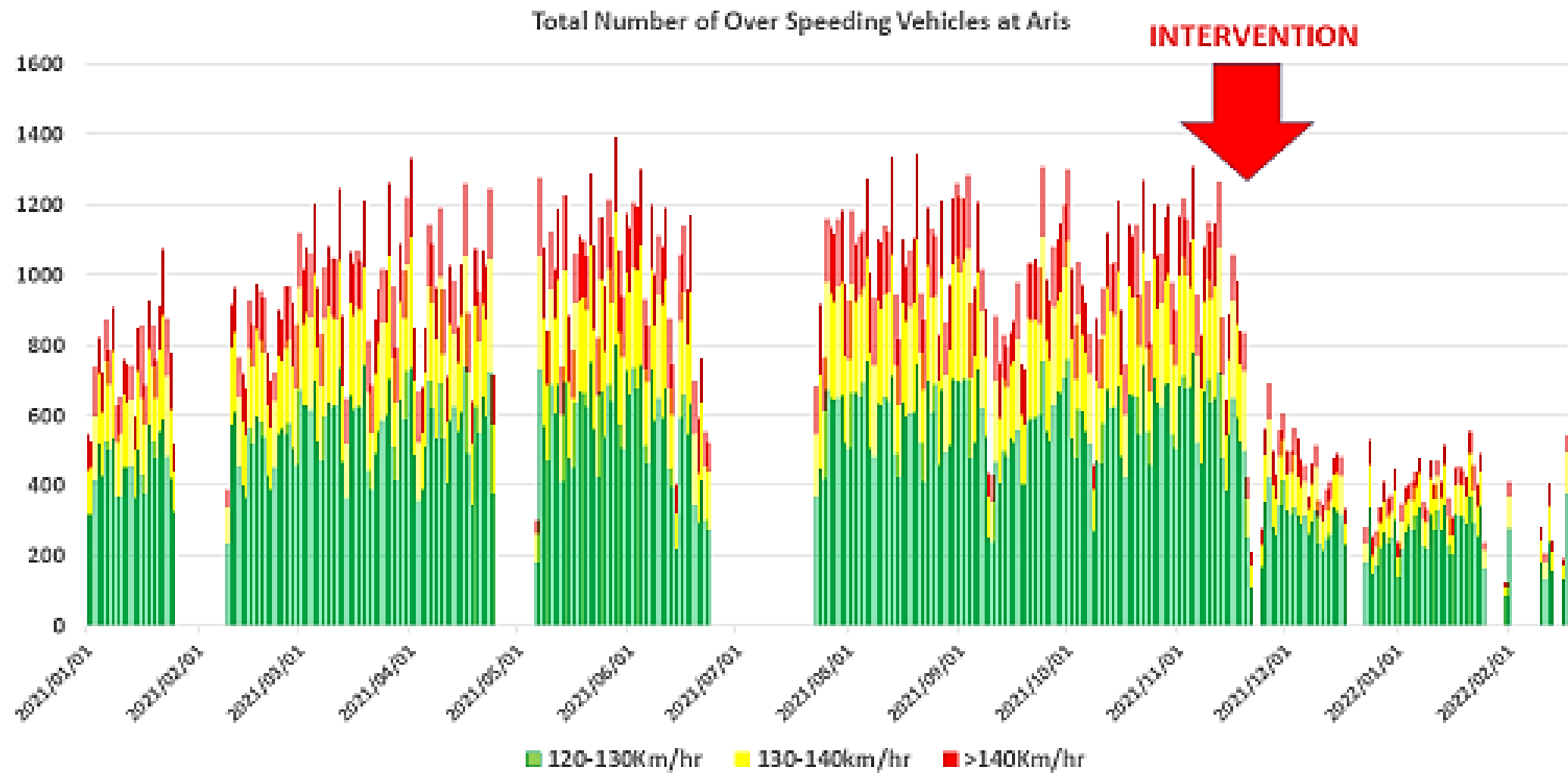
Weigh-in-motion Site Installation



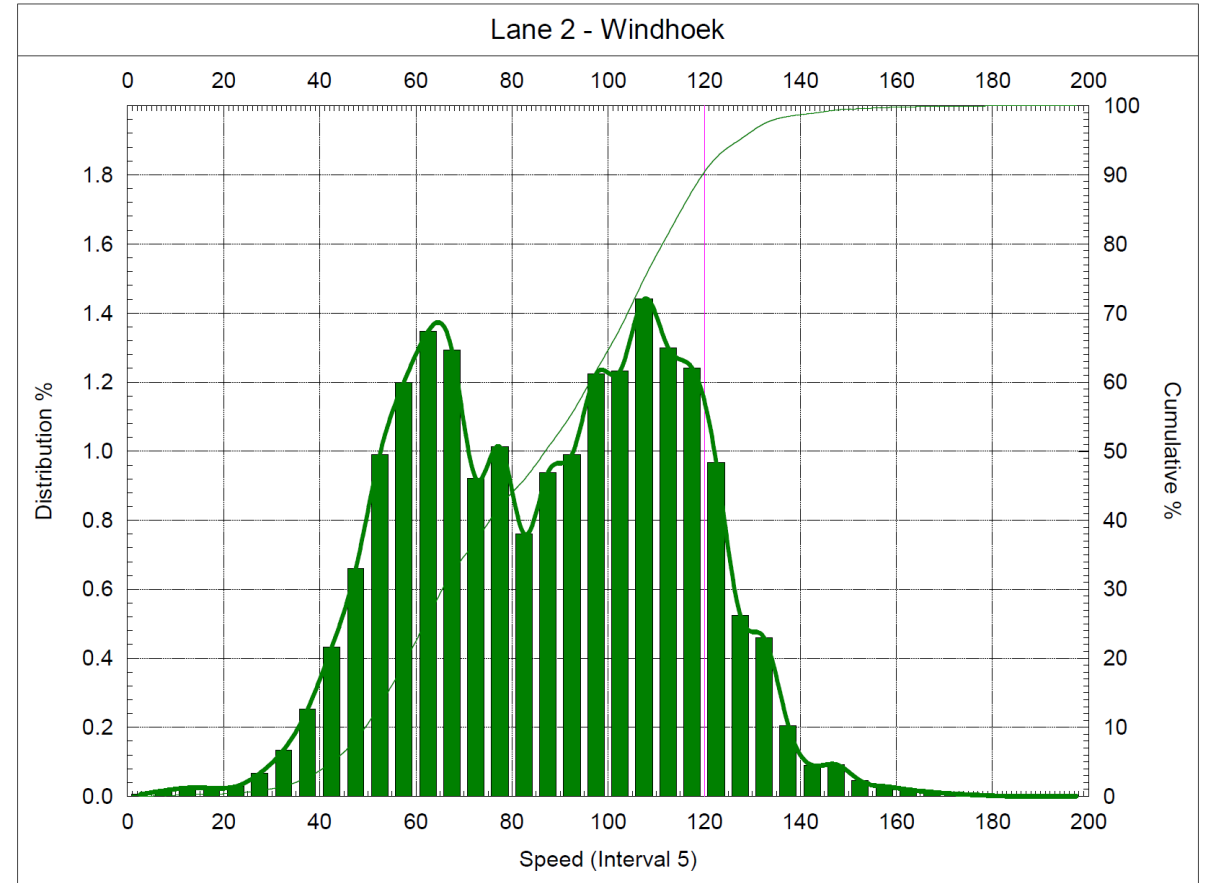
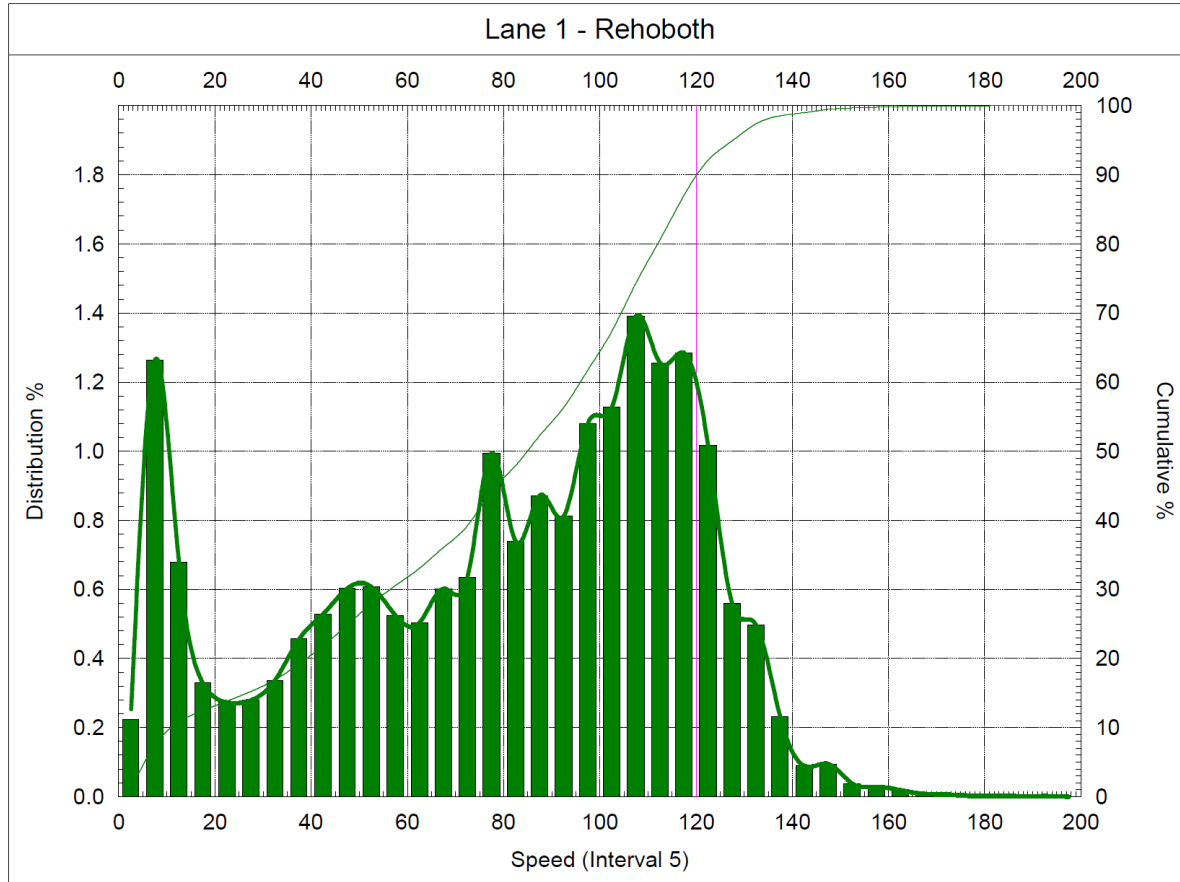
A blue, rectangular weigh-in-motion sensor is embedded in a road surface. The sensor has the word "PAT" embossed on it in large, bold letters. The road surface is asphalt with a yellow painted line running horizontally across the frame. The sensor is positioned between two yellow lines. The background is a dark, textured asphalt surface.

Weigh-in-motion Site Installation

IMPACT OF THE INSTALLATION OF ANPR CAMERAS AT ARIS



Speed Distribution



Overload Statistics

VEHICLE SUMMARY			
Summary	Lane 1	Lane 2	Total
Vehicles	67085	68426	135511
Light	59905	62350	122255
Heavy	7180	6076	13256
Heavy Weighed	6805	6047	12852
Overloaded	528	213	741
Over-Axle	429	191	620
Over-Group	387	136	523
Over-GVM	291	61	352
Over-RL	234	36	270
Over-BF	240	33	273
% Weighed	94.8	99.5	97.0
% Overloaded	7.4	3.5	5.6
% Over-Axle	6.0	3.1	4.7
% Over-Group	5.4	2.2	3.9
% Over-GVM	4.1	1.0	2.7
% Over-RL	3.3	0.6	2.0
% Over-BF	3.3	0.5	2.1

SINGLE AXLE OVERLOAD SUMMARY						
Overload(%)	Lane 1		Lane 2		Total	
	Count	%	Count	%	Count	%
0.0 - 5.0	223	3.3	118	2.0	341	2.7
5.0 - 10.0	111	1.6	47	0.8	158	1.2
10.0 - 15.0	52	0.8	16	0.3	68	0.5
15.0 - 20.0	19	0.3	4	0.1	23	0.2
20.0 - 25.0	6	0.1	1	0.0	7	0.1
> 25.0	18	0.3	5	0.1	23	0.2
Total	429	6.3	191	3.2	620	4.8

MULTI AXLE GROUP OVERLOAD SUMMARY						
Overload(%)	Lane 1		Lane 2		Total	
	Count	%	Count	%	Count	%
0.0 - 5.0	200	2.9	93	1.5	293	2.3
5.0 - 10.0	104	1.5	26	0.4	130	1.0
10.0 - 15.0	48	0.7	10	0.2	58	0.5
15.0 - 20.0	17	0.2	2	0.0	19	0.1
20.0 - 25.0	3	0.0	1	0.0	4	0.0
> 25.0	15	0.2	4	0.1	19	0.1
Total	387	5.7	136	2.2	523	4.1

GVM OVERLOAD SUMMARY						
Overload(%)	Lane 1		Lane 2		Total	
	Count	%	Count	%	Count	%
0.0 - 5.0	185	2.7	51	0.8	236	1.8
5.0 - 10.0	74	1.1	4	0.1	78	0.6
10.0 - 15.0	11	0.2	0	0.0	11	0.1
15.0 - 20.0	2	0.0	1	0.0	3	0.0
20.0 - 25.0	5	0.1	0	0.0	5	0.0
> 25.0	14	0.2	5	0.1	19	0.1
Total	291	4.3	61	1.0	352	2.7

Namibia - RA14 NB | Top 25 Worst Overloads

#	Operator	Date & Time	Vehicle Reg	Overload	Overload Type
1	UNKNOWN	17/01/2025 08:15:12	N7624OH	49656 kgs	GVM
2	UNKNOWN	29/01/2025 08:30:26	N230139W	37612 kgs	GVM
3	UNKNOWN	24/01/2025 08:25:16	N7624OH	37588 kgs	GVM
4	UNKNOWN	09/01/2025 08:52:51	ABNORMAL	37114 kgs	GVM
5	UNKNOWN	30/01/2025 07:10:05	ABNORMAL	32793 kgs	GVM
6	UNKNOWN	09/01/2025 08:49:20	ABNORMAL	32337 kgs	GVM
7	UNKNOWN	09/01/2025 16:59:42	N230139W	30500 kgs	GVM
8	UNKNOWN	30/01/2025 07:09:48	ABNORMAL	30484 kgs	GVM
9	UNKNOWN	10/01/2025 06:51:20	N220756W	25582 kgs	GVM
10	UNKNOWN	08/01/2025 23:54:18	N224934W	17764 kgs	GVM
11	UNKNOWN	13/01/2025 15:31:49	CN20091	13333 kgs	GVM
12	UNKNOWN	07/01/2025 14:56:41	N7463T	11882 kgs	GVM
13	UNKNOWN	23/01/2025 14:14:20	N217500X	10874 kgs	GVM
14	UNKNOWN	16/01/2025 15:19:05	K7463T	10791 kgs	GVM
15	UNKNOWN	15/01/2025 17:34:47	CY434826	10224 kgs	GVM
16	UNKNOWN	17/01/2025 13:16:03	CN27529	10004 kgs	GVM
17	UNKNOWN	27/01/2025 08:22:45	CY350685	9979 kgs	GVM
18	UNKNOWN	19/01/2025 21:23:56	N4653OH	9741 kgs	GVM
19	UNKNOWN	11/01/2025 11:31:42	N6467T	9631 kgs	GVM
20	UNKNOWN	16/01/2025 18:50:39	CYF695NC	9493 kgs	GVM
21	UNKNOWN	11/01/2025 13:56:14	CAR22261	9257 kgs	GVM
22	UNKNOWN	28/01/2025 09:34:45	CN22390	9217 kgs	GVM
23	UNKNOWN	11/01/2025 15:26:10	N97859W	9120 kgs	GVM
24	UNKNOWN	21/01/2025 20:53:08	N7463T	8885 kgs	GVM
25	UNKNOWN	17/01/2025 16:33:16	N129691W	8802 kgs	GVM

Northbound

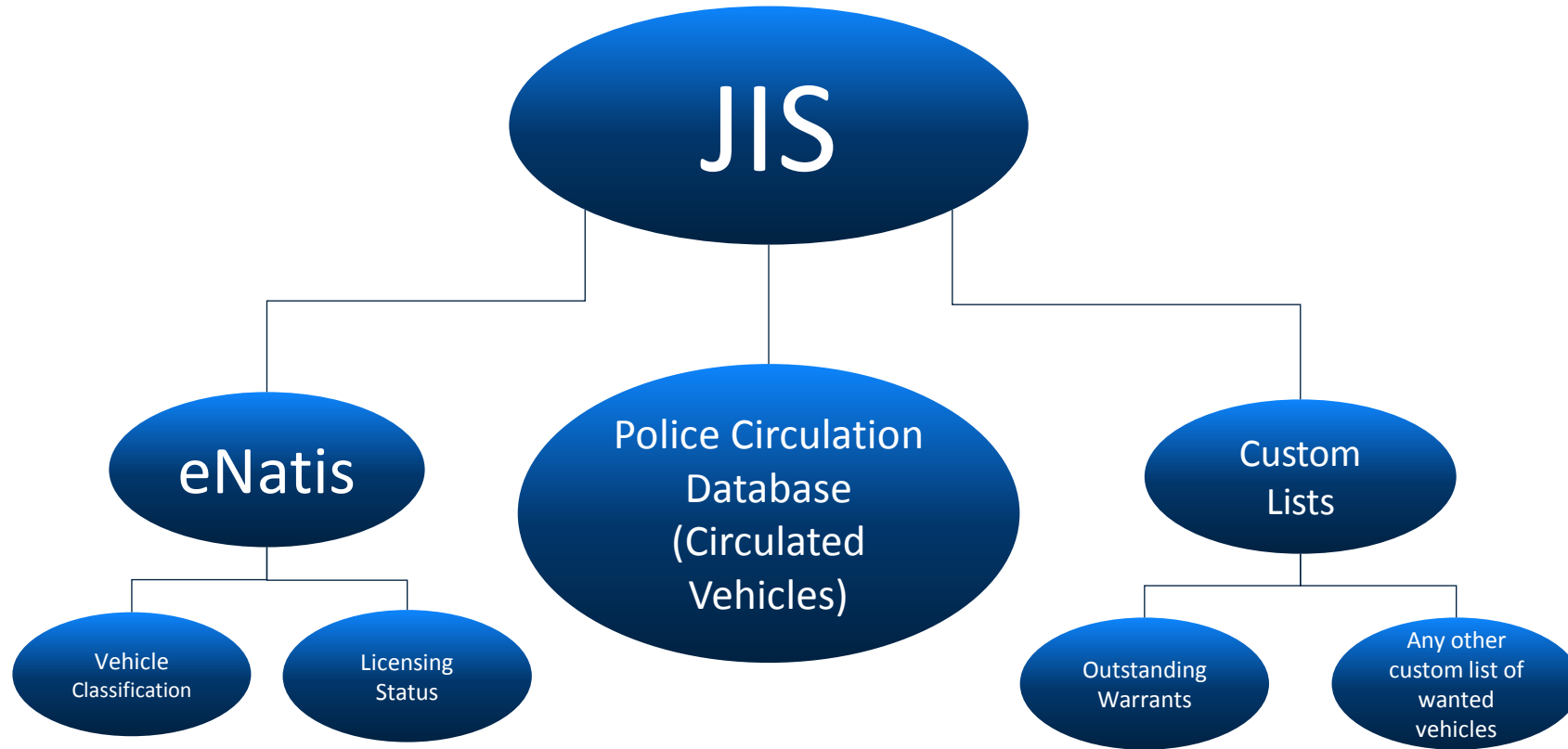
Namibia - RA14 SB | Top 25 Worst Overloads

#	Operator	Date & Time	Vehicle Reg	Overload	Overload Type
1	UNKNOWN	07/01/2025 07:15:21	N230139W	44631 kgs	GVM
2	UNKNOWN	31/01/2025 15:09:42	N178316W	26909 kgs	GVM
3	UNKNOWN	13/01/2025 17:19:43	N59385W	15433 kgs	GVM
4	UNKNOWN	24/01/2025 15:13:56	CJ103605	10197 kgs	GVM
5	UNKNOWN	02/01/2025 16:34:48	CWN440NC	7009 kgs	GVM
6	UNKNOWN	28/01/2025 16:07:03	N4200VB	6804 kgs	GVM
7	UNKNOWN	12/01/2025 09:54:01	CBR4624	5701 kgs	GVM
8	UNKNOWN	24/01/2025 17:33:41	N2460WB	5495 kgs	GVM
9	UNKNOWN	25/01/2025 19:27:40	CY254907	5436 kgs	AG
10	UNKNOWN	15/01/2025 15:26:01	N4417OT	5230 kgs	GVM
11	UNKNOWN	24/01/2025 17:27:42	N226876W	5214 kgs	GVM
12	UNKNOWN	09/01/2025 14:07:05	N226876W	4907 kgs	GVM
13	UNKNOWN	16/01/2025 15:20:04	N241795W	4701 kgs	GVM
14	UNKNOWN	18/01/2025 05:39:58	CVV609NC	4480 kgs	GVM
15	UNKNOWN	10/01/2025 14:35:15	CN36790	4407 kgs	GVM
16	UNKNOWN	23/01/2025 19:07:42	N6810M	4171 kgs	GVM
17	UNKNOWN	28/01/2025 17:18:03	RR9999NA	3478 kgs	AG
18	UNKNOWN	23/01/2025 11:33:55	LY34HSGP	3319 kgs	GVM
19	UNKNOWN	12/01/2025 15:21:32	N2143R	3319 kgs	GVM
20	UNKNOWN	20/01/2025 09:21:14	N145629W	3317 kgs	GVM
21	UNKNOWN	20/01/2025 19:15:47	N208057W	3228 kgs	AG
22	UNKNOWN	08/01/2025 16:49:20	N194403W	3145 kgs	AG
23	UNKNOWN	11/01/2025 11:14:36	N243372W	3025 kgs	GVM
24	UNKNOWN	19/01/2025 11:08:04	N186783W	3025 kgs	GVM
25	UNKNOWN	23/01/2025 17:14:37	CHX030NC	2981 kgs	GVM

Southbound

Integration with e-Natis

- Query data through the Joint Information System (JIS)
- To get the required speed classification groups
 - Light, Taxi, Bus & Heavy
- To link overloading offenders by name (habitual offender ID)
- Identify:
 - Un-Licensed
 - Un-roadworthy
 - Stolen vehicle details



Joint Information System

Connectivity to e-Natis and other Datasets

Linking records to the Static Weighbridge

- Requirement – RA to supply Mikros the Static Weighbridge F17 file monthly
- To calibrate the Weigh-In-Motion correctly
- To generate reports on the Static Scale performance
 - Comparisons of overloads detected by the Wim against overloads weighed and prosecuted Statically



Basic AxleInfo Shape Violation Info Picture

RUN No. 23 LOG No. 24 Tagged

Departure 2024-02-29 09:50:26.270 Speed 93.7

Arrival 2024-02-29 09:50:25.399 Length 2267

Physical Lane 3 Axles 0

Logical Lane 3 GVM 0.00

Direction Forward Total Axle Spacing 0

Chassis Code Medium Bumper-to-1st Axle n/a

Internal Class 0 Last Axle-to-Bumper

Trailers na Axle Grouping

TMH3 V.C. 20 Any heavy vehicle

Schemes RSA Lgt/Hvy RSA Ext Lgt/Hvy

Classes Heavy Long

Descriptions Heavy Vehicle Long Truck

Front Speed 93.7 Back Speed 96.2 B-F Speed Dif 2.5

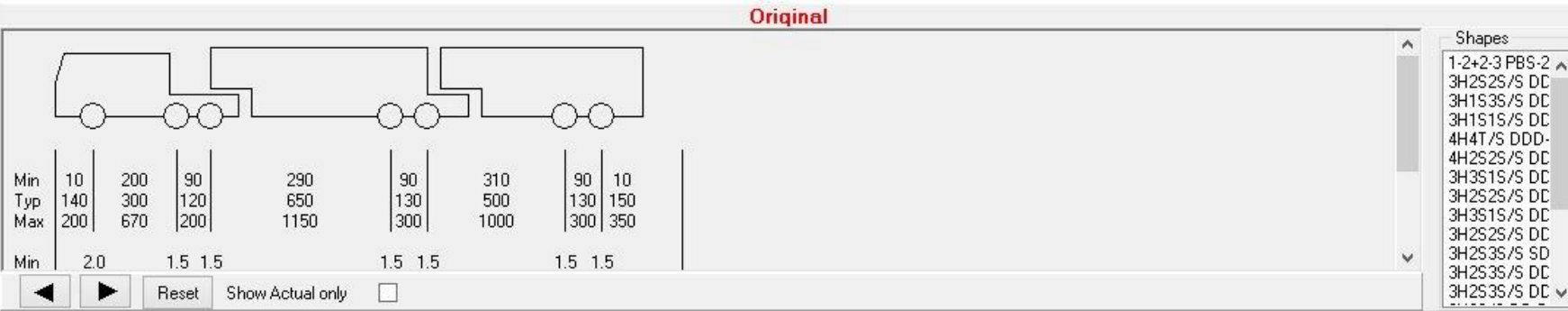
Occurancy 908 ms Headway n/a

Flow Priority Free

Failure Codes

Number Plate S/Dual tyre code

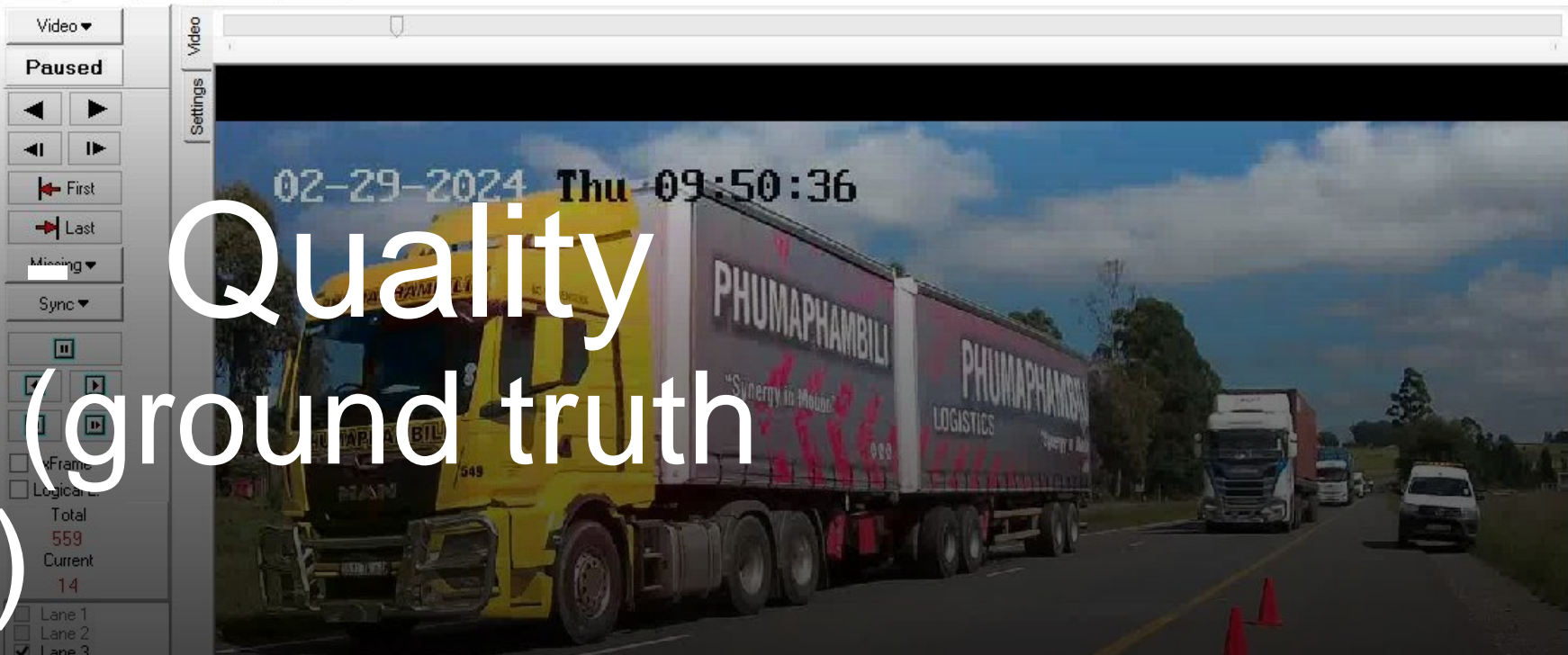
Straddle Detected IN-Lane triggered



- Shapes
- 1-2+2-3 PBS-2 ^
 - 3H2S2S/S DC
 - 3H1S3S/S DC
 - 3H1S1S/S DC
 - 4H4T/S DDD-
 - 4H2S2S/S DC
 - 3H3S1S/S DC
 - 3H2S2S/S DC
 - 3H3S1S/S DC
 - 3H2S2S/S DC
 - 3H2S3S/S SD
 - 3H2S3S/S DC
 - 3H2S3S/S DC

Show rejected vehicles (VS/VR)

Picture Video 1 Video 2 Video 3 Video 4



Moncam - Quality Assurance (ground truth verification)



Drafting and fulfilling the required Standard for Prosecution

- Obtain site approval from the Prosecuting Authority
- Get the Law Enforcement Directorate more involved with the project
- Obtain official section measurement from an accredited specialist (Distance between entry and exit points)
- Get the NIS to adopt the South African NRCS Standard for Average Speed Over Distance
- Obtain site verification in accordance with the Standard

System Type Approval



national regulator for
compulsory specifications

**Legal Metrology Interim
Requirements:
Road traffic law enforcement
systems**

**Part 1: Long, Fixed-Distance
Speed Meter (LFDSM)**

Type Approval Certificate

Equipment Type Approval



Type Approval Certificate

SA 1645 Amendment 1

In accordance with the provisions of chapter 5, section 22(1) and 22(2)(a) and (b) of the Legal Metrology Act (Act 9 of 2014), the Chief Executive Officer hereby certifies that the pattern of the instrument(s) described herein meets the requirements for approval purposes of the,

Legal Metrology Act and LM – RTLE-ASOD: 2019, Edition 1

and may be used for prescribed purposes after due consideration of any limitations or conditions imposed by the Type Approval Certificate.

This certificate relates only to the metrological and technical characteristics of the pattern of the instrument concerned, as covered by the relevant Standard, it does not constitute or imply any guarantee as to the safety of the equipment.

System: "MTM-KZN Model AM3" ASOD

Applicant: Mikros Traffic Monitoring(KZN)
(Pty)Ltd

Date of Issue: 26 March 2021

Date of Expiry: 25 March 2031

Date of amendment: 08 June 2021

Approved by: I Willis

A handwritten signature in black ink, appearing to read "I Willis", is positioned above a horizontal line.

General Manager Legal Metrology
National Regulator for Compulsory Specifications
Private Bag X25, Brooklyn, 0075
Republic Of South Africa

VERIFICATION CERTIFICATE

Certificate number	LFDSM_ Section 68
Verification test Results(s) ID	Section 68: MPUMALANGA BORDER NB TO PIET RETIEF SOUTH NB _ 25/03/2025

Issued to:

Company Name:

Address:

Verification procedure: **LM – RTLE-LFDSM: 2021**

Traceability of equipment used.
Equipment used is traceable to the national standards as indicated below.

	Calibration certificate number	Date of calibration	Identification of equipment Description, SN, Set no
Distance	75384-1	19-02-2021	Description: Range Distance, Area: N3 1 31.2 S To N3 1 30.2 S, Road: N3 South (Between Shongweni and Marianhill Toll), Pinetown
	75384-2	22-02-2021	Manufacturer: Geo Studio Technology Garmin, Description: Trackmaker Software + USB GPS Antenna, Model No: TrackMaker Professional GPS 18x, Serial No: 00133366 19M026527
	79762-9	20 to 22-01-2025	Description: Range Distance, Area: MPUMALANGA BORDER NB TO PIET RETIEF SOUTH NB: N2 N, Between MPUMALANGA BORDER NB TO PIET RETIEF SOUTH NB
Time	79761-3	17 to 18-01-2025	Manufacturer: Cosy, Description: Electronic Clock-Timer, Model No: CR2032, Asset No: A
	79761-4	17-01-2025	Manufacturer: Cosy, Description: Electronic Clock-Timer, Model No: CR2032, Serial No: PNE3275, Asset No: B




Equipment used: NRCS-LM Loan (Tick appropriate block)

ASOD Description:

System:

Name and Model	MTM-KZN Model AM3	SA Number	
Serial No	N/A	Manufacturer	Mikros Traffic Monitoring-KZN

Components:

Software Version number	
Software Compilation Checksum number	
Section ID/Distance seal number	

Site:

Site Identification	Section 68: MPUMALANGA BORDER NB TO PIET RETIEF SOUTH NB			
Site Coordinates	Latitude	-27.2432 & -27.0544454	Longitude	31.2519 & 30.8325283
Site Location	N2, MPUMALANGA BORDER NB TO PIET RETIEF SOUTH NB			
Site Road Number/ID	Site 216 Mpumalanga NB- 217 Piet Retief NB			
Site Distance	50983m			

The "measuring instrument" was/were tested and found to comply in all respects with the requirements of the Legal Metrology Act, 2014 (Act 9 of 2014) and may be used for a prescribed purpose as intended by the Act.

Verification officer Name:	<input type="text" value="D. Nundkisun"/>	Signature:	
Seal Number of VO	<input type="text" value="NRCS 32"/>	Verification Mark	<input type="text" value="N/A"/>

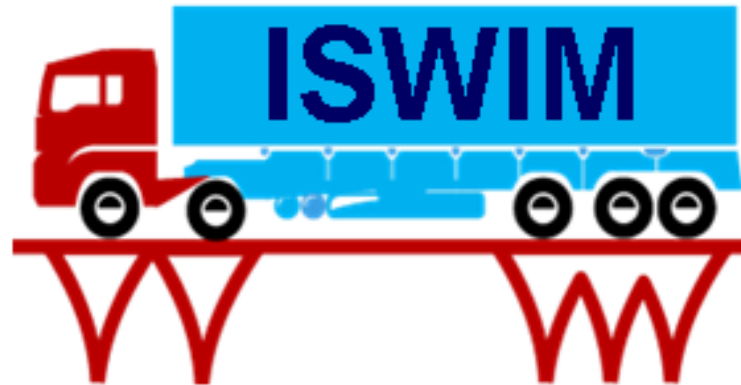
Issue Date:	<input type="text" value="2025-03-25"/>	Expiry date	<input type="text" value="2026-03-25"/>
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End of certificate

Page 1 of 1

Verification Certificate

Thank You !



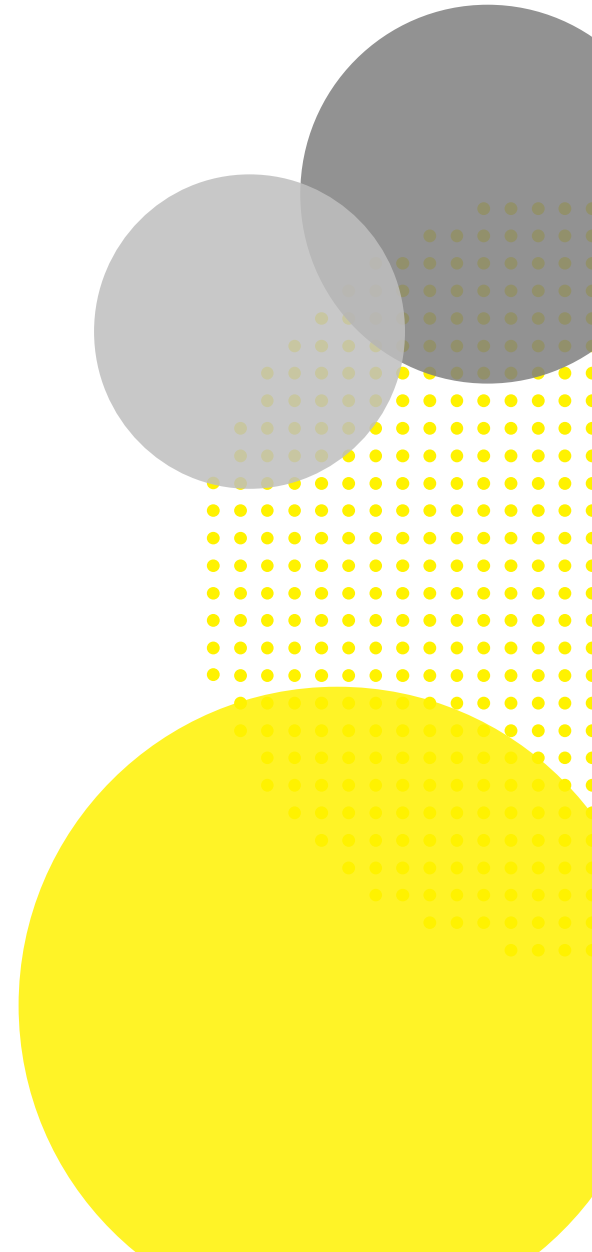
Questions?

Aaron Moodley (ASOD)

aaron@mtmkzn.co.za

Rob Sik (WIM)

rob@mikros.co.za



CTO TRAFFIC HIGHLIGHTS

TRAFFIC HIGHLIGHTS OF SITE 014				
1.1	Site Identifier		014	
1.2	Site Name		014	
1.3	Site Description	From Rehoboth to Windhoek		
1.4	Road Description	Route : T0105 Road : T0105 Section :	Distance : 61.7km	
1.5	GPS Position	17 07 53.4E -22 46 42.1S		
1.6	Number of Lanes		2	
1.7	Station Type	Permanent (WIM)		
1.8	Requested Period	2025/03/01 - 2025/03/31		
1.9	Length of record requested (hours)		744	
1.10	Actual First & Last Dates	2025/03/03 - 2025/03/31		
1.11	Actual available good data (hours)		682	
1.12	Percentage good data available for requested period		91.7	
		Rehoboth	Windhoek	Total
2.1a	Total number of vehicles (counted)	67085	68426	135511
2.1b	Total number of vehicles (projected for period)	73151	74614	147765
2.2	Average daily traffic (ADT)	2360	2407	4767
2.3	Average daily truck traffic (ADTT)	249	207	457
2.4	Percentage of trucks	10.6	8.6	9.6
2.5	Truck split % (short:medium:long)	33 : 12 : 55	33 : 12 : 55	33 : 12 : 55
2.6	Percentage of night traffic (20:00 - 06:00)	10.9	9.6	10.2
3.1	Speed limit (km/hr)			120
3.2	Average speed (km/hr)	86.8	88.6	87.7
3.3	Average speed - light vehicles (km/hr)	89.8	90.4	90.1
3.4	Average speed - heavy vehicles (km/hr)	59.9	69.3	64.2
3.5	Average night speed (km/hr)	79.3	83.8	81.5
3.6	15th centile speed (km/hr)	56.7	58.8	57.8
3.7	85th centile speed (km/hr)	118.0	118.0	118.0
3.8	Percentage vehicles in excess of speed limit	11.6	11.0	11.3
4.1	Percentage vehicles in flows over 600 vehicles/hr	11.9	4.5	12.7
4.2	Highest volume on the road (vehicles/hr)		2025/03/17 07:00:00	785
4.3	Highest volume in the North (vehs/hr)		2025/03/17 07:00:00	750
4.4	Highest volume in the South (vehs/hr)		2025/03/06 18:00:00	627
4.5	Highest volume in a lane (vehicles/hr)		2025/03/17 07:00:00	750
4.6	15th highest volume on the road (vehicles/hr)		2025/03/05 07:00:00	683
4.7	15th highest volume in the North direction (vehs/hr)		2025/03/10 08:00:00	467
4.8	15th highest volume in the South direction (vehs/hr)		2025/03/28 19:00:00	484
4.9	30th highest volume on the road (vehicles/hr)		2025/03/27 07:00:00	544
4.10	30th highest volume in the North direction (vehs/hr)		2025/03/11 08:00:00	401
4.11	30th highest volume in the South direction (vehs/hr)		2025/03/28 18:00:00	369
5.1	Percentage of vehicles less than 2s behind vehicle ahead	17.5	19.5	18.5
6.1	Total number of heavy vehicles (projected for period)	7727	6428	14155
6.2	Estimated average number of axles per truck	4.6	4.7	4.6
6.3	Estimated truck mass (Ton/truck)	24.7	22.1	23.5
6.4	Estimated average E80/truck	1.7	1.2	1.5
6.5	Estimated daily E80 on the road			688
6.6	Estimated daily E80 in the North direction			432
6.7	Estimated daily E80 in the South direction			257
6.8	Actual average daily E80 in the worst North lane			427
6.9	Actual average daily E80 in the worst South lane			265
6.10	Actual average Axles/Truck (Short:Medium:Long)	(2.1 : 3.4 : 6.4)	(2.1 : 3.6 : 6.4)	(2.1 : 3.5 : 6.4)
6.11	Actual average Mass/Truck (Short:Medium:Long)	(6.4 : 14.5 : 38.1)	(7.9 : 17.4 : 31.5)	(7.1 : 15.9 : 35.1)
6.12	Actual average E80s/Truck (Short:Medium:Long)	(0.2 : 0.7 : 2.9)	(0.3 : 1.1 : 1.8)	(0.2 : 0.9 : 2.4)

