Paardeberg Mountain Wildfire

27 December 2023 – 02 January 2024

M.A.P Scientific Services
January 2024

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Disclaimer

The burnt areas displayed in this report are modelled based on significant changes in vegetation and have not been verified on the ground. The data may therefore include areas that were not necessarily affected by fire. Furthermore, the data are generated from satellite imagery that can be affected by atmospheric anomalies and conditions such as cloud cover, smog, or smoke. These factors may result in inaccurate data from time to time. Furthermore, satellite imagery captured over an area represent a snapshot at that period of time. All data illustrated should be interpreted with caution and should be backed up with observations on the ground. MAPSS does not take responsibility for any inaccuracies or misrepresentations in the data.

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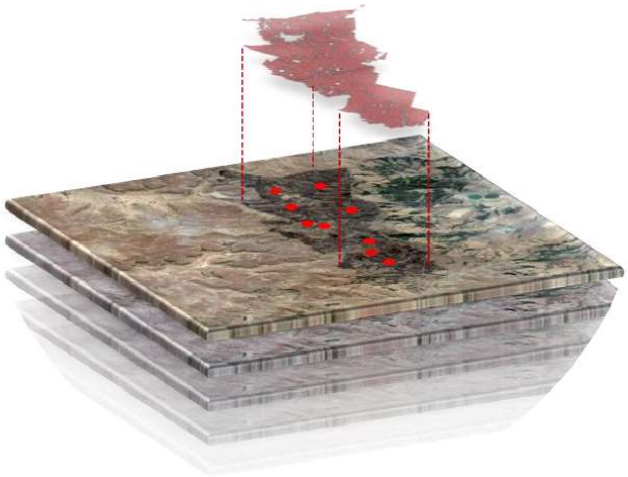
1. Background

MAPSS Burnt Area Product is produced and owned by M.A.P Scientific Services (Pty) Ltd. The data is generated using high resolution (10m) satellite imagery captured every 5 to 10 days. The data is then modelled by comparing changes in vegetation between two consecutive satellite images represented by a pre-date and post-date image. The result is a burnt area product represented by polygons and associated data.



Specifically, the burn scar is modelled by measuring the spectral/light properties of pixels within a satellite image. The spectral analysis used was normalised burn ratio (NBR) that focuses on the Near infrared and shortwave infrared spectrum.

In this document MAPSS reports on the generated burn scar maps of the apparent fire which occurred ~27 December 2023 until ~ 4 January 2024, on the Paardeberg Mountain just north-west of Wellington, Western Cape. The fire is estimated to be 2 872 ha in size, affecting 61 farm portions. These maps are supported by thermal hotspot data captured by MODIS and VIIRS instruments, as well as a breakdown of the farm portions affected, and area burnt (ha).

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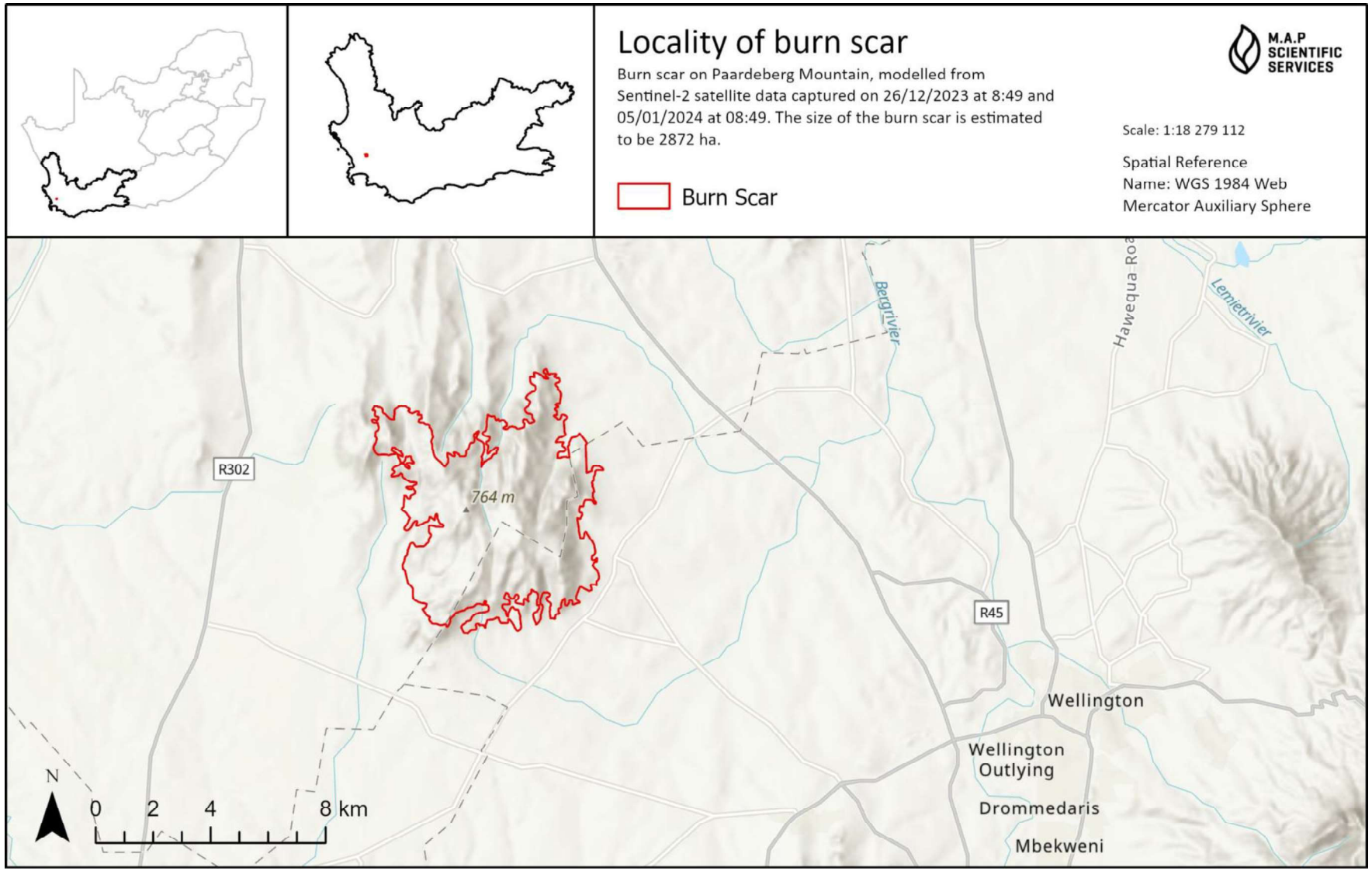


Figure 2. *Satellite image captured before the fire occurred on 26th of December 2023.*

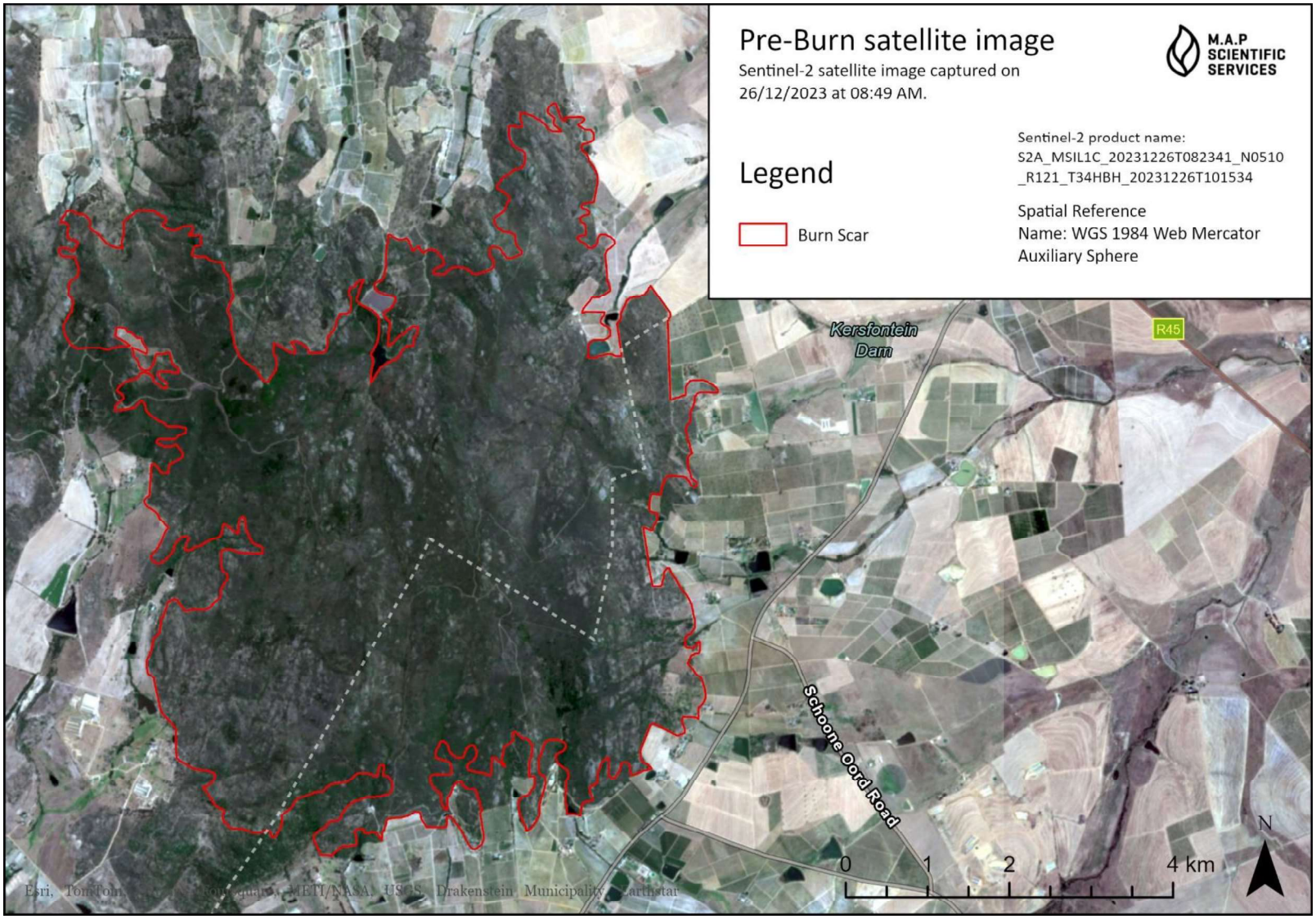


Figure 3. *Satellite image captured after the fire occurred on the 5th of January 2024.*

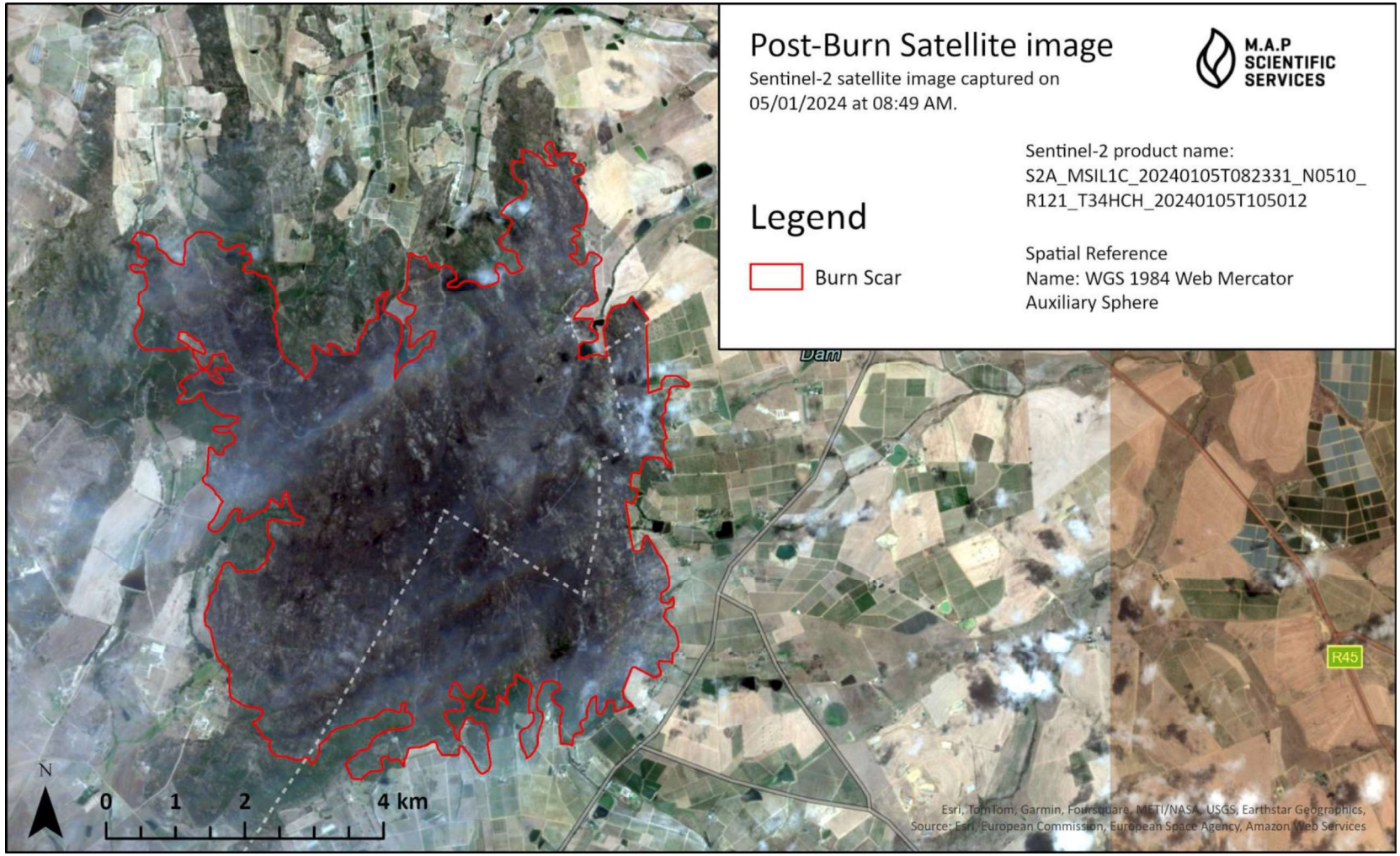


Figure 4. *Map illustrating thermal hotspots captured by MODIS and VIIRS sensors (illustrating the overall spread of the fire from 27 December 2023 until 2 January 2024).*

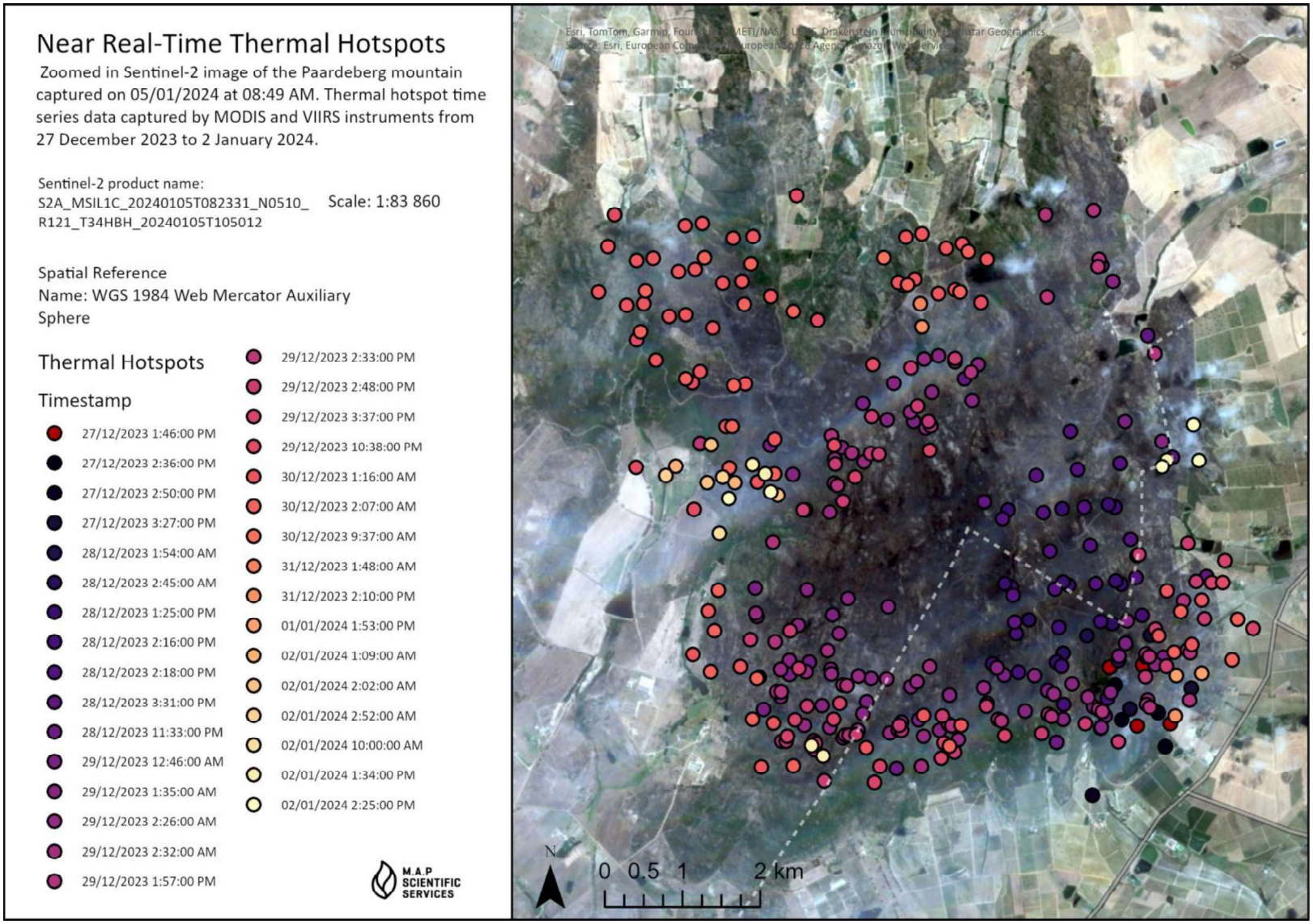


Figure 5. *Map illustrating thermal hotspots captured by MODIS and VIIRS sensors (illustrating the potential starting point of the fire on 27 December 2023).*

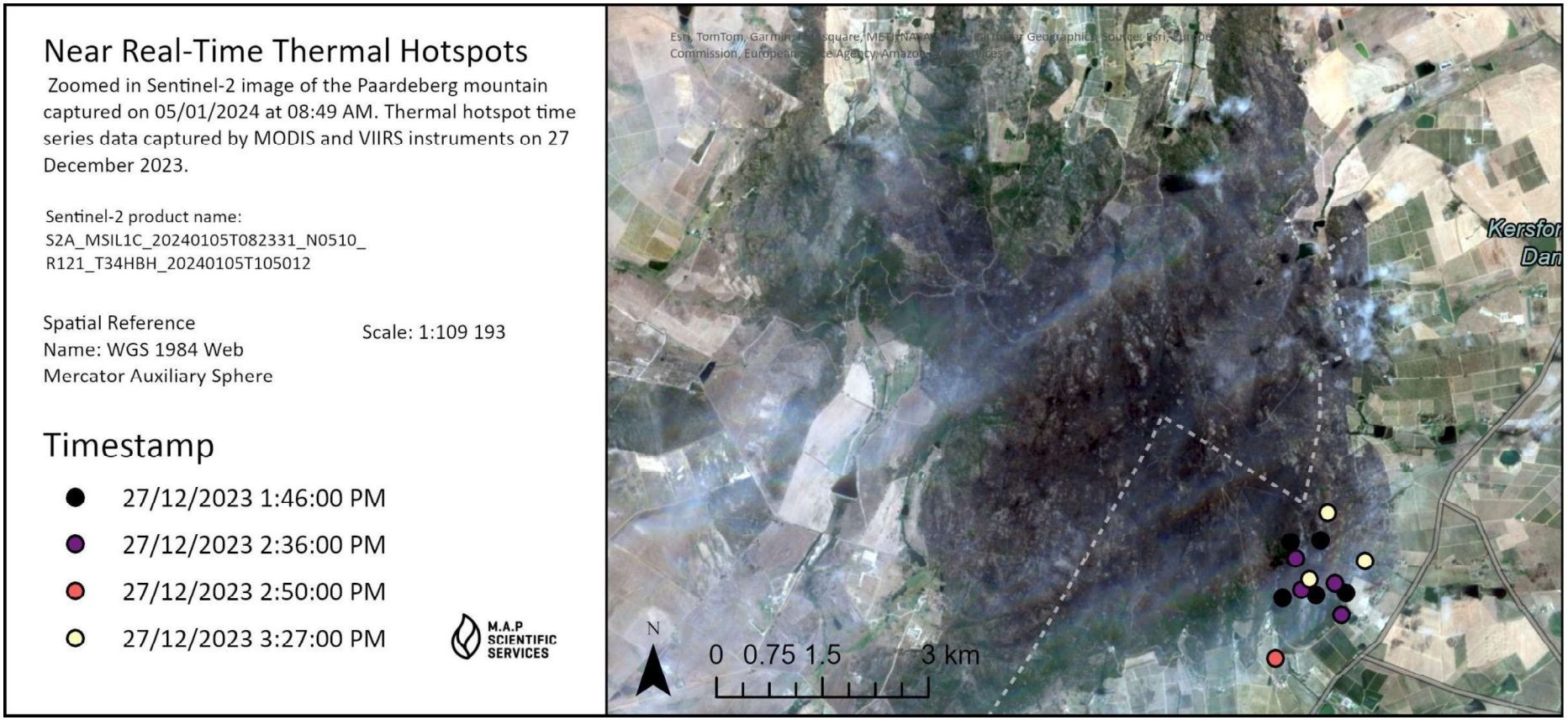


Figure 6. *Map illustrating thermal hotspots captured by MODIS and VIIRS sensors (illustrating the potential direction of the spread of the fire on 28 December 2023).*

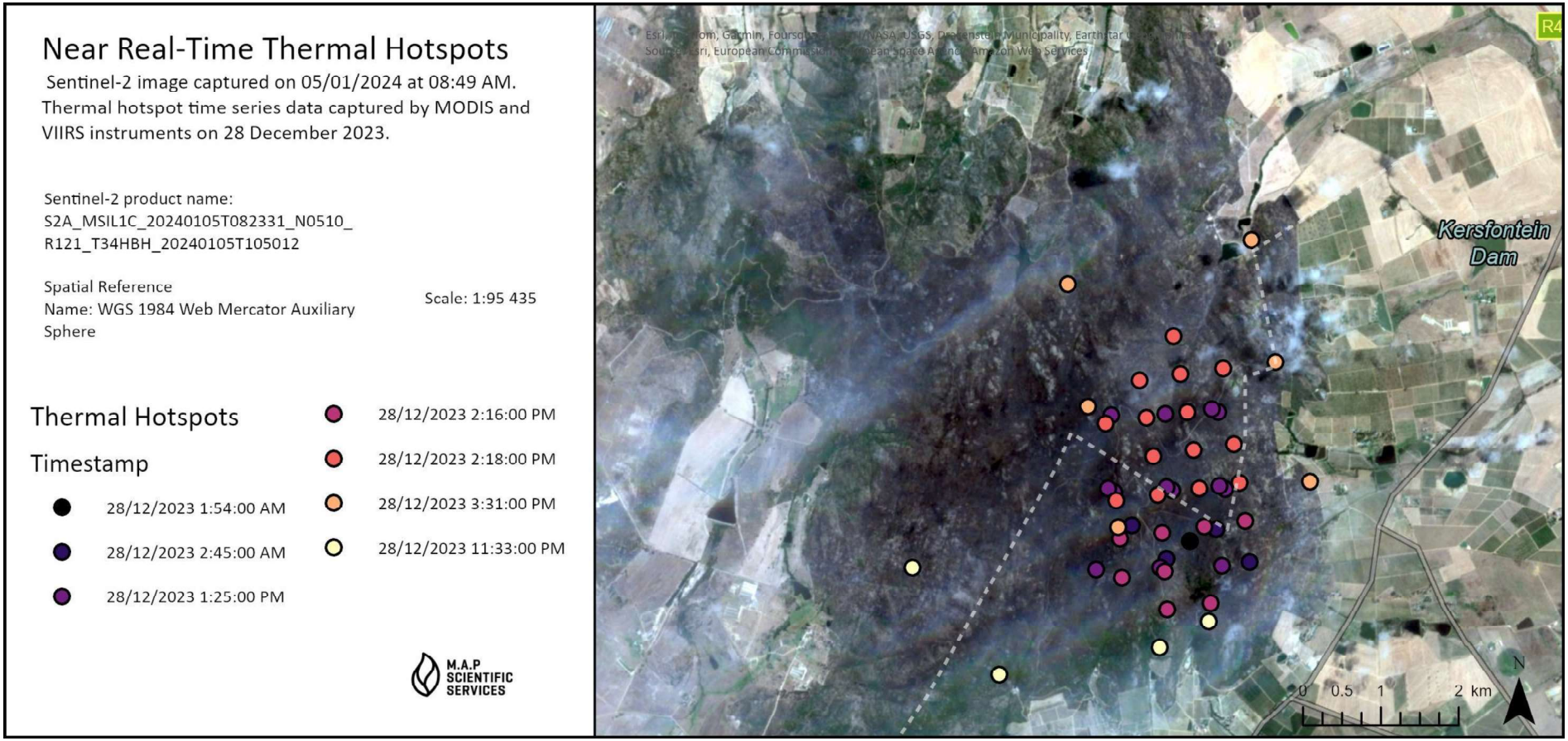


Figure 7. *Map illustrating thermal hotspots captured by MODIS and VIIRS sensors (illustrating the potential direction of the spread of the fire on 29 December 2023).*

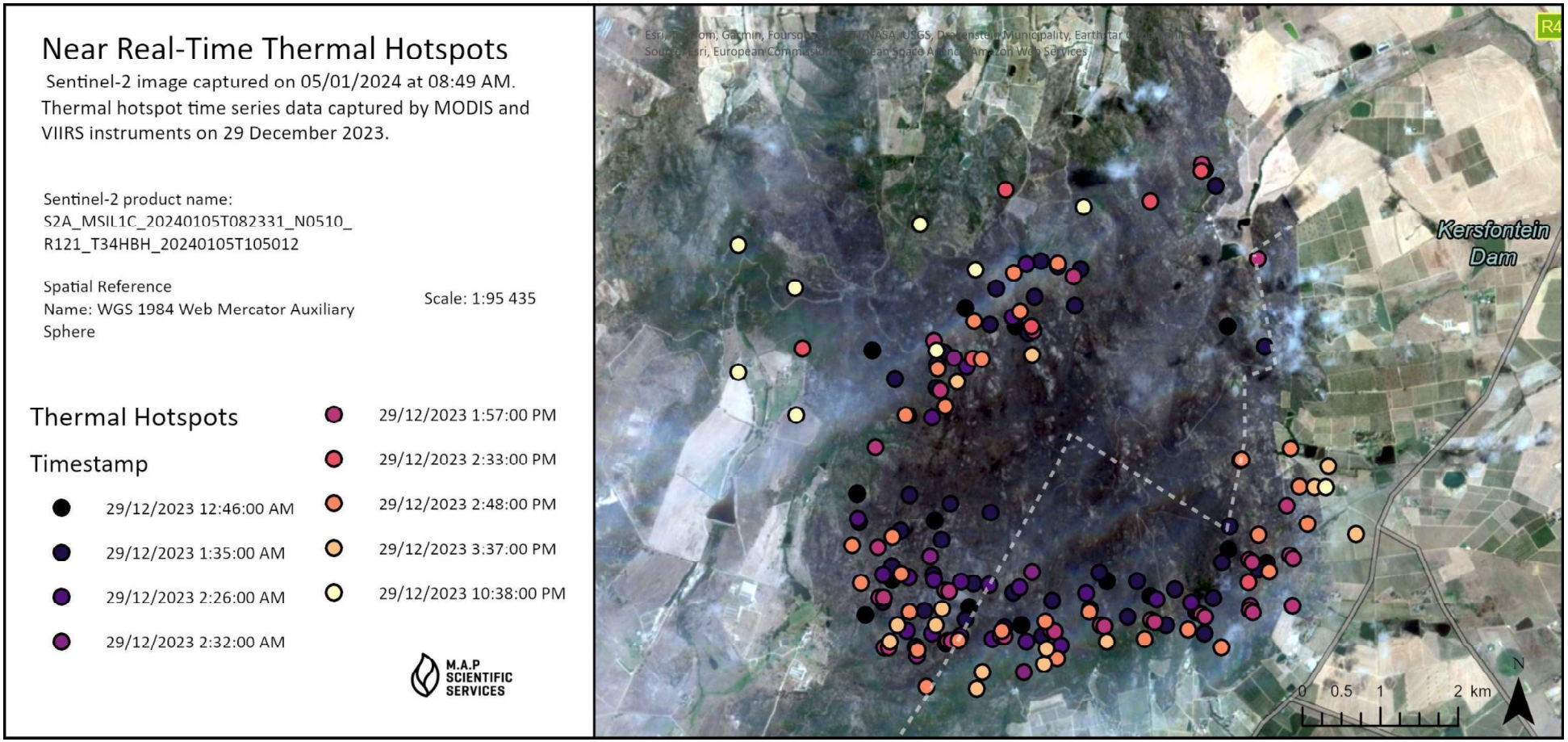


Figure 8. *Map illustrating thermal hotspots captured by MODIS and VIIRS sensors (illustrating the potential direction of the spread of the fire on 30 and 31 December 2023).*

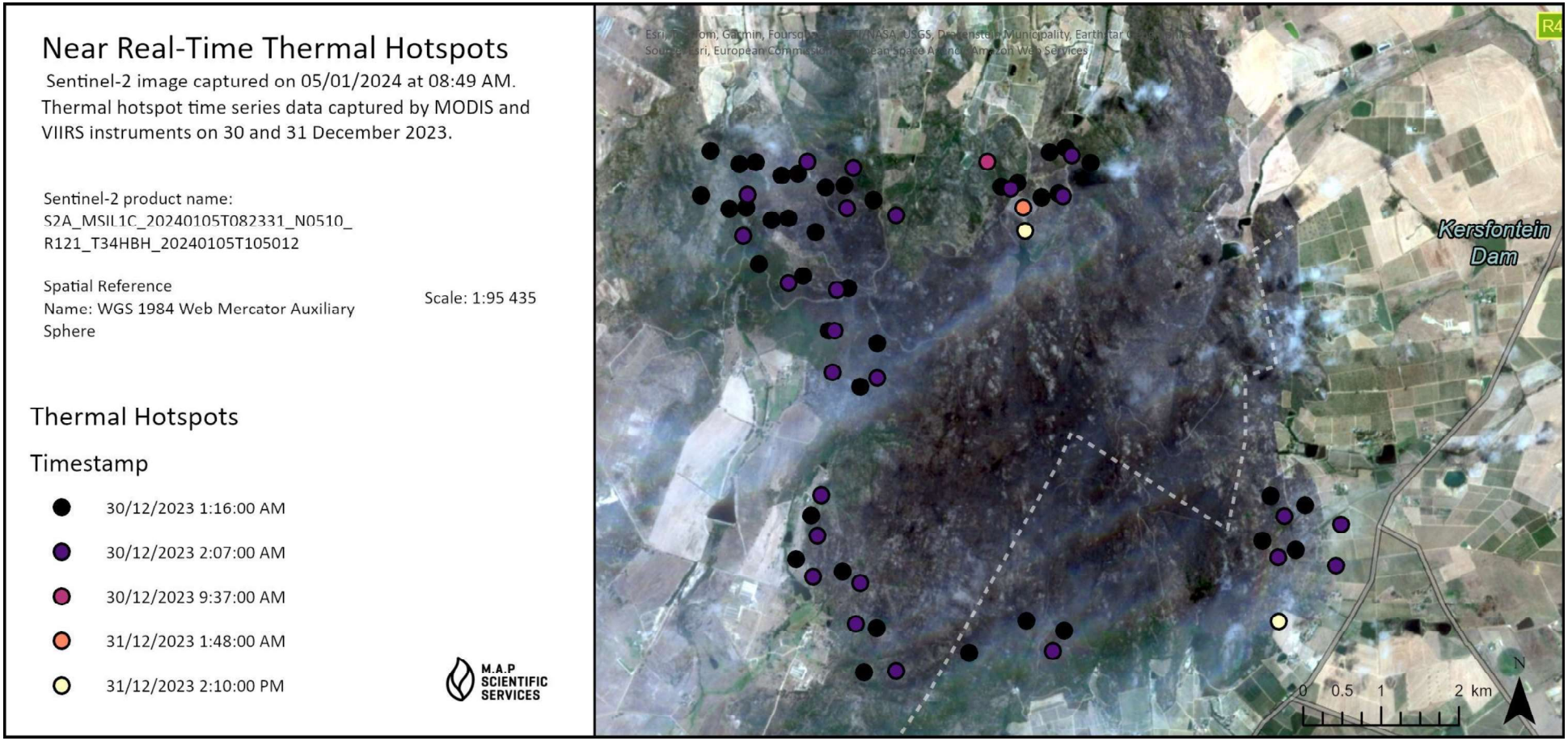
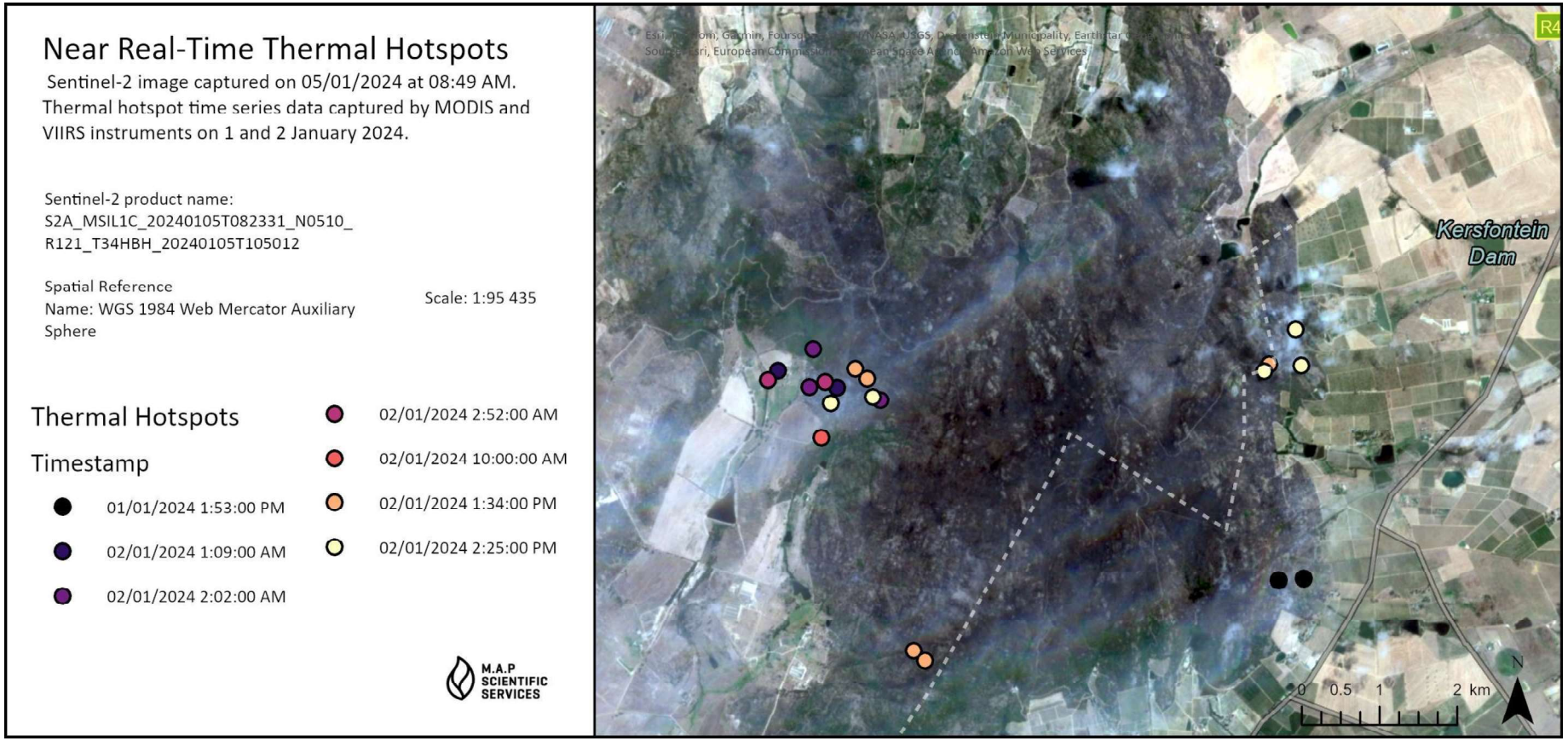


Figure 9. *Map illustrating thermal hotspots captured by MODIS and VIIRS sensors (illustrating the potential direction of the spread of the fire on 1 and 2 January 2024).*



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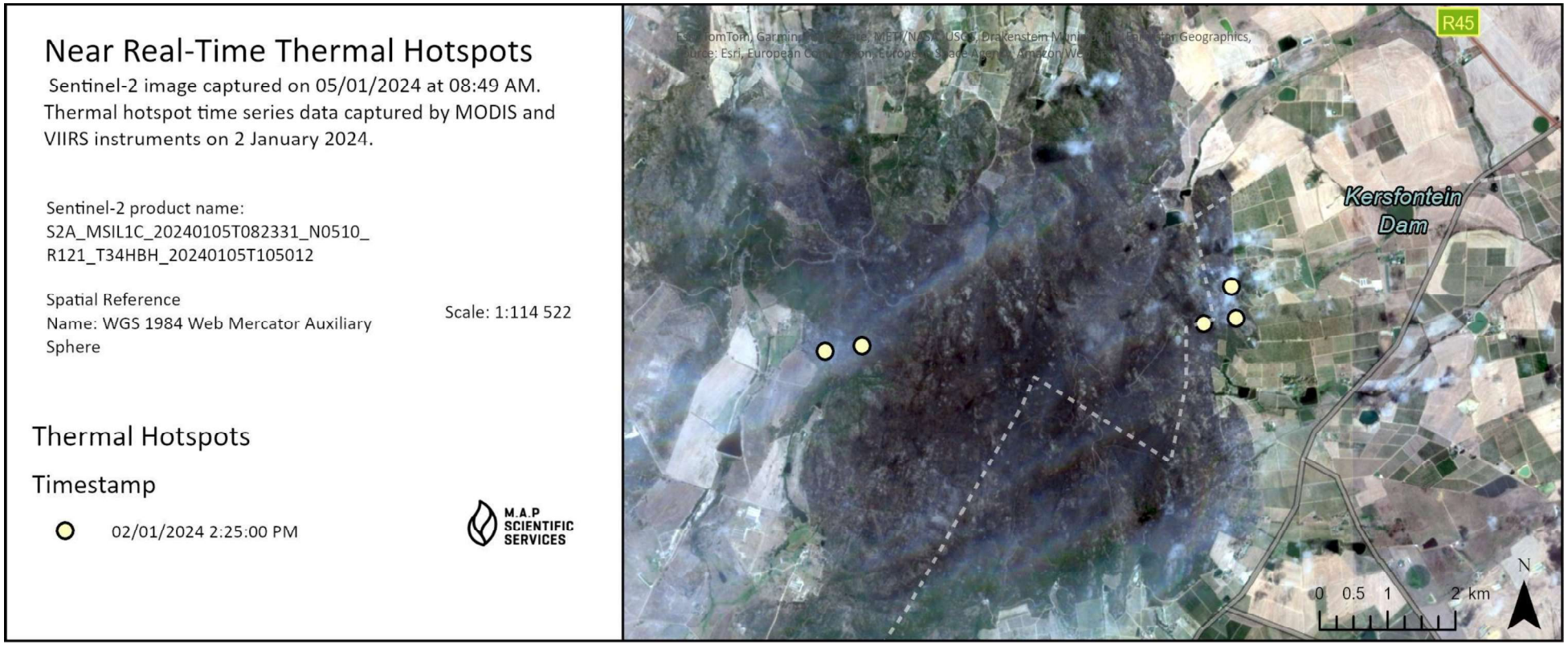


Figure 11. *The location of thermal hotspots for one time-stamp on 28 December 2023 (11:33 PM) and two time-stamps on 29 December 2023 (12:46 AM and1:35 AM).*

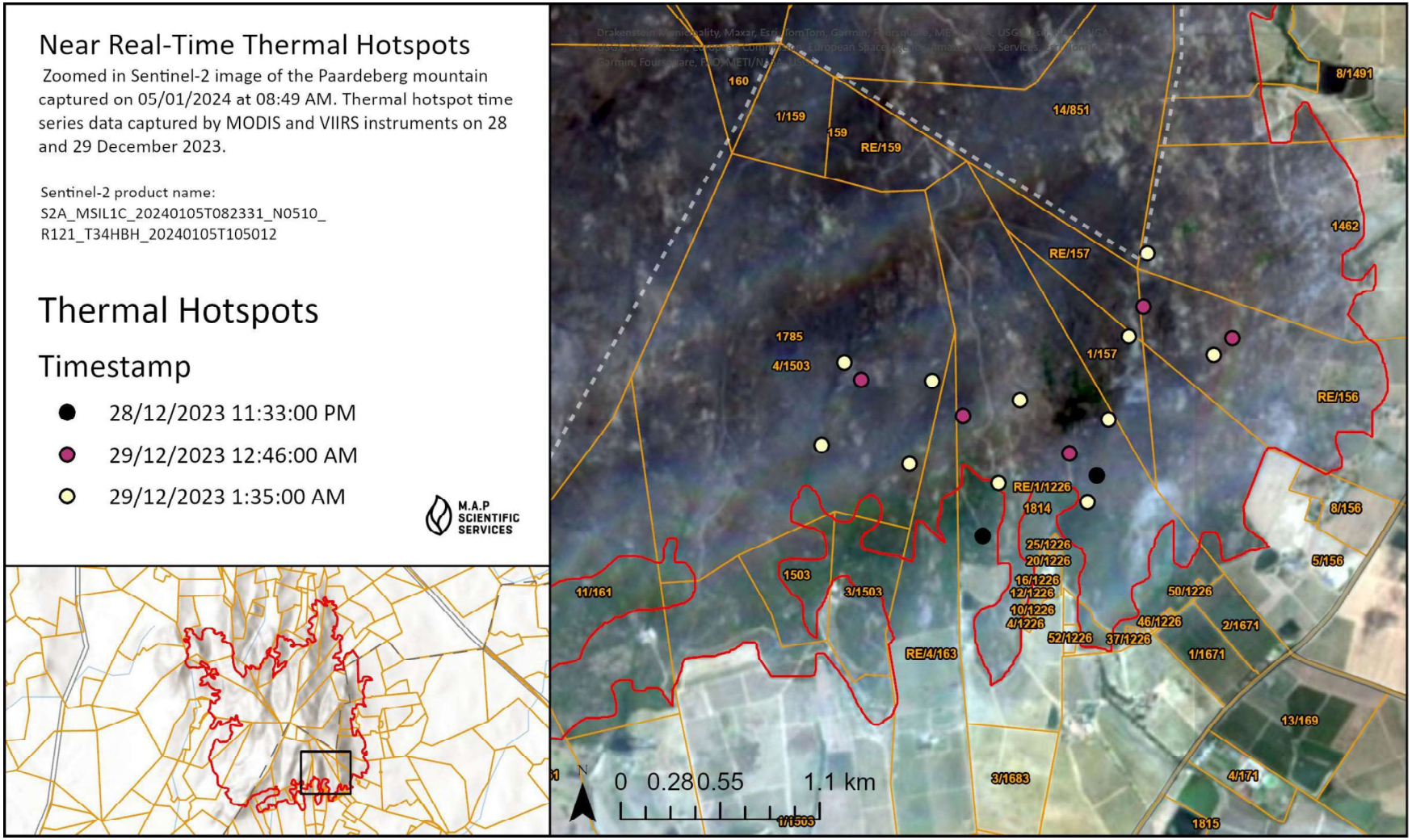


Figure 12. *Map showing the extent of the burn scar overlaid with the farm portions affected by the fire.*

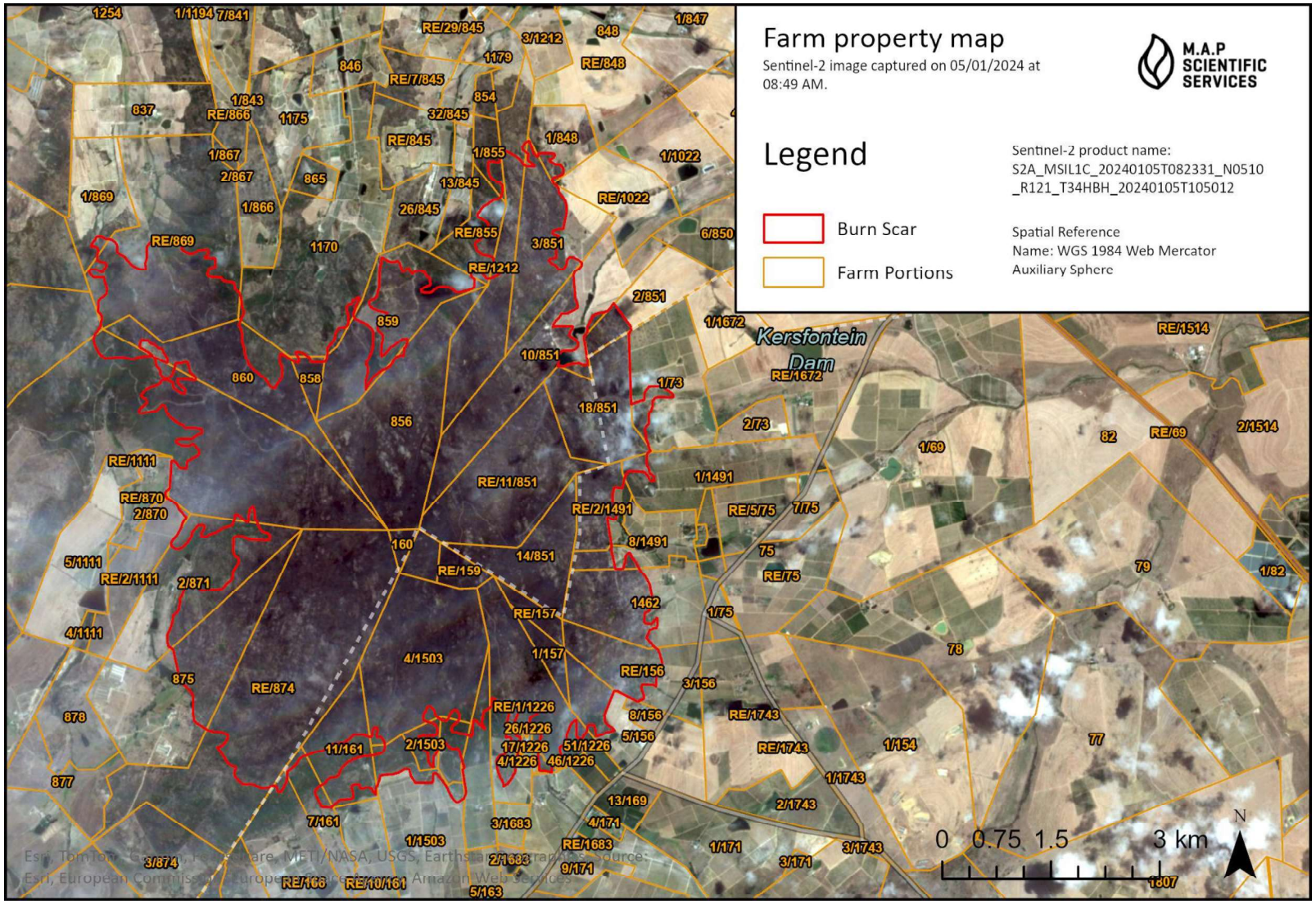


Table 1. *A list of farm portions, showing the farm name, size (hectares) and estimated area burnt (hectares) per farm portion.*

Farm Portion	Portion Tag Value	26 Digit Code	Parent Farm name	Farm area (ha)	Approximate area burnt (ha)
1	1503	W023C055000000001503000000	SLENT 1503	422.26	258.12
2	1/159	W023C055000000001785000000	1785	18.03	18.03
3	RE/159	W023C055000000000159000000	ANNEX SLENT 159	19.38	19.38
4	RE/855	W015C046000000000855000000	WATERVAL 855	52.95	14.03
5	858	W015C046000000000858000000	ANNEX WATERVAL 858	15.18	13.67
6	859	W015C046000000000859000000	MALMESBURY RESERVOIR AREA 859	153.12	102.60
7	860	W015C046000000000860000000	ANNEX BROUWERS KLOOF 860	147.40	122.41
8	1/869	W015C046000000000869000000	WELTEVREDEN 869	83.80	81.70
9	870	W015C046000000000870000000	BROUWERSKLOOF 870	41.01	0.23
10	2/871	W015C046000000000871000000	BRAUWERSKLOOF 871	169.38	64.21
11	1/157	W023C055000000000157000000	ANNEX WELTEVREDEN 157	19.66	19.66
12	160	W023C055000000001785000000	1785	8.83	8.83
13	RE/2/1226	W023C055000000001814000000	KLOKBERG 1814	4.40	0.25
14	4/1226	W023C055000000001814000000	KLOKBERG 1814	0.07	0.02
15	5/1226	W023C055000000001814000000	KLOKBERG 1814	0.05	0.01
16	6/1226	W023C055000000001814000000	KLOKBERG 1814	0.06	0.04
17	7/1226	W023C055000000001814000000	KLOKBERG 1814	0.06	0.29
18	1462	W023C055000000001462000000	1462	141.38	71.99
19	RE/157	W023C055000000000157000000	ANNEX WELTEVREDEN 157	17.96	17.96
20	RE/156	W023C055000000000156000000	SCHOON OORT 156	101.36	56.29
21	14/851	W015C046000000000851000000	BOTER KLOOF 851	89.34	89.34
22	159	W023C055000000000159000000	ANNEX SLENT 159	37.41	37.41
23	RE/11/851	W015C046000000000851000000	BOTER KLOOF 851	182.32	182.32
24	10/851	W015C046000000000851000000	BOTER KLOOF 851	194.67	121.31
25	2/851	W015C046000000000851000000	BOTER KLOOF 851	68.36	15.82
26	1/73	W023C055000000000073000000	KEERSFONTEIN 73	132.10	10.22
27	RE/1111	W015C046000000000111000000	JAKOB 111	682.04	268.32
28	856	W015C046000000000856000000	ANNEX BOTERKLOOF 856	214.53	214.53
29	RE/869	W015C046000000000869000000	WELTEVREDEN 869	316.29	132.70
30	875	W015C046000000000875000000	LEMOEN KLOOF 875	221.48	99.24
31	1170	W015C046000000001170000000	1170	281.37	6.38
32	1/1111	W015C046000000000111000000	JAKOB 111	206.24	1.45

Farm Portion	Portion Tag Value	26 Digit Code	Parent Farm name	Farm area (ha)	Approximate area burnt (ha)
33	5/156	W023C055000000000156000000	SCHOON OORT 156	118.71	30.72
34	18/851	W015C046000000000851000000	BOTER KLOOF 851	107.18	107.18
35	3/851	W015C046000000000851000000	BOTER KLOOF 851	128.50	94.31
36	1/848	W015C046000000000848000000	LA RHINE 848	50.98	4.69
37	RE/1212	W015C046000000001212000000	1212	133.10	104.14
38	RE/874	W015C046000000000874000000	WOODLANDS 874	479.79	352.27
39	RE/166	W023C055000000000166000000	166	167.52	1.81
40	7/161	W023C055000000000161000000	SLENT 161	47.38	2.95
41	11/161	W023C055000000000161000000	SLENT 161	80.22	52.89
42	1/1503	W023C055000000001503000000	SLENT 1503	172.70	22.82
43	RE/2/1491	W023C055000000001491000000	1491	55.93	40.99
44	1/1491	W023C055000000001491000000	1491	135.71	5.82
45	8/1491	W023C055000000001491000000	1491	66.66	12.74
46	1/855	W015C046000000000855000000	WATERVAL 855	23.66	4.46
47	RE/4/163	W023C055000000000163000000	SLENT 163	56.68	9.63
48	4/1503	W023C055000000001785000000	1785	211.58	206.74
49	2/1503	W023C055000000001503000000	SLENT 1503	17.03	9.64
50	3/1503	W023C055000000001503000000	SLENT 1503	20.95	12.49
51	2/1111	W015C046000000001261000000	1261	79.19	1.45
52	1785	W023C055000000001785000000	1785	238.44	74.37
53	848	W015C046000000000848000000	LA RHINE 848	319.77	4.82
54	57/1226	W023C055000000001815000000	WELTEVREDE 1815	4.07	1.57
55	1814	W023C055000000001814000000	KLOKBERG 1814	179.16	113.77
56	RE/1/1226	W023C055000000001814000000	KLOKBERG 1814	166.98	115.11
57	1815	W023C055000000000171000000	STAART VAN PAARDEBERG 171	137.50	1.90
58	RE/1/1226	W023C055000000001814000000	KLOKBERG 1814	172.06	115.11
59	1261	W015C046000000001261000000	1261	72.97	1.45
60	RE/2/1111	W015C046000000001261000000	1261	79.19	1.45
61	RE/870	W015C046000000000870000000	BROUWERSKLOOF 870	38.73	0.27

Figure 13. *Map showing the thermal hotspots captured by MODIS and VIIRS instruments (illustrating the spread of the fire on three farm portions 14/851, 8/1491 and RE/157 on 28 and 29 December 2023).*

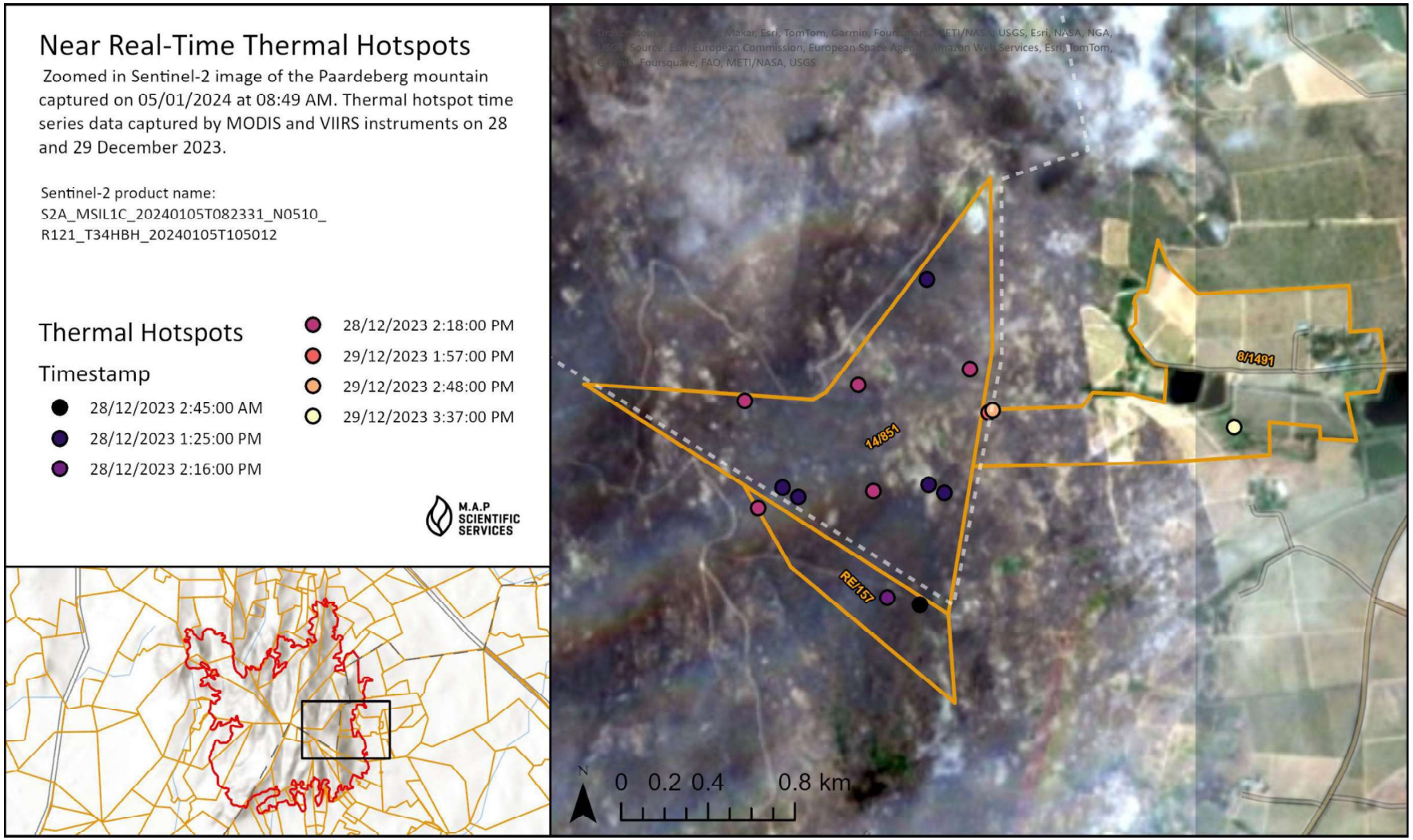
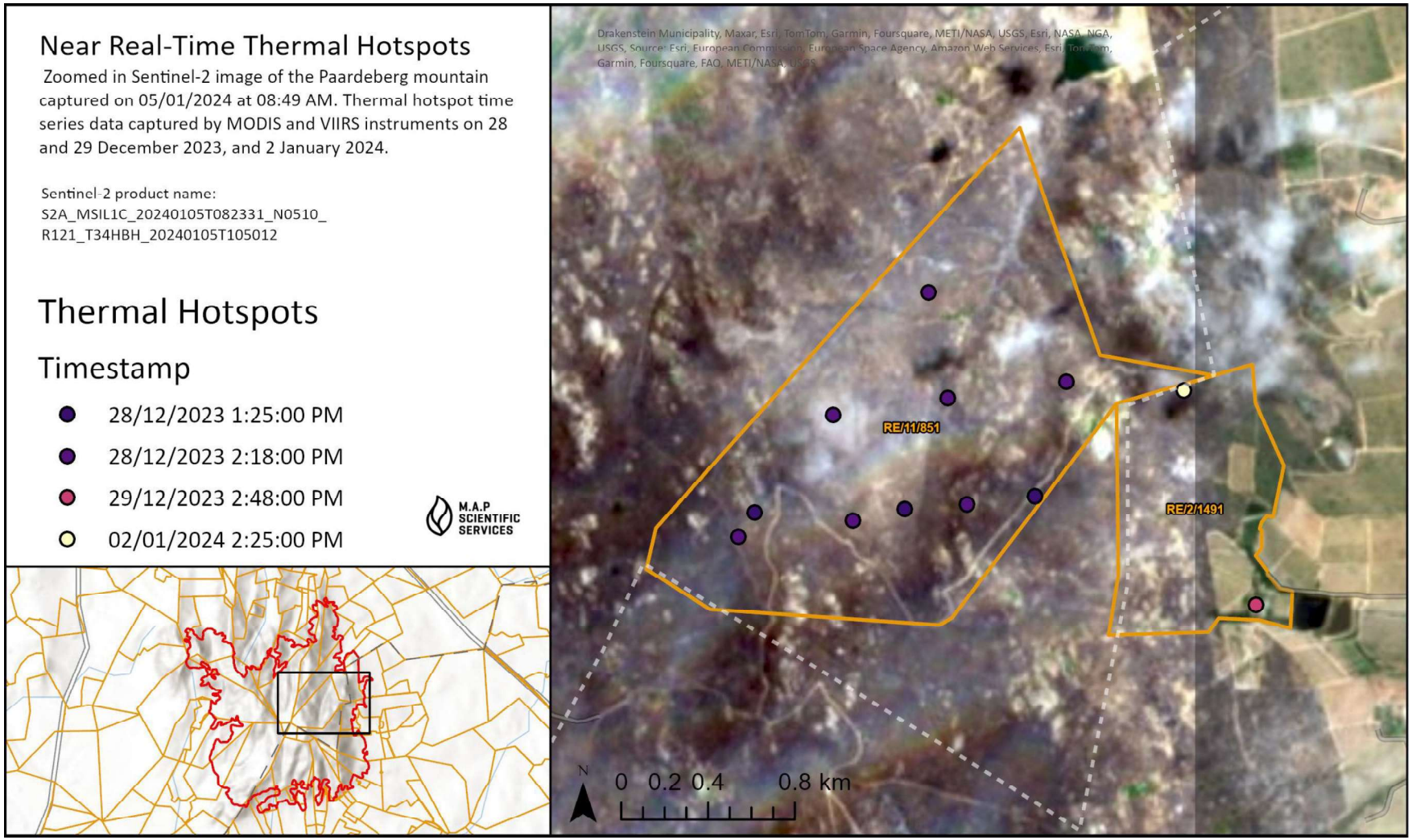


Figure 14. *Map showing the thermal hotspots captured by MODIS and VIIRS instruments (illustrating the spread of the fire on two farm portions RE/11/851 and RE/2/1491 on 28 and 29 December 2023, and 2 January 2024).*



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