



# EXPLORATION PROGRAM TO COMMENCE ON EXPANDED LITHIUM PORTFOLIO

Ragnar is pleased to provide shareholders with an exploration update on two lithium exploration programs to commence in Sweden:

# Hälleberget Lithium Project:

- Extensive sampling program with experienced geologists from GeoVista and Axray Scientific.
- This program follows recent confirmation of tourmaline and beryl-bearing pegmatites in the field with spot XRF readings indicating highly fractionated and fertile lithium-caesium-tantalum ("LCT") pegmatites.
- Compilation work by Ragnar has identified at least 47 additional mapped pegmatites by the Geological Survey of Sweden, including an area further south where Ragnar has lodged a new application which, if granted, will expand the Hälleberget ground holding from 21km<sup>2</sup> to 52km<sup>2</sup>.

# Bergom Lithium Project:

- Extensive sampling program with experienced geologists from GeoVista.
- New application lodged will, if granted, expand the Bergom tenure from 27km<sup>2</sup> to 75km<sup>2</sup>, which follows recent confirmation of tourmaline and beryl-bearing pegmatites in the field with spot XRF readings indicating highly fractionated and fertile LCT-pegmatites.
- Compilation work by Ragnar has identified at least 20 additional mapped pegmatites by the Geological Survey of Sweden that have not been sampled or assayed.



Figure 1: Photograph of outcropping tourmaline and beryl-bearing muscovite-rich LCT pegmatites (pg) at Hälleberget (Located near sample number Hall010GS)

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Executive Director Eddie King commented:

"After completing our rights issue and placement of the shortfall, we are now funded and excited to commence our extensive sampling programs across two highly prospective lithium projects in Sweden. Previous assays and recent fieldwork confirm the extensive potential for spodumene-bearing pegmatites across our extensive ground position."

Ragnar Metals Limited ("RAG" "Ragnar" or the "Company") (ASX: RAG) is pleased to advise that exploration programs across two projects will commence mid-August 2023 following the recent confirmation of extensive LCT-pegmatites and the expansion of the ground holding on both lithium projects.

# Hälleberget Lithium Project Update

An initial field visit was recently undertaken and confirmed the presence of muscovite-rich pegmatites that are variably tourmaline-bearing (Figure 2) and detected trace beryl in places (Table 1). Prominent outcrops extend for at least 400m and up to 30m in thickness in areas of good outcrop exposure (Figure 1). Portable XRF readings on muscovite confirmed highly fractionated and fertile LCT-pegmatites with encouraging K/Rb fertility ratios. A portable handheld Bruker XRF machine was used in the field for spot readings, displaying elevated LCT-pegmatite pathfinder metals tin, niobium and tantalum. Mineralogical identification of widespread tourmaline, beryl and muscovite is a characteristic trace mineral assemblage typical of LCT pegmatite zonation systems (Bradley & McCauley USGS, 2010).

The initial field visit was encouraging, and subsequent compilation work by Ragnar has identified at least 20 other mapped pegmatites, primarily to the south and east, that the Geological Survey of Sweden has mapped but has yet to sample or assay (Figure 3). A further 27 unsampled pegmatites were identified to the south, where Ragnar has lodged a new application to secure an additional 31km<sup>2</sup> of project tenure, which if granted, will expand the Hälleberget project's total area to 52km<sup>2</sup>. The new license is strategically located 4km from the Jarkvissle lithium deposit (Figure 3).

Due to the positive indication of LCT-pegmatites and expansion of the project tenure, Ragnar has engaged experienced geologists from GeoVista and Axray Scientific for a 7-day field trip to conduct extensive rock sampling across the tenure commencing 14<sup>th</sup> August 2023.



Figure 2: Photograph muscovite-rich pegmatite at Hälleberget with 5% tourmaline (T) (Sample Hall010GS)



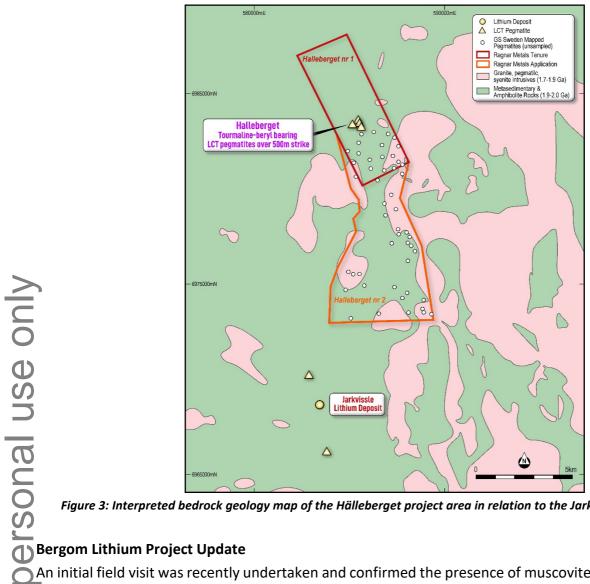


Figure 3: Interpreted bedrock geology map of the Hälleberget project area in relation to the Jarkvissle lithium deposit

An initial field visit was recently undertaken and confirmed the presence of muscovite-rich pegmatites up to 2m thick. Interestingly, further pegmatites were observed 3 km to the southeast of the tenure toward the Orrvik lithium pegmatites (Figure 4, see RAG announcement 26 June 2023), which are also muscovite-rich and tourmaline-bearing (Figure 4) and contain trace beryl in places (Table 1). Portable XRF readings on muscovite confirmed highly fractionated and fertile LCT-pegmatites with encouraging K/Rb fertility ratios and elevated tin, niobium and tantalum. Mineralogical identification of tourmaline, beryl and muscovite is a characteristic trace mineral assemblage typical of LCT pegmatite zonation systems (Bradley & McCauley USGS, 2010).

The initial field visit was encouraging, particularly in the area of open ground where Ragnar has now identified 14 additional unsampled pegmatites, including the Annundsbole tin-niobium-lithium pegmatite occurrence (Figure 5). As a result, Ragnar has lodged an application to add an additional 47km<sup>2</sup> of tenure, expanding the Bergom project's total area to 75 sq km (Figure 5).

Due to the positive indication of LCT-pegmatites and expansion of the project tenure, Ragnar has engaged experienced geologists from GeoVista to conduct a 7-day field trip of rock sampling across the tenure commencing 21<sup>st</sup> August 2023.





Figure 4: Photograph of tourmaline-bearing (T) muscovite-rich pegmatite at Bergom (Sample number BERGS08)

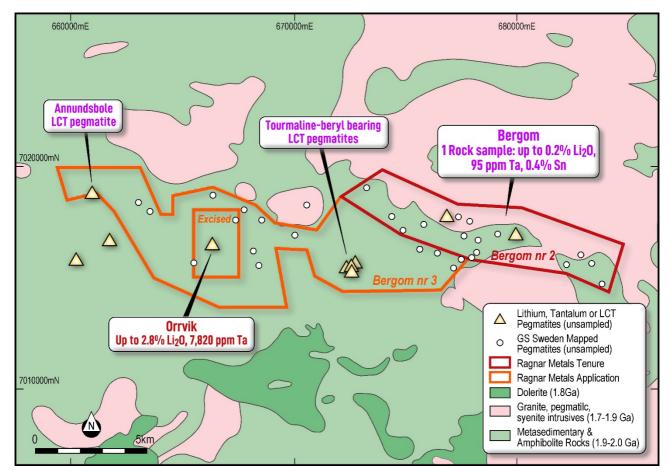


Figure 5: Interpreted bedrock geology map of the Bergom project area in relation to the Orrvik lithium prospect.



# **Program Overview**

Ragnar Metals Limited's 100%-owned lithium Hälleberget and Bergom lithium projects in Sweden are located in an area that is interpreted to represent the western extent of the same geological terrain that contains the largest lithium deposits in Scandinavia: the Kaustinen Lithium province in Finland (Figure 6).

The Hälleberget Project is strategically located 10km along strike to the north of Sweden's newest expanding lithium pegmatite resource at Jarkvissle<sup>1</sup> (Figure 2). The area was explored by LKAB Prospektering in 1984 where firm evidence for lithium, tin and tantalum mineralisation was detected in pegmatites was reported (See RAG announcement 26 June 2023). The Bergom project is located 100km east-northeast of Hälleberget and is in an area of known LCT pegmatites including the Orrvik lithium pegmatite<sup>2</sup>. The Bergom area was also explored by LKAB Prospektering in 1984 and again elevated lithium, tin and tantalum was detected in pegmatites was reported (See RAG announcement 26 June 2023).

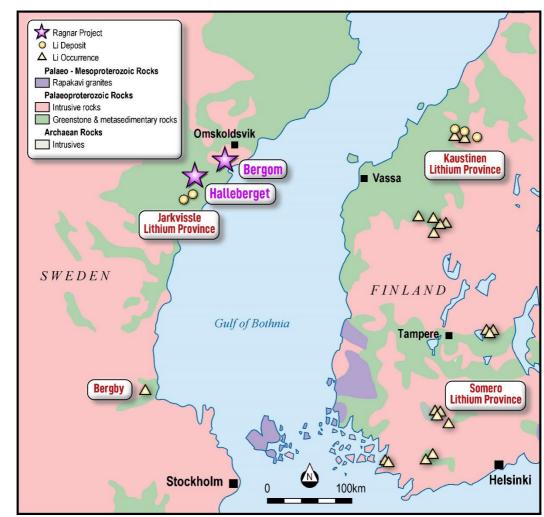


Figure 6: Simplified geological map of Scandinavia showing the location of Ragnar's new Lithium Projects.

# References:

<sup>1</sup>Martinsson, O & Wanhainen, C., 2022. Economic Potential of Battery Metals and Minerals in Sweden (https://www.divaportal.org/smash/record.jsf?pid=diva2%3A1650386&dswid=5876 <sup>2</sup>Pallas Minerals Q3 Report 2022 (https://pallasminerals.com/project-information/)



Sample ID	Prospect	Easting	Northing	Sample type	Rock type	Description
						Pegmatite dyke on northern edge of outcropping
						dyke. Elevated Ta Nb Sn on spot pXRF readings. Low
HÄLL005GS	Halleberget	585494	6984656	Outcrop	Pegmatite	K/Rb
						Tourmaline (5%) muscovite rich pegmatite , elevated
HÄLL010GS	Halleberget	585514	6983515	Outcrop	Pegmatite	Ta Nb Sn on spot pXRF readings, Low K/Rb
						Muscovite rich pegmatite, elevated Ta Nb Sn on spot
HÄLL012GS	Halleberget	585518	6983474	Outcrop	Pegmatite	pXRF readings. Low K/Rb
						Muscovite rich pegmatite, elevated Ta Nb Sn on spot
HÄLL013GS	Halleberget	585582	6983436	Outcrop	Pegmatite	pXRF reading. Low K/Rb
HÄLL014GS	Halleberget	585520	6983347	Outcrop	Pegmatite	Muscovite rich pegmatite, possble trace beryl (0.5%)
HÄLL015GS	Halleberget	585556	6983309	Outcrop	Pegmatite	Muscovite rich pegmatite, possible trace bery (0.5%)
						Muscovite rich pegmatite elevated Nb Sn on spot
HÄLL016GS	Halleberget	585588	6983273	Outcrop	Pegmatite	pXRF readings. Low K/Rb
						Tourmaline (2%) muscovite, quartz pegmatite
HÄLL017GS	Halleberget	585610	6983218	Outcrop	Pegmatite	elevated Ta Nb Sn on spot pXRF readings. Low K/Rb
						Muscovite rich pegmatite, possible trace beryl (0.5%),
HÄLL019GS	Halleberget	585705	6983310	Outcrop	Pegmatite	elevated Nb Sn on spot pXRF readings. Low K/Rb
						5m thick muscovite rich pegmatite, possible trace
						beryl (0.5%), elevated Ta Nb Sn on spot pXRF readings.
HÄLL020GS	Halleberget	587017	6982905	Outcrop	Pegmatite	Low K/Rb
						60cm thick muscovite rich pegmatite with lowish K/Rb
BERGS03	Bergom	676855	7017666	Outcrop	Pegmatite	ratio with XRF
						Pegmatite outcrop, muscovite rich and possible trace
						green beryl (0.5%), elevated Ta Nb Sn on spot pXRF
BERGS05	Bergom	672502	7015206	Outcrop	Pegmatite	readings. Low K/Rb
						Muscovite rich pegmatite, possible trace bery (0.5%),
BERGS06	Bergom	672336	7015306	Outcrop	Pegmatite	elevated Nb Sn on spot pXRF readings. Low K/Rb
						Fine grained pegmatite with feldspar, albite, elevated
BERGS07	Bergom	672338	7015309	Outcrop	Pegmatite	Nb Sn on spot pXRF readings. Low K/Rb
						Muscovite rich pegmatite, 1% tourmaline, elevated Ta
BERGS08	Bergom	672472	7015284	Outcrop	Boulder	Nb Sn on spot pXRF readings. Low K/Rb
						Muscovite rich pegmatite, possible trace bery (0.5%)
						1.5m thick dyke, elevated Ta Sn on spot pXRF
BERGS09	Bergom	672753	7015568	Outcrop	Pegmatite	readings. Low K/Rb

**Table 1:** Rock sample descriptions by Ragnar Metals from a field visit

### Table 2: Ragnar Metals Sweden Project Tenement Details

Name	License ID	RAG Ownership	Area Ha	Expiry Date
Gruvhagen nr 1	2023 38	100%	1612.54	23/03/2026
Olserum North	2023 55	100%	2082.61	25/04/2026
Bergom nr 2	2023 35	100%	2767.31	20/03/2026
Bergom nr 3	Application	100%	4773.74	
Hälleberget nr 1	2023 36	100%	2110.45	20/03/2026
Hälleberget nr 2	Application	100%	3152.4	
Total Area			16499.05	

For the purpose of ASX Listing Rule 15.5, the Board has authorised this announcement to be released.

For further enquiries, contact:

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# **Competent Person Statement**

The information in this announcement relating to exploration results, geology and planning is based on information compiled by Leo Horn of All Terrain Geology, a consultant to Ragnar Metals and a member of The Australasian Institute of Geoscientists. Mr Horn has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves".

Mr Horn consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

END



## APPENDIX 1 JORC TABLE 1 - JORC CODE, 2012 EDITION - TABLE 1

# **Section 1 Sampling Techniques and Data**

# (Criteria in this section apply to all succeeding sections.)

	in this section apply to all succeeding sections.			
Criteria	JORC Code explanation	Commentary		
Samplin techniq		<ul> <li>Spot readings completed taken on muscovite mica minerals with handheld Bruker XRF in order to establish elevated pathfinder metals for LCT pegmatite pathfinder metals such as Rb, Nb, Ta and Sn.</li> <li>No drilling reported in this announcement.</li> <li>pXRF not subject to daily calibration standards</li> </ul>		
	<ul> <li>systems used.</li> <li>Aspects of the determination of mineralisation that are material to the Public Report.</li> </ul>	<ul> <li>a guide only.</li> <li>No drilling reported in this announcement.</li> </ul>		
	<ul> <li>In cases where 'industry standard' work has been done this would be relatively simple (e.g 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusua commodities or mineralisation types (e.g submarine nodules) may warrant disclosure of detailed information</li> </ul>			
Drilling techniqu	Drill type (e.g. core, reverse circulation, open	, , , , , , , , , , , , , , , , , , ,		
Drill sample recover	<ul> <li>Method of recording and assessing core and chip sample recoveries and results assessed</li> </ul>			
Logging		<ul> <li>Simple mineralogical descriptions are recorded for each rock sample (as outlined in Table 1) based on the interpreted minerals observed in hand specimen by the recoding geologist.</li> </ul>		



Criteria	a	JC	RC Code explanation	С	ommentary
Sub-			If core, whether cut or sawn and whether		No drilling reported in this announcement.
sampli			quarter, half or all core taken.	٠	Rock sample sizes are suitable for the
technic and sa		٠	If non-core, whether riffled, tube sampled,		reporting of exploration results such as visual
prepara			rotary split, etc and whether sampled wet or dry.		mineral estimates.
propur		•	For all sample types, the nature, quality and		
		-	appropriateness of the sample preparation		
			technique.		
		٠	Quality control procedures adopted for all sub-		
			sampling stages to maximise representivity of		
		•	samples. Measures taken to ensure that the sampling is		
		•	representative of the in-situ material collected,		
			including for instance results for field		
			duplicate/second-half sampling.		
		٠	Whether sample sizes are appropriate to the		
0			grain size of the material being sampled.		
Quality assay (		•	For geophysical tools, spectrometers, handheld XRF instruments, etc, the	٠	No drilling or rock assays reported in this announcement.
and	uutu		parameters used in determining the analysis	•	Handheld Bruker Titan S1 800 Portable XRF
laborat	tory		including instrument make and model, reading		with 50 kV detector tube (reading time 60
tests			times, calibrations factors applied and their		seconds) used as a guide tool only where key
			derivation, etc.		indicator pathfinder metals for (e.g. Rb, Sn, Ta,
2		•	Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external		Nb) are indicated in order to prioritise the submission of rocks samples for assay at a
)			laboratory checks) and whether acceptable		later time.
5			levels of accuracy (i.e. lack of bias) and		
			precision have been established.		
Verifica	ation	٠	The verification of significant intersections by	٠	No drilling reported in this announcement.
of sampli	na		either independent or alternative company personnel.		
and		•	The use of twinned holes.	•	No drilling reported in this announcement.
assayii	ng	•	Documentation of primary data, data entry	٠	No drilling reported in this announcement.
			procedures, data verification, data storage		
)			(physical and electronic) protocols.		No deillion non arte din this anno sur sur sut
Locatio	on of	•	Discuss any adjustment to assay data. Accuracy and quality of surveys used to locate	•	No drilling reported in this announcement. Coordinates for rock sample at Bergom and
data po		•	drill holes (collar and down-hole surveys),	•	Hälleberget were collected using a handheld
			trenches, mine workings and other locations		GPS.
)			used in Mineral Resource estimation.		
_		٠	Specification of the grid system used.	٠	SWEREF99TM.
Data		•	Quality and adequacy of topographic control.	•	No drilling reported in this announcement.
Data spacing	a	•	Data spacing for reporting of Exploration Results.	٠	Rock sampling was conducted where outcrop and boulder samples are available.
and	5	•	Whether the data spacing and distribution is	•	The data is not appropriate for use in
distrib	ution		sufficient to establish the degree of geological		estimating a resource.
			and grade continuity appropriate for the		
			Mineral Resource and Ore Reserve estimation		
		•	procedure(s) and classifications applied. Whether sample compositing has been	•	No sample compositing undertaken.
		-	applied	-	ne cample compositing undertaken.
Orienta	ation	٠	Whether the orientation of sampling achieves	•	The outcrops and boulders were recorded at
of data			unbiased sampling of possible structures and		selected sites, and it is unknown if these results
relation			the extent to which this is known, considering		are biased or unbiased.
geolog structu		•	the deposit type. If the relationship between the drilling		
30000		•	If the relationship between the drilling orientation and the orientation of key		
			mineralised structures is considered to have		
			introduced a sampling bias, this should be		
			assessed and reported if material.		



Criteria	JORC Code explanation	Commentary		
Sample security	• The measures taken to ensure sample security.	<ul> <li>Rock sample security has been adequately maintained by Ragnar.</li> </ul>		
Audits or reviews	<ul> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	• No audits or reviews have been completed.		

# **Section 2 Reporting of Exploration Results**

(Criteria listed in the preceding section also apply to this section.)

j	Criteria	JORC Code explanation	Commentary		
/1 11 y	Mineral tenement and land tenure status	<ul> <li>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</li> <li>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.</li> </ul>	<ul> <li>Exploration Permits Hälleberget nr 1 (2023:36) and Bergom nr 2 (2023:35) are owned 100% by Ragnar Metals. The tenures are located in Bergslagen District within the Municipality of Ornskoldsvik. Both Permits are valid until 20/03/2026.</li> <li>Bergom nr 3 and Hälleberget nr 2 are applications that have been lodged and not yet granted.</li> <li>There are no known impediments to operate in the license areas for early-stage exploration work.</li> </ul>		
こう	Exploration done by other parties	<ul> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	Previous rock assays reported in a previous Ragnar announcement were conducted by LKAB Prospektering in 2019 that are relevant to this announcement.		
	Geology	• Deposit type, geological setting and style of mineralisation.	Pegmatites identified to date on both projects in Sweden are currently interpreted to be similar to the host pegmatites in the Proterozoic-aged Kaustinen Lithium Province deposits in Southern Finland. More work is required to establish the similarities in geological setting.		
	Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of</li> </ul>	<ul> <li>No drilling reported in this announcement.</li> <li>No drilling reported in this announcement.</li> </ul>		
-	Relationship between mineralisation widths and intercept lengths	<ul> <li>metal equivalent values should be clearly stated.</li> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').</li> </ul>	<ul> <li>No metal equivalents are reported.</li> <li>Not applicable – no sample results reported.</li> </ul>		
	Diagrams	<ul> <li>Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported. These should include, but not be limited to a plan view of drill hole collar</li> </ul>	• Appropriate maps and tables are included in the body of the Report.		



Criteria	JORC Code explanation	Commentary
Balanced	<ul> <li>locations and appropriate sectional views.</li> <li>Where comprehensive reporting of all</li> </ul>	No drilling reported in this appauragement
reporting	<ul> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	
Other substantive exploration data	<ul> <li>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul>	
Further work	<ul> <li>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	• Further work is described in the body of this announcement.