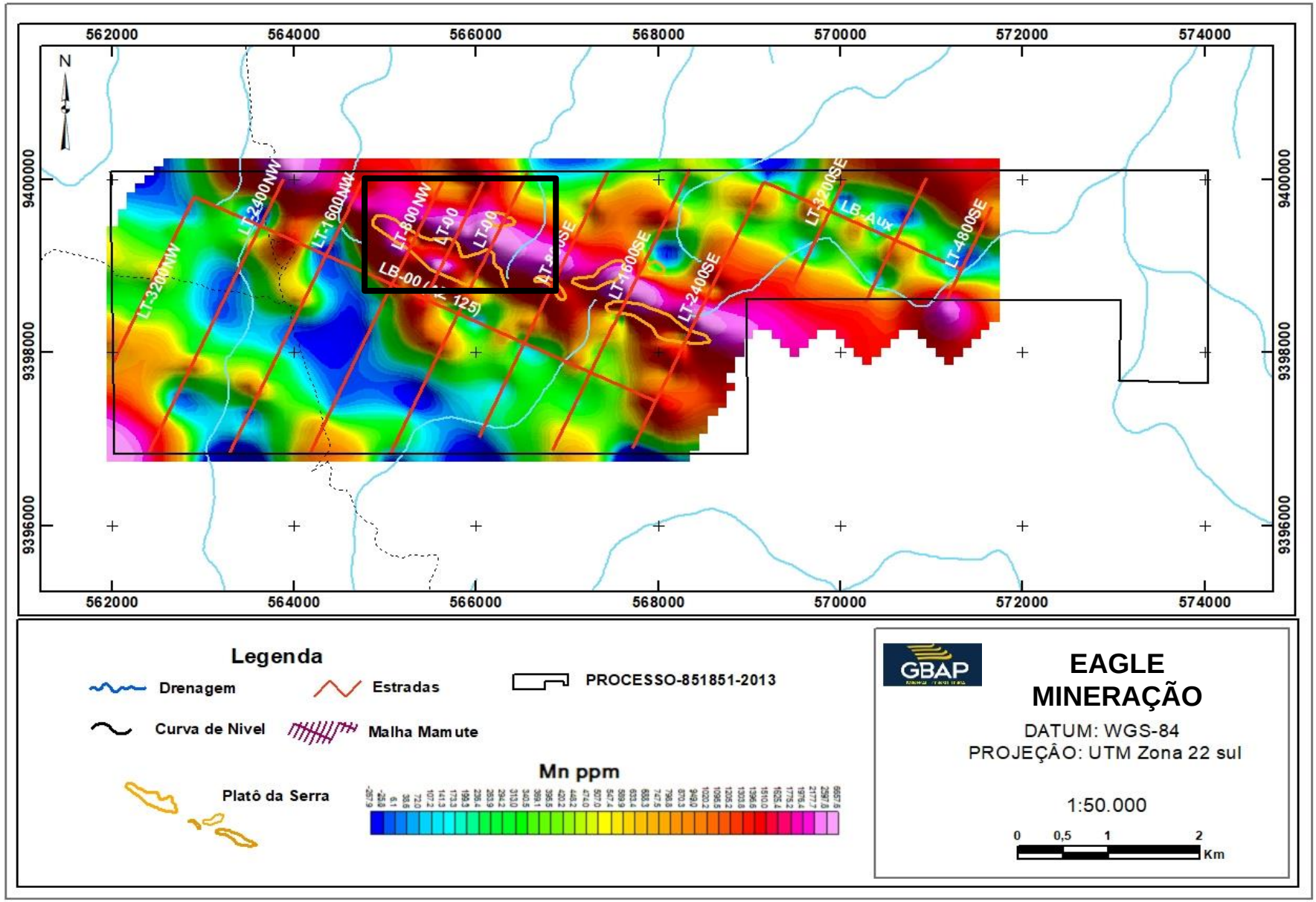
Manganese Eagle Project

GBAP
MINERAL CONSULTING

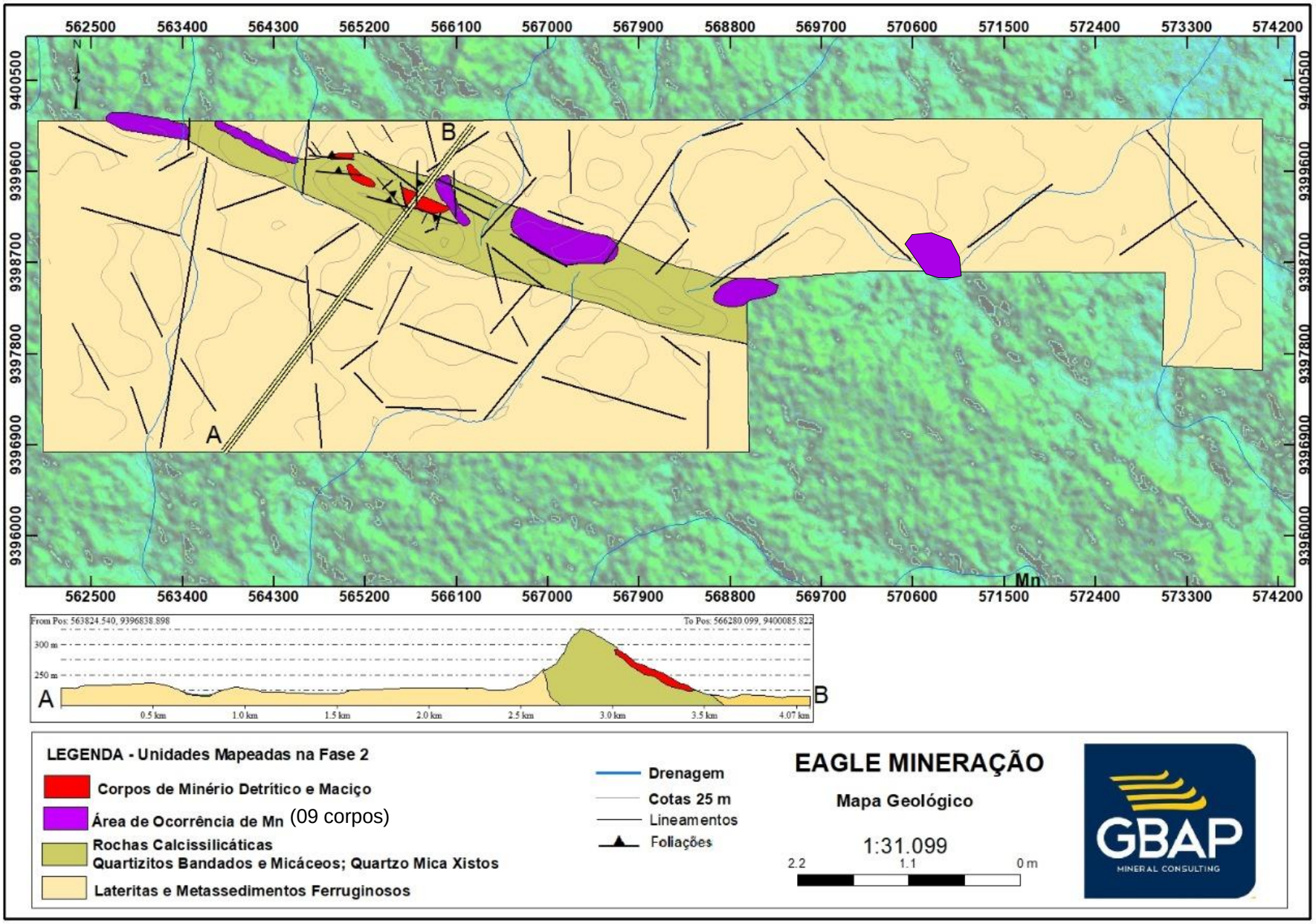
Manganese Eagle Project Location

- Excellent location near other Mn projects in the research and operation phase.
- The region has a logistic structure: Carajás railway, hydroelectric plants, transmission lines, highways, airports, urban centers.

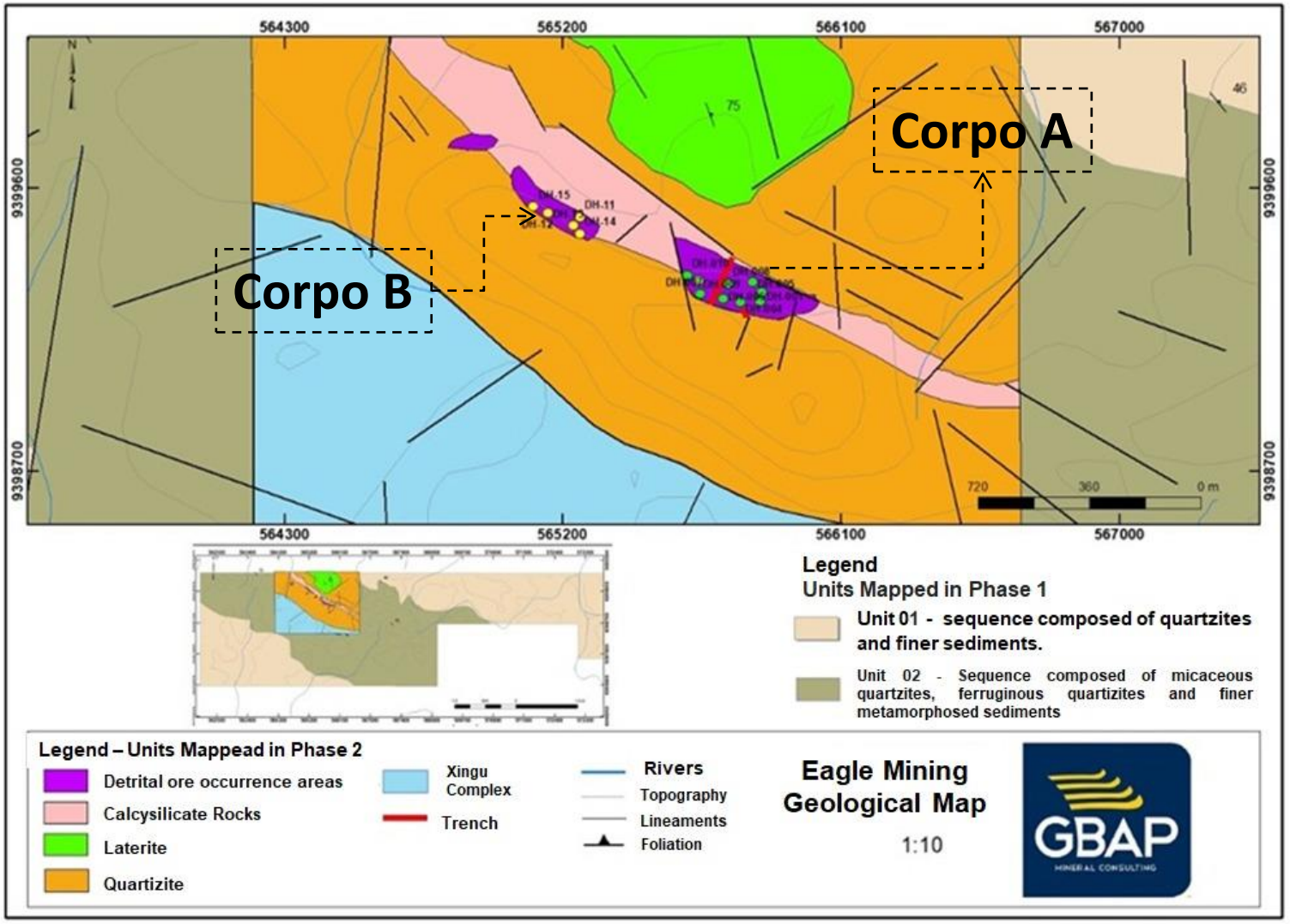
Soil Geochemistry Map - Phase 1



Geological Map - Phase 2



Geological Map - Phase 2



- We identified two extensive areas of block-enriched colluvial cover and massive manganese mounds and fragments, called Bodies A and B;
- Exploratory drilling campaign concluded on orebodies A and B;
- Two N10E-oriented trenches, called T1 and T2, were constructed, mapped and sampled to mineral characterization and chemical analisys.

Drilling campaign

Detritic Manganese Ore

Xisto Manganesífero

- Detritic Manganese ore was intercepted by holes DH-001 and DH-002 with the following thicknesses 1.5m and 5m, respectively;

- The drilling intercepted the schist with manganese; The colluvial cover covers the Shale with managanes.

Massive manganese ore blocks

- Detail mapping confirmed extensive area of occurrence of Detritic Manganese ore;
- In this area there are massive manganese ore blocks, as well as fragments of varying sizes immersed in clay matrix.

Types of Ores Found in Eagle Target

Massive Manganese: solid rock, locally rolled, dark gray, compact, tough and fractured; subordinate pegmatoid veins occur filling fractures; These veins are composed of quartz and feldspar, sometimes containing biotite. In some parts brecciations occur with MnO2 fragments surrounded by quartz.

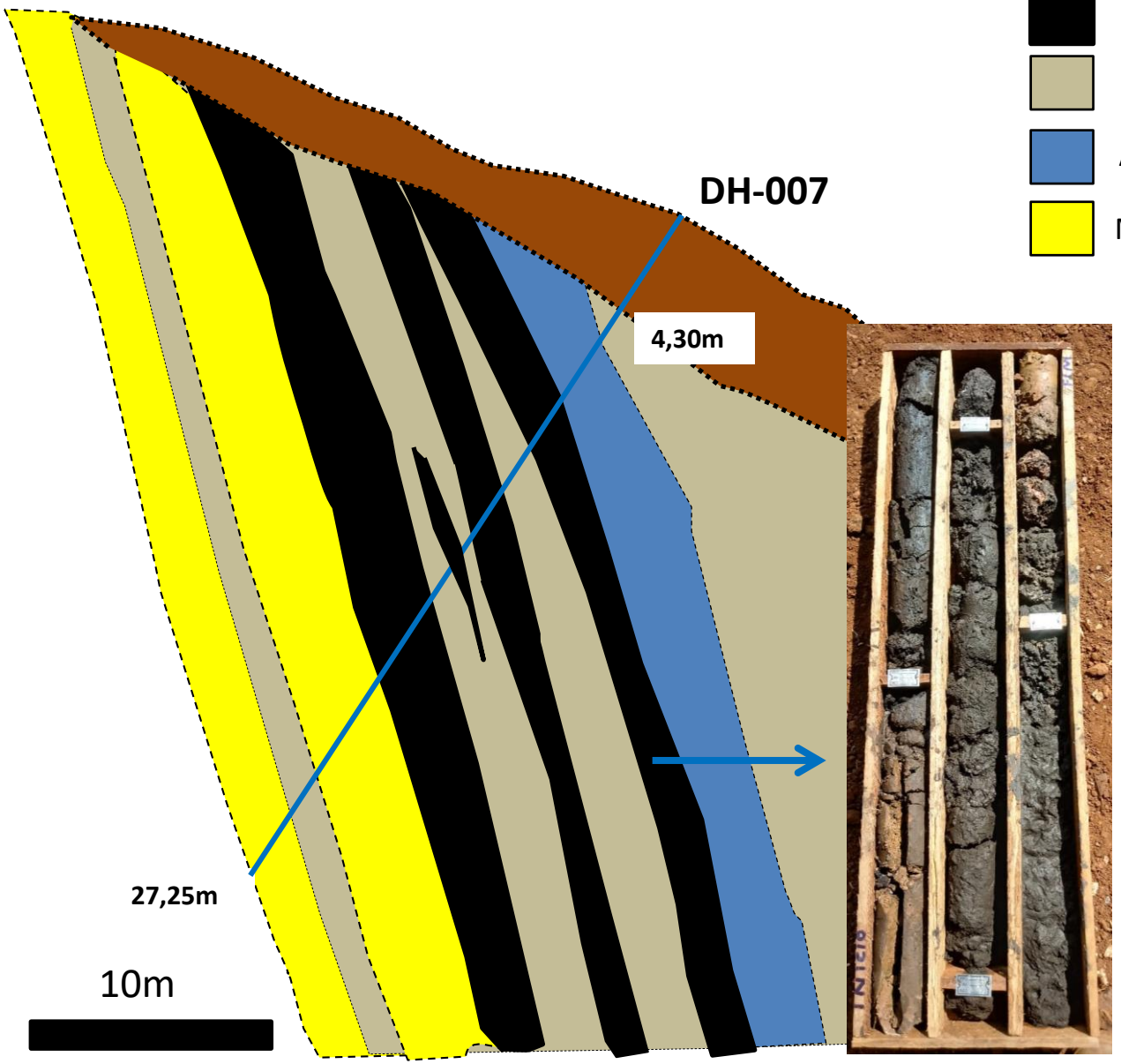
Detritic Manganese: grayish brown material consisting of pisolites, blocks and, subordinately, iron concretions and quartz fragments; has clay silt matrix;

Body A Geology




- Outcrop of massive manganese ore blocks at the top of the hill, close to contact with micaceous and feldspar quartzites;
- The blocks have not been transported and are probably in situ;
- the surface of the blocks show signs of weathering

Geological Section: DH-0007



Coverage (Detritic ore)

Massive and Powdered Manganese ores

Felds-Ms-Qz Schist

Act-Bt-Cc-Qz-garnet Schist

Mycaceous and feldspar quartzites

- Schematic section of hole DH-007;
- The main manganese ore strip is nested in the contact between feldspatic schist and Biotite-Muscovite-Quartz Schist;
- Two ore bodies were identified: Mn Massif / Pulverulent 9.00 -11.40m and Massive Mn 14.80 - 15.80m;
- Due to intense weathering, the ore is friable and powdery.

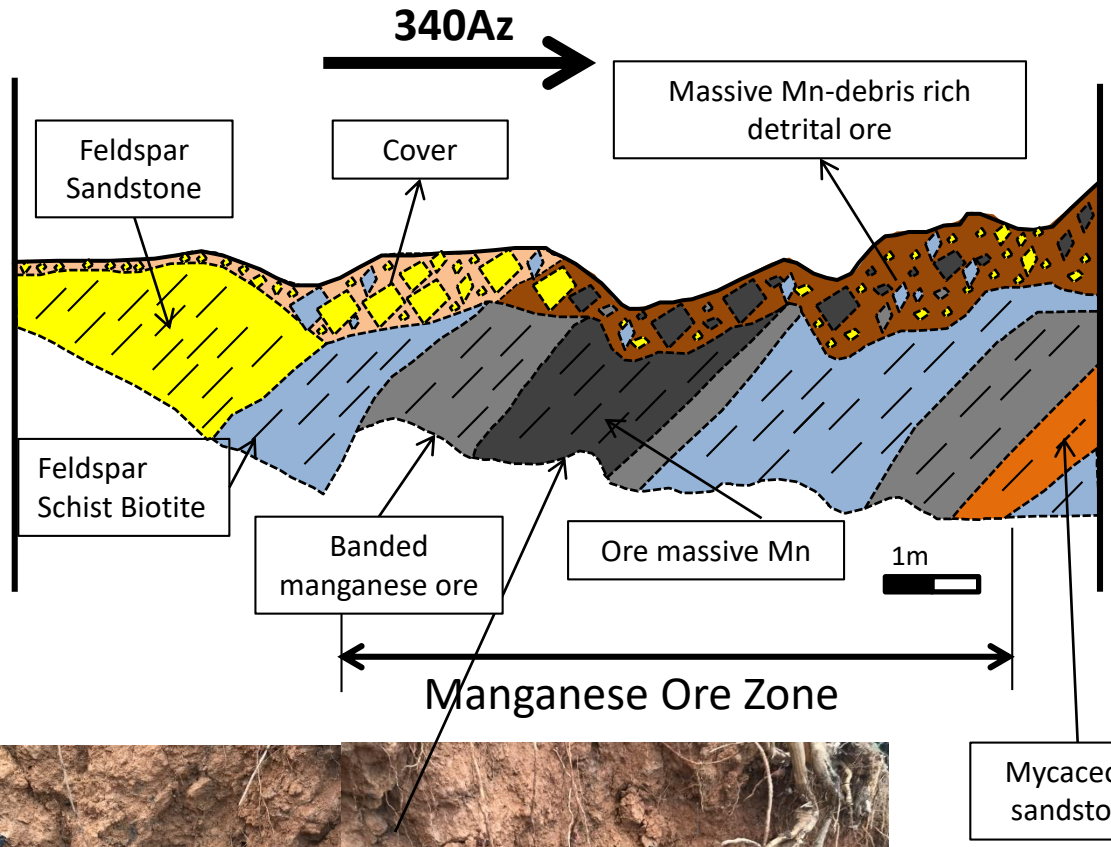
Trenches Located on Body A

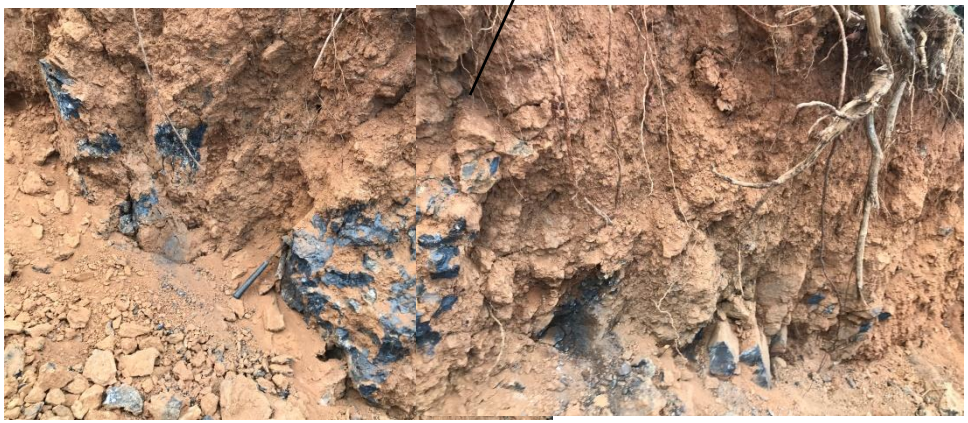
Trench 1 (TCR 01)

Trench 2 (TCR 02

- Trench 1 is more extensive, in the northern part it cut colluvial sequence with abundant quartzite fragments, while in the southern part it revealed bodies of massive, banded and schist Mn with dives to SW;
- Trench 2 is smaller, but revealed similar manganese sequence to that found in Trench 1;
- In both trenches the detritus ore on the primary manganese ore bodies is relatively depleted in Mn fragments.

Geological section of the north part of TCR 01





Detail of the Mn Massive Ore Zone

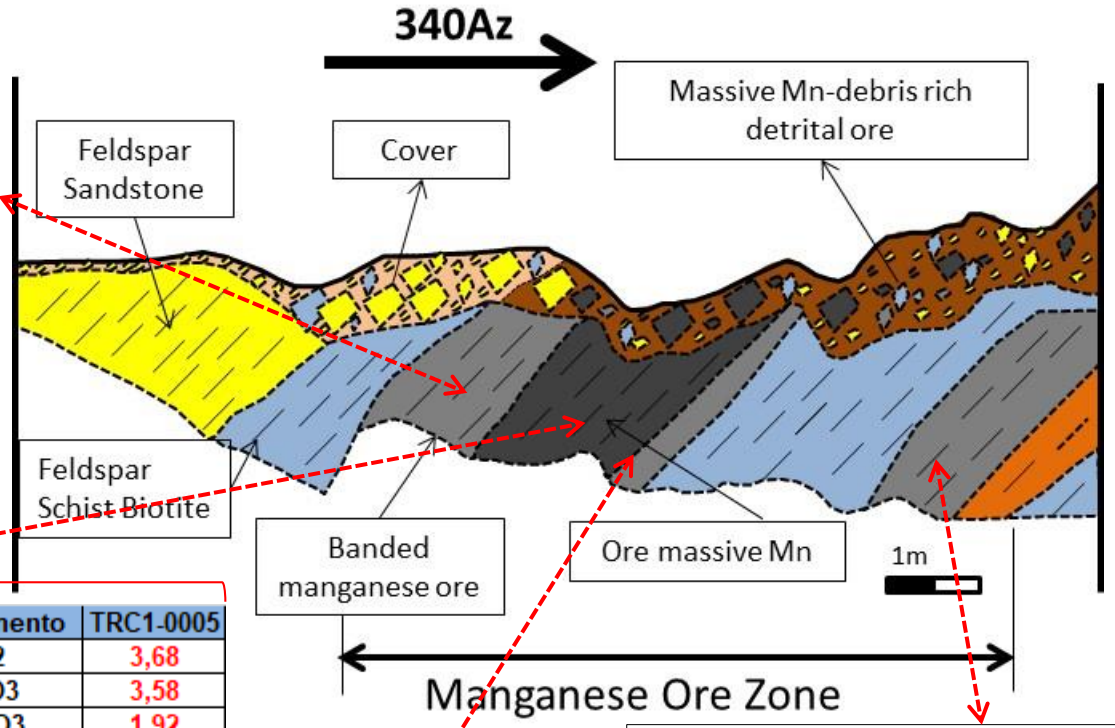
- Schematic geological section of Trench 1 - upper part - south part;
- The geological units dive to SW, the dives are high and range from 68o to 75o;
- Two types of colluvium, one composed of quartzite and schist fragments and one enriched with manganesifera rock fragments;
- Two ore zones were identified, located within feldspatic shales;
- The ore zone is made up of banded manganese (solid manganese interspersed with feldspatic bands) bordering the most mineral-rich zone of Mn.

Analysis by XRD: Trench 1

Geochemistry and Mineralogy

TRC1-001: Todorokite, Birnessite e Quartz
TRC1-002: Birnessite e Quartz

TRC1-003: Todorokite, Birnessite e Quartz
TRC1-004: Cryptomelane
TRC1-005: Todorokite, Birnessite e Quartze



XRF-SGS

Elemento	TRC1-0003
SiO2	11,3
Al2O3	9,42
Fe2O3	5,56
CaO	0,18
MgO	<0,1
TiO2	0,51
P	0,09
Na2O	<0,1
K2O	1,53
Mn	38,8
LOI	13

Elemento	TRC1-0004
SiO2	5,43
Al2O3	3,76
Fe2O3	5,6
CaO	0,16
MgO	<0,1
TiO2	0,15
P	0,09
Na2O	<0,1
K2O	1,68
Mn	48,1
LOI	12,96

Elemento	TRC1-0005
SiO2	3,68
Al2O3	3,58
Fe2O3	1,92
CaO	0,22
MgO	<0,1
TiO2	0,14
P	0,12
Na2O	<0,1
K2O	2,01
Mn	50,3
LOI	13,44

TRC1-006: Todorokite, Birnessite

Elemento	TRC1-0006
SiO2	4,53
Al2O3	5,67
Fe2O3	3,11
CaO	0,15
MgO	0,24
TiO2	0,26
P	0,07
Na2O	<0,1
K2O	1,59
Mn	46,3
LOI	13,92

TRC1-007: Cryptomelane, Birnessite
TRC1-008: Cryptomelane, Todorokite e Birmessite

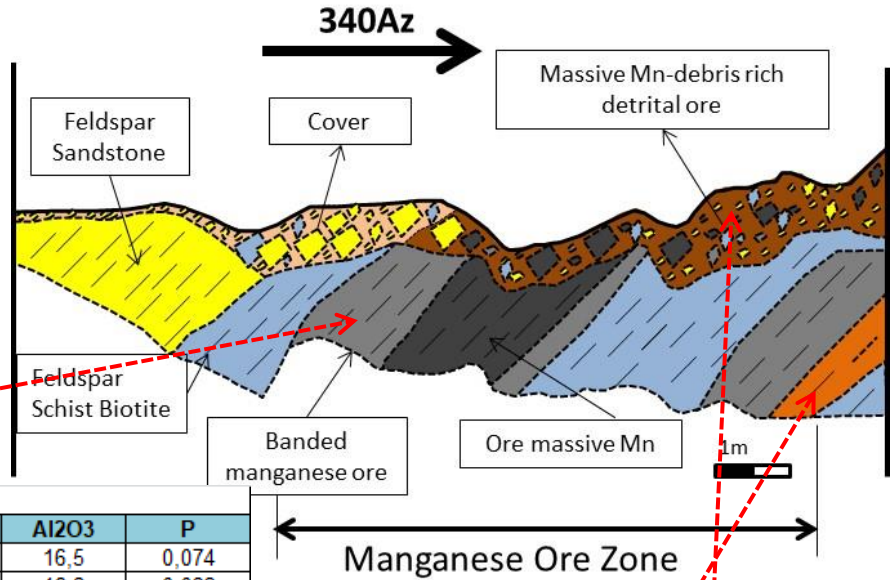
Elemento	TRC1-0007
SiO2	5,23
Al2O3	7,61
Fe2O3	3,73
CaO	0,12
MgO	0,7
TiO2	0,34
P	0,04
Na2O	<0,1
K2O	2,02
Mn	44,3
LOI	16,06

Elemento	TRC1-0008
SiO2	11,8
Al2O3	7,14
Fe2O3	3,36
CaO	0,12
MgO	0,44
TiO2	0,32
P	0,05
Na2O	0,1
K2O	1,82
Mn	41
LOI	14,07

Analysis by XRD: Trench 1

Geochemistry and Mineralogy

Banded Mn is a product with 76.56% recovery and average Mn content = 44%.



TRC1-001: Todorokita, Birnessita e Quartzo
TRC1-002: Birnessita e Quartzo

Detrític Ore

PUNI-MAMU-BRC-TRC1-0001

Fração	Massas (g)	%	Acumulativo%	Mn	SiO2	Al2O3	P
19,000 mm	3087	38,65%	38,65%	29,6	14,1	16,5	0,074
10,000 mm	735	9,20%	47,85%	33	10,7	16,2	0,083
6,300 mm	460	5,76%	53,61%	33	12,5	14,8	0,087
1,000 mm	1180	14,77%	68,39%	33,2	14,7	13,4	0,087
0,150 mm	597	7,47%	75,86%	15,7	49,4	11,1	0,061
<0,150 mm	1928	24,14%	100,00%	3,49	40,7	30,5	0,061
Total	7987	100,00%					

PUNI-MAMU-BRC-TRC1-0002

Fração	Massas (g)	%	Acumulativo%	Mn	SiO2	Al2O3	P
19,000 mm	3705	39,00%	39,00%	50,1	5,4	3,47	0,083
10,000 mm	1338	14,08%	53,08%	50,1	6,2	3,35	0,083
6,300 mm	837	8,81%	61,89%	48,7	6,74	3,63	0,083
1,000 mm	1395	14,68%	76,58%	44	11,6	4,82	0,087
0,150 mm	515	5,42%	82,00%	33,5	27,8	5,84	0,079
<0,150 mm	1710	18,00%	100,00%	5,51	38,4	28,6	0,065
Total	9500	100,00%					

XRF-SGS

PUNI-MAMU-BRC-TRC1-0010

Fração	Massas (g)	%	Acumulativo%	Mn	SiO2	Al2O3	P
19,000 mm	7454	50,45%	50,45%	45,4	5,94	3,64	0,109
10,000 mm	2085	14,11%	64,56%	42,5	12,3	3,29	0,091
6,300 mm	1048	7,09%	71,65%	41,8	12,5	4,47	0,096
1,000 mm	2007	13,58%	85,24%	32	30,9	4,26	0,074
0,150 mm	606	4,10%	89,34%	12,8	69,8	3,04	0,039
<0,150 mm	1575	10,66%	100,00%	3,78	41,5	26,5	0,052
Total	14775	100,00%					

Banded Ore

PUNI-MAMU-BRC-TRC1-0009

Fração	Massas (g)	%	Acumulativo%	Mn	SiO2	Al2O3	P
19,000 mm	1813	15,18%	15,18%	45,8	5,4	4,3	0,100
10,000 mm	2071	17,34%	32,52%	41,5	6,2	3,52	0,118
6,300 mm	1715	14,36%	46,88%	43,2	6,74	3,55	0,109
1,000 mm	3063	25,65%	72,53%	40,9	11,6	3,73	0,105
0,150 mm	510	4,27%	76,80%	17,7	27,8	3,21	0,052
<0,150 mm	2770	23,20%	100,00%	3,65	38,4	26,2	0,044
Total	11942						

Conclusions

- In this phase of the geological research we identified the bodies A and B, we can consider that the results of the drillholes and trenches lead us to estimate potential resources of 3Mt, (44 to 52% of Mn).

- The continuity of the research for the total area of 3,000 ha shows new bodies discovered to be studied that in the end we can talk about 10Mt reserves of massive and detrital ore.