



# Palma Cu VMS Project



October 2021

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*The information in this presentation that relates to exploration results, is based on, and fairly represents, information and supporting documentation prepared by Dr Klaus Petersen a Competent Person and Member of the Australasian Institute of Mining and Metallurgy and, with respect to information attributed to or compiled from the 'Mineral Resource Estimate' included within the IGR, is based on information compiled by Mr Simon Mortimer of Atticus Geoscience Consulting, a Competent Person and fellow of The Australian Institute of Geoscientists, and Mr Rob Smakman of Alvo Minerals Limited, a Competent Person and fellow of the Australasian Institute of Mining and Metallurgy. Dr Petersen is a full time employee for Target Latin America. Dr Petersen has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and the activities being undertaken to qualify as a Competent Person defined in the "Australasian Code for Reporting of Mineral Resources and Ore Reserves" (JORC Code 2012). Mr Mortimer has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Mortimer is responsible for the geological modelling and resource evaluation sections of the Mineral Resource Estimate. Mr Smakman is a full-time employee of Alvo Minerals and has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Smakman is responsible for the site visit report and sampling sections of the Mineral Resource Estimate.*

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# Palma Project: Investment Summary

- Palma is a Copper/Zinc rich VMS project in Central Brazil
- JORC 2012 Inferred Mineral Resource Estimate<sup>†</sup> of **4.6Mt @ 1.0% Cu, 3.9% Zn, 0.4% Pb & 20g/t Ag**
- Near surface, exploration idle for >30 years
- First time >500km<sup>2</sup> of contiguous package held by the same entity
- VMS targets occur in clusters- Alvo has secured >30km of prospective strike
- Recent VTEM survey >20 late-time conductors- mostly untested
- >27km of Cu/Zn in soil anomalies
- Ni/Cu/PGE layered mafic/ultramafic exploration target



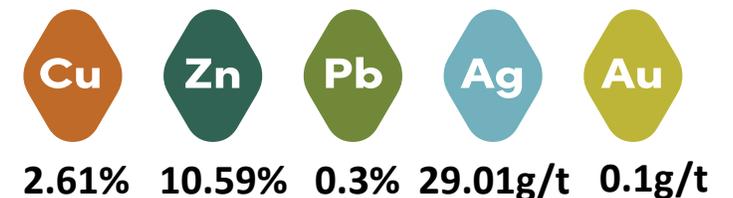
# Palma: Advanced Discoveries



- Palma is a Copper/Zinc rich VMS project in Central Brazil
- **JORC 2012 Inferred Mineral Resource Estimate\*†**
  - **High-Grade, shallow, polymetallic prospects - 5 drilled to date in district.** Discovered in '70's, project has been largely idle for ~30 years
    - **2.8Mt @ 1.1% Cu, 4.3% Zn, 0.2% Pb & 23g/t Ag – C3 deposit only**
    - Total JORC 2012 Inferred Resource of 4.6Mt @ 1.0% Cu, 3.9% Zn, 0.4% Pb & 20g/t Ag
    - Existing resource doesn't include Au potential
  - Near surface (fresh from 15m) and open along strike- at depth
  - >32,000 meters of Diamond drilling completed across the district
  - Preliminary metallurgical testwork- good recoveries and high-grade concentrates
  - VMS occur globally in clusters. Alvo controls >80% of the District



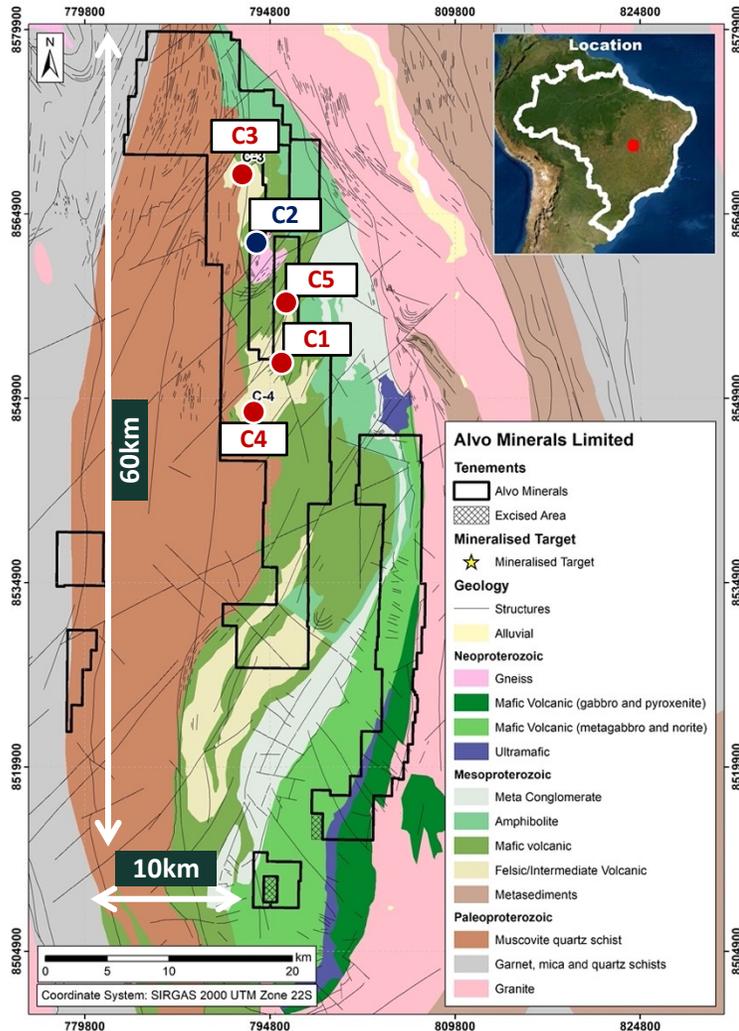
**Intercept assayed 20.2m @**



\*The NSR cut-off of USD\$60/t has been calculated using the following prices: 2.90\$/lb Cu, 1.04\$/lb Zn, 0.79\$/lb Pb, 24.5\$/oz Ag and assuming recoveries of 90% for all metals in sulphide and 45% for all metals in oxides.

† Refer to Alvo Minerals Prospectus dated 30 July 2021, announced to ASX 18 October 2021.

# The Palma Project



- Palma VMS district- **5 outcropping prospects**. VMS typically occur in clusters- *only the outcropping* prospects drilled to date
- Alvo won first ever Federal Government Auction in Feb 2020 (~60km<sup>2</sup>) and has since added to extensive exploration tenure (~452km<sup>2</sup>)
- Project acquisition details:
  - Deposit ~A\$120k – PAID. **1.71% Royalty\*** to CPRM- **WINNING BID**
  - Signing payment ~A\$560k **PAID**- Due Diligence underway
  - Exploration (drilling) commitment of ~A\$3.5M \*\* over 36 months- starting once DD is complete (timing at Alvo’s election).
  - Staged payments on completion of satisfactory exploration within 3 years. ~A\$1.5 M \*\* on title transfer (subject to successful exploration) and ~A\$1.8 M \*\* on granting of mining license
- ~14,000 Stream sediments and soil samples- driving exploration. 32km of drilling. 2008 third party VTEM survey- multiple late-time conductors identified- untested by drilling

\*Royalty to CPRM is exclusive of Government statutory royalties- currently ~3%. CPRM royalty subject to adjustment factor (+/-) according to basket price of concentrate sales

\*\*Payment amounts are approximate as they are denominated in the Assignment Contract in Brazilian Reals and subject to inflation and foreign exchange fluctuations – assumed AUD/BRL exchange rate of 3.9

# Palma Project History



## Early 1970's

Early exploration by the Brazilian Geological Survey- CPRM. Regional Nickel exploration, mapping and soils discovered anomalous Cu in soils



## 1976 – 1978

Regional Stream sediments, defined numerous target areas. Soils and ground geophysics focused exploration and defined drill targets



## 1979 – 1993

Exploration by CPRM including diamond drilling on C1, C2, C3 and C4. Met testwork



## 1986 – 1989

Japan Government exploration and collaboration. Mapping, soils, ground geophysics and 6 diamond holes (mainly C4)



## 2016 – 2019

CPRM decide to commercialise Government assets; Palmeiropolis chosen as the first to be auctioned.



## 2008

Detailed Heli-VTEM survey flown by Votorantim/Lara. 11 holes drilled on 9 conductors. No access to the CPRM ground. Over 500 'pickings' identified. >230 within CPRM ground



## October 2019

Alvo Minerals wins the first CPRM mineral project auction



## February 2020

Alvo Minerals signs contract & pays signing bonus to CPRM



## 2020/1 Alvo Re-interprets Palma

All Historical data is combined for the first time- additional ground secured

# Infrastructure & Location



**Sealed roads** to project, 4 hours from Brazil's capital city, Brasilia

Four Hydroelectric dams within 100km of the project with **High Voltage Power** lines crossing the project

Town of **Palmeiropolis** (10,000 people) within 5km

Planned and existing N-S and E-W **rail** within short trucking distance

**Multiple Port** options

Rural area with farming as main land use

Brazil has **multiple smelting options**

Not in the Amazon rainforest

Local community and political representatives, appear **supportive** of exploration and mining

# JORC 2012 Inferred Mineral Resource



| JORC 2012 Inferred Mineral Resource <sup>‡</sup> |                    |             |            |            |            |           |
|--|--------------------|-------------|------------|------------|------------|-----------|
| Mineralised Prospect                             | NSR Cut-Off (US\$) | Tonnes (Mt) | Cu (%)     | Zn (%)     | Pb (%)     | Ag (g/t)  |
| C1   | 60                 | 1.80        | 0.8        | 3.2        | 0.8        | 15        |
| C3   | 60                 | 2.80        | 1.1        | 4.3        | 0.2        | 23        |
| <b>Total</b>                                     | <b>60</b>          | <b>4.60</b> | <b>1.0</b> | <b>3.9</b> | <b>0.4</b> | <b>20</b> |



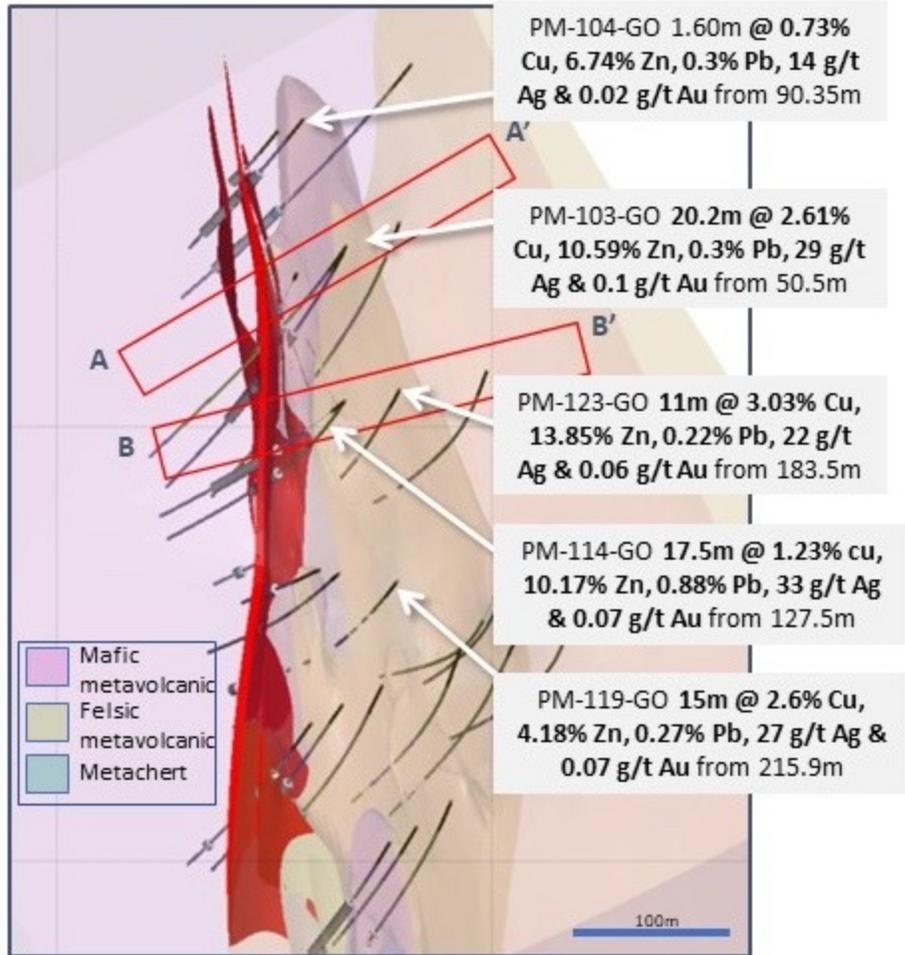
**Resources Based on ~32km of diamond drilling in 165 holes**

**Inspecting Palma VMS drillcore (CPRM storage)**

\*The NSR cut-off of USD\$60/t has been calculated using the following prices: 2.90\$/lb Cu, 1.04\$/lb Zn, 0.79\$/lb Pb, 24.5\$/oz Ag and assuming recoveries of 90% for all metals in sulphide and 45% for all metals in oxides. Values are rounded and may not add up.

<sup>‡</sup> Refer to Alvo Minerals Prospectus dated 30 July 2021, announced to ASX 18 October 2021.

# C3 Prospect



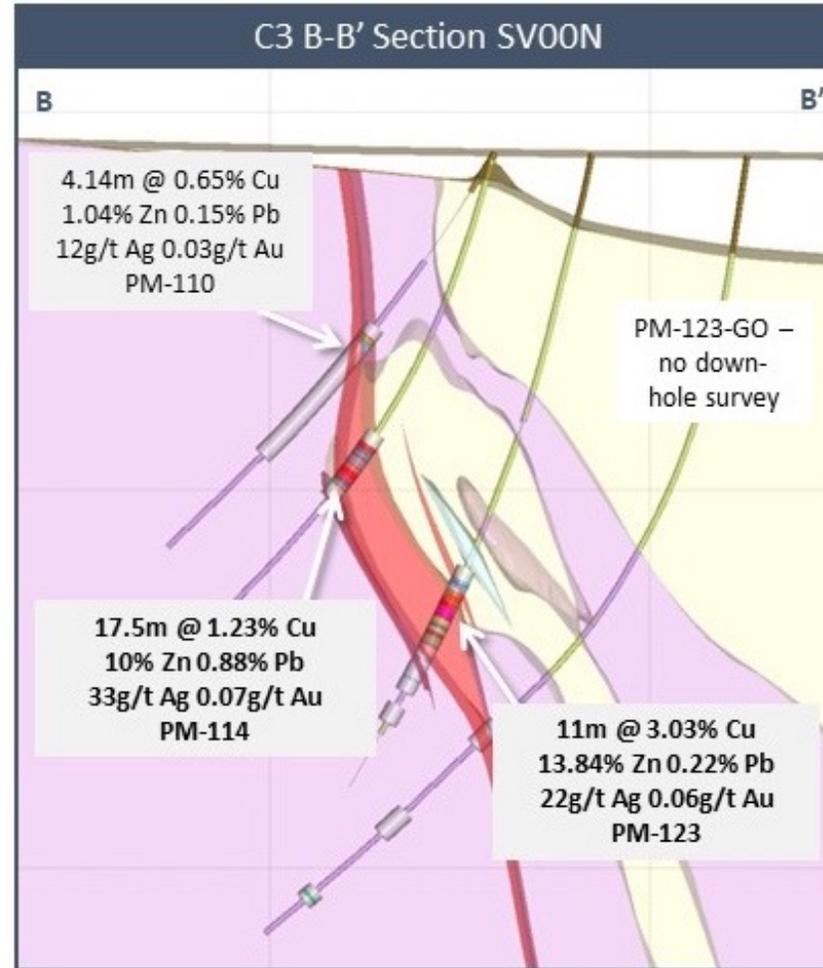
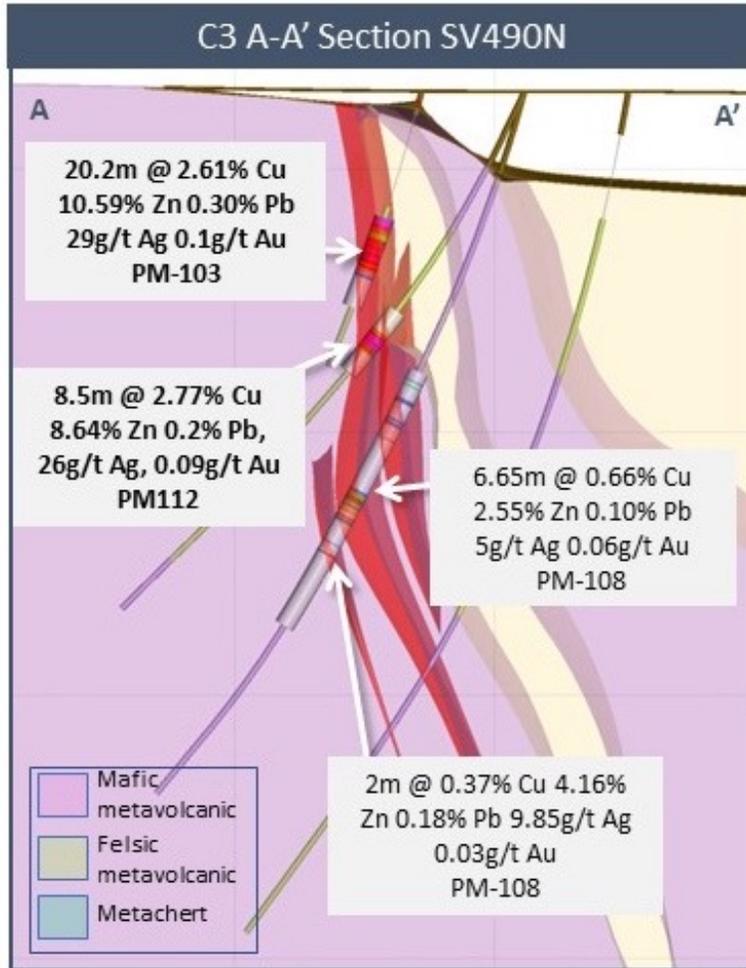
- C3 has the highest copper grades. Mineralisation is **open at depth and along strike**
- C3 JORC 2012 Inferred Resource<sup>†</sup> of **2.8Mt @ 1.1% Cu, 4.3% Zn, 0.2% Pb & 23g/t Ag**
- Drill lines are **~100m apart**, geological re-interpretation confirms plunge component is upside to resources
- Re-logging and new-interpretation required- major VTEM conductor 200m east- remains unexplained and un drilled

| JORC 2012 Inferred Mineral Resource <sup>†</sup> |             |            |            |            |           |
|--|-------------|------------|------------|------------|-----------|
| Mineralised Prospect                             | Tonnes (Mt) | Cu (%)     | Zn (%)     | Pb (%)     | Ag (g/t)  |
| C1   | 1.80        | 0.8        | 3.2        | 0.8        | 15        |
| <b>C3</b>  | <b>2.80</b> | <b>1.1</b> | <b>4.3</b> | <b>0.2</b> | <b>23</b> |
| <b>Total</b>                                     | <b>4.60</b> | <b>1.0</b> | <b>3.9</b> | <b>0.4</b> | <b>20</b> |

- Only 8% of core was assayed for gold (from prospects C1 and C3) ~15% of those results returned >0.1g/t. Gold not reported in historical resource tables- nor recent JORC MRE

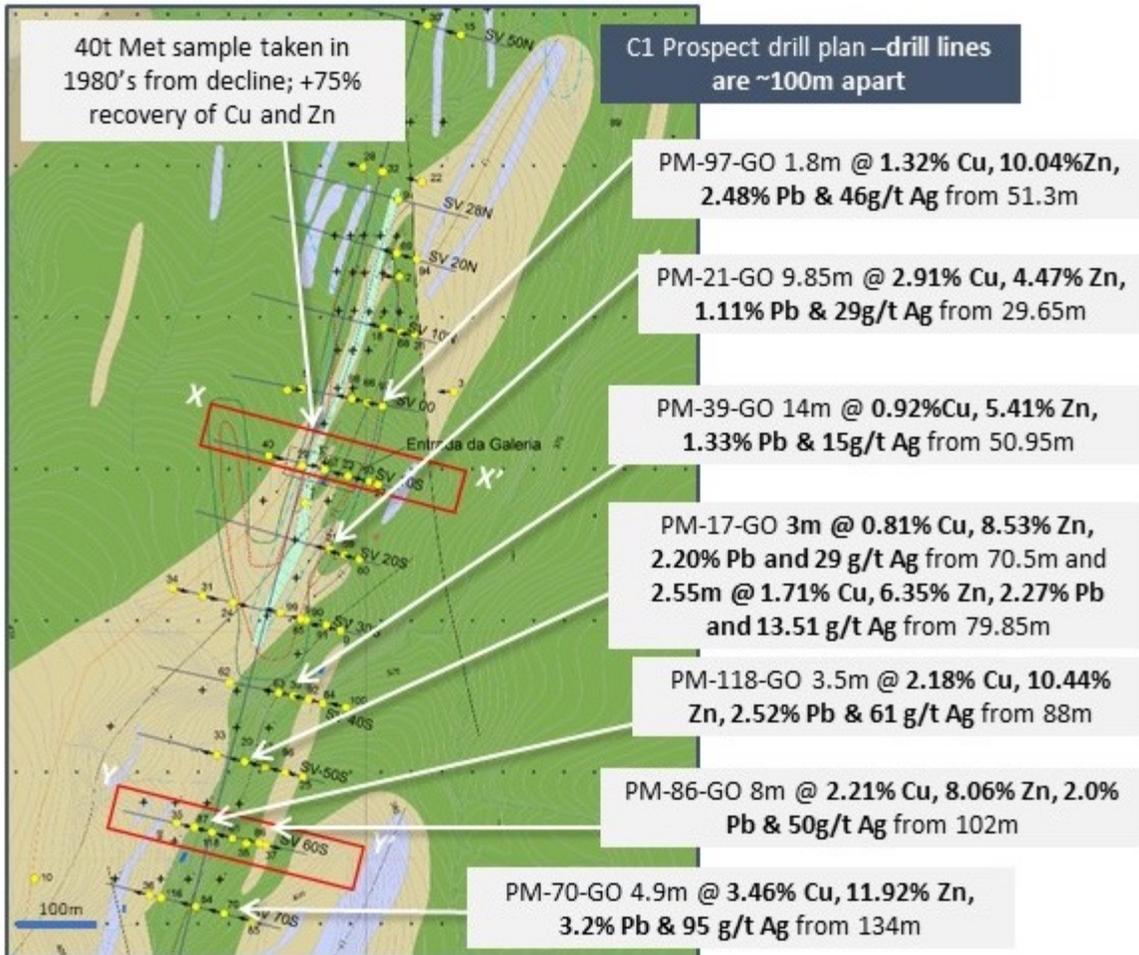
<sup>†</sup> Refer to Alvo Minerals Prospectus dated 30 July 2021, announced to ASX 18 October 2021.

# C3 Drill Sections



- Mineralised zone is a continuous zone, extending ~450m NE-SW. Zinc mineralisation is mainly restricted to a high-grade, shallowly plunging zone.
- Mineralisation is concentrated on contact between mafic metavolcanic and felsic metavolcanic
- Drill hole logging and section mapping don't match well, re-interpretation underway
- Only some holes surveyed downhole for dip- no deviation information
- Gold sampling largely incomplete- gold associated with pyrite and appears to be adjacent to Cu and Zn rich massive sulphide zones

# C1 Prospect



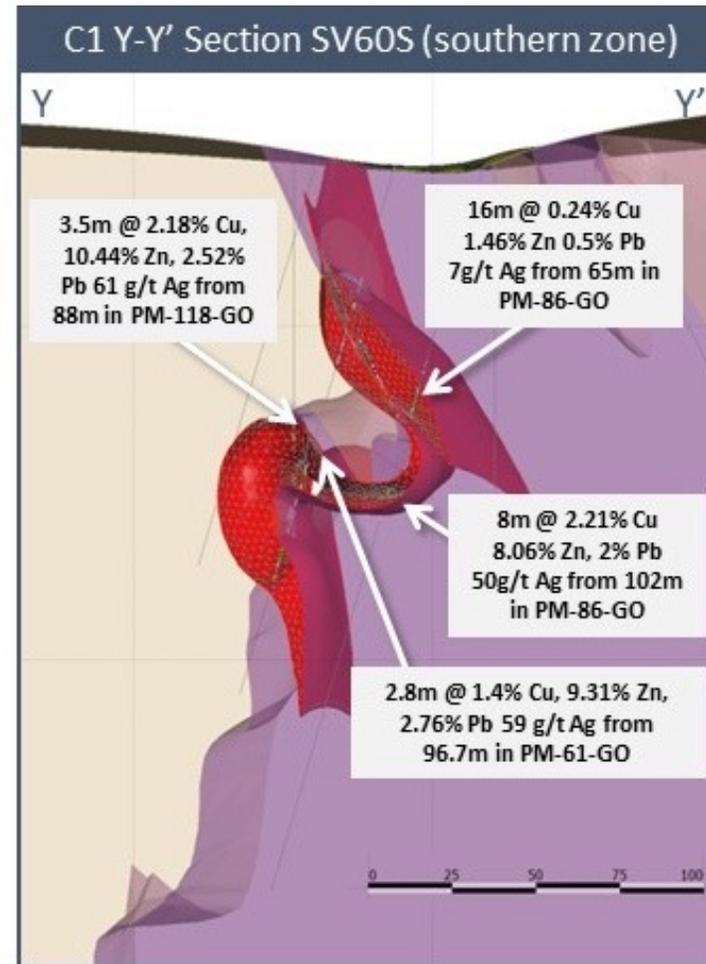
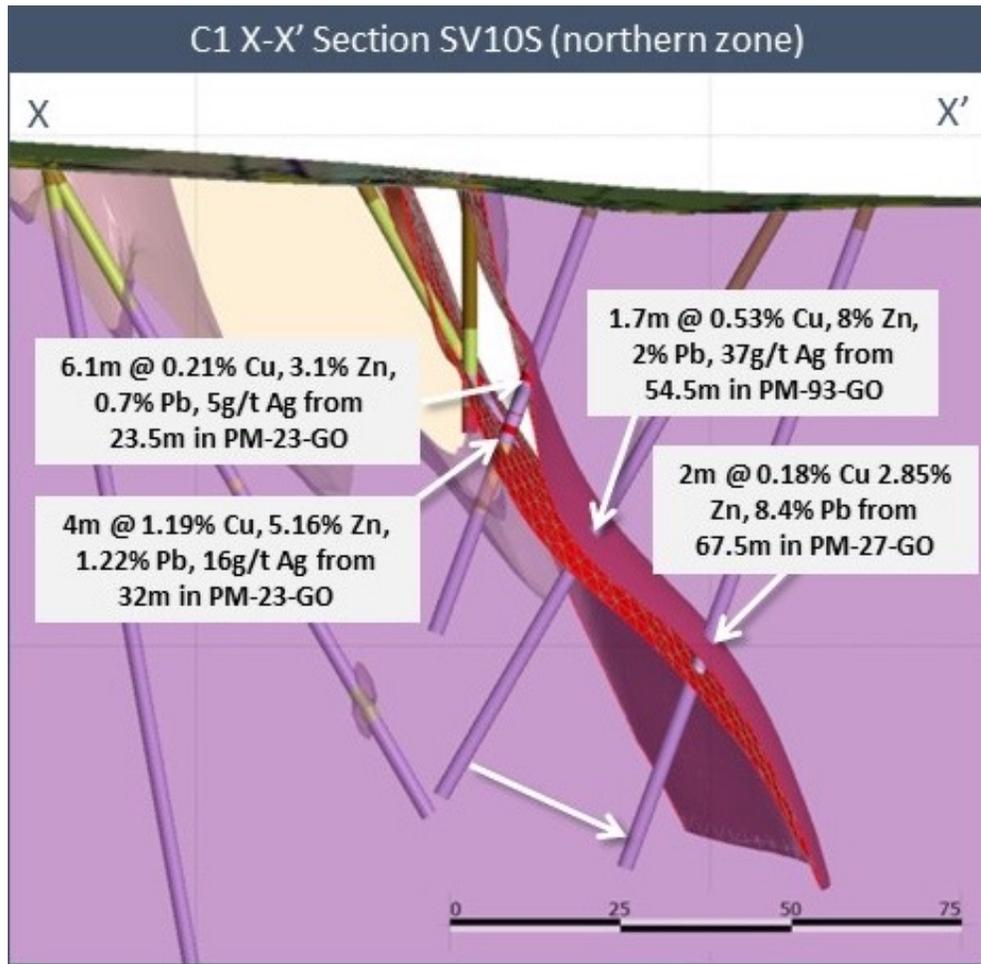
- C1 is **mineralised over 1.2km of strike** and open at depth and along strike. Mineralisation has been re-interpreted to include geological controls- 3 distinct zones have been defined- a high grade Zn zone, the Cu zone and a pyrite zone which appears to have elevated gold.
- C1 JORC 2012 Inferred Resource of **1.80Mt @ 0.8% Cu, 3.2% Zn, 0.8% Pb & 15g/t Ag**. Gold mineralisation not routinely assayed and not reported

| JORC 2012 Inferred Mineral Resource <sup>†</sup> |             |            |            |            |           |
|--|-------------|------------|------------|------------|-----------|
| Mineralised Prospect                             | Tonnes (Mt) | Cu (%)     | Zn (%)     | Pb (%)     | Ag (g/t)  |
| <b>C1</b>  | <b>1.80</b> | <b>0.8</b> | <b>3.2</b> | <b>0.8</b> | <b>15</b> |
| C3   | 2.80        | 1.1        | 4.3        | 0.2        | 23        |
| <b>Total</b>                                     | <b>4.60</b> | <b>1.0</b> | <b>3.9</b> | <b>0.4</b> | <b>20</b> |

- Drill lines are ~100m apart, geological reinterpretation underway with plunge component presenting upside to resources
- Sparsely sampled for Au. Re-sampling across the deposit needed to establish tenor and location of gold mineralisation. Zonal metal modelling incomplete as sampling is materially incomplete

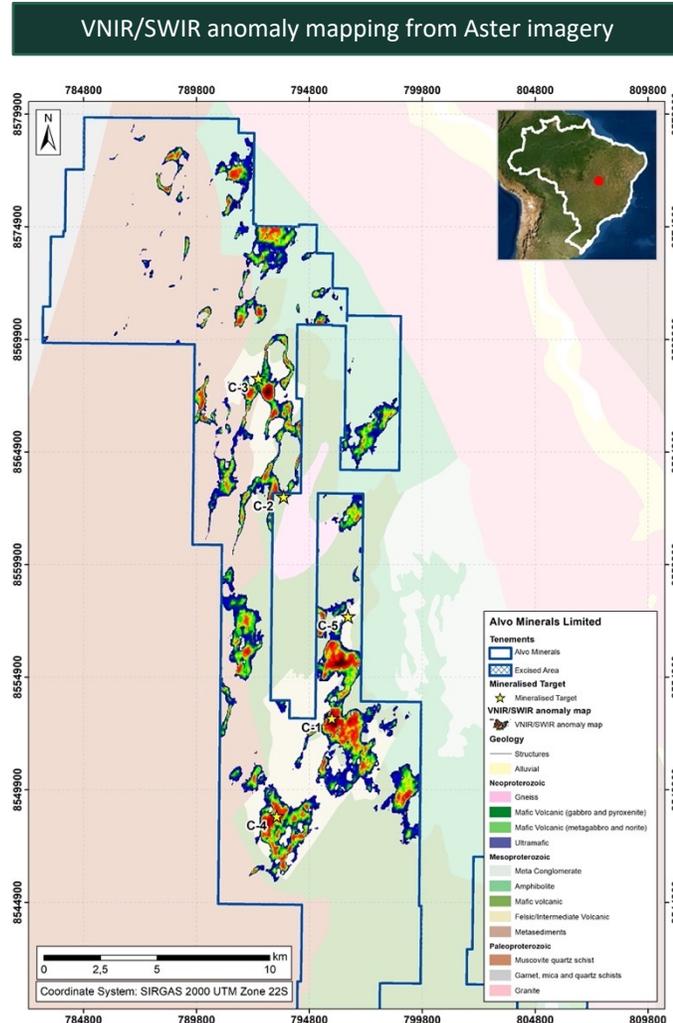
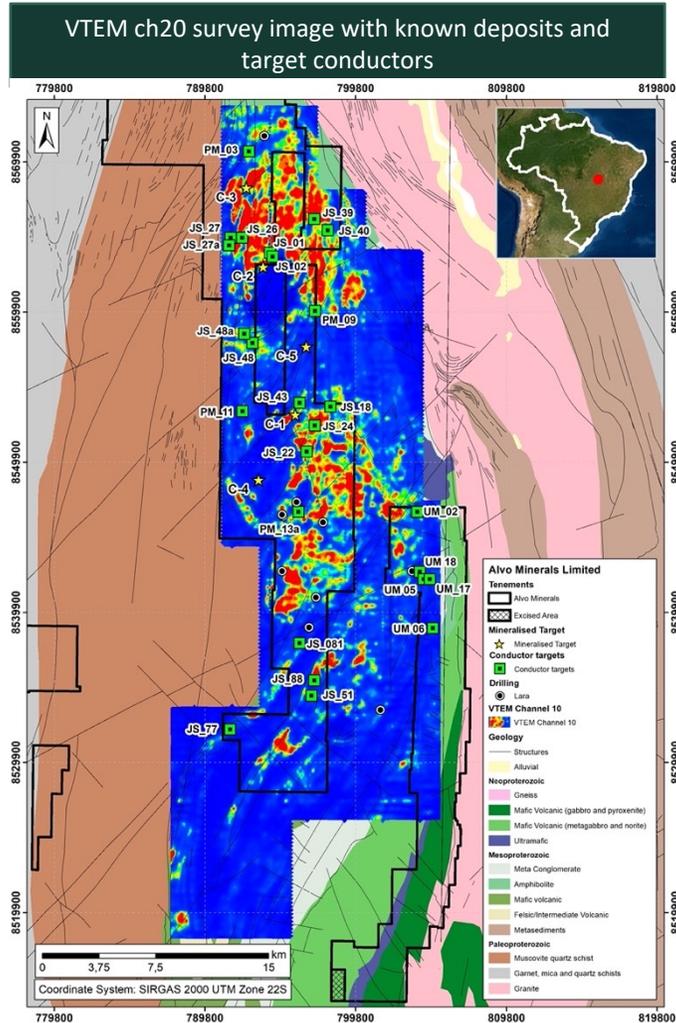
<sup>†</sup> Refer to Alvo Minerals Prospectus dated 30 July 2021, announced to ASX 18 October 2021.

# C1 Drill Sections



- Mineralised zone is divided into a narrow and shallow northern zone and a folded and thicker southern zone
- Zones extend ~1,200m NNE
- Zinc mineralisation is mainly restricted to a high-grade, shallowly plunging zone.
- Mineralisation is concentrated on a folded contact between mafic metavolcanic and felsic metavolcanic
- Drill hole logging and section mapping don't match well, re-interpretation underway
- Gold sampling largely incomplete- gold associated with pyrite and appears to be adjacent to Cu and Zn rich massive sulphide zones

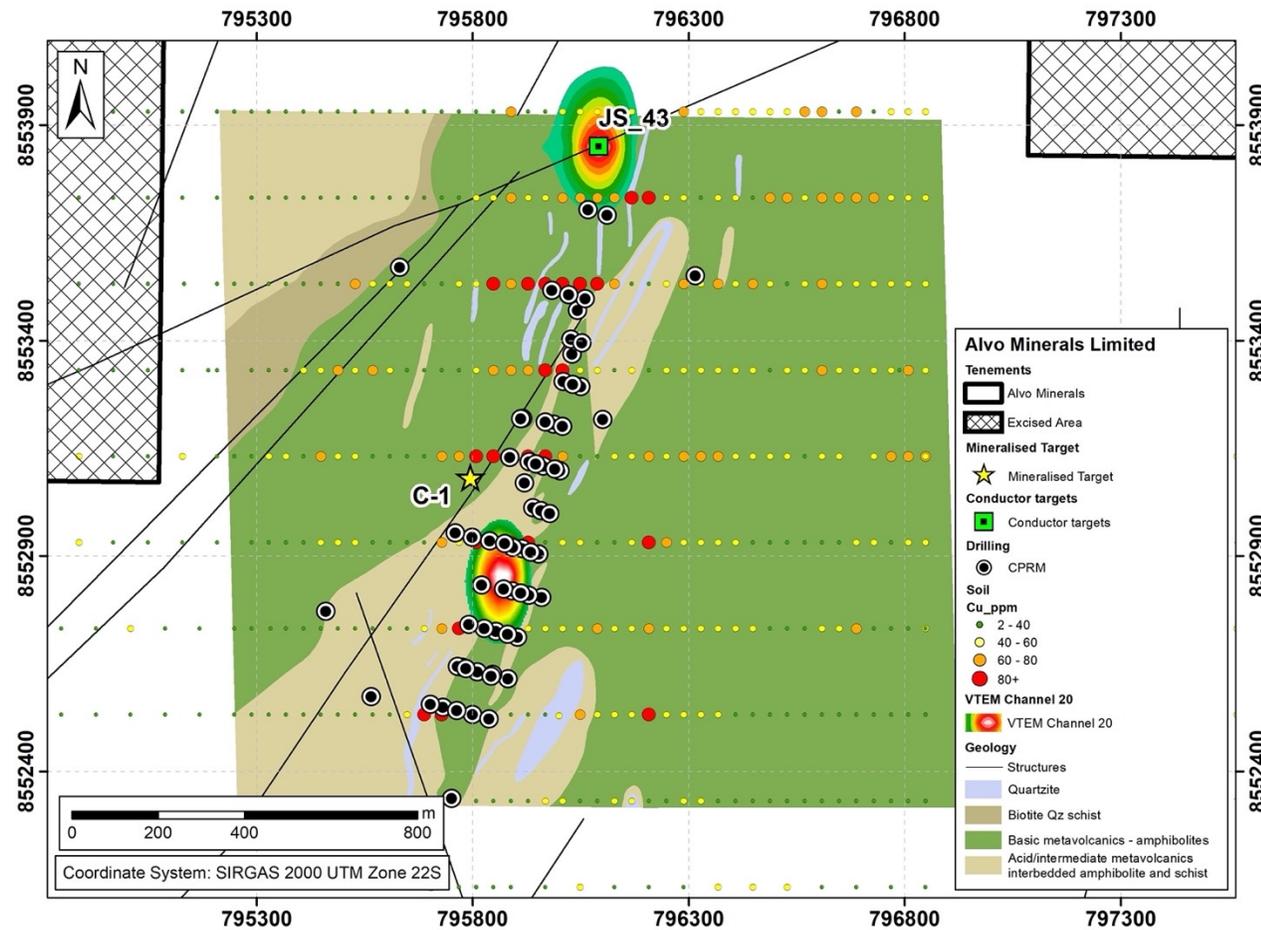
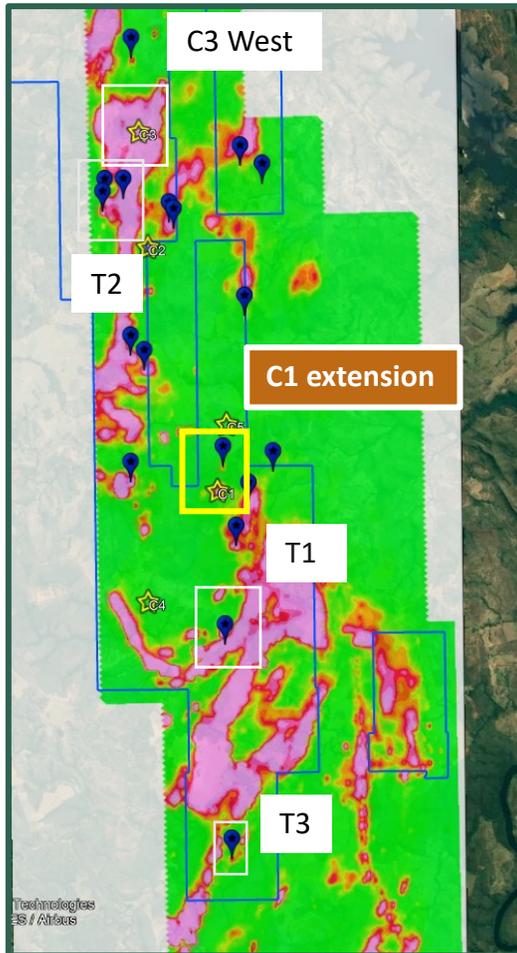
# Palma Exploration Targets



- Alvo has >500km<sup>2</sup> of contiguous and highly prospective ground in a known VMS district- the first time this package has been held by the same entity
- Alvo has compiled an extensive geochemical database that can drive exploration. Stream sediments, soil sampling, rock chips and panned concentrates amount to over 14,000 datapoints with multiple elements sampled
- Regional geochemistry dataset-27km of untested high tenor Cu/Zn Soil anomalies
- VTEM (inc. Mag and RAD) survey flown in 2008 has been re-interpreted and >20 late-time conductors in favourable geological settings have been identified
- Various government magnetics and radiometrics have been compiled and will form a part of the exploration targeting
- Combining the geochemistry with the geophysics, recent detailed geological mapping and new and ongoing interpretation, Alvo has applied for multiple new areas

# Exploration targets – C1 Extension (JS\_43)

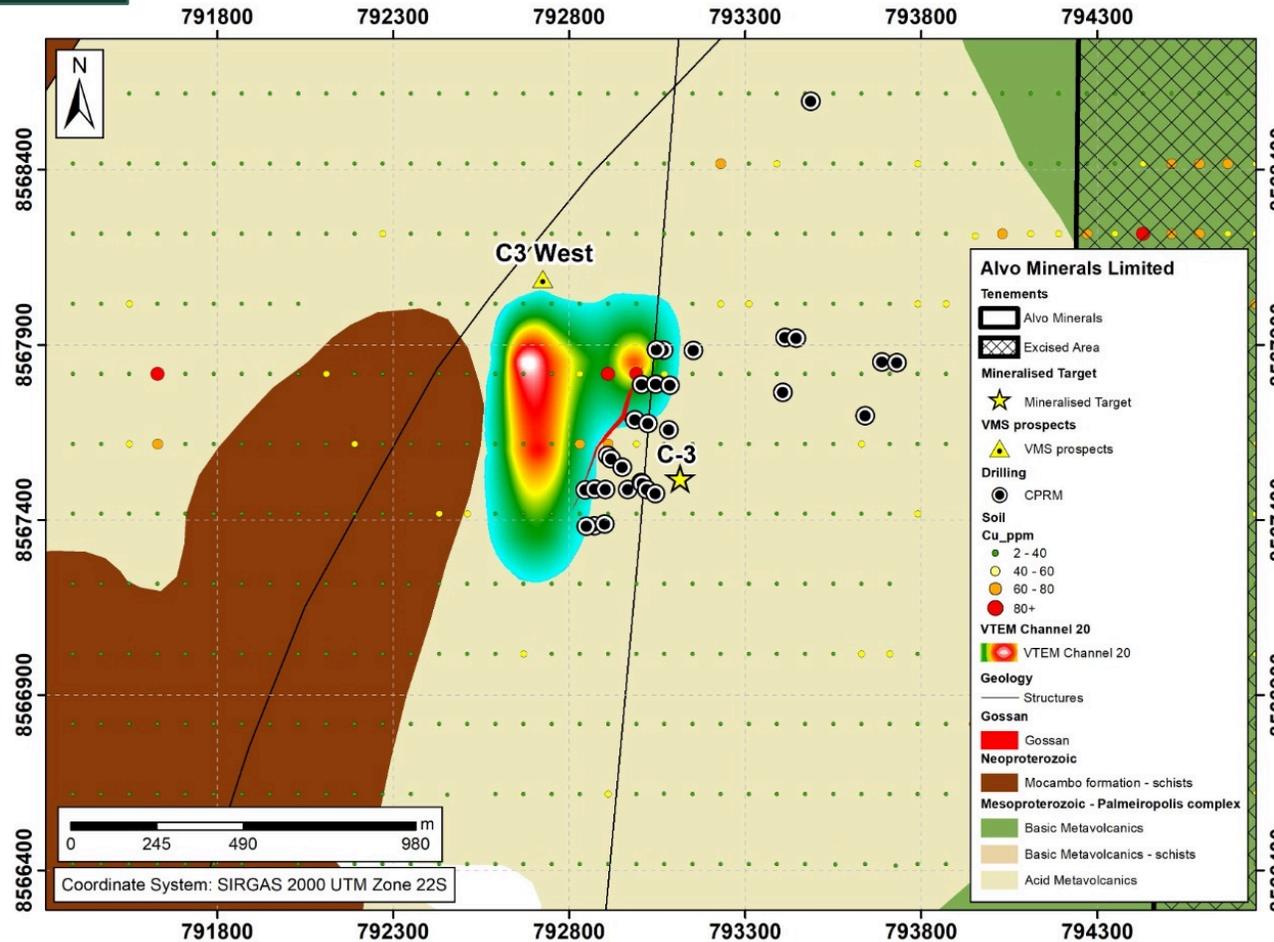
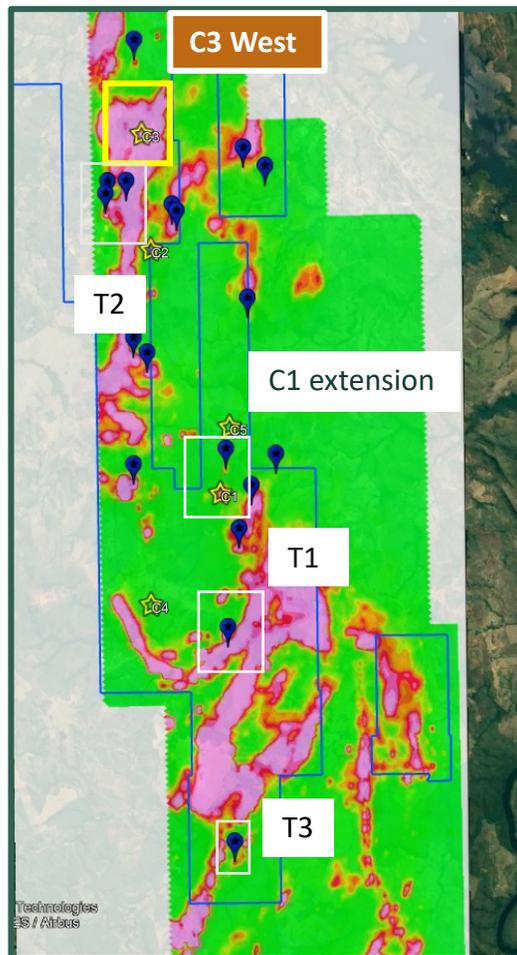
VTEM ch25 survey image with exploration targets



- Late time Ch20 VTEM elongate conductor. ~400m long, estimated to be ~100m below surface
- Conductor is directly along strike from C1 deposit. C1 has a strong conductor coincident to mineralisation.
- Medium grade Zn and Cu in soils (indicating JS\_43 does not outcrop)
- Favourable geological setting- could represent the fault offset extension to C1
- Shallow drilling on southern end hit disseminated sulphides

# Exploration targets – C3 West

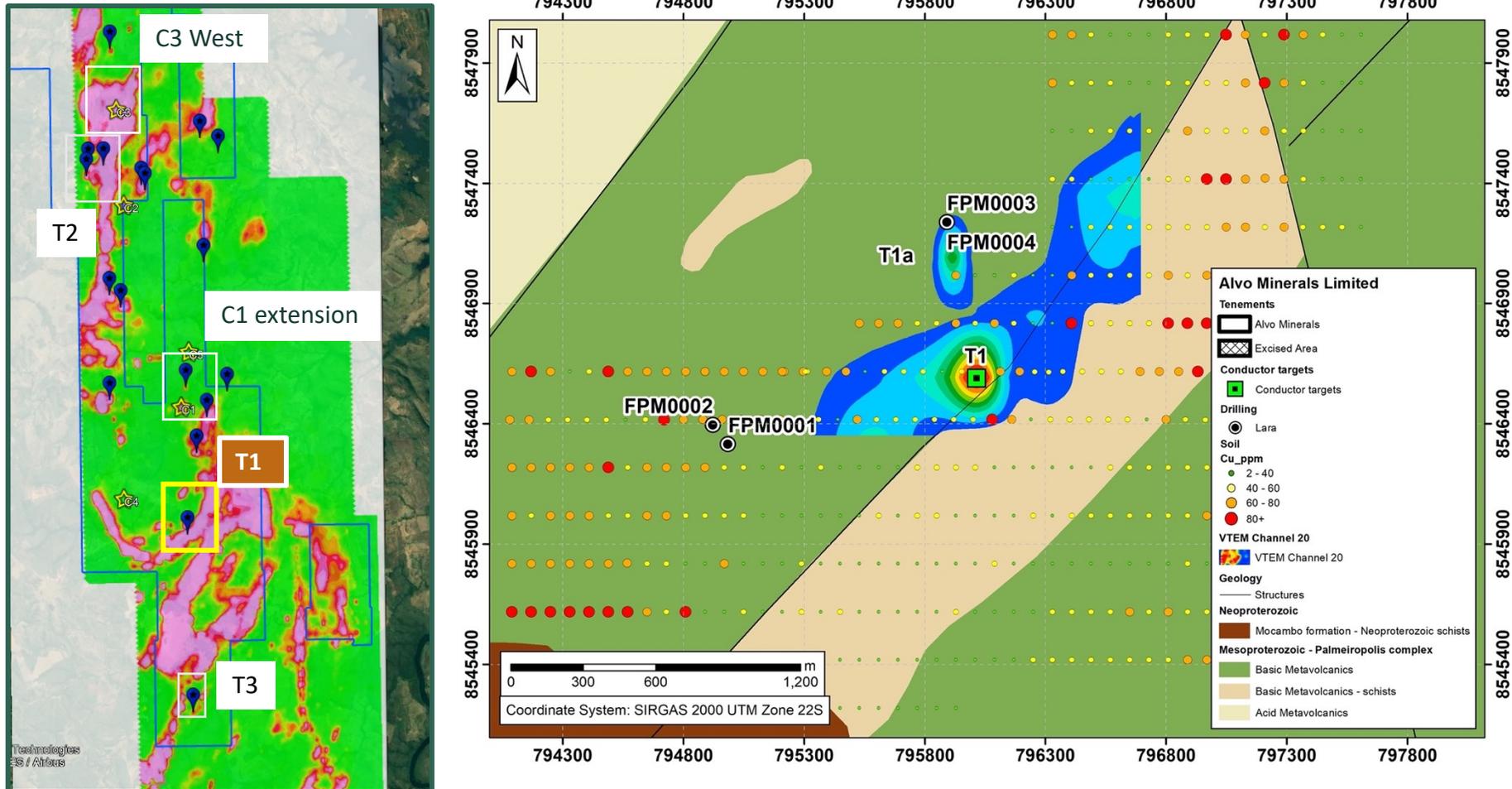
VTEM ch25 survey image with exploration targets



- Late time Ch20 VTEM elongate conductor. ~450m long- appears to be flat lying-S plunging
- Conductor is west of C3 deposit. C3 has a modest conductor co-incident to mineralisation.
- Medium grade Zn and Cu in soils

# Exploration targets – T1

VTEM ch25 survey image with exploration targets

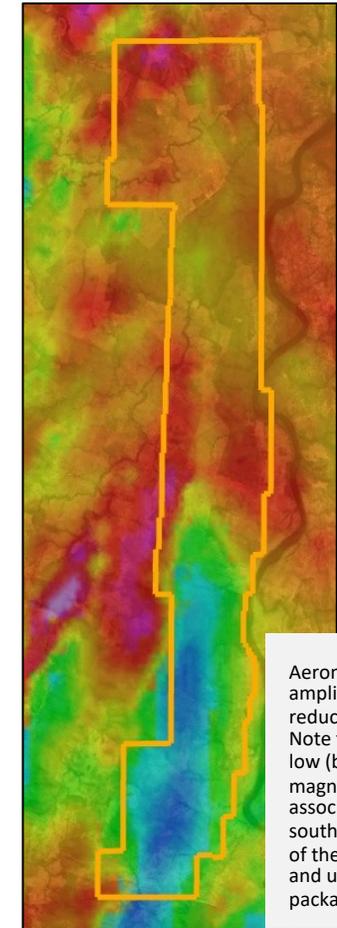
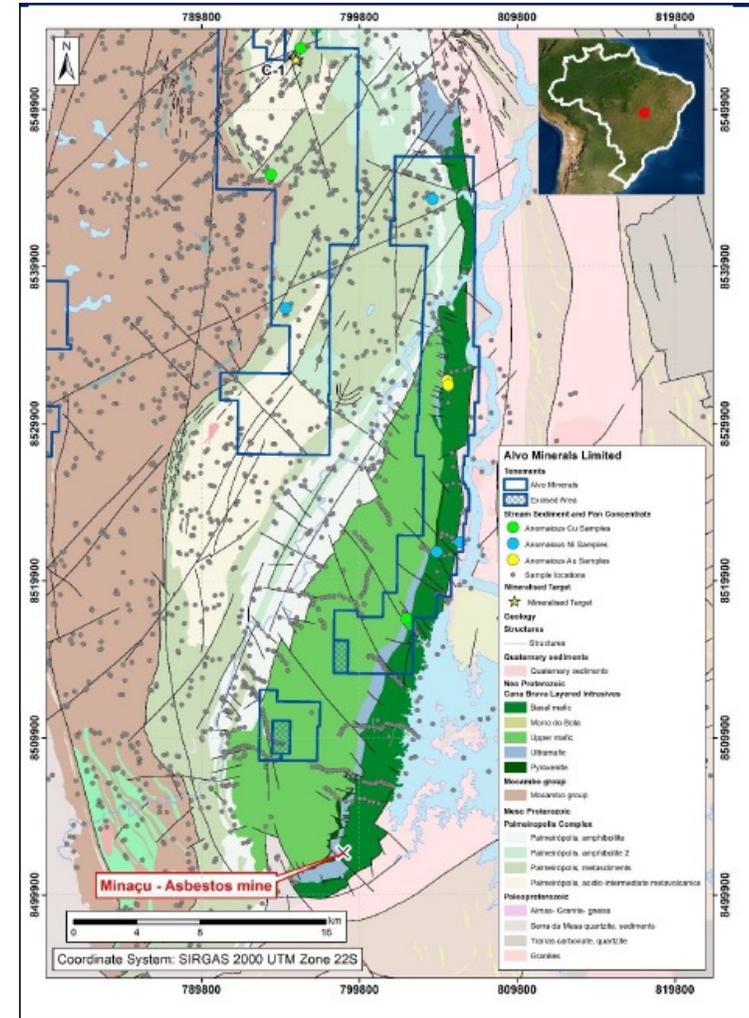


- High grade Zn and Cu in soils- soil grid needs additional sampling
- Late time Ch20 VTEM bullseye conductor. ~300m wide
- Favourable geological setting- contact zone between mafic and felsic metavolcanics.
- Contact zone is on the same NE-SW orientation as C1.

# Cana Brava. Ni/Cu/PGE's magmatic sulphide target

## Early stage exploration target - Cana Brava mafic/ultramafic belt

- N-S striking mafic/ultramafic belt layered intrusion prospective for Ni/Cu/PGE's
- Stream sediment sampling Ni shows a very strong correlation with Co, Cr, Cu & V with a moderate correlation with Ba, Ga, Mo & Zn.
- Correlation indicative of mafic host with magmatic mineralisation
- Spatially these samples are associated with a layered gabbroic intrusion to the south east and it's adjacent metanorite
- Regionally, this ultramafic unit is the host of important Nickel laterite mines at Niqeulandia (Nickel-land) ~50km to the South. Minacu is host to active and large asbestos mine
- ~180km<sup>2</sup> 100% owned by Alvo- 30km of strike, with additional ground recently won in e-Auction



Aeromagnetic amplitude image-reduced to pole. Note the relatively low (blue clouds) magnetic signature associated with the southern portion of the lower mafic and ultramafic package

# Alvo Minerals Corporate Snapshot



- Alvo's board has significant minerals exploration and mining experience in Brazil and around the world
- Alvo has access to an experienced team in Brazil to manage exploration activities



**Graeme Slattery**  
Non-Exec Chairman

Graeme is a practising corporate lawyer with over 20 years of experience advising companies in the mining and resources sector on all aspects of corporate and commercial law. He has extensive experience dealing with foreign jurisdictions and regulatory issues and serves on numerous international boards.



**Rob Smakman**  
Managing Director

Rob is a Geologist with over 20 years international experience, over 10 of which were in Brazil. Fluent in Portuguese, he successfully founded and listed Crusader Resources and was responsible for instigating its Brazilian entry and operations. In Crusader, Rob sourced, negotiated, explored and built projects whilst raising >USD100M in capital (equity and debt) for multiple projects. Projects included the Borborema Gold Project, the Posse Iron Ore Mine and the Juruena Gold Project.



**Beau Nicholls**  
Non-Exec Director

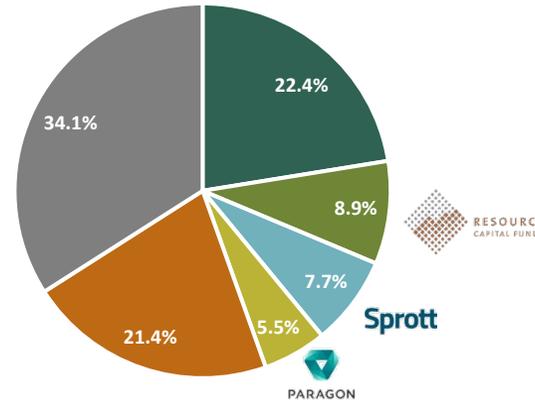
Beau is a Geologist with over 25 years international experience, including 9 years in Brazil as the Principal consultant for Coffey Mining- a leading international consulting firm (Beau is fluent in Portuguese) . Beau is an Executive Director with ASX listed Big River Gold and Principal Consultant for Sahara Natural Resources, specializing in exploration and mining services in Africa.

# Alvo Minerals Capital Structure



## IPO Structure Summary

| Key Information                              | IPO (Maximum Subscription) |
|--|----------------------------|
| Share price                                  | 0.25                       |
| Shares to be issued                          | 40,000,000                 |
| Funds raised                                 | 10,000,000                 |
| Total shares on issue                        | 72,830,314                 |
| <b>Market capitalisation</b>                 | <b>18,207,579</b>          |
| Cash (before IPO costs)                      | 10,698,779                 |
| Debt   | nil                        |
| <b>Enterprise value</b>                      | <b>7,508,800</b>           |
| Options (exercise price \$0.35) <sup>1</sup> | 9,000,000                  |



## Proposed Use of Funds

| Proposed Use of Funds   | Maximum Subscription (\$M) |
|---|----------------------------|
| Geophysics & Geochemical Surveys                              | 1.8                        |
| RC & Diamond Drilling (Resource Extensions, Infill, Regional) | 3.2                        |
| Technical & Metallurgical Studies                             | 1.1                        |
| Working capital & Corporate Costs                             | 1.9                        |
| IPO Costs   | 0.9                        |
| <b>Total</b>  | <b>8.8</b>                 |

1. Issue of 5.0m options exercisable at \$0.35 to Board & Management expiring 4 years from the date of issue & 4.0m brokered options exercisable at \$0.35 expiring 3 years from date of issue

# Indicative Exploration Timeline



|  | Q3-CY2021 |     |     | Q4-CY2021 |     |     | Q1-CY2022 |     |     | Q2-CY2022 |     |     |
|--|-----------|-----|-----|-----------|-----|-----|-----------|-----|-----|-----------|-----|-----|
|  | July      | Aug | Sep | Oct       | Nov | Dec | Jan       | Feb | Mar | Apr       | May | Jun |
| <b>Exploration/ Operational</b>              |           |     |     |           |     |     |           |     |     |           |     |     |
| Geochemistry, geophysics & field work        |           |     |     | ■         | ■   | ■   | ■         | ■   | ■   | ■         | ■   | ■   |
| Target Generation/ Definition                |           | ■   | ■   | ■         | ■   |     |           | ■   | ■   |           |     |     |
| AC/ DD/ RC Drilling: EM Targets              |           |     |     |           | ■   | ■   | ■         | ■   |     |           |     |     |
| DD/ RC Drilling: Resource expansion & Infill |           |     |     | ■         | ■   | ■   | ■         |     |     |           | ■   | ■   |
| MRE update                                   |           |     |     |           |     |     |           |     |     | ■         | ■   |     |
| Metallurgy/ early scoping study work         |           |     |     |           |     |     | ■         | ■   |     |           | ■   | ■   |
| Data Review & compilation                    |           |     |     |           |     |     | ■         |     | ■   |           |     | ■   |
| Environmental licensing and monitoring       |           |     |     |           |     |     | ■         | ■   | ■   | ■         | ■   | ■   |



**VMS**  
Brazil

Thank you

Rob Smakman

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# Appendix



# Strong Brazilian Relationships



- Alvo management have combined > 25 years of on-ground Brazilian experience- negotiating, exploring, licensing, studying building and operating minerals projects.
- Strong association with CPRM and local government. Aligned towards developing Palma into a mining district
- Local town of Palmeiropolis (10,000 people)- Supportive Mayor



Rob Smakman along with the Governor of Tocantins state, President of CPRM, Federal Deputy of Tocantins and the Mayor of Palmeiropolis after winning the auction in Rio de Janeiro, October 21<sup>st</sup>, 2019. The victory was gazetted on the 5<sup>th</sup> of November.\*



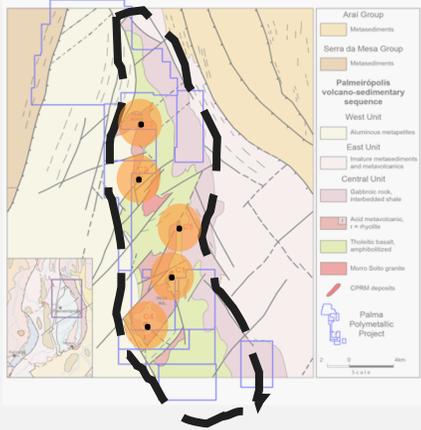
Rob Smakman signing the contract with CPRM in Brasilia, 21<sup>st</sup> February 2020. Present at the ceremony were representatives of the CPRM, ANM, PPI, Brazilian State and municipal government and the Australian Ambassador to Brazil, the Honorable Tim Kane.

\*Leilão de direitos exploração de minérios em TO recebeu proposta única – Foto: Carlos Brito/G1



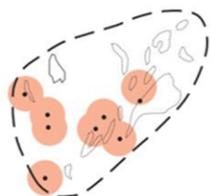
# Palma setting and potential

**Volcanogenic Massive Sulphide (VMS) deposits occur worldwide and are a major source of Cu and Zn**

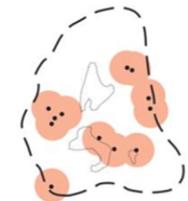


Palma district (4.8Mt)

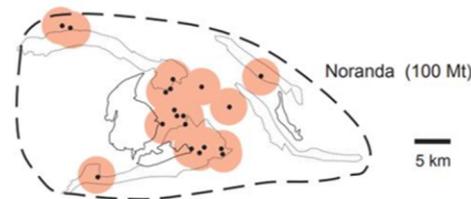
- Only outcropping mineralisation drilled to date
- VMS style appears to be Bimodal-Mafic
- Palma district has potential to host multi-million tonne resources
- Similar age and mineralisation style to the operating Bisha VMS deposit in Eritrea (+31Mt @ 4.6% Zn, 0.97% Cu and 0.57 g/t Au)



Flin Flon (80 Mt)

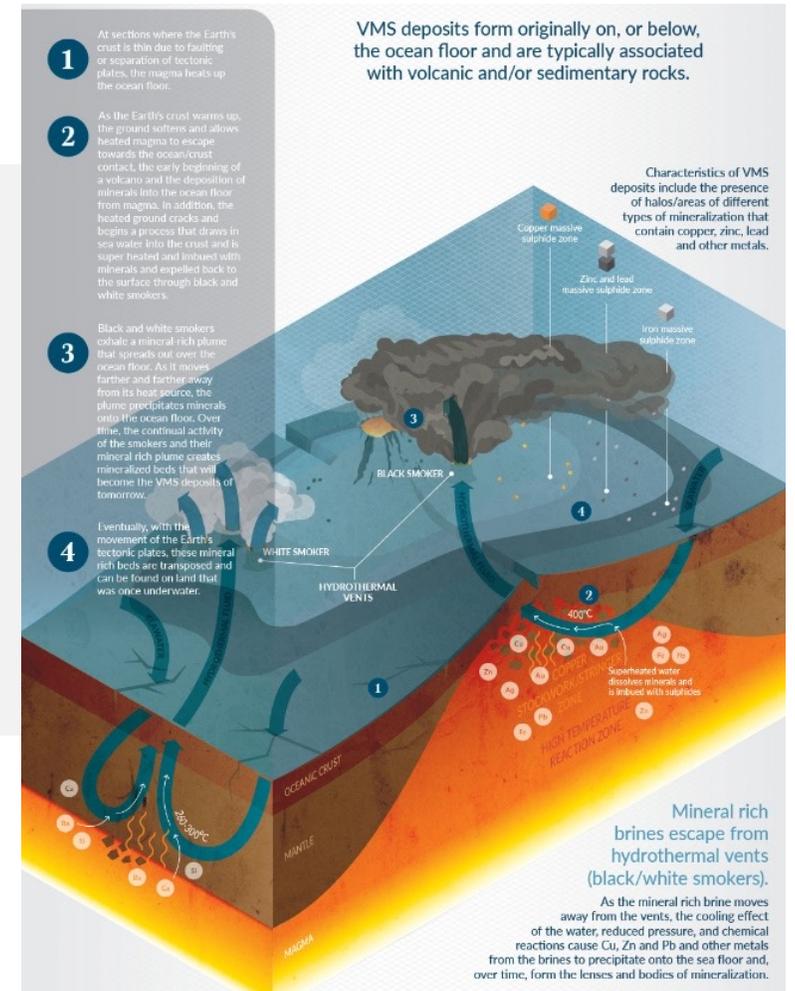


Hokuroku District (90 Mt)



Noranda (100 Mt)

5 km



# Palma Polymetallic – Key Metals



- Cu and Zn are the 3<sup>rd</sup> and 4<sup>th</sup> most used metals globally = Massive markets
- Cu and Zn at 5-year highs (18/10/2021)
- Zinc “V-shaped” recovery spurred by fiscal stimulus
- Both metals are fundamental for emerging technologies- Electric Vehicles and Renewable Energy
  - Cu in electric vehicles is 3x combustion engines
  - Zn usage in renewables- solar, wind and thermal spray – demand is growing

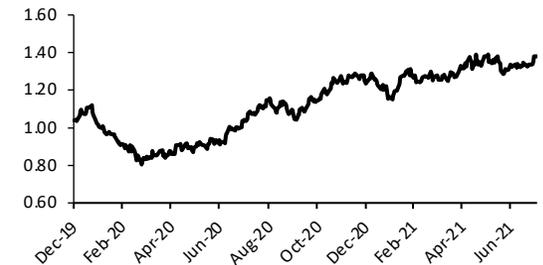


- Palma style VMS mineralisation typically contains significant gold
- Only 5% of the drilled samples were assayed for gold- results included
  - **6m @ 2.54g/t Au** PM-121-GO at C3
  - **1m @ 5.33g/t Au & 933 g/t Ag** in PM-104-GO at C3
- Gold is trading close to **All Time Highs** in Brazilian Reals- due to weak currency

1 Year Copper Spot (US\$/lb)



1 Year Zinc Spot (US\$/lb)



1 Year Gold Spot in Brazilian Reals vs US Dollars

