

NATIONAL INTEGRATED MINERAL EXPLORATION PROJECT (NIMEP)



Rare Metal Pegmatite Projects

FEDERAL REPUBLIC OF NIGERIA

MINISTRY OF MINES AND STEEL DEVELOPMENT

and the

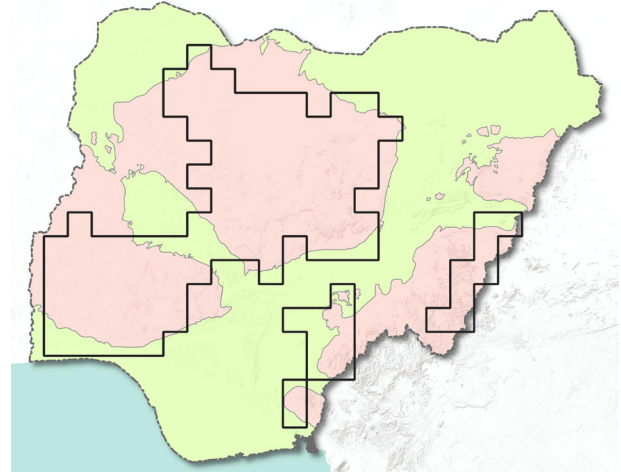
NIGERIAN GEOLOGICAL SURVEY AGENCY



PEGMATITES—WHAT ARE THEY GOOD FOR?

Pegmatites are granitic igneous rocks that form in metamorphic terranes. They consist mainly of large crystals of feldspar, quartz and mica (>1 cm), but can contain other important minerals such as spodumene (an ore of lithium), lepidolite (an ore of lithium), beryl (an ore of beryllium), cassiterite (an ore of tin) and columbite-tantalite (“coltan”, an ore of tantalum and niobium) that are rarely found in economic amounts in other types of rocks.

They also can be a source of gemstones. Some of the world’s best tourmaline, aquamarine, and topaz deposits have been found in pegmatites.



Pegmatite crystal growth



Columbite-tantalite (‘coltan’)



Lepidolite (lithium-mica)



Graphic (‘hieroglyphic’) texture in pegmatite



Beryl



Muscovite (mica)



Spodumene



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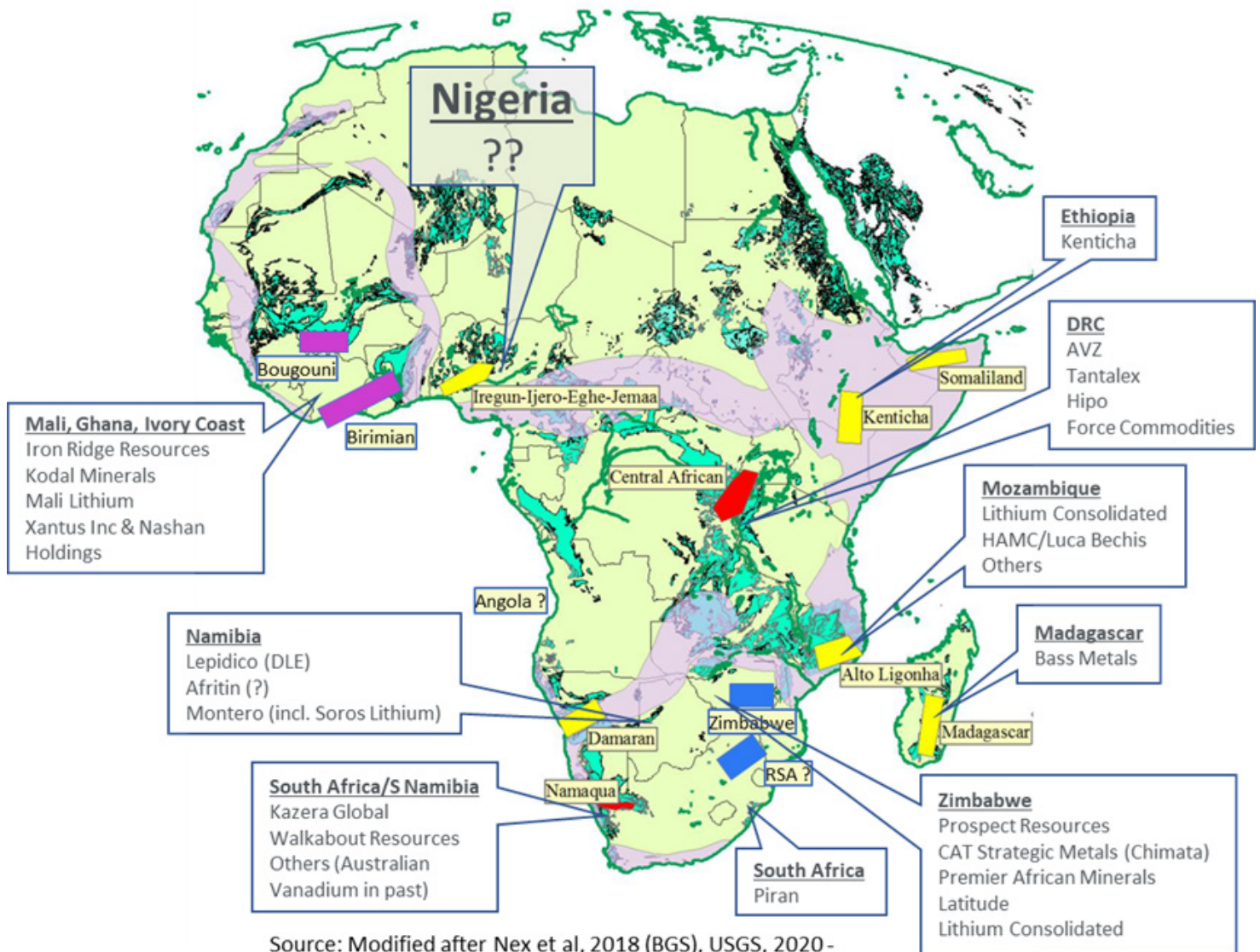
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WHERE CAN RARE METAL PEGMATITES BE FOUND IN AFRICA?

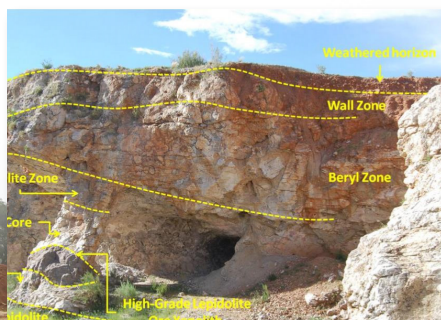
Africa's geology is as diverse as its people, which is why it is so rich in minerals. There are several orogenic belts throughout Africa that host significant potential for hard-rock (pegmatite) deposits. Some of the best known are in Central Africa (DRC), Damara (Namibia), Zimbabwe, Namaqua (South Africa), Mozambique Ethiopia and West Africa (Mali, Ghana and Ivory Coast). Nigeria is also host to significant orogenic terranes.



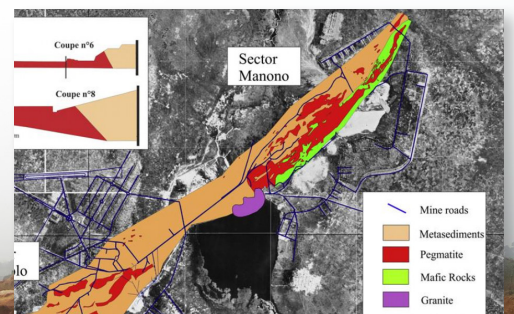
Source: Modified after Nex et al, 2018 (BGS), USGS, 2020 - <https://pubs.usgs.gov/periodicals/mcs2020/mcs2020.pdf>



Bikita, Zimbabwe



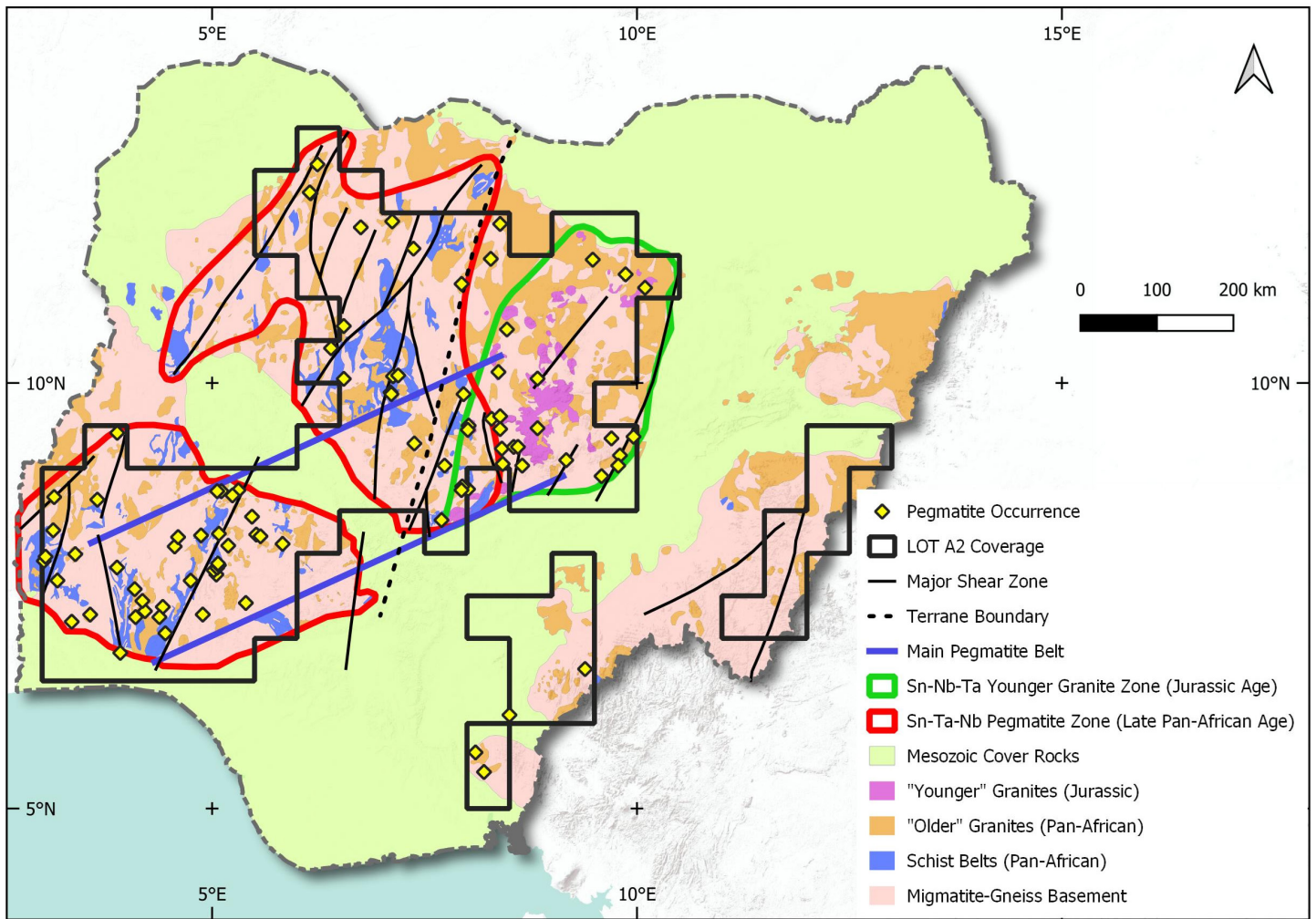
Rubicon, Namibia



Manono-Kitotolo, DRC

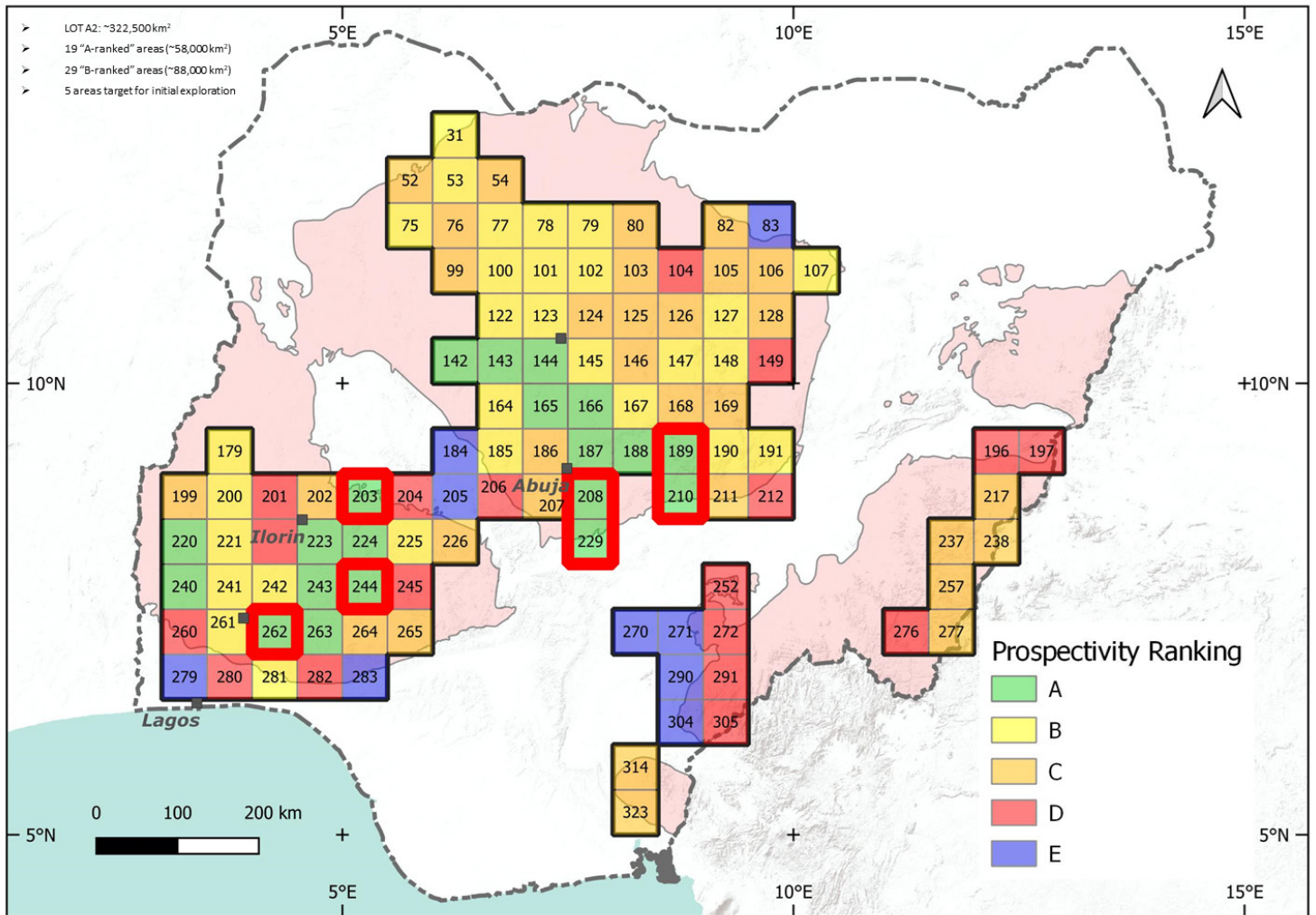
PEGMATITE EXPLORATION IN NIGERIA

Nigeria has large basement rock areas (>325,000 km²) that are potentially prospective for lithium-caesium-tantalum (LCT) pegmatites. These areas within metamorphic terranes that favourable for hosting lithium, tantalum and tin mineralisation.



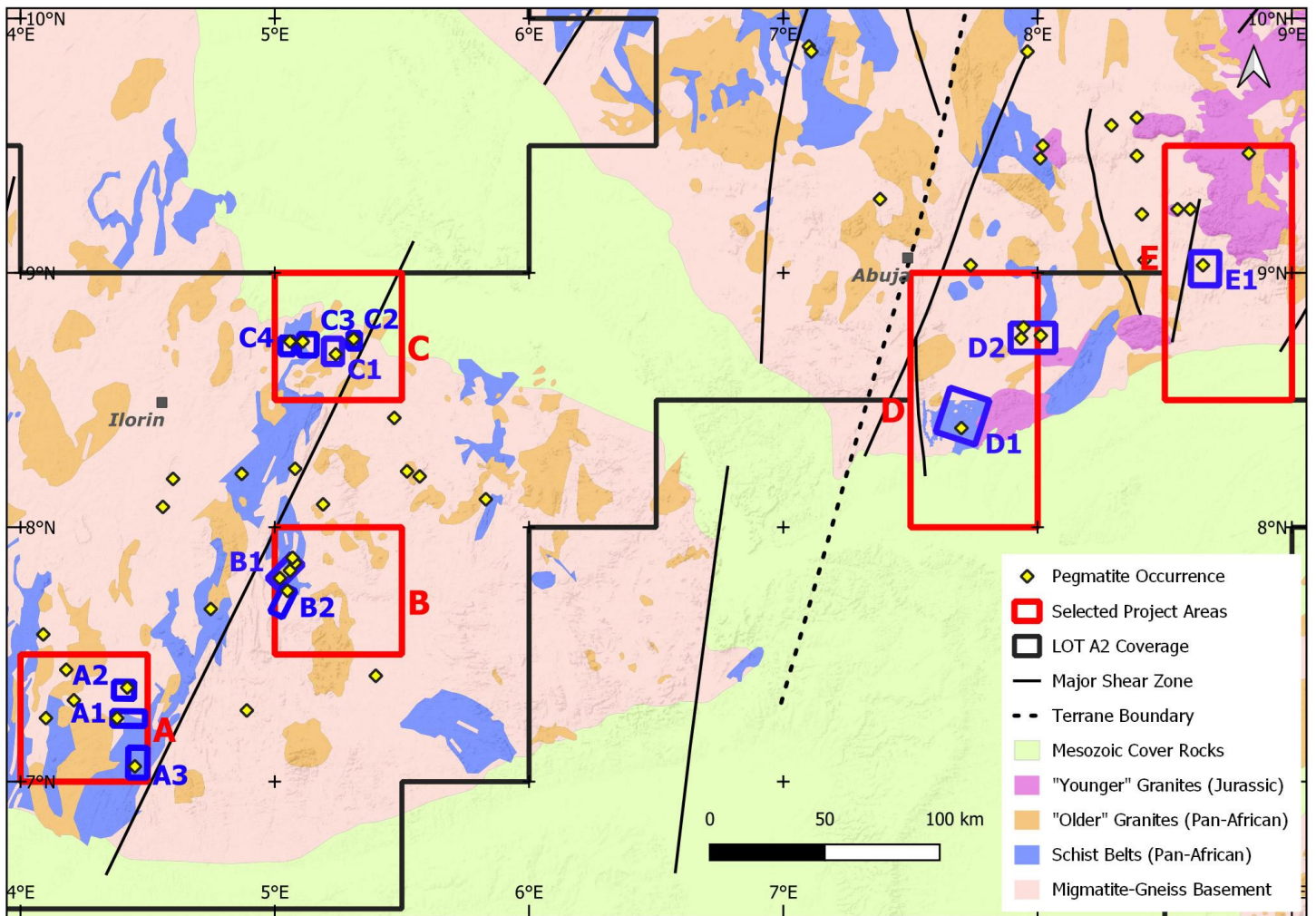
LOT A2 COVERAGE

Through a ranking process, the cadastral blocks making up the coverage areas of LOT A2 were assigned a Prospectivity Ranking from A to E, with A being the most prospective and E being the least prospective. A subset of blocks were chosen for further investigation, but many other blocks with potential remain untested.



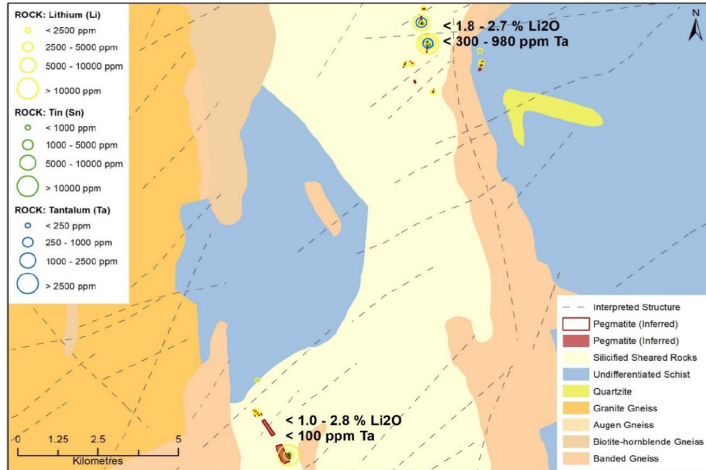
LOT A2 COVERAGE

Following the desktop selection process, exploration activities proceeded at the five initial areas of interest. Mapping, geophysics, rock sampling, soil sampling and trenching were performed in most of these areas and assessed. Positive results were followed up and a sub-selection of areas was made for further investigation and drill testing (labelled blue outlines). It is important to note that the work undertaken only covered a small proportion of the total coverage of LOT A2 and many other areas remain untested.

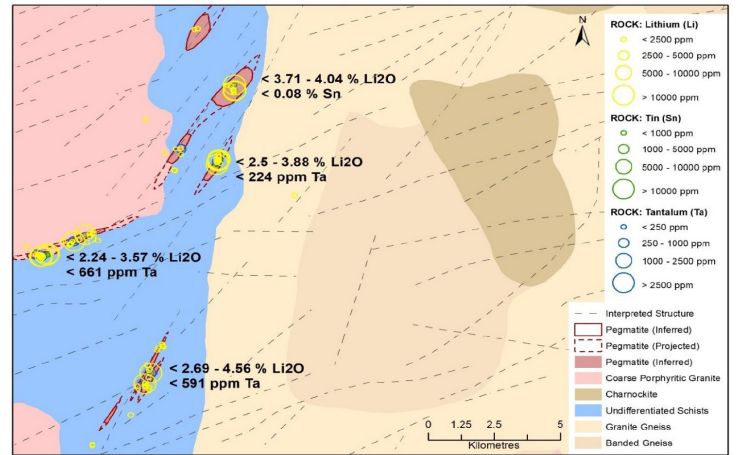


Rock Chip Sampling and Assay

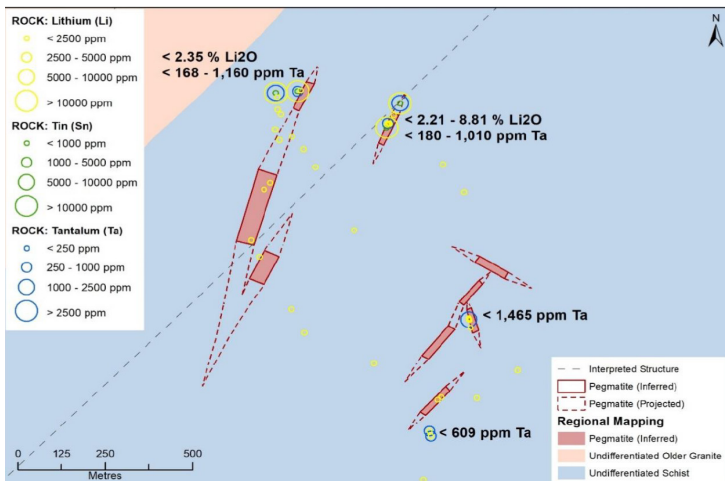
Block A



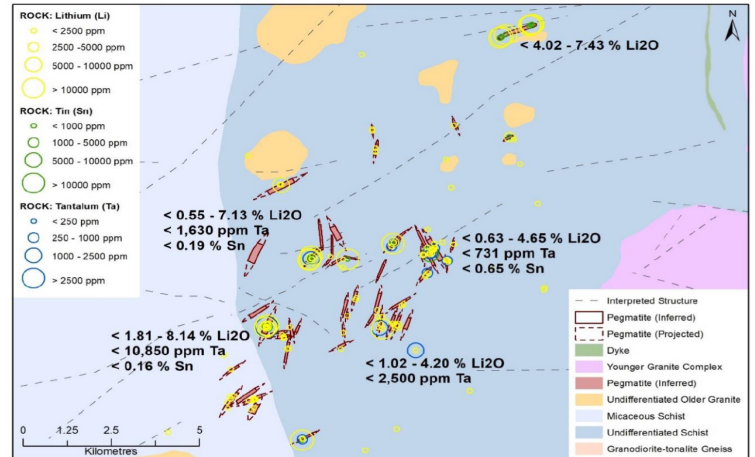
Block B



Block C



Block D



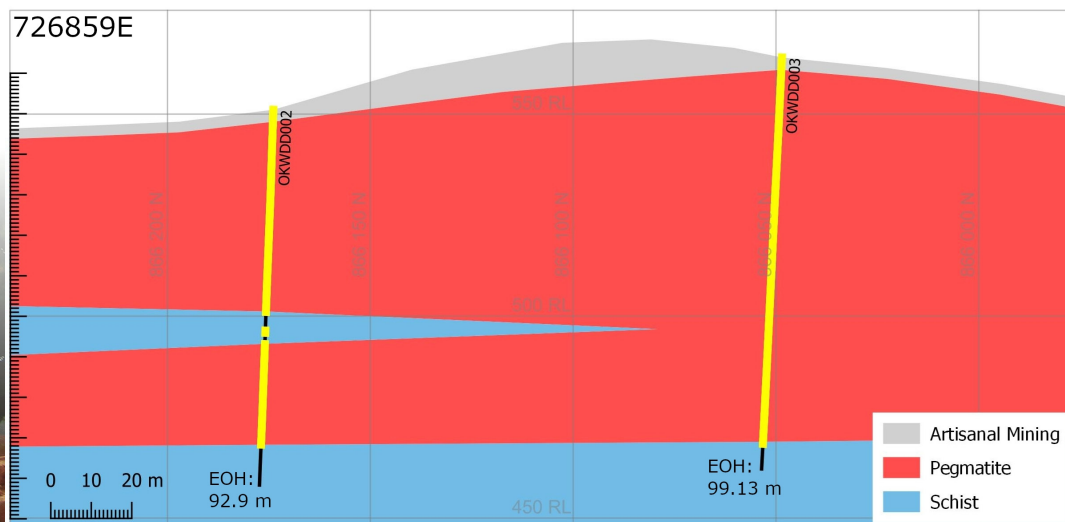
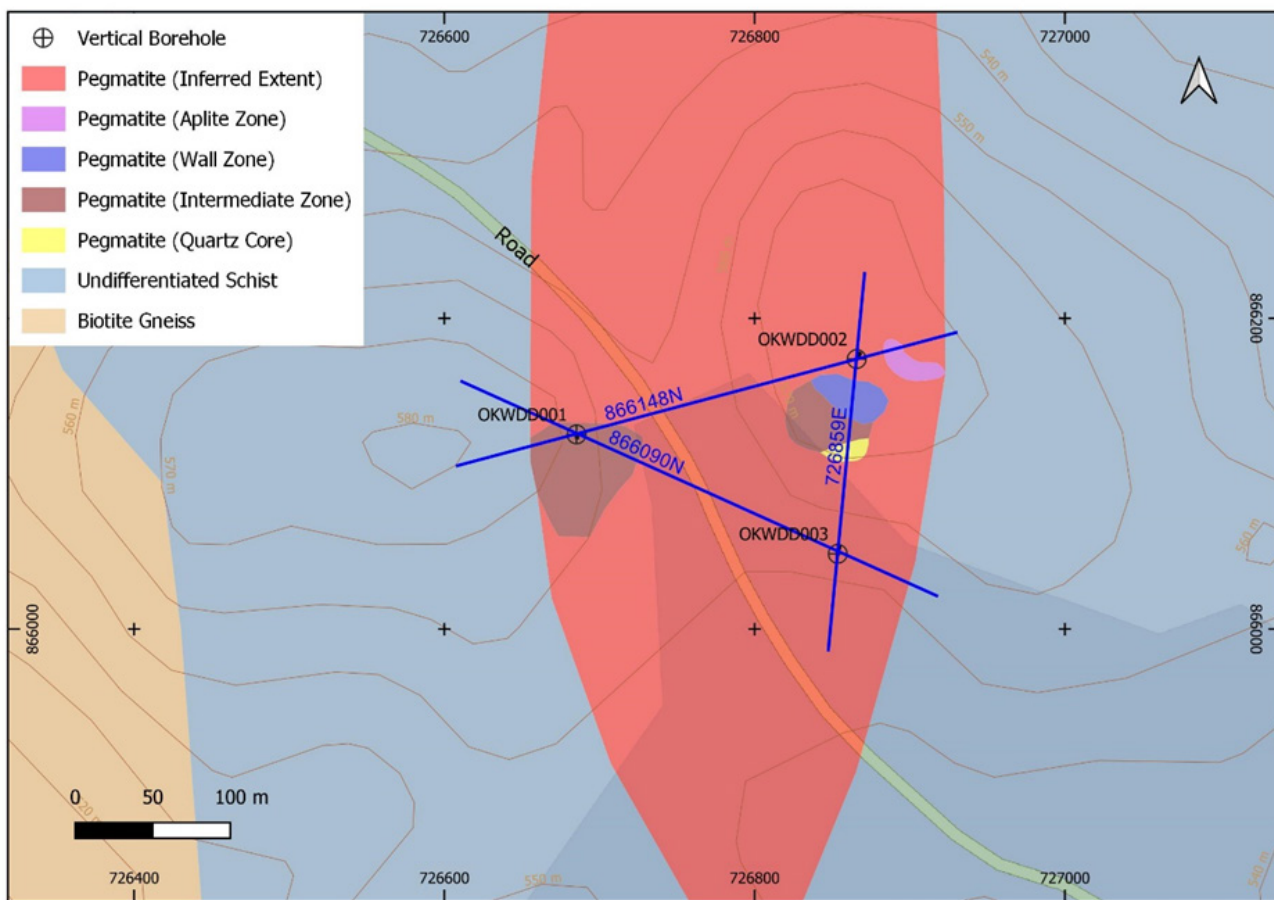
DRILLING AREA B1 RESULTS

At drilling area B1, significant results were returned from multiple intervals near surface at several pegmatite targets with one example shown in the diagrams to the right, and summary intervals presented below.

Significant intersections analysed include:

OKWDD002 157 ppm Ta over 8.60 m
 including 344 ppm Ta over 3.48 m
 and 874 ppm Ta over 0.70 m
 OKWDD003 234 ppm Ta over 19.20 m
 including 1762 ppm Ta over 2.00 m
 and 3180 ppm Ta over 1.00 m

ILKDD003 3780 ppm Sn and 134 ppm Ta over 0.80 m
 IJEDD006 121 ppm Ta over 1.00 m
 IJEDD007 505 ppm Sn over 1.00 m
 IJEDD009 199 ppm Ta over 3.50 m
 IJEDD010 107 ppm Ta over 3.23 m
 OKADD001 374 ppm Ta over 6.70 m

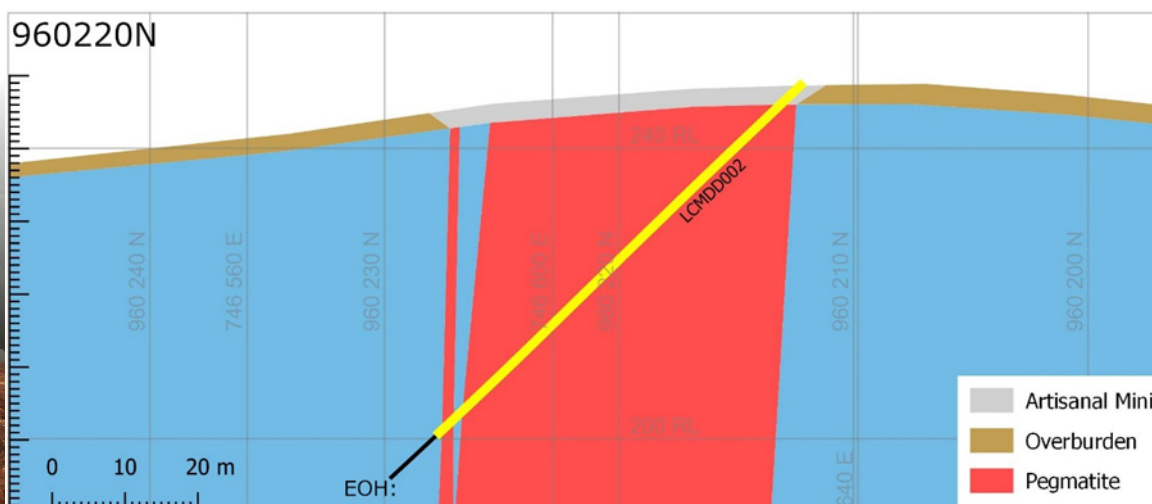
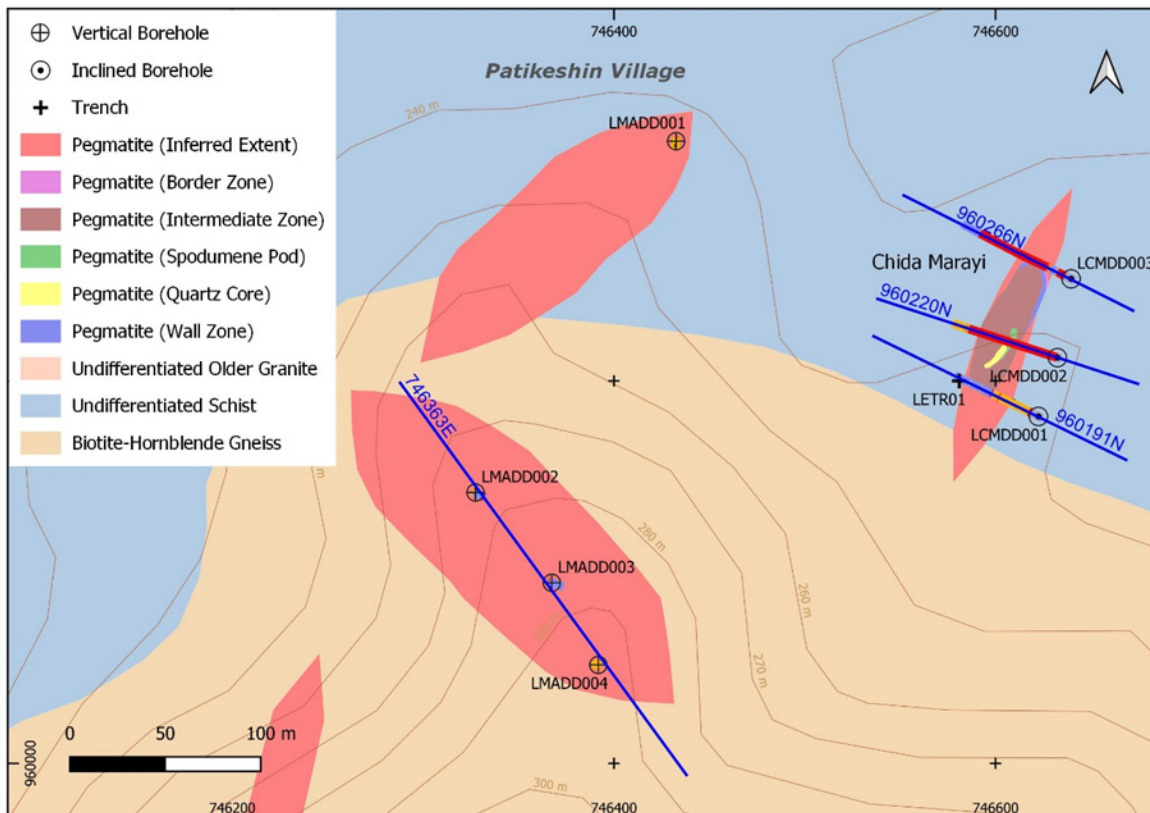


DRILLING AREA C1 RESULTS

At drilling area C1, significant results were returned from multiple intervals near surface at two pegmatite targets with one example shown in the diagrams to the right, and summary intervals presented below.

Significant intersections analysed include:

LCMDD001	94 ppm Ta over 1.00 m	and	152 ppm Ta over 51.45 m
	and 112 ppm Ta over 1.20 m	including	1.39% Li ₂ O and 198 ppm Ta over 0.90 m
LCMDD002	177 ppm Ta over 67.00 m	Including	427 ppm Ta over 0.74 m
	including 246 ppm Ta over 11.50 m	LMADD002	184 ppm Ta over 3.00 m
	and 0.68% Li ₂ O and 1015 ppm Ta over 1.00 m	and	0.45% Li ₂ O over 2.00 m
	including 254 ppm Ta over 20.04 m	LMADD003	252 ppm Ta over 10.20 m
	and 0.73% Li ₂ O and 468 ppm Ta over 1.80 m	including	1005 ppm Ta over 0.80 m
LCMDD003	112 ppm Ta over 1.00 m	including	0.61% Li ₂ O and 285 ppm Ta over 3.00 m
	and 89 ppm Ta over 2.00 m	LMADD004	124 ppm Ta over 2.24 m
		and	0.40% Li ₂ O over 1.00 m

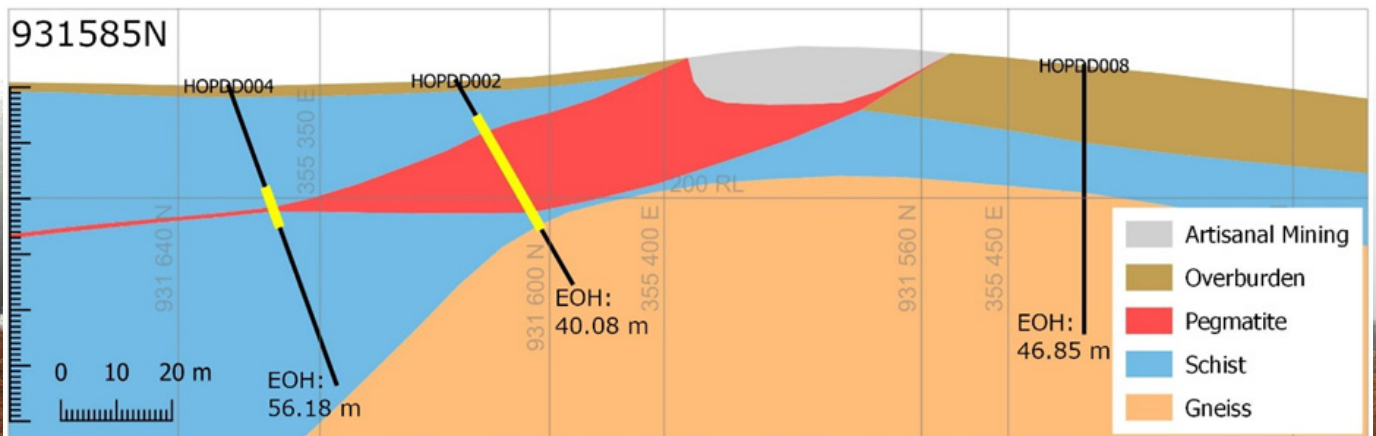
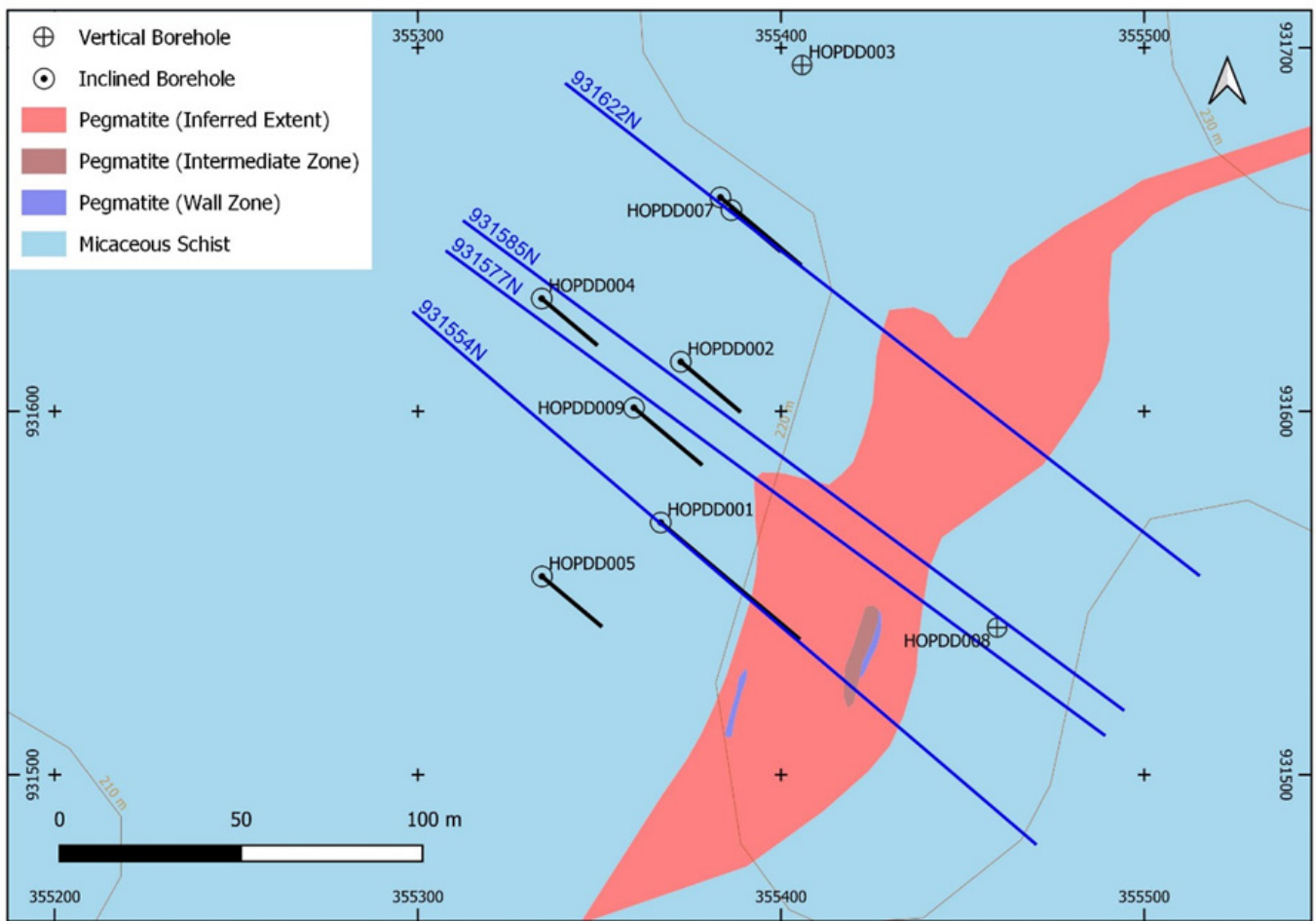


DRILLING AREA D1 RESULTS

At drilling area D1, significant results were returned from multiple intervals near surface at several pegmatite targets with one example shown in the diagrams to the right, and summary intervals presented below.

Significant intersections analysed include:

HOPDD001	573 ppm Sn and 118 ppm Ta over 2.00 m	and	1.06% Li ₂ O, 601 ppm Sn and 954 ppm Ta over 0.84 m
HOPDD002	0.7% Li ₂ O and 117 ppm Ta over 14.85 m	and	1100 ppm Sn over 1.07 m
	including 1.56% Li ₂ O over 3.20 m	and	298 ppm Ta over 1.00 m
	and 1.27% Li ₂ O and 527 ppm Ta over 1.63 m	HOPDD007	81 ppm Ta over 10.89 m
	and 0.90% Li ₂ O over 3.20 m		including 0.49% Li ₂ O over 0.85 m
		HOPDD009	2.41% Li ₂ O, 1764 ppm Sn and 287 ppm Ta over 1.70 m
			and 546 ppm Sn over 1.00 m

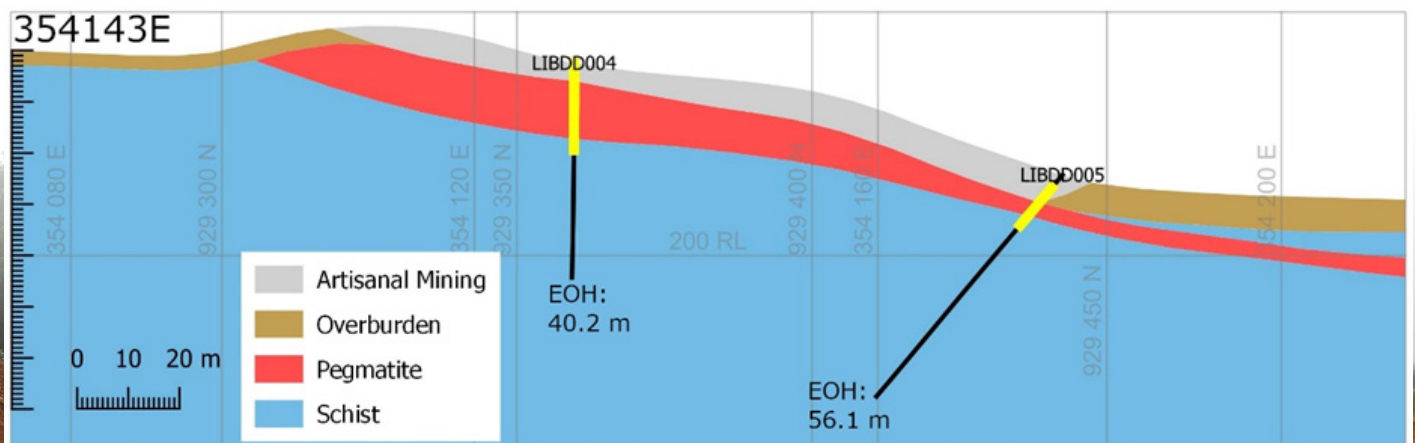
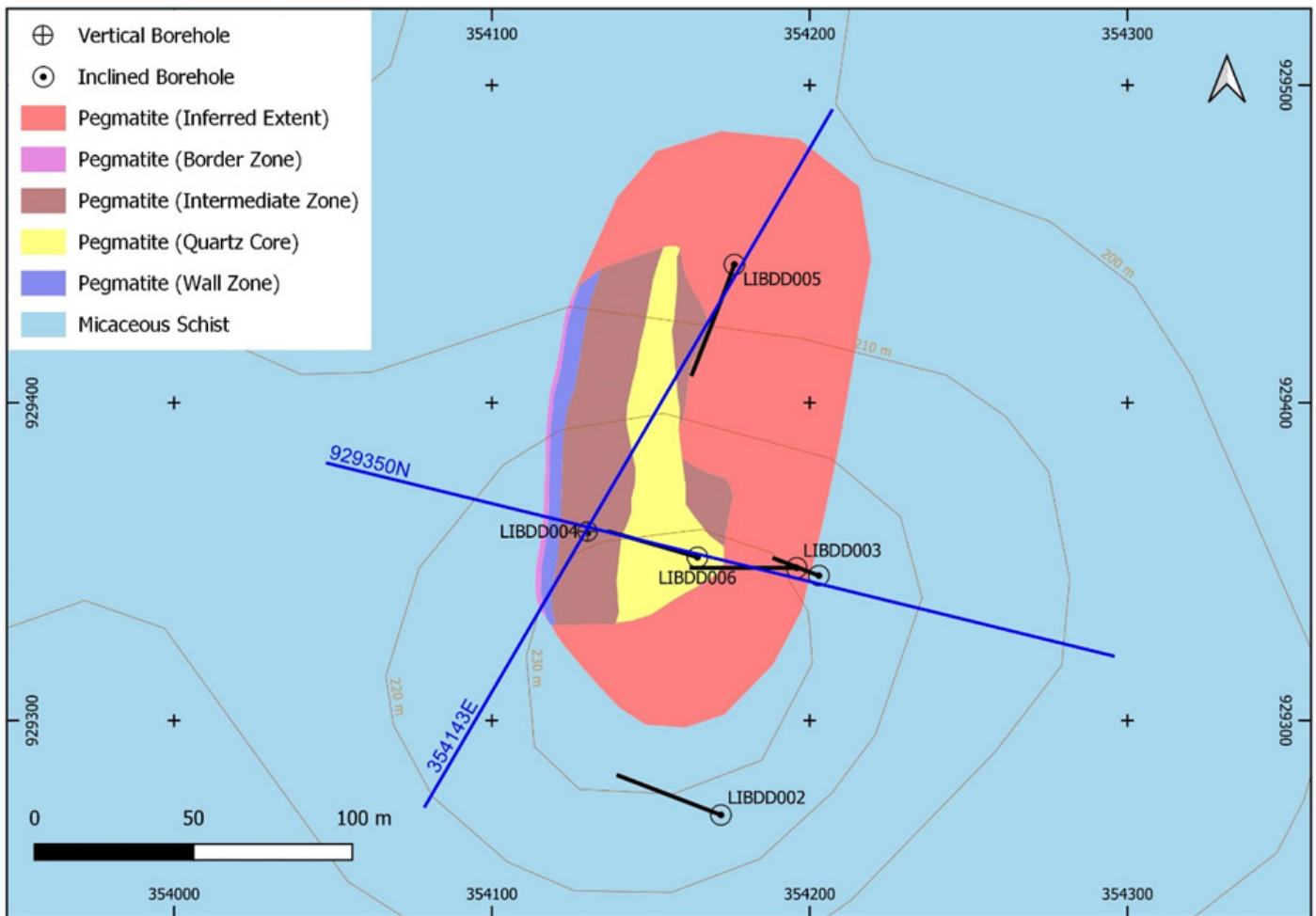


DRILLING AREA D1 RESULTS (continued)

At other pegmatite targets in drilling area D1, significant results were returned from multiple intervals near surface at several pegmatite targets with one example shown in the diagrams to the right, and summary intervals presented below.

Significant intersections analysed include:

LIBDD004	0.47% Li ₂ O over 5.50 m including 1.05% Li ₂ O over 1.00 m and 106 ppm Ta over 0.50 m and 0.92% Li ₂ O over 1.50 m and 1.38% Li ₂ O over 0.90 m	LIBDD005	0.68% Li ₂ O over 4.50 m including 0.99% Li ₂ O over 3.00 m and 86 ppm Ta over 0.70 m
		MYDD003	200 ppm Ta over 8.95 m including 555 ppm Ta over 1.50 m
		DBDD001	194 ppm Ta over 1.90 m



DRILLING AREA D2 RESULTS

At other pegmatite targets in drilling area D1, significant results were returned from multiple intervals near surface at several pegmatite targets with one example shown in the diagrams to the right, and summary intervals presented below.

Significant intersections analysed include:

GDKDD001 0.78% Li₂O, 820 ppm Sn and 216 ppm Ta over 2.60 m

including 1.05% Li₂O, 1140 ppm Sn and 221 ppm Ta over 1.85 m

GDKDD002 1.15% Li₂O, 1480 ppm Sn and 1052 ppm Ta over 4.21 m

including 1.75% Li₂O, 1370 ppm Sn and 1369 ppm Ta over 2.63 m

and 3090 ppm Sn and 548 ppm Ta over 0.79 m

AGKDD003 0.37% Li₂O, 948 ppm Sn and 144 ppm Ta over 4.80 m

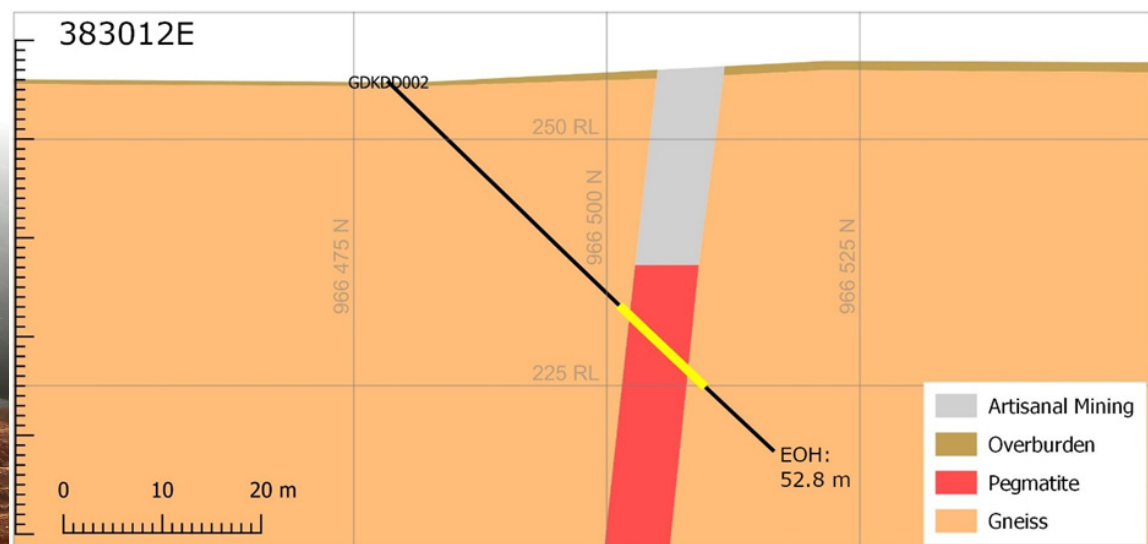
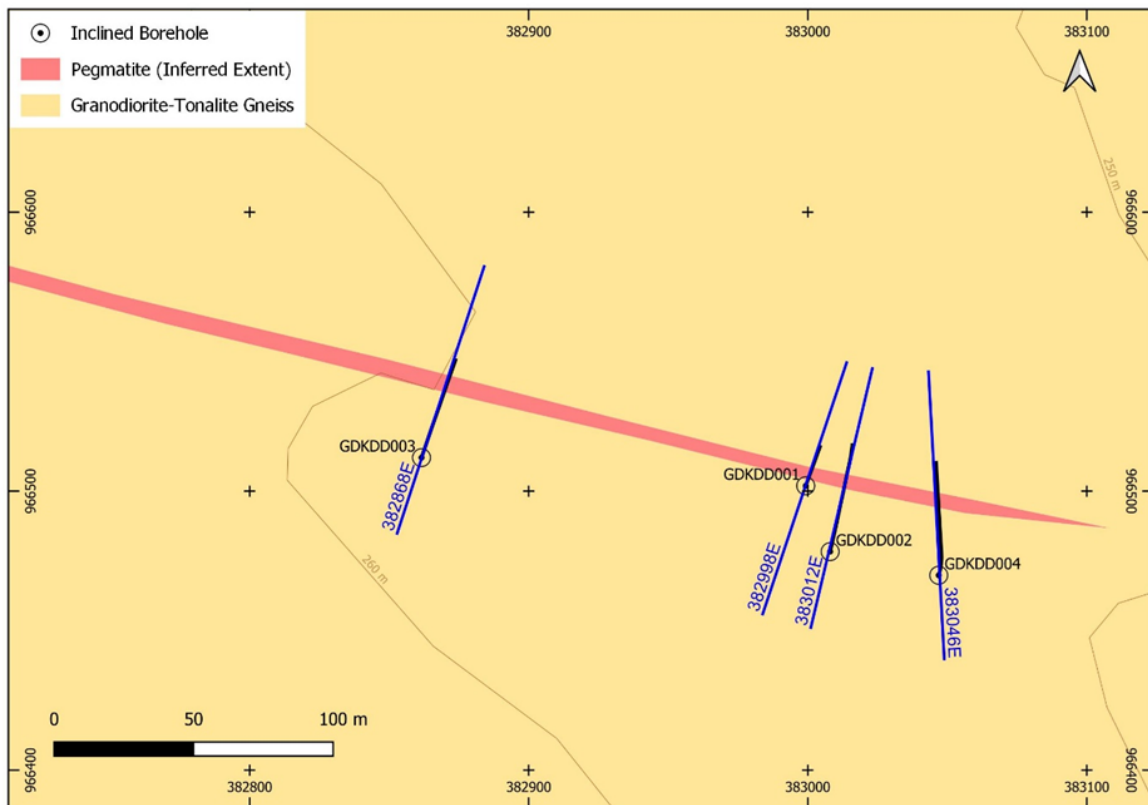
including 0.43% Li₂O over 3.70 m

and 3360 ppm Sn and 277 ppm Ta over 0.91 m

AGKDD004 1.38% Li₂O, 803 ppm Sn and 261 ppm Ta over 2.84 m

including 2950 ppm Sn and 98 ppm Ta over 0.44 m

and 2.86% Li₂O and 455 ppm Ta over 1.26 m
and 1600 ppm Sn and 82 ppm Ta over

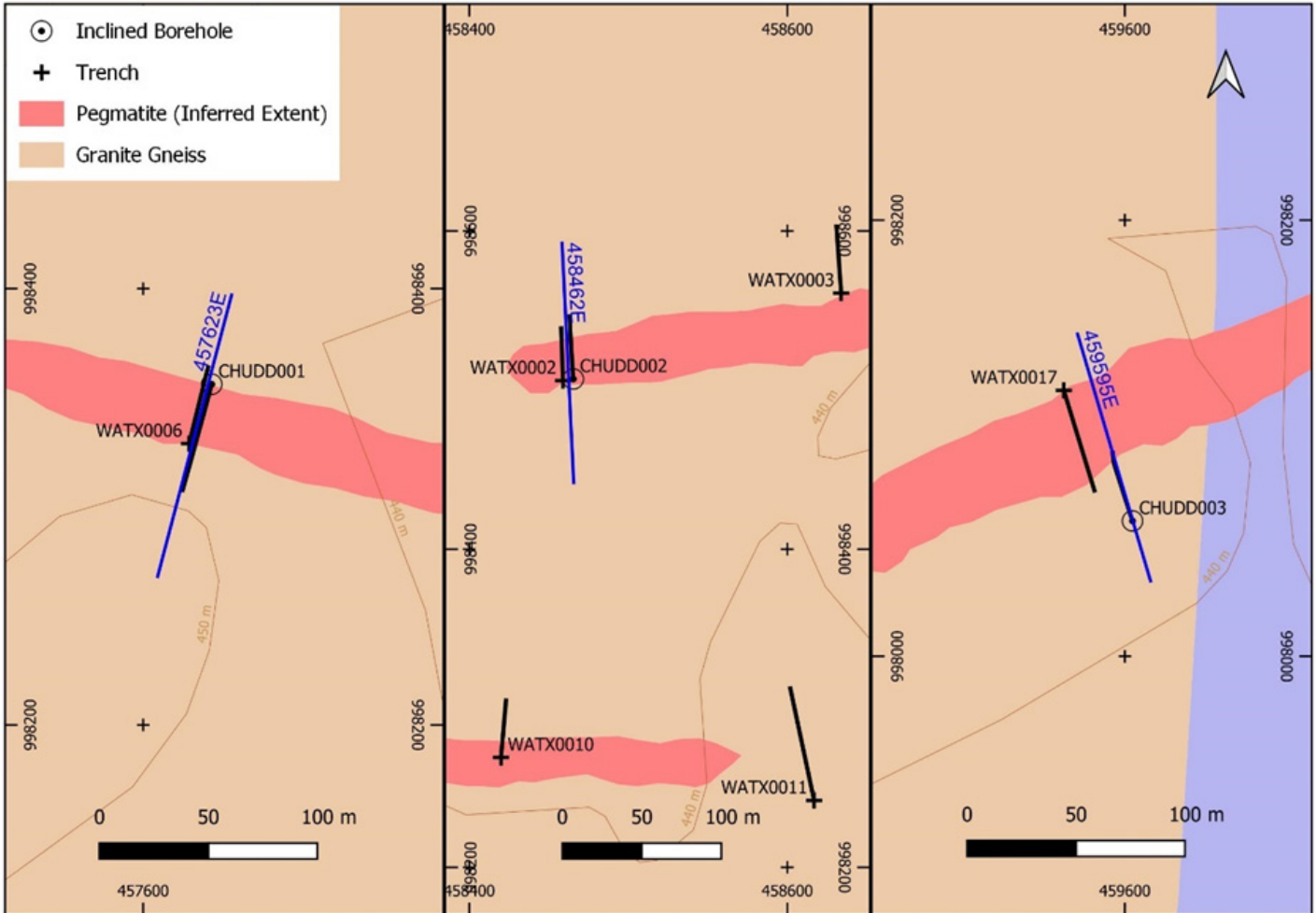


DRILLING AREA E1 RESULTS

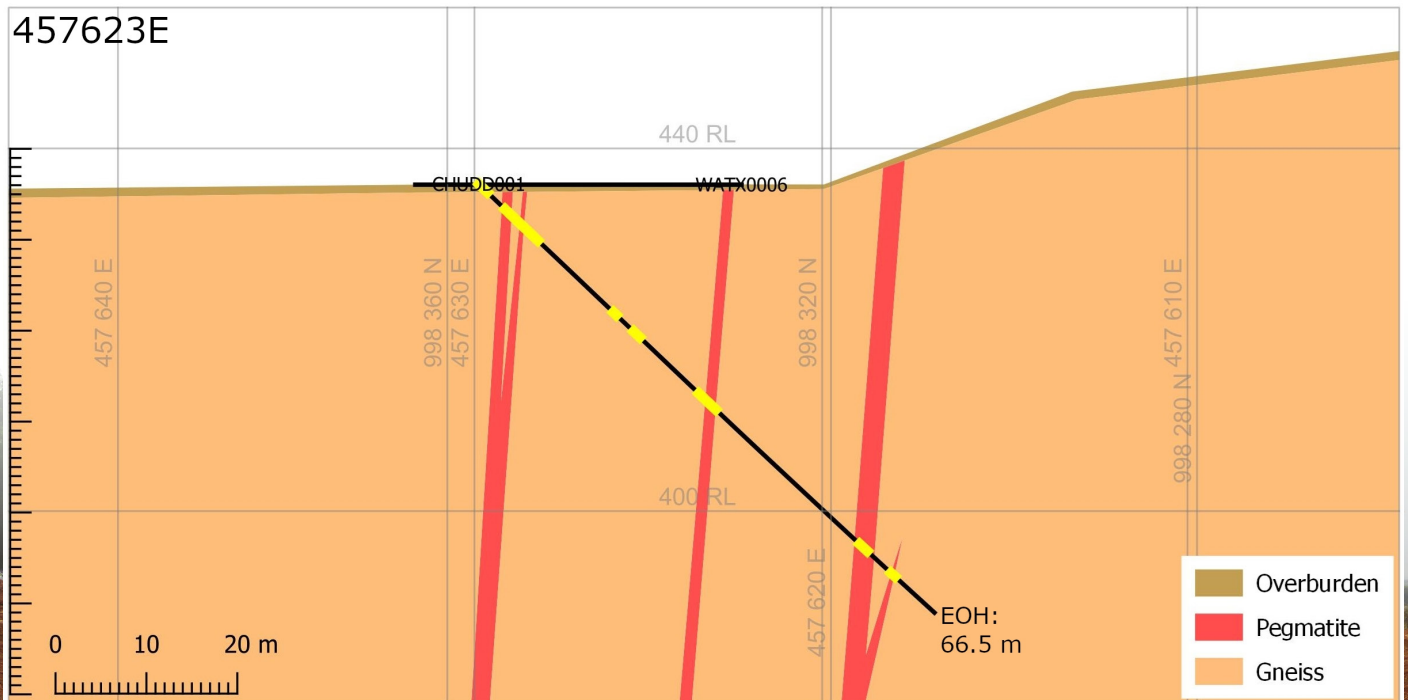
At two pegmatite targets in drilling area E1, significant results were returned from intervals near surface with one example shown in the diagrams to the right, and summary intervals presented below.

Significant intersections analysed include:

- CHUDD001 >3500 ppm Sn over 0.5 m
- CHUDD002 553 ppm Sn over 0.66 m



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EXPLORATION TARGET RESULTS

Several Exploration Targets were estimated from the results of drill testing. Note that the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to estimate a Mineral Resource and that it is uncertain if further exploration will result in the estimation of a Mineral Resource.

