



ESSENTIAL METALS

for a sustainable future

ASX Code: ESS

Corporate Profile

Shares on issue: 243,092,268
Cash: \$9m (31 Dec 2021)
Debt: Nil

KEY PROJECTS

LITHIUM Pioneer Dome
GOLD Golden Ridge
GOLD Juglah Dome

Joint Ventures (ESS %)

2 x nickel projects (20-25%)*
4 x gold projects (25-30%)*
* Free carried to a decision to mine

Corporate Directory

Non-Executive Chairman
Craig McGown

Non-Executive Directors
Paul Payne
Warren Hallam

Managing Director
Timothy Spencer

CFO & Company Secretary
Carl Travaglini

Exploration Manager
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AMENDED: Please note that the exploration results included in the section 'Acra Gold Joint Venture' beginning on Page 8 are newly reported results as they were not considered sufficiently material to be reported separately when they were received from the Joint Venture partner.

18 February 2022

DECEMBER 2021 QUARTERLY REPORT

Pioneer Dome Lithium Project continues to advance with strong results from Dome North, more lithium targets, new drilling programmes underway and advancements made towards project development.

HIGHLIGHTS

- **Pioneer Dome Lithium Project, WA:** Key operational activities during the Quarter were:
 - Receipt and analysis of assay results from the 5,934m Reverse Circulation (RC) drill programme completed at Dome North in August. The best results came from four RC holes drilled into the upper portion of the Cade Deposit:
 - **21m @ 1.08% Li₂O from surface** (PDRC589)
 - **24m @ 1.29% Li₂O from surface** (PDRC590)
 - **15m @ 1.06% Li₂O from 47m** (PDRC591)
 - **26m @ 1.46% Li₂O from 51m** (PDRC592)
 - 13-hole diamond drill programme commenced in December, targeting near-surface mineralisation (oxide/transition) at the Cade and Davy deposits to obtain samples for bulk density measurements and for confirmatory metallurgical test work.
 - Baseline environmental survey completed as part of a range of activities currently underway to prepare Dome North for development.
- **Corporate:** The Company's 51% interest in the non-core, early-stage Mavis Lake exploration asset located in Canada was divested to Critical Resources Limited (ASX: CRR) for \$0.75M in cash (50% withheld for Canadian tax purposes) and 34 million listed CRR ordinary shares.
- **Closing cash** on hand as at 31 December 2021 was \$9 million.



PIONEER DOME LITHIUM PROJECT

The Pioneer Dome Project (ESS: 100%) is located in the heart of Western Australia's lithium corridor in the Eastern Goldfields, approximately 130km south of Kalgoorlie and 275km north of the Port of Esperance. A Mineral Resource of 11.2Mt @ 1.21% Li₂O¹ has been defined at Dome North in the northern area of the Project.

The southern Yilgarn area is recognised as being well-endowed with spodumene deposits, including the Bald Hill Mine, the Mt Marion Mine and the Buldania Project. The world-class Greenbushes Deposit, the Mt Holland Mine and the Mt Cattlin Mine are located further west, south-west and south-south-west, respectively.

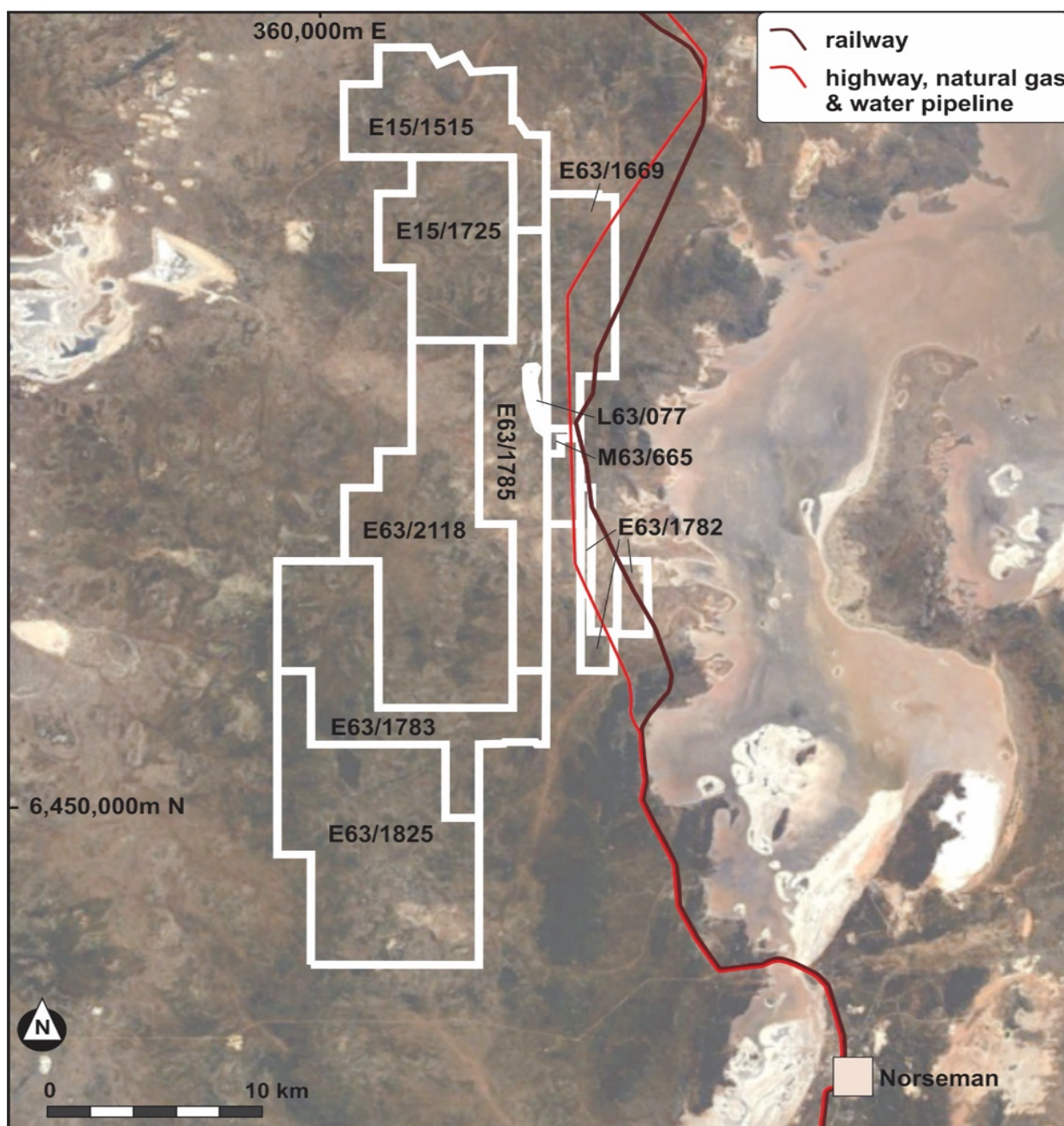


Figure 1 - The location of the tenements of the Pioneer Dome Lithium Project relative to major infrastructure.

¹ Refer ASX:ESS announcement 29 September 2020 – Dome North Resource upgrade

RC DRILL PROGRAMME RESULTS

All assays from the slim-line Reverse Circulation (RC) drill programme completed in late August were received and reported in ASX announcements released on 15 October and 3 November.

The 5,934m RC drill programme was undertaken to test areas with potential for the discovery of additional spodumene-bearing pegmatites which could add to the currently defined Mineral Resource at Dome North and to test the upper zone of the Cade Deposit.

As announced on 15 October², four RC holes drilled in the upper zone of the Cade Deposit returned broad high-grade intercepts, with highlights of:

- **21m @ 1.08% Li₂O from surface** (PDRC589)
- **24m @ 1.29% Li₂O from surface** (PDRC590)
- **15m @ 1.06% Li₂O from 47m** (PDRC591)
- **26m @ 1.46% Li₂O from 51m** (PDRC592)

Also, hole PDRC519, located at the southern end of the Davy deposit, returned encouraging assays of:

- **7m @ 1.02% Li₂O from 21m**, including 3m @ 1.44% Li₂O; and
- **9m @ 0.62% Li₂O from 42m**

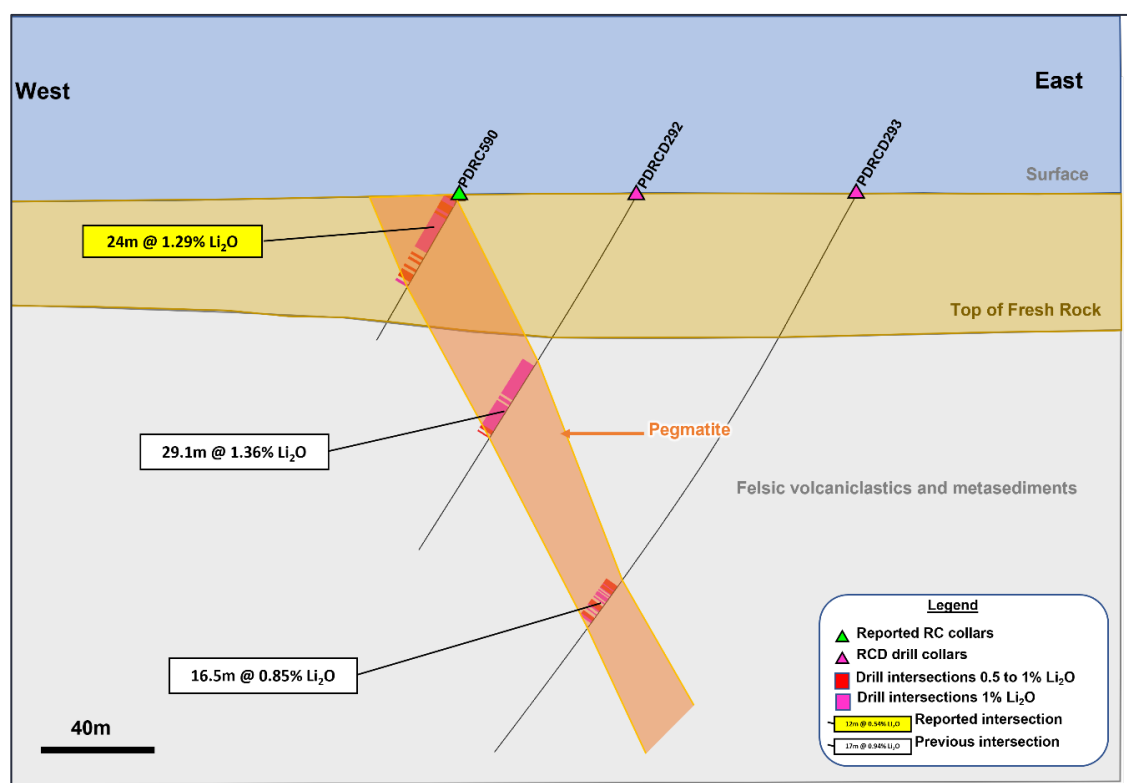


Figure 2 – Cross-section showing drill hole PDRC590 and previously drilled holes on the same section.

² Refer ASX:ESS announcement 15 October 2021 – High grade assay results from Cade Deposit

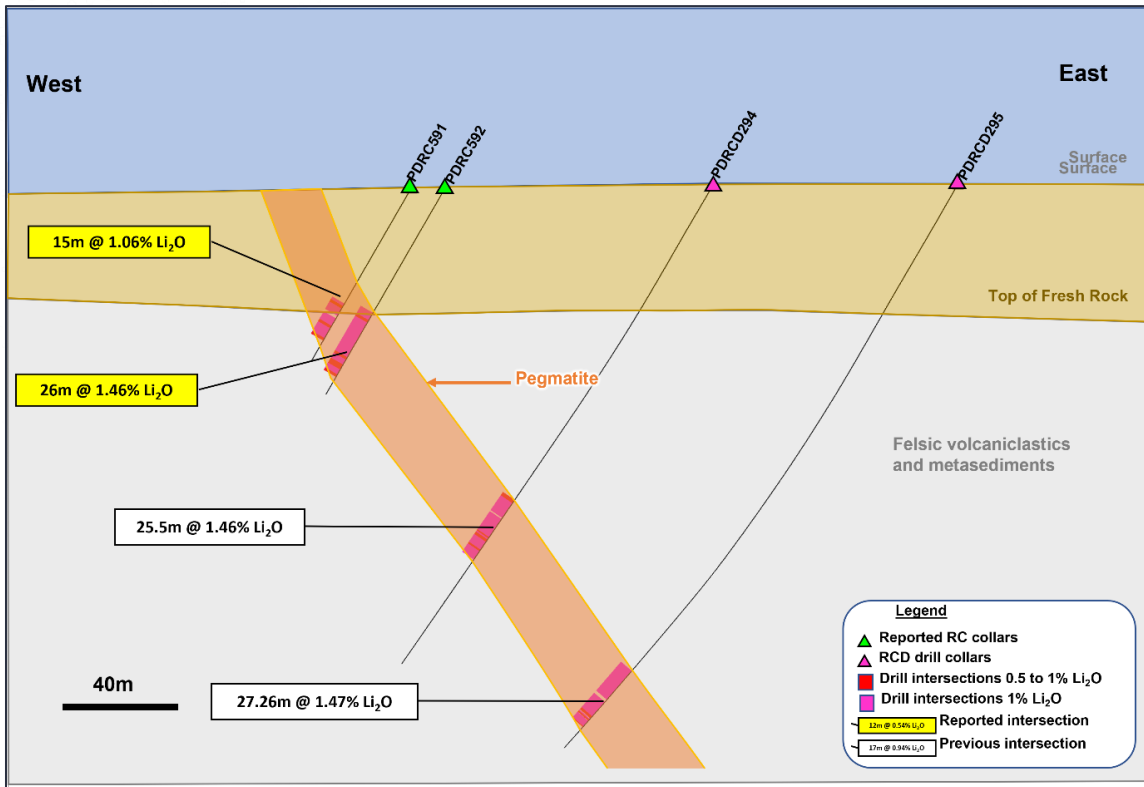


Figure 3 – Cross-section showing drill holes PDR591 and PDR592 and previously drilled holes on the same section.

Other than those outlined above, no other significant intersections (>0.5% Li₂O) were returned, however encouraging geochemical results were returned from Heller North (PDR543 & 44) as well as the 'Davy to Cade' (PDR571 to PDR575) area, both of which required further investigation.

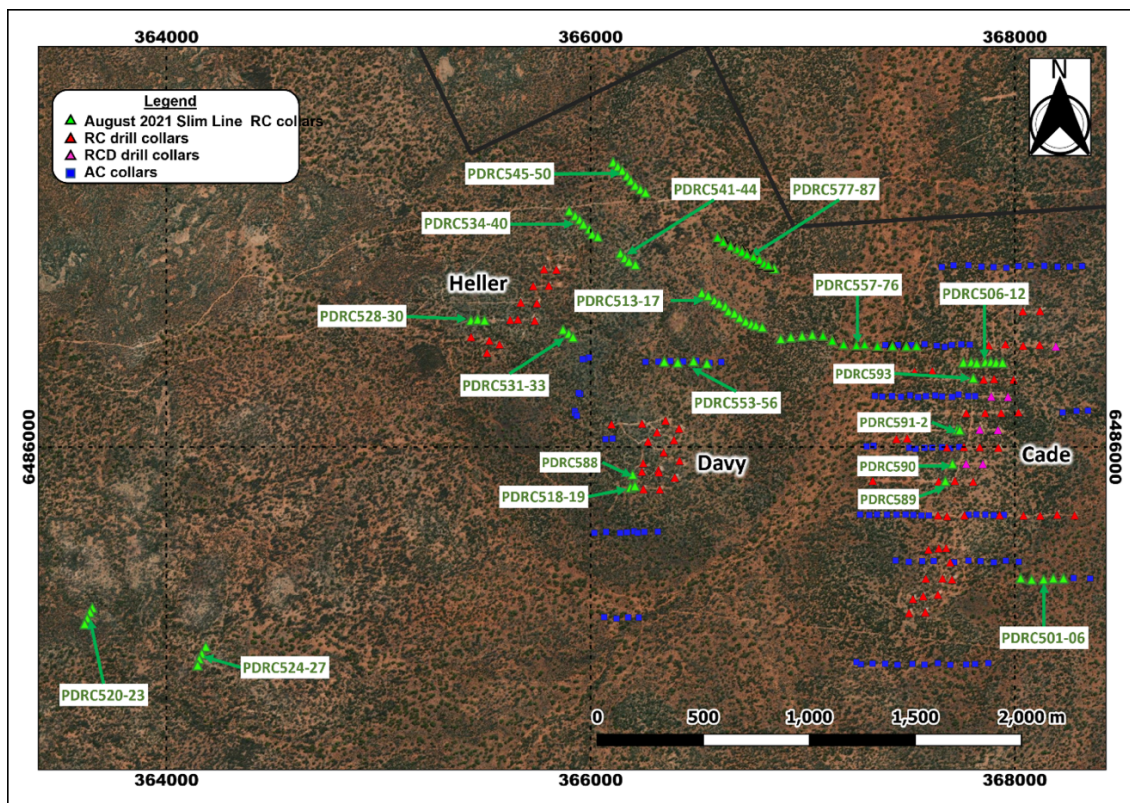


Figure 4 – Dome North LCT drilling (see legend).

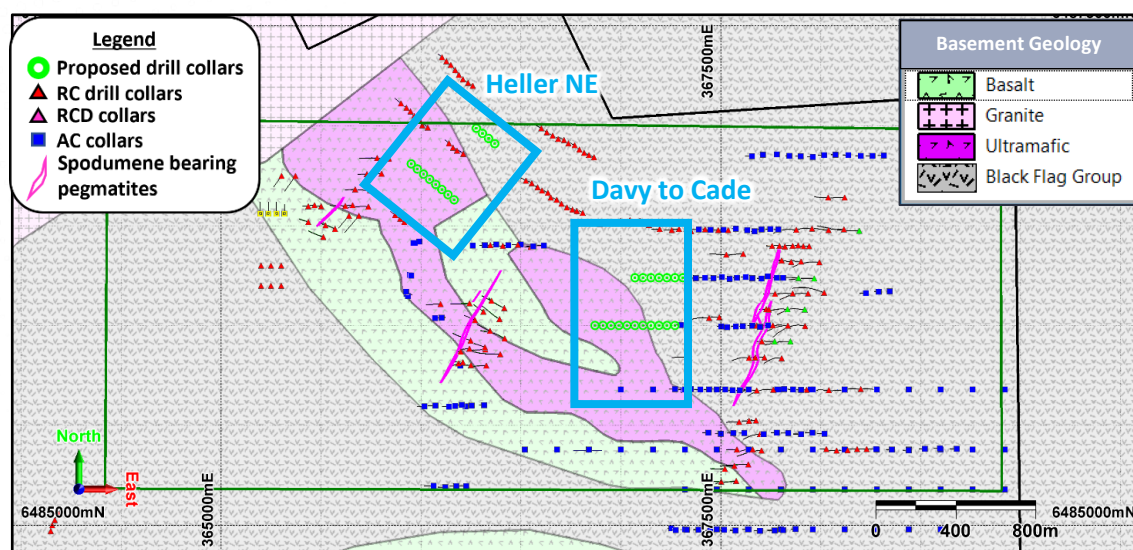


Figure 5 – Dome North proposed drilling (green circles), surface projection of MRE (magenta outlines) and previous drilling (see legend) on top of the interpreted geology.

STEPS TOWARDS DEVELOPMENT READY

As part of its strategy to become a new force in the lithium supply chain, Essential took several key steps during the Quarter to advance the Pioneer Dome Lithium Project to a ‘development-ready’ status.

The Company has engaged Primero, a leading integrated engineering group, to develop order of magnitude (OOM) capital and operating cost estimates for two plant flowsheet options, processing 1.6 million tonnes per annum of spodumene ore:

- Option 1 – Whole of Ore Flotation (WOF)
- Option 2 – DMS and flotation (Hybrid)

The costs were collated from Primero’s database and factored as required with an order of magnitude accuracy of +/-35%. The scope of costs considered only related to the process plant, from the run-of-mine to concentrate stockpile and TSF discharge. Items such as bulk earth works, NPI, power and water supply were not included in the CAPEX estimate.

The evaluation will assist Essential in understanding the economic thresholds of a stand-alone lithium concentrate operation. The results of the evaluation will be incorporated into a Scoping Study, expected to commence by mid-year, pending assays from the current drill programmes and results from further metallurgical test work.

Botanica Consulting, a Kalgoorlie-based environmental consultancy, conducted a springtime **flora and fauna survey** to assist with the coordination of the baseline studies required to secure regulatory approvals and licences. The final report is expected in February, however Botanica has already advised that no particularly sensitive flora or fauna were identified during the survey.

Lastly, a hydrology study was underway during the Quarter with the final report expected in February.



A meeting was held in December with representatives of Ngadju Native Title Aboriginal Corporation (NNTAC), the body representing the Ngadju People, who are the custodians of the land on which the Pioneer Dome Project is located, to provide an update on the Company's activities including preparations underway to be development ready. A Mining and Heritage Agreement is already in place with the NNTAC covering the Pioneer Dome Project.

OTHER EXPLORATION ACTIVITIES

An air-core drilling programme commenced in late December to test early-stage targets located in the southern area of the Pioneer Dome Project, before moving onto the Dome North area to test two targets in and around the Dome North lithium Mineral Resource in January.

The southern tenement drilling was conducted across various lithium, gold and nickel targets on tenements E63/1782, E63/1783, E63/1785 & E63/1825, all due for renewal within the next 5 months. A total of 42 AC holes had been drilled by the end of December on E63/1783 and E63/1825 for 1,447m.

Of the 42 holes completed, nine holes intersected a quartz-rich pegmatite, with the Company's geologists noting that spodumene was not visible in any of the pegmatite intersections. Drilling re-commenced in mid-January with a plan to drill a further 21 AC holes.

Review of LCT potential

An independent lithium-focused exploration consultant was engaged to review the current exploration data within tenement E15/1515 (where the Dome North lithium Mineral Resource is located). This will involve reviewing the Company's data, WAMEX and open file data sources.

The primary focus of the review is on the extensive surface sampling dataset and the application of a Fertility Index to define targets using all available data.

The findings of this review are expected during the March Quarter.



GOLDEN RIDGE GOLD PROJECT

The Golden Ridge Gold Project (ESS: 100% Au) is located 20km south-east of Kalgoorlie and is highly prospective for gold and nickel mineralisation. The Project lies within the well-endowed Menzies-Boorara Shear Zone that hosts the Paddington, Boorara and Golden Ridge Deposits. Exploration at the Project has identified multiple highly prospective gold and nickel targets.

A review of the April 2021 AC drilling was carried out at the Golden Ridge Project to gain a greater understanding of the gold potential of the three targets tested, namely AC75 (Refer Figure 6), Skandia and Maximus. The review indicated that there was a lack of other elements associated with the gold mineralisation intersected and the gold-in-soil anomalies appear to be associated with thin transported cover with elevated gold levels. However, the Skandia target and the AC75 western anomalism warrant further drill testing.

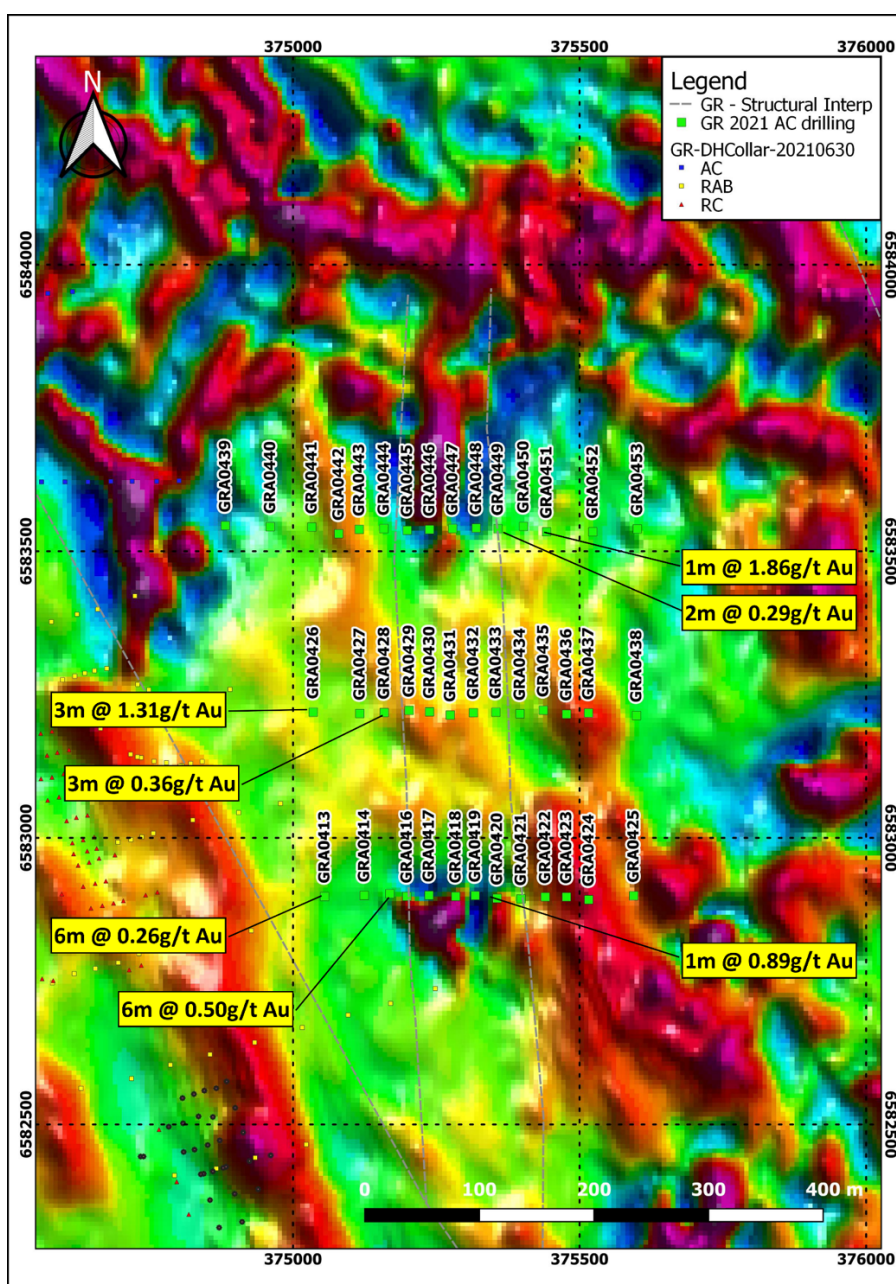


Figure 6 - Significant gold anomalism in AC drilling from the AC75 target.



JUGLAH DOME GOLD PROJECT

The Juglah Dome Project (ESS: 100%) is located ~60km east-southeast of Kalgoorlie and is highly prospective for gold mineralisation. Exploration by previous owners identified multiple gold targets using soil geochemistry and drilling. The Project lies in a similar geological setting to the Majestic and Imperial Deposits, located 10km to the north-west, and the Daisy Complex to the west, which forms part of Silver Lake Resources Limited's Mt Monger Operations.

Detailed geological interpretation was completed on previous holes at Juglah Dome with the objective of understanding the extension of the Gards felsic porphyry beneath transported cover to the south-east.

An RC drill programme has been planned for the March Quarter to test the extension to the south-east and follow up on anomalism intersected in the previous AC drilling.

JOINT VENTURE INTERESTS

Essential Metals has a portfolio of minority (20%-30%) free-carried interests in four gold and two nickel joint ventures located in Western Australia.

Acra Gold Joint Venture Eastern Goldfields WA

ESS 25% - Northern Star Resources Limited (ASX: NST) 75%

RC drilling was completed at the Gambia South prospect, located 2km south of Horizon Minerals' Gambia open pit and 49km south-west of the Carosue Dam mill. Mineralisation along the Gambia trend is associated with multiple flat-lying stacked lodes hosted within a north-west trending gabbro unit.

The target area is covered by shallow drainage material such that previous soil sampling has been deemed ineffective. Limited shallow RAB drilling has returned anomalous EOH results of up to 0.9 g/t Au (KPAC042), defining two 200m x 200m target areas which correlate to small-scale subtle breaks in the magnetics.

A total of 12 RC drill holes were completed for a total of 1,308m over the identified target areas. All drilling intersected the favourable gabbro host unit with drill-hole ACEX003 intersecting a 7m-wide zone of bleached silica-carbonate +-pyrite alteration, comparable to the mineralisation style at the main Gambia deposit. The oxide profile averaged 60-65 metres down-hole depth.

One-metre samples for the anomalous 4m composite intercepts were submitted. Results were received in December and included a best result of 16m @ 1.98 g/t Au from 38m including 1m @ 24.3 g/t Au from 40m in ACEX002. ACEX005 returned 3m @ 2.56 g/t Au from 46m approximately 250m to the south (Figure 1).

The RC drilling has confirmed the presence of significant bedrock mineralisation over a 350m strike length. Drilling is being planned to follow up these encouraging early-stage results and is scheduled to commence by April 2022.



TABLE 1 - Significant RC drill results reported for the Gambia South area

All results reported are from 1m sample split intervals above a 0.5 g/t cut-off.

Hole ID	East (MGA)	North (MGA)	RL (MGA)	Dip	Azi (MGA)	From	To	Width (m)	Grade g/t Au
ACEX002	399643	6634188	365	-65	250	38	54	16	1.98
					incl	40	41	1	24.3
ACEX003	399725	6634188	364	-65	250	40	41	1	0.81
ACEX005	399773	6633959	363	-55	250	46	49	3	2.56
						56	57	1	1.31
ACEX007	399747	6633708	362	-65	250	26	27	1	0.89
						42	48	7	0.93
ACEX008	399822	6633736	362	-65	250	46	47	1	0.85
ACEX009	399896	6633763	362	-65	250	59	60	1	0.60
ACEX010	400035	6633309	360	-65	250	110	111	1	0.69
ACEX011	400102	6633358	361	-65	250	30	31	1	1.56
						103	104	1	0.58
ACEX012	400175	6633389	361	-65	250	90	91	1	0.78
						106	108	2	1.51

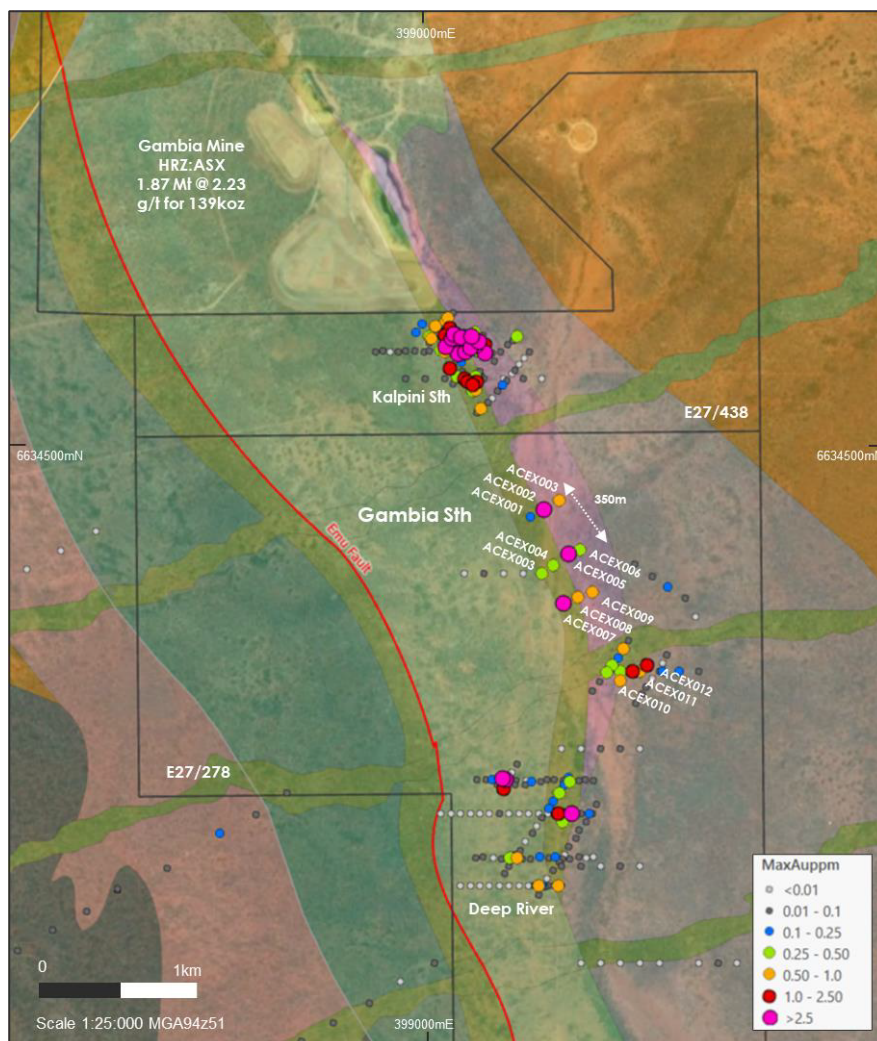


Figure 7 - Map showing the location of Gambia South RC drilling, the status of results, geology and interpreted mineralised structures



Blair – Golden Ridge Nickel Joint Venture Eastern Goldfields WA (nickel rights only)

ESS 100% reducing to 25% - Australian Nickel Co. Ltd (renamed from Crest Investment Group 1 Ltd) earning 75% (farm-in stage)

The key focus of JV partner, Australian Nickel Co. has been on identifying and capturing all relevant geological, resource and mining data. The Blair Nickel Mine has now been reconstructed from surface to approximately 100m depth where mining ceased in 2009. This evaluation has highlighted a series of high priority targets that will now go through a detailed assessment.

The main activities undertaken during the Quarter were as follows:

- Planning for initial programs of drilling and the submission of programs of work (POW's). This work will be focused on the immediate Blair Mine environment, Leo Dam and Blair South targets and a drill programme is planned for commencement during the March Quarter.
- Re-build of lower part of the Blair resource to better understand tonnes per vertical metre. This will support decision making on any future drill testing of the Blair Deeps mineralisation.
- High-level cost assessment to rehabilitate the underground infrastructure.
- Continued integration of drilling and geophysical data from the immediate extensions surrounding Blair.
- Review of electromagnetic data (EM) and some check geological logging of historical drilling at Leo Dam prior to drill planning.

Balagundi Gold/Base Metals Joint Venture Eastern Goldfields WA

ESS 100% reducing to 25% - Black Cat Syndicate Limited (ASX: BC8) earning 75% (farm-in stage)

The Balagundi Project is located 25km east of Kalgoorlie and sits immediately adjacent to the north-west portion of the Myhree Mining Centre within the Kurnalpi Terrane, which is separated from the Myhree Mining Centre by the Victory Fault (a second order regional structure). The project is prospective for both gold and base metal VMS-style deposits.

Essential Metals and Black Cat entered into the Farm-in and Joint Venture in July 2019.

In November, Black Cat received confirmation of Exploration Incentive Scheme funding of up to \$147,000 towards a diamond drilling programme at Balagundi. The drilling will be undertaken in the March Quarter, pending interpretation of a moving loop electromagnetic (MLEM) survey undertaken in September, targeting the Brontes, Asterope and Anvil prospects.

Wattle Dam Nickel Joint Venture Eastern Goldfields WA (nickel rights only)

ESS 20% - Maximus Resources Limited (ASX: MXR) 80%

Exploration activity by the JV operator, Maximus Resources Limited (Maximus), focused on the Hilditch West and Central prospects during the Quarter.

Hilditch West: A 531m diamond drill hole was completed, designed to intersect a coincident peak magnetic response and the centre of an Electromagnetic (EM) conductive target plate at approximately 420m down-hole (~340m from surface), which was generated from an EM survey carried out in the June Quarter.



Within the completed hole, repetitive intervals of komatiite flows were identified with minor disseminated sulphides observed. A narrow massive sulphide unit was intersected from 124m with a pyrite + magnetite + pyrrhotite + chalcopyrite assemblage, interpreted as an interflow sediment unit. A ~6m interval of disseminated native copper in chlorite-rich veinlets was observed from 255m and a wide biotite + garnet + disseminated sulphide altered shear zone was observed at the base of the komatiite package from 463m to 501m.³

Central Nickel Prospect: A large-scale ground-based fixed loop electromagnetic (EM) geophysical survey was completed across the Central prospect area, which has identified two shallow late-time conductors between Estrella Resources Limited's historical Andrews Shaft, 5A and 1A Nickel Mines.

Planning has commenced on an initial reconnaissance drill programme to test the 2200N and Sully targets.⁴

Larkinville Joint Venture Eastern Goldfields WA

ESS 25% - Maximus Resources Limited (ASX: MXR) 75%

During the quarter, a small reconnaissance Deep Ground Penetrating Radar (DGPR) survey was executed over the eastern half of the Larkinville tenement. The survey comprised 300m spaced east-west lines (5.8 km in total) and was primarily aimed at detecting topology of the base-of-oxidation profile which may indicate faults and/or shear-zones in close proximity to the structurally controlled Larkinville Gold deposit.

The survey was also designed to assess for pegmatites as observed outcropping elsewhere on this tenement. Results for the survey are being assessed and interpreted.

Kangan Gold Joint Venture Pilbara, WA

ESS 30% - Novo Resources Limited & Sumitomo Corporation 70%

The Kangan Project is located in the West Pilbara region of Western Australia. Under the farm-in & JV agreement with Novo Resources Corp and Sumitomo Corporation signed in June 2019, those parties now hold a 70% interest in the Project with Essential Metals retaining a 30% interest. Novo and Sumitomo will jointly fully fund gold exploration programmes, with Essential Metals free-carried until a decision to mine is made.

No reportable activities for the Quarter.

³ Refer ASX:MXR announcement 24 November 2021 – Exploration Update Hilditch West

⁴ Refer ASX:MXR announcement 23 November 2021 – Central Nickel Prospect – Priority Conductors Identified



CORPORATE

As at 31 December 2021, the Company held **\$9 million in cash reserves** and had no debt.

During the quarter, the Company received \$400,000 from Australian Nickel Company as a milestone payment in accordance with the Blair – Golden Ridge Nickel Farm-in/Joint Venture.

During the quarter, the Company paid a total of A\$122,000 to related parties, comprising all directors of the Company (Managing Director salary, non-executive director fees and superannuation). (Appendix 5B, Item 6).

Post Quarter: On 4 January, the Company received \$375,000 in cash and 34 million fully paid ordinary listed shares (no escrow) from Critical Resources Limited (ASX: CRR) to complete the Mavis Lake Project divestment. \$375,000 cash has also been remitted to a trustee to cover withholding tax due on the profit arising on the sale of the interest in PCLC. The Company is awaiting a preliminary assessment from the Canadian Tax Authority on how much withholding tax is to be remitted to it by Critical Resources on behalf of Essential.⁵

The Critical Resources share price was \$0.096 at close of trading on 26 January, valuing the 34 million shares at \$3.3 million.

This ASX release has been approved by the Board of Directors

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References to ASX announcements:

- 14 January 2022 – Pioneer Dome Lithium Project update
- 3 November 2021 – Dome North drill programme to commence
- 25 October 2021 – Sale of Mavis Lake Lithium JV interest
- 15 October 2021 – High grade assay results from Cade Deposit
- 28 September 2021 – Pioneer Dome Lithium Project update

The Company confirms that it is not aware of any new information or data that materially affects the information included in the previous market announcements and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.

⁵ Refer ASX:ESS announcement 25 October 2021 – Sale of Mavis Lake Lithium JV interest



ABOUT ESSENTIAL METALS LIMITED

Essential Metals is a well-funded and active explorer focused on key global demand-driven commodities, focussed on the creation of shareholder wealth through exploration and project development. The Company operates **three strategically located lithium and gold projects** in Western Australia.

100% OWNED AND MANAGED PROJECTS:

- **LITHIUM:** The **Pioneer Dome LCT Project** is highly prospective for lithium-caesium-tantalum (LCT) mineral systems and includes the **Dome North Lithium Mineral Resource** of 11.2 million tonnes @ 1.21% Li₂O.⁶
- **GOLD:** The **Juglah Dome Project** is located 60km east-southeast of Kalgoorlie and is considered to be highly prospective for gold and has potential for VHMS style polymetallic deposits.
- **GOLD:** The **Golden Ridge Project** is located ~20km SSE of Kalgoorlie, WA. Our activities are focussed on reappraising known prospects as well as identifying new areas within the large land tenure.

JOINT VENTURE INTERESTS:

- **GOLD:** The **Acra** Project is near Kalgoorlie. Northern Star Resources Limited (ASX: NST) has earned a 75% Project Interest and continues to fully fund exploration programmes until approval of a Mining Proposal by DMIRS is received with Essential Metals holding a 25% interest.
- **GOLD:** The **Kangan** Project is in the West Pilbara and part of a joint venture with Novo Resources Corp (TSXV.NVO) and Sumitomo Corporation (TYO:8053), who will jointly fund 100% of gold exploration programmes until a decision to mine is made, with Essential Metals holding a 30% interest.
- **GOLD:** The **Balagundi** Project is subject to a farmin & JV agreement where Black Cat Syndicate Limited (ASX: BC8) is earning a 75% interest in the Project located at Bulong, near Kalgoorlie. Black Cat will then fully fund gold exploration programmes until a decision to mine is made, with Essential Metals retaining a 25% interest.
- **GOLD:** The Company holds a 25% free-carried interest (gold only) in the **Larkinville** Project near Kambalda, WA, with Maximus Resources Ltd (ASX: MXR).
- **NICKEL:** The nickel mineral rights on the **Blair-Golden Ridge** Project, which includes the suspended Blair Nickel Sulphide Mine. are subject to a Farmin/Joint Venture with Crest Investment Group, a nickel exploration specialist which is earning up to a 75% interest. The Company will retain a 25% free-carried interest up to a decision to mine.
- **NICKEL:** The Company holds a 20% free-carried interest (nickel only) in the **Wattle Dam** project near Kambalda, WA, with Maximus Resources Ltd (ASX: MXR).

⁶ Refer ASX:ESS announcement 29 September 2020 – Dome North Resource upgrade



Forward Looking Statements

This document may contain forward-looking statements which involve a number of risks and uncertainties. These forward looking statements are expressed in good faith and believed to have a reasonable basis. These statements reflect current expectations, intentions or strategies regarding the future and assumptions based on currently available information. Should one or more of the risks or uncertainties materialise, or should underlying assumptions prove incorrect, actual results may vary from the expectations, intentions and strategies described in this announcement. No obligation is assumed to update forward looking statements if these beliefs, opinions, and estimates should change or to reflect other future developments.

Exploration Results (ESS Projects) – Competent Person Statement

Mr Andrew Dunn (MAIG), Exploration Manager who is employed full-time by Essential Metals Limited, compiled the technical aspects of this Report, other than pertaining to the Joint Ventures. Mr Dunn is eligible to receive equity-based securities in Essential Metals Limited under the Company's employee incentive schemes. Mr Dunn is a member of the Australian Institute of Geoscientists and has sufficient experience that is relevant to this style of mineralization and type of deposit under consideration and to the activity that is being reported on 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 Dunn consents to the inclusion in the report of the matters in the form and context in which it appears.

Acra Gold Project Joint Venture – Exploration Work – Competent Person Statement

The information in this announcement that relates to exploration results for the Acra Project Joint Venture is based on information compiled by Michael Mulrone, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy and a full-time employee of Northern Star Resources Limited. Mr Mulrone has sufficient experience that is relevant to the styles of mineralisation and type of deposits under consideration and to the activity being undertaken 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" for the Company's Acra Project Joint Venture. Mr Mulrone consents to the inclusion in this announcement of the matters based on this information in the form and context in which it appears.

Exploration Results (Wattle Dam and Larkinville Joint Ventures) – Competent Person Statement

The information in this report pertaining to the Wattle Dam Nickel JV and the Larkinville JV is based on information reviewed, collated and compiled by Dr Travis Murphy, a full-time employee of Maximus Resources Limited. Dr Murphy is a professional geoscientist and Member of The Australian Institute of Geoscientists and has sufficient experience relevant to the style of mineralisation and type of Deposit under consideration and to the activity which has been undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Dr Murphy consents to the inclusion in the report of the matters based on information in the form and context in which it appears.



Appendix 1

The following information is provided in accordance with ASX Listing Rule 5.3 for the Quarter.

1. Listing of Tenements (Consolidated Basis) as at Quarter End

Tenement	Holder	Notes	Status
Pioneer Dome Project Located 133km SSE of Kalgoorlie, WA			
E15/1515	Essential Metals Limited		Granted
E15/1725	Essential Metals Limited		Under application
E63/1669	Essential Metals Limited		Granted
E63/1782	Essential Metals Limited		Granted
E63/1783	Essential Metals Limited		Granted
E63/1785	Essential Metals Limited		Granted
E63/1825	Essential Metals Limited		Granted
E63/2118	Essential Metals Limited		Under application
L63/77	Essential Metals Limited		Granted
M63/665	Essential Metals Limited		Granted
Golden Ridge Nickel Project Located 30km SE of Kalgoorlie, WA			
E26/186	Golden Ridge North Kambalda Pty Ltd	1, 2	Granted
E26/211	Golden Ridge North Kambalda Pty Ltd	1, 2	Granted
E26/212	Golden Ridge North Kambalda Pty Ltd	1, 2	Granted
M26/220	Golden Ridge North Kambalda Pty Ltd	1, 2	Granted
M26/222	Golden Ridge North Kambalda Pty Ltd	1, 2	Granted
M26/284	Golden Ridge North Kambalda Pty Ltd	1, 2	Granted
M26/285	Golden Ridge North Kambalda Pty Ltd	1, 2	Granted
L26/272	Golden Ridge North Kambalda Pty Ltd	1, 2	Granted
Juglah Dome Project Located 60km ESE of Kalgoorlie, WA			
E25/585	Western Copper Pty Ltd	3	Granted
Regional Projects, Located in WA			
E15/1710	Essential Metals Limited		Granted
E15/1522	Essential Metals Limited		Granted
Kangan Lithium & Gold Project Located 80km S of Port Hedland, (Wodgina) WA			
E45/4948	Essential Metals Limited	5	Granted
E47/3318-I	Essential Metals Limited	4, 5	Granted
E47/3321-I	Essential Metals Limited	4, 5	Granted
E47/3945	Essential Metals Limited	5	Granted
Balagundi Gold & Base Metals Project Located 25km NE of Kalgoorlie, WA			
E27/558	Essential Metals Limited	6	Granted
Mavis Lake Lithium Project, Located 10km East of Dryden, Ontario, Canada			
6 Mining Leases with Surface Rights	Pioneer Canada Lithium Corp 51% International Lithium Corporation 49%	7	Granted
189 Unpatented Mining Claims	Pioneer Canada Lithium Corp 51% International Lithium Corporation 49%	7	Granted



Acra Gold Project Located 60km NE of Kalgoorlie, WA			
E27/278	Essential Metals Limited / Northern Star Resources Limited	8, 9	Granted
E27/438	Essential Metals Limited / Northern Star Resources Limited	8, 9	Granted
E27/491	Essential Metals Limited / Northern Star Resources Limited	9	Granted
E27/520	Essential Metals Limited / Northern Star Resources Limited	8, 9	Granted
E27/548	Essential Metals Limited / Northern Star Resources Limited	9	Granted
E27/579	Essential Metals Limited / Northern Star Resources Limited	8, 9	Granted
E28/1746	Essential Metals Limited / Northern Star Resources Limited	8, 9	Granted
E28/2483	Essential Metals Limited / Northern Star Resources Limited	9	Granted

Tenement	Holder	Notes	Status
Wattle Dam Nickel Project Located 65km S of Kalgoorlie, WA			
M15/1101	Maximus Resources Limited	10, 11	Granted
M15/1263	Maximus Resources Limited	10, 11	Granted
M15/1264	Maximus Resources Limited	10, 11	Granted
M15/1323	Maximus Resources Limited	10, 11	Granted
M15/1338	Maximus Resources Limited	10, 11	Granted
M15/1769	Maximus Resources Limited	10, 11	Granted
M15/1770	Maximus Resources Limited	10, 11	Granted
M15/1771	Maximus Resources Limited	10, 11	Granted
M15/1772	Maximus Resources Limited	10, 11	Granted
M15/1773	Maximus Resources Limited	10, 11	Granted
Larkinville West Gold Project Located 75km S of Kalgoorlie, WA			
M15/1449	Essential Metals Limited / Maximus Resources Limited	12	Granted
P15/5912	Essential Metals Limited / Maximus Resources Limited	12	Granted
Maggie Hays Hill Nickel JV, Located 140km SE of Southern Cross			
E63/1784	Essential Metals Limited / Poseidon Nickel Limited	13	Granted

Note	
1	Golden Ridge North Kambalda Pty Ltd is a 100% owned subsidiary of Essential Metals Limited.
2	Nickel sulphides rights are subject to the Australian Nickel Company Ltd Farmin/Joint venture.
3	Western Copper Pty Ltd is a 100% owned subsidiary of Essential Metals Limited.
4	Subject to a 1.5% NSR royalty right held by FMG Pilbara Pty Ltd.
5	Kangan Gold JV Agreement: Novo Resources Corp holds a 70% Project Interest in gold and precious metals mineral rights.
6	Balagundi Farmin/JV Agreement: Black Cat Syndicate Limited is earning a 75% Project interest.
7	A Joint Venture with International Lithium Corp. The Project was sold to Critical Resources Limited on 4 January 2022.
8	Heron Resources Limited retains nickel laterite ore rights.
9	Acra JV Agreement Northern Star Resources Limited 75% interest. Essential Metals Limited 25% free carried interest.
10	Heron Resources Limited retains pre-emptive right to purchase nickel laterite ore.



11	Wattle Dam Nickel JV Agreement: Title, Mineral Rights held by Maximus Resources Limited. Essential Metals Limited 20% free carried interest in nickel sulphide minerals.
12	Larkinville West JV Agreement: Maximus Resources Limited 75%, Essential Metals Limited 25% free carried interest, except nickel rights which are subject to the Wattle Dam JV.
13	Maggie Hays Lake JV Agreement: Poseidon Nickel Limited 80%, Essential Metals Limited 20% & free carried interest to commencement of mining.

2. Tenements acquired during the Quarter (Consolidated Basis)

None.

3. Tenements sold, relinquished, reduced or lapsed during the Quarter (Consolidated Basis)

None.

4. Tenements applied for during the Quarter (Consolidated Basis)

None.

**Appendix 2 – Acra JV drill information**

Hole ID	Grid	East (MGA)	North (MGA)	RL (MGA)	Dip	Azi (MGA)	EOH
ACEX001	MGA94z51	399574	6634148	365	-65	250	101
ACEX002	MGA94z51	399643	6634188	365	-65	250	100
ACEX003	MGA94z51	399725	6634188	364	-65	250	125
ACEX004	MGA94z51	399691	6633901	363	-65	250	100
ACEX005	MGA94z51	399773	6633959	363	-55	250	100
ACEX006	MGA94z51	399831	6633982	364	-65	250	100
ACEX007	MGA94z51	399747	6633708	362	-65	250	100
ACEX008	MGA94z51	399822	6633736	362	-65	250	100
ACEX009	MGA94z51	399896	6633763	362	-65	250	107
ACEX010	MGA94z51	400035	6633309	360	-65	250	125
ACEX011	MGA94z51	400102	6633358	361	-65	250	125
ACEX012	MGA94z51	400175	6633389	361	-65	250	125
							1,308



Appendix 3

JORC Table 1: Section 1 Sampling Techniques and Data.

(References to all NST drilling to date, including AC, RC and diamond drilling are retained).

Criteria	JORC Code explanation	Commentary
Sampling techniques	Nature and quality of sampling (e.g., cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as downhole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.	Sampling was completed using Reverse circulation (RC) drilling by Orlando. Soils -2mm sieved to 250gram sample. Sample taken at a nominal 300mm depth.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	RC samples were split using a rig-mounted cone splitter on 1m and 4m intervals to obtain a sample for assay. The 4m samples were submitted for assay with 1m splits submitted for >0.5g/t gold composites. Multi-element (ME) samples were taken routinely down hole and submitted for ME analysis.
	Aspects of the determination of mineralisation that are Material to the Public Report. 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 30 g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g., submarine nodules) may warrant disclosure of detailed information.	Samples were taken to BV Kalgoorlie laboratories for preparation by drying, crushing to <3mm, and pulverising the entire sample to <75µm. 300g Pulps splits were used for 50g Fire assay charge and AAS analysis. Soils submitted to LabWest Minerals Analysis in Perth for UFF-PE (Au plus full 50 element suite by ICP-MS/OES)
Drilling techniques	Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g., core diameter, triple or standard tube, depth of diamond tails, face-sampling bit, or other type, whether core is oriented and if so, by what method, etc.).	RC Drilling was completed using a 5.75" drill bit, downsized to 5.25" at depth.
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and results assessed.	Moisture content and sample recovery are recorded for each RC and soil sample.
	Measures were taken to maximise sample recovery and ensure representative nature of the samples.	RC drilling contractors adjust their drilling approach to specific conditions to maximise sample recovery. Moisture content and sample recovery are recorded for each RC sample. No recovery issues were identified during the RC drilling. However, recovery was poor at the very beginning of each hole, as is normal for this type of drilling in overburden.
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	No relationship has been observed between recovery and grade.
Logging	Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.	RC sample chips are logged in 1m intervals. For the entire length of each hole. Regolith, Primary lithology, alteration, veining, and mineralisation are all recorded. Soil sample chips are logged for Regolith +/- Primary lithology.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	All logging is quantitative where possible and qualitative elsewhere.



	The total length and percentage of the relevant intersections logged.	In all instances, the entire drill hole is logged.
Sub-sampling techniques and sample preparation	If core, whether cut or sawn and whether quarter, half or all core taken.	N/A
	If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.	All RC samples are split using a rig-mounted cone splitter to collect either a 4m composite or a 1m sample 3-4kg in size. Moisture content of the sample is recorded and noted if wet samples are obtained.
	For all sample types, the nature, quality, and appropriateness of the sample preparation technique.	RC samples submitted for analysis to Bureau Veritas for sample preparation and analysis in Kalgoorlie and analysis in Perth. Sample preparation commences with sorting, checking, and drying at less than 110°C to prevent sulphide breakdown. Samples are jaw crushed to a nominal 15mm particle size or smaller. If the sample is greater than 3kg a Boyd crusher with rotary splitter is used to reduce the sample size to less than 3kg (typically 1.5kg) at a nominal <3mm particle size. The entire crushed sample (if less than 3kg) or sub-sample is then pulverised to 90% passing 75µm, using a bowl pulveriser. 300g Pulp subsamples are then taken with an aluminium scoop and stored in labelled pulp packets
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Grind checks are performed at both the crushing stage(3mm) and pulverising stage (75µm), requiring 90% of material to pass through the relevant size.
	Measures were taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate/second-half sampling.	Field duplicates were taken for RC samples at a rate of 1 in 20 Field duplicates were taken for soil samples at a rate of 1 in 40
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Sample sizes are considered appropriate.
Quality of assay data and laboratory tests	The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.	A 50g Fire assay charge is used with a lead flux, dissolved in the furnace. The pill is totally digested by HCl and HNO3 acids before Atomic absorption spectroscopy (AAS) determination for gold analysis.
	For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	No geophysical tools were used to determine any element concentrations.
	Nature of quality control procedures adopted (e.g., standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e., lack of bias) and precision have been established.	Certified reference materials (CRMs) are inserted into the sample sequence randomly at a rate of 1 per 20 samples to ensure correct calibration. Any values outside of 3 standard deviations are re- assayed with a new CRM. Blanks are inserted into the sample sequence at a rate of 1 per 20 samples, this is random, except where high-grade mineralisation is expected. Here, a blank is inserted after the high-grade sample to test for contamination. Failures above 0.2g/t are followed up, and re-assayed. New pulps are prepared if failures remain. Field duplicates are taken for all AC/RC samples (1 in 20 samples). No CRM'S were submitted for the soil samples
Verification of sampling and	The verification of significant intersections by either independent or alternative company personnel.	All significant intersections are verified by another Northern Star geologist during the drill hole validation process, and later by a Competent Person to be signed off.
	The use of twinned holes.	No twinned holes were drilled for this dataset.



assaying	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	Geological logging is directly entered into an Acquire database. Assay files are received in CSV format and loaded directly into the database by the project's responsible geologist with an Acquire importer object.
	Discuss any adjustment to assay data.	No adjustments are made to this assay data.
Location of data points	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.	A planned hole is pegged using a hand-held GPS by the geologist. The final collar is picked up after hole completion by Differential GPS in the MGA 94 Zone 51 grid. During drilling, single-shot surveys are taken every 30m as a minimum standard to ensure the hole remains close to design with a further survey taken at the end of hole. A continuous north-seeking gyro tool is used. A more detailed survey (i.e., more survey stations) is generally conducted upon completion of the hole. Results are uploaded to an online server, where they can be downloaded and imported into Northern Star's Acquire database.
	Specification of the grid system used.	Collar coordinates are recorded in MGA94 Zone 51.
	Quality and adequacy of topographic control.	The Differential GPS returns reliable elevation data with an appropriate level of precision for resource drilling. Garmin GPS was used to locate the soils samples +/-1m
Data spacing and distribution	Data spacing for reporting of Exploration Results.	Drillhole spacing is variable and dependent on the interpreted geometries of geology and mineralisation at individual prospects.
	Whether the data spacing, and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	Only exploration results are being reported.
	Whether sample compositing has been applied.	No compositing has been applied to these exploration results (except RC samples that are already in 4m composites), although composite intersections are reported.
Orientation of data in relation to geological structure	Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.	All drilling was oriented as close to perpendicular as practicable to the interpretation of mineralisation orientation.
	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.	No sampling bias is considered to have been introduced by the drilling orientation.
Sample security	The measures taken to ensure sample security.	Prior to laboratory submission, Northern Star Resources stored samples in a secure yard or in a locked and enclosed trailer on site. Samples are transported to the laboratory within 24-72 hours where they are stored in a secure fenced compound and tracked through their chain of custody and via audit trails.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	No such exercise has been undertaken for the drilling at this stage.



Section 2 Reporting of Exploration Results (Criteria listed in the preceding section also apply to this section)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	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.	<p>All drill holes mentioned in this report are located within tenement E27/278 and the soils samples located on E27/491 & E28/520. These tenements are part of a joint venture between Pioneer Resources ASX: PIO (80%) and Northern Star Resources ASX: NST (20%). Northern Star Resources have the option of earning a further 55% interest (total 75% interest) in the project by sole funding \$3 million of exploration expenditure within 3 years. On the 21st February 2019, notice was sent to Pioneer that the expenditure threshold has been reached to complete the earning of an additional 55% interest in the Acra JV Tenements, with new JV tenement equity of NST (75%) and PIO (25%).</p> <p>Following the Joint Venture (JV) formation, Pioneer (currently Essential Metals) will continue to be free carried up until the JV secures a DMP approval for a future Mining Proposal. When a Mining Proposal is approved, Pioneer may either contribute pro-rata to future expenditure or sell its 25% JV interest at a fair market value to Northern Star Resources for cash or NST shares at Pioneer's election. The tenements are located approximately 60km NE of Kalgoorlie WA.</p>
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a license to operate in the area.	No known impediments exist, and the tenements are in good standing
Exploration done by other parties	Acknowledgement and appraisal of exploration by other parties.	The prospects referred to in this report are targets generated by NSR based on work previously undertaken by Pioneer Resources from geological field mapping coincident with historic workings that have hardly been tested in this area of drilling by Pioneer Resources.
Geology	Deposit type, geological setting, and style of mineralisation.	<p>Mineralisation styles at Acra are typical of Eastern Goldfields-style shear hosted gold deposits.</p> <p>Mineralisation at all three prospects is believed to be associated with the crustal-scale structural corridor – the Emu Fault. The bulk of gold mineralisation occurring along the Emu Fault typically occurs as brecciated, coarse crystalline vein containing quartz-carbonate ± pyrite ± pyrrhotite ± arsenopyrite ± gold.</p>
Drill hole Information	A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: easting and northing of the drill hole collar elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar dip and azimuth of the hole downhole length and interception depth hole length.	All holes in this programme are tabulated in the main body of the report.



	If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	All drill holes are reported in the body of this reported regardless of the results returned. Exclusion of the drill information will not detract from the understanding of the report.
Data aggregation methods	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.	All reported assay results have been length weighted to provide an intersection width. Barren material between mineralised samples has been permitted in the calculation of these widths where the resultant average composite grade of samples beyond (and not including) the core mineralised zone exceeds the cut-off grade used for intercept calculation.
	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.	No assay results have been top-cut for the purpose of this report. A lower cut-off of 0.5g/t has been used to identify significant results unless otherwise stated. Where the target zone does not exceed the 0.5 g/t cut-off the intercept has been calculated across the target structure with no cut-off grade applied. For early-stage exploration drilling (e.g., regional aircore), lower cut off grades are appropriate in reporting significant results and the cut off grades used are stated in these cases.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalent values have been used for the reporting of these exploration results.
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results.	
	If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	Downhole lengths have been reported and are not an indication of true width.
	If it is not known and only the downhole lengths are reported, there should be a clear statement to this effect (e.g., 'downhole length, true width not known').	Downhole widths have been clearly specified when used. True widths have not been used.
Diagrams	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 locations and appropriate sectional views.	Appropriate plans and/or sections have been included in the body of this report.
Balanced reporting	Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practised to avoid misleading reporting of Exploration Results.	Both high and low grades have been reported accurately, clearly identified with the drill hole attributes and 'From' and 'To' depths.
Other substantive exploration data	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,	All material exploration data has been reported within the report body.



	geotechnical and rock characteristics; potential deleterious or contaminating substances.	
Further work	The nature and scale of planned further work (e.g., tests for lateral extensions or depth extensions or large-scale step-out drilling).	Further planned work is referenced in the report body.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Appropriate diagrams are included in the body of this report.