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**RESEARCH**  
INDEPENDENT INVESTMENT RESEARCH

Essential Metals Limited (ASX: ESS)

July 2021

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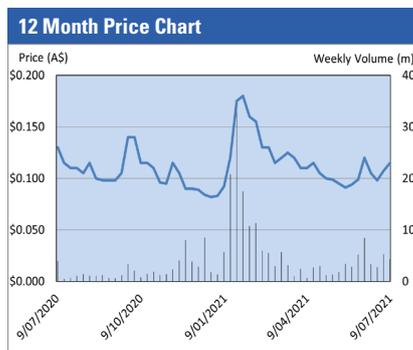


**Note:** This report is based on information provided by the company as at July 9, 2021.

Investment Profile	
Share Price as at July 9, 2021	A\$0.105
12 month L/H	A\$0.08/0.18
Issued Capital	
Ordinary Shares	200.8 m
Listed Options	24.6 m
Unlisted Options	33.5 m
Performance Rights	2.25 m
Market Capitalisation (Undiluted)	A\$21.09 m
Cash - March 31, 2021	A\$6.23 m

Board and Management	
Mr Craig McGown: Non-Executive Chairman	
Mr Tim Spencer: Managing Director	
Mr Paul Payne: Non-Executive Director	
Mr Warren Hallam - Non-Executive Director	
Mr Andrew Dunn: Exploration Manager	
Mr Carl Travaglini: Company Secretary	

Top Shareholders	
Sophisticated Investors	11.9%
Board and Management	1.4%
Top 20	19.3%



## ON THE STARTING BLOCKS...

Essential Metals ("Essential" or "the Company") is in an ideal position to hitch a ride on the expected re-rating of lithium over coming years. With their Dome North Lithium Project (11.2 Mt @ 1.21% Li<sub>2</sub>O and 40 ppm Ta<sub>2</sub>O<sub>5</sub>) located near Norseman, between the mining centre of Kalgoorlie and the Port of Esperance, the Company has an asset with a reasonable chance to grow into a potentially commercially viable project. This is one of few such lithium assets available in a junior resources company, and in our view has a good chance to drive significant value.

Our view also is that ~15 - 20 Mt of resources will be the scale required to justify progressing to detailed development studies, and with mineralisation at the current deposits open, and several other targets in the Pioneer Dome project, we would expect Essential to have a good chance of reaching this figure. Also, preliminary metallurgical testwork has been very positive.

Other companies with comparable resources include Core Lithium (ASX: CXO, "Core"), which has a market capitalisation of ~A\$290 million. Core's Finnis project, close to Darwin, however is well advanced, with permitting and offtake in place and currently advancing additional offtake and Project Financing. This demonstrates the potential value to shareholders of such a project.

In addition to the lithium, Essential has two prospective gold projects (Juglah Dome and Golden Ridge) within the highly productive Kalgoorlie-Kurnalpi Rift - both are within 70 km of Kalgoorlie. Previous exploration has highlighted the prospectivity, with the Company having recently completed drilling at various prospects with encouraging results, although it is still early stage work for Essential.

Golden Ridge is located within the Boorara Shear Zone ("BSZ"), which trends SSE from Menzies to Golden Ridge, and which is the main control on a number of gold deposits and operations, including Paddington/Broad Arrow, and Horizon Minerals' (ASX: HRZ, "Horizon") Boorara operations, immediately to the north of the Golden Ridge tenements.

Previous work at Golden Ridge concentrated on nickel, with the historically operated Blair Nickel Mine being located within the tenements. The nickel rights have recently been farmed out, with Crest Investment Group ("Crest") having to spend A\$4 million over four years to earn 75%.

This brings us to another part of the Company's strategy - farming out projects where it is considered that this will provide better potential returns to shareholders, by being exposed to the upside through the use of the balance sheet of other parties. To date the Company has farmed out several gold and nickel projects, holding free carried interests ("FCI").

As such we see the potential for good returns to shareholders with exploration success.

## KEY POINTS

**Quality exploration property portfolio:** Essential has a prospective gold and lithium exploration portfolio with this being confirmed by results of work to date.

**Experienced management:** The Board and Management have extensive experience in the resources sector, including in corporate and technical roles.

**Cashed up:** With A\$6.23 million in the bank as of March 31, 2021, the Company is well cashed up to actively and effectively undertake the planned exploration activities, both on lithium and gold.

**In a proven mining district with established infrastructure:** The Kalgoorlie/Norseman region of Western Australia is a world class mining destination, with well developed transport and utility infrastructure, and ready access to skilled labour and mining services.

**Lithium markets looking up:** Forecasts see the demand for lithium growing at between 15% and 20% CAGR until 2030, driven by the expected take-up of electric vehicles ("EV") - this is expected to lead to a supply deficit from 2024 should no appreciable new production come on stream.

**Leveraged to exploration success:** With an enterprise value ("EV") of under A\$15 million, Essential is well leveraged to exploration success.

**Steady news flow:** We expect to see a steady and positive news flow with ongoing exploration activities.

The investment opinion in this report is current as at the date of publication. Investors and advisers should be aware that over time the circumstances of the issuer and/or product may change which may affect our investment opinion.

## SWOT ANALYSIS

### Strengths

- ◆ **Highly prospective holdings in a proven mineral district:** The Company holds prospective holdings in what is arguably the one of the world's premier gold and hard-rock lithium jurisdictions.
- ◆ **Well developed infrastructure:** All projects are located in areas of well developed transport and utility infrastructure, and within 150 km of the mining centre of Kalgoorlie.
- ◆ **Cashed up:** With A\$6.23 million in the bank, Essential is well cashed up to pursue the planned exploration programmes.
- ◆ **Experienced people:** Company personnel have significant experience in the resources sector.
- ◆ **Forecast strong lithium markets:** Lithium markets are forecast to rise strongly over coming years, driven by the expected demand for EVs - should Essential prove up sufficient resources to justify an operation, the Company will be in an ideal position to return value to shareholders by virtue of the strong markets.

### Weaknesses

- ◆ **Services shortages:** Given the amount of exploration activity, and the effects of COVID, there are current shortages in skilled labour and services, and slow turnaround in laboratories - this however is affecting most operators.

### Opportunities

- ◆ **Exploration and drilling success:** Given the quality of the exploration ground and the results of work to date, there is a good opportunity for exploration success at all projects.
- ◆ **Lithium resource growth:** In our view this is the key opportunity for Essential, in growing the lithium resources to a size that will justify taking them further and adding value.
- ◆ **Acquisitions and earn-ins:** This is a perennial opportunity should the right opportunities come up; there are also some other lithium assets close to Pioneer Dome that may prove a fit with Essential's projects.

### Threats

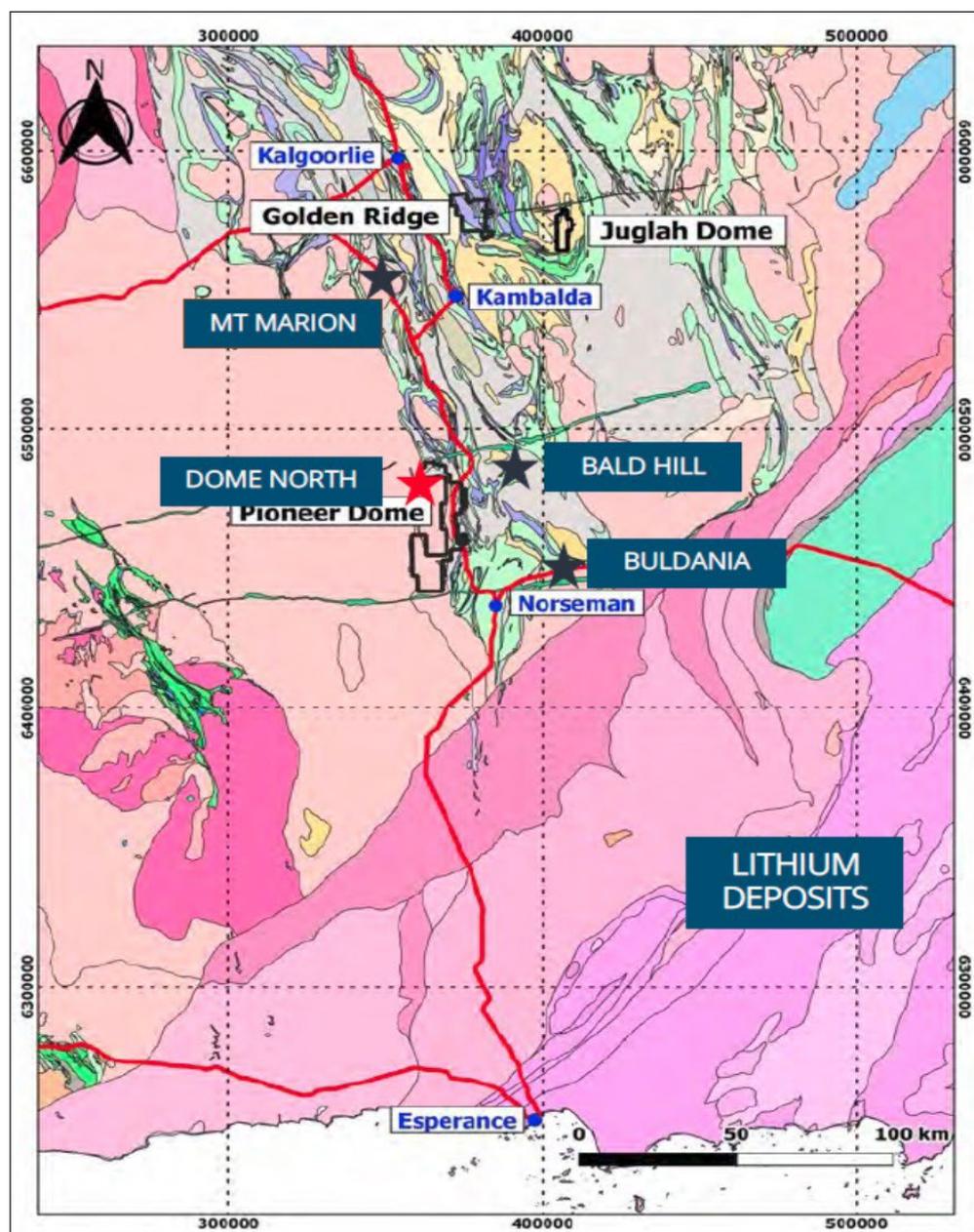
- ◆ **Markets and funding:** These are major threats for resource companies and although currently strong, investor sentiment can turn on a dime and funding can dry up.
- ◆ **Poor exploration results:** This goes without saying, and is a perennial threat to junior explorers who rely on risk (equity) capital, and operate a long term game in what is often a short term market.

## OVERVIEW

### STRATEGY AND PROJECT OVERVIEW

- ◆ Essential is a lithium and gold explorer and developer, with a portfolio of projects in the Kalgoorlie/Norseman area of the Yilgarn of Western Australia.
- ◆ The three key projects are (Figure 1):
  - Pioneer Dome (Li, Cs), which includes the Dome North Lithium Project and the previously mined Sinclair Caesium Deposit,
  - Golden Ridge (Au); and,
  - Juglah Dome (Au).
- ◆ The most advanced is Pioneer Dome, with the others being at an early stage of gold exploration - historic work at Golden Ridge concentrated on nickel (with this also including the Blair nickel mine, which was mined in three phases between 1990 and 2008).
- ◆ These are all within 150 km of Kalgoorlie, with ready access to infrastructure and skilled personnel and services.
- ◆ Figure 1 also highlights the location of spodumene lithium deposits, with one, Mt Marion (35.7 Mt @ 1.4% Li<sub>2</sub>O), being in operation and Bald Hill (26.5 Mt @ 1% Li<sub>2</sub>O) being under care and maintenance.

Figure 1: Project location and regional lithium deposits



Source: Essential

- ◆ Part of the Company's strategy is to farm-out non-core assets - this allows Essential to keep an equity interest whilst leveraging off the balance sheet of other companies.
- ◆ This provides the opportunity to share in any upside on these properties, and the potential to monetise holdings, particularly with any significant increase in value with exploration/development success.
- ◆ Crest, backed by ex-Jubilee Mines (Peter Langworthy) and Independence Group (Heath Hellewell) executives, has recently entered into an earn-in into the nickel rights over Golden Ridge, with Crest required to spend A\$4 million over four years to earn 75% - Essential retains all non-nickel rights, and at the end of the earn-in will retain a 25% FCI until any decision to mine.
- ◆ Other earn-ins and joint ventures include:
  - Balagundi Gold/Base Metals Joint Venture, with this at the earn-in stage, with Black Cat Syndicate (ASX: BC8) earning up to 75%,
  - Kangan Gold Joint Venture, with Novo Resources Corp (TSXV: NVO) and Sumitomo Corporation holding 70% in the West Pilbara Project,
  - Acra Gold Joint Venture, with Northern Star Resources Limited (ASX: NST) having earned 75%; and,
  - Wattle Dam Nickel Joint Venture, with Maximus Resources Limited (ASX: MXR) having earned 80% of the nickel rights only; the Company also has a 25% FCI (gold only) in the Larkinville Project near Kalgoorlie with Maximus.
- ◆ Essential also has a 51% interest (with International Lithium Corp holding 49%) in the Mavis Lake Lithium Project in Ontario, Canada.
- ◆ The individual earn-in/JV properties will not be discussed further.

## FINANCIAL POSITION

- ◆ As at March 31, 2021 Essential had A\$6.234 million in the bank - the most recent capital raising was an oversubscribed placement and SPP that raised A\$4.19 million at a price of A\$0.085/share in December 2020. The raising included a free 1 for 2 option, with an exercise price of A\$0.15, and an expiry date of 30 November, 2022. The options are listed under the code "ESSO".

## CAPITAL STRUCTURE

- ◆ Essential currently has 200.8 million fully paid ordinary shares, 24.6 million listed options, 5.489 million unlisted options and 2.253 million performance rights on issue. Option exercise dates range from 30/11/2021 to 23/09/2024, with exercise prices of between A\$0.125 and A\$0.45.
- ◆ The share register is made up of sophisticated and retail investors with the largest individual holding being 2%. Directors and Management hold ~1.4% and the Top 20 hold 19.3%.

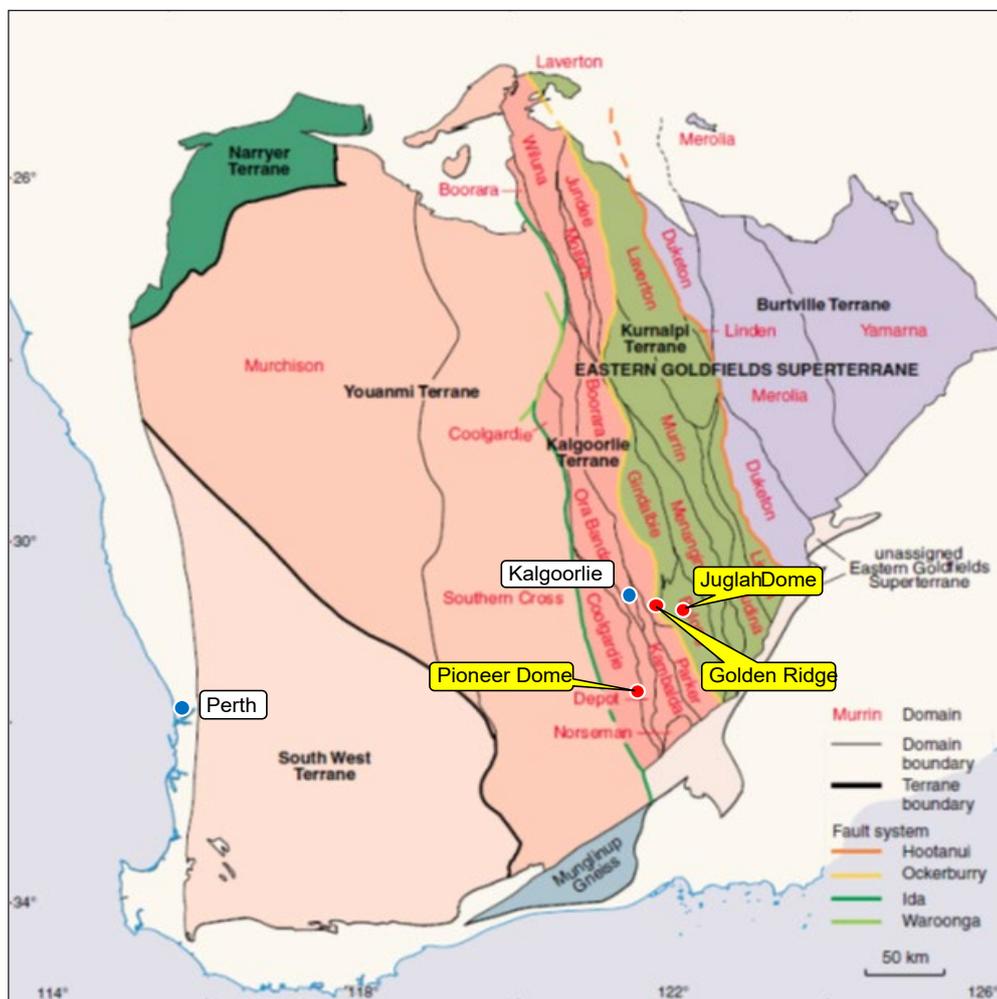
## REGIONAL GEOLOGY AND MINERALISATION

### REGIONAL GEOLOGY

- ◆ Essential's projects are all located within the Neoproterozoic Kalgoorlie and Kurnalpi Terranes of the Eastern Goldfields Supergroup within the Archaean Yilgarn Craton (Figure 2).
- ◆ These terranes form the Kalgoorlie-Kurnalpi Rift ("KKR"), which originally formed through rifting on the eastern edge of the proto-Yilgarn Craton, with rifting commencing at ~2,720 Ma, associated with the eruption of tholeiitic basalts and komatiites between 2,720 Ma and 2,690 Ma within the Kalgoorlie Terrane.
- ◆ Calc-alkaline volcanism, possibly related to arc tectonics, commenced in the Kurnalpi Terrane at ~2,730 Ma, and continued through to ~2,660 Ma, with this transitioning up from generally basaltic to andesitic lavas and hyaloclastites (with some dacitic and rhyolitic rocks) to volcanoclastic and epiclastic rocks derived from the volcanic complexes.
- ◆ Within the Kalgoorlie Terrane, the basal basalts are overlain by the largely volcanoclastic Black Flag Group, with a significant amount of material derived from intermediate to felsic igneous rocks - deposition of these units continued to about 2,660 Ma.
- ◆ The final stage of deposition was sedimentation in late stage basins from ~2,665 Ma, initiated by the D<sub>3</sub> extensional event, with these units unconformably overlying the older rocks.

- ◆ Four main periods of granitic magmatism have been identified, with the latter two events largely associated with the main D<sub>4</sub> and D<sub>5</sub> compressional (and main gold mineralising) events.
- ◆ The earlier magmatic events are associated with volcanic units, as well as some gold mineralisation.

Figure 2: Yilgarn Craton tectonic framework



Source: Adapted from Cassidy et al, 2006.

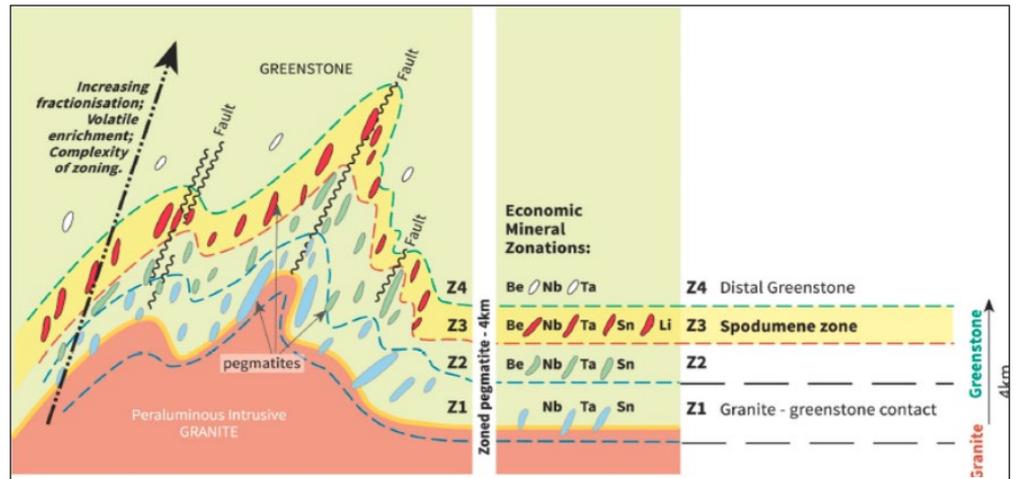
- ◆ Several stages of deformation have been identified (which are collectively termed the Yilgarn Orogeny), starting with the original basin opening from ~2.72 Ga, and ending with the two main compressional events from 2.66 to 2.62 Ga, with the main period of orogenic gold mineralisation contemporaneous with the compression at around 2.65 to 2.63 Ga.
- ◆ The intensive deformation has led to the development of the complex structure, including refolded folds and faults/shears as seen through the region.
- ◆ What is of interest, is that this represents one of the earliest periods of plate tectonics as recognised now, following from the granite diaparism as seen in earlier Archaean terranes, such as in the Pilbara Craton.

## REGIONAL MINERALISATION

### Lithium

- ◆ Lithium mineralisation is hosted in complex LCT (lithium-caesium-tantalum) pegmatites, sourced from highly fractionated S-type granites.
- ◆ These are commonly zoned, with a schematic being shown in Figure 3, and form as sills and dykes, and are commonly intruded along structures.
- ◆ In addition to lithium, another element that can be found is caesium, which occurs in the zeolite mineral pollucite ((Cs,Na)<sub>2</sub>Al<sub>2</sub>Si<sub>4</sub>O<sub>12</sub>·2H<sub>2</sub>O) - Essential has previously mined pollucite from the Sinclair Mine at Pioneer Dome.

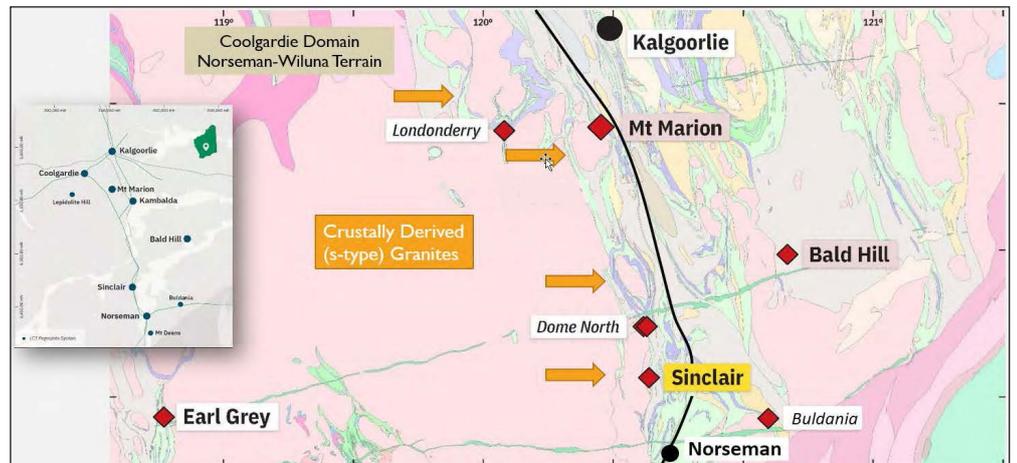
Figure 3: Pegmatite schematic



Source: Essential (Pioneer) release

- ◆ Several lithium occurrences have thus far been discovered in the region, including:
  - Dome North - Essential - 11.2 Mt @ 1.21% Li<sub>2</sub>O and 40 ppm Ta<sub>2</sub>O<sub>5</sub>,
  - Buldania - Liontown Resources - 14.9 Mt @ 0.97% Li<sub>2</sub>O and 44 ppm Ta<sub>2</sub>O<sub>5</sub>,
  - Bald Hill - Alita (in administration) - 26.5 Mt @ 1.0% Li<sub>2</sub>O and 149 ppm Ta<sub>2</sub>O<sub>5</sub>, with additional tantalum resources of 4.4 Mt @ 336 ppm Ta<sub>2</sub>O<sub>5</sub>,
  - Mt Marion - Mineral Resources/Ganfeng - 71.3 Mt @ 1.37% Li<sub>2</sub>O; and,
  - Mt Holland (Early Grey) - Wesfarmers/SQM - 189 Mt @ 1.50% Li<sub>2</sub>O.
- ◆ Of the above Mt Marion is operating and Bald Hill is under care and maintenance.

Figure 4: Spodumene pegmatites in the Pioneer Dome region.



Source: Essential (Pioneer) release

## Gold

- ◆ The region is noted by its gold endowment, with, as of 2015 the KKR having a total gold endowment (including current resources and previously mined) of 7,154 tonnes (223 Moz), or 71% of the Yilgarn's total endowment of over 10,000 tonnes (311 Moz). Of this, the Kalgoorlie Domain hosts 5,910 tonnes (185 Moz).
- ◆ Since 2015, approximately 1,200 tonnes (37.5 Moz) of gold has been mined in Western Australia, with the majority from the Yilgarn Craton.
- ◆ Assuming that depletion has been fully replaced, and that proportions between terranes remains constant, replacement of depletion results in a current endowment of approximately 11,200 tonnes (350 Moz) for the Yilgarn, and 7,952 tonnes (249 Moz) for the KKR.
- ◆ This does not account for new discoveries and resource additions above depletion during the same period.
- ◆ As mentioned earlier, the main period of gold mineralisation was over a 20 million year period from 2.65 to 2.63 Ga contemporaneous with the compression, however there were minor periods associated with earlier periods of magmatism.

- ◆ Gold mineralisation will occur in different settings, dependent upon physical and chemical changes that result in the precipitation of gold.
- ◆ The major, generally NNW trending crustal scale structures form conduits for the transport of the orogenic mineralising fluids, and it is commonly splayed off these that control and/or host the gold mineralisation.

### Nickel

- ◆ In addition to gold, the region is one of the world's premier nickel provinces, as exemplified by the Kambalda deposits, which in addition to nickel can also contain copper and PGEs.
- ◆ The main style of deposit in the region are those related to lava channels, with the generally massive sulphide nickel mineralisation occurring at the base of channelised komatiitic lava flows - these are largely associated with domes, including Kambalda and Widgiemooltha amongst others.
- ◆ Mt Keith, located near Wiluna at the northern end of the KKR, occurs as disseminated sulphides in a thickened komatiite cumulate unit, and is one of the world's largest deposits of its type.
- ◆ The komatiite-associated deposits are contemporaneous with the flows and intrusives, and formed in a tight time frame ~2,710 Ma years ago - although older komatiite lavas are found in the Yilgarn these generally do not host nickel mineralisation.

### Base Metals

- ◆ There is also potential for volcanogenic massive sulphide ("VMS") base and precious metal mineralisation in the KKR, with examples including the Teutonic Bore Camp and Anaconda.
- ◆ These have been dated at ~2,690 to 2,700 Ma, and are largely associated with the felsic volcanics found within the Kurnalpi Terrane.

## PIONEER DOME - ESS 100%

### LOCATION, TENURE AND INFRASTRUCTURE

- ◆ Pioneer Dome covers an area of 356 km<sup>2</sup>, and includes seven granted exploration licences ("EL"), one EL application, one granted mining lease ("ML") and one granted miscellaneous licence ("L") - all are in good standing (Figures 1, 2 and 5).
- ◆ The tenement package is centred ~150 km south of Kalgoorlie and 250 km north of the deep water port of Esperance - the Coolgardie-Esperance Highway passes through the eastern edge of the tenements.

### PREVIOUS WORK

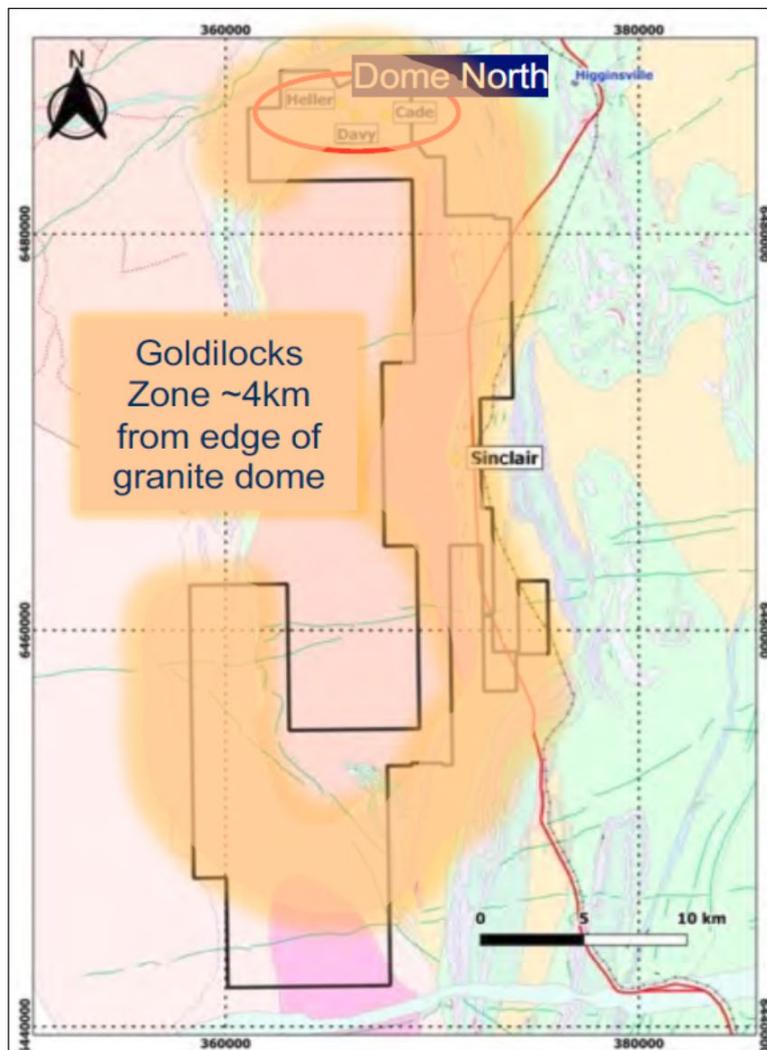
- ◆ Prior to Essential (then Pioneer) commencing activities at Pioneer Dome in 2016, there had only been limited exploration, and none for lithium, although pegmatites were noted by previous explorers.

### GEOLOGY AND MINERALISATION

- ◆ The Company's tenements cover a large proportion of the margin of the Pioneer Dome, with the core intrusive being a monzogranite - the eastern edge is marked by the 50 Mile Tank Gneiss, an older unit that has been intruded by the granite, and which may represent an inlier of pre-greenstone basement.
- ◆ Surrounding greenstone units include volcanics of the Kalgoorlie Group (including the Kambalda Komatiite), overlain by volcanoclastics and sediments of the Black Flag Group.
- ◆ Although the published mapping shows a later granite directly abutting the southwestern edge of the Pioneer Monzogranite, work by the Company has identified probable Black Flag units in the area, with this interpretation supported by the magnetic signature in the area - this has important ramifications for lithium exploration, given that the pegmatites are generally found in the units around and within 4 km of the dome (the "Goldilocks Zone" as shown in Figure 5), and not within the intrusives.
- ◆ The primary mineralisation style is pegmatite hosted lithium, with caesium also being present in the Sinclair area. Pegmatites identified to date form a swarm over a strike length of 15 km within the sediments along the eastern side of the Pioneer Monzogranite, with a second group (Dome North) at the northern end of the intrusive.

- ◆ The eastern pegmatites include Sinclair, which is a highly fractionated pegmatite (which are the dominant hosts for spodumene mineralisation) - this is just 18 km from the spodumene bearing Dome North pegmatites.
- ◆ It is considered that the entire “Goldilocks Zone” (Figure 5) at up to ~4 km from the granite margin is prospective for the highly fractionated spodumene-bearing pegmatites - refer to Figure 3 for a diagrammatic section.

**Figure 5: Pioneer Dome tenements, geology and targets**



Source: Adapted from Essential

## WORK BY ESSENTIAL

- ◆ Essential commenced lithium exploration in early 2016, with this initially leading to the discovery of several pegmatites along the eastern edge of the dome, including the 2016 discovery of the pollucite hosted caesium mineralisation which was subsequently mined in 2018/2019.
- ◆ Early work included soil sampling, geological mapping and drilling; subsequent work has discovered the Heller, Davy and Cade deposits in the north of the project area.

## Dome North Lithium

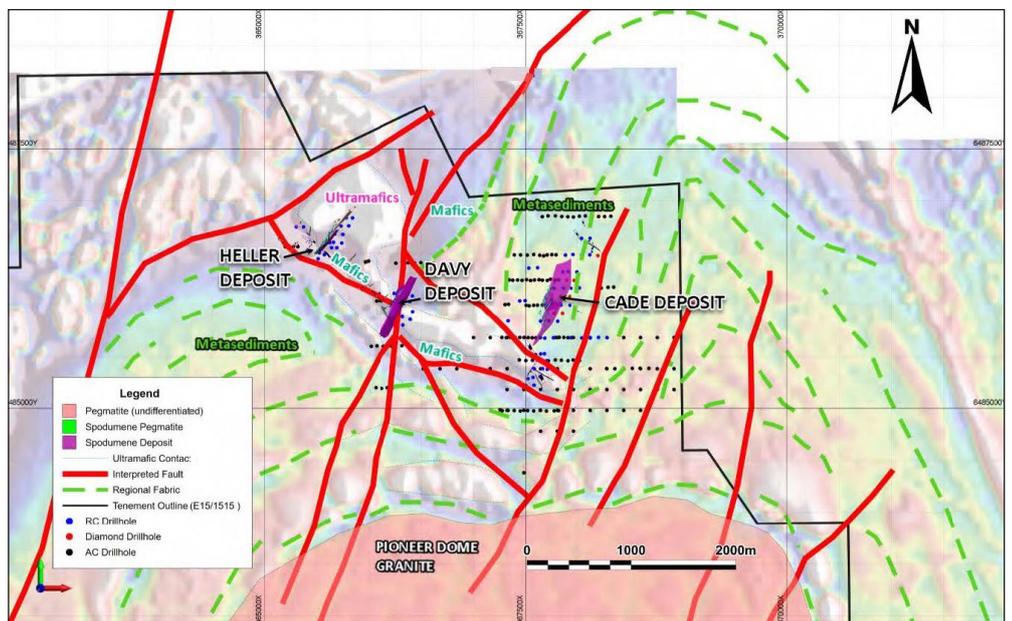
- ◆ The Dome North pegmatites were initially discovered in mid-2019 by geological mapping over geochemically identified target areas, with drilling commencing soon after. The initial MRE, for the Cade Deposit, of 8.2 Mt @ 1.23% Li<sub>2</sub>O was announced to the market on November 29, 2019.
- ◆ Further work identified the Davy and Heller deposits, with an updated MRE, as presented in Table 1, being released to the market on September 29, 2020.
- ◆ There has only been limited drilling into areas with alluvial cover and weathering (up to 70 m deep) - however relatively fresh pegmatite has been noted in outcrop, indicating that the pegmatites may be more resistive and less affected by weathering than the host rocks.

- ◆ A map of the Dome North pegmatites is presented in Figure 6 - this is on a magnetic image background, and includes the structural and geological interpretation.

**Table 1: Dome North MRE**

Dome North MRE						
Deposit	Classification	Tonnes (Mt)	Li <sub>2</sub> O %	Ta <sub>2</sub> O <sub>5</sub> ppm	Contained Li <sub>2</sub> O (T)	Fe <sub>2</sub> O <sub>3</sub> %
Cade	Indicated	5.4	1.3	33	70,000	0.55
	Inferred	2.8	1.18	33	33,000	0.63
Davy	Inferred	2.3	1.13	53	25,000	0.68
Heller	Inferred	0.7	1.02	76	8,000	0.72
<b>Total</b>	<b>Total</b>	<b>11.2</b>	<b>1.21</b>	<b>40</b>	<b>136,000</b>	<b>0.61</b>
Global	Measured	-	-	-	-	-
	Indicated	5.4	1.3	33	70,000	0.55
	Inferred	5.8	1.14	46	66,000	0.66
	<b>Total</b>	<b>11.2</b>	<b>1.21</b>	<b>40</b>	<b>136,000</b>	<b>0.61</b>

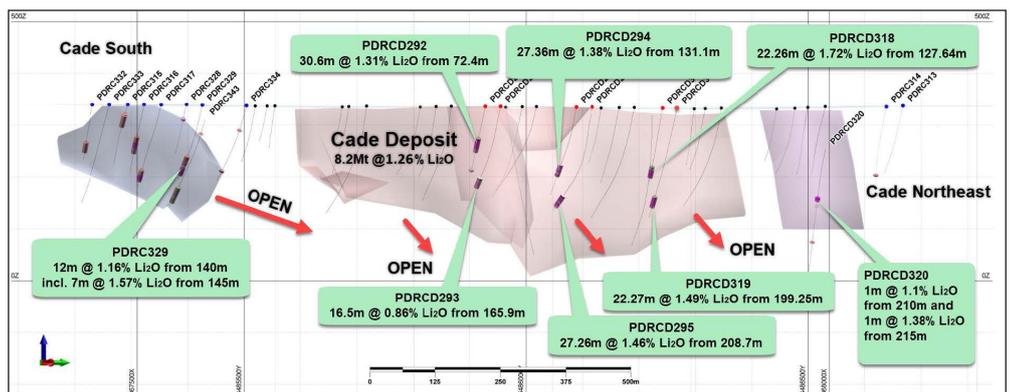
**Figure 6: Dome North deposits and interpretation**



Source: Essential

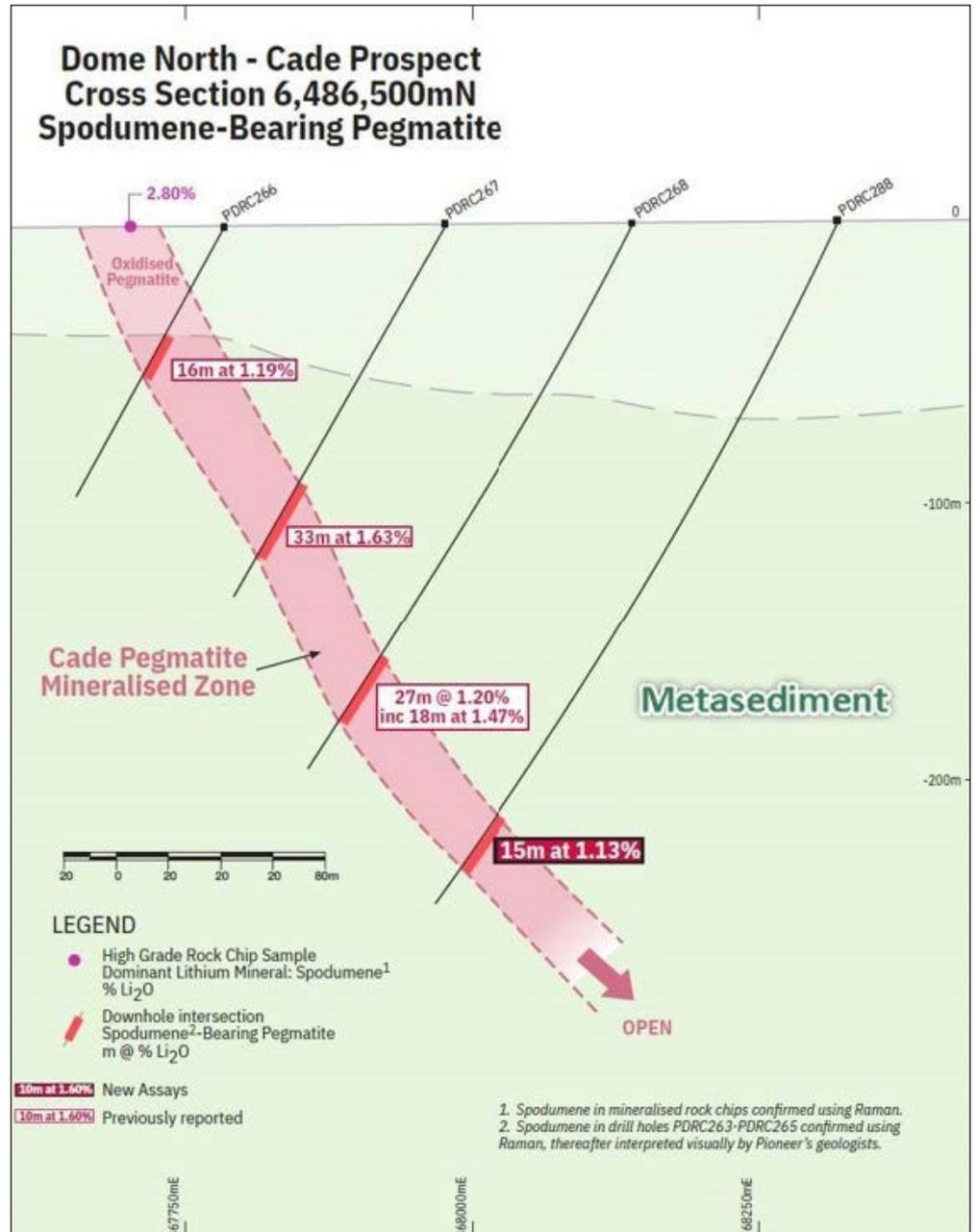
- ◆ Cade, the largest of the three pegmatites identified to date, is hosted within largely fine grained metasediments of the Black Flag Group - these have been intensely deformed and sheared, with the pegmatite being intruded along the shears.
- ◆ Cade comprises three lenses, Cade Northeast, Cade and Cade South, with mineralisation being open down dip and down plunge (Figure 7), however the resource has largely been confined to what would be considered a realistic open pit depth.
- ◆ The main lens, which dips to the east, has a strike length of ~900 m, has been intersected to around 250 m below surface, and has a true thicknesses of up to 30 m (Figure 8).

**Figure 7: Cade deposit long section, looking we**



Source: Essential

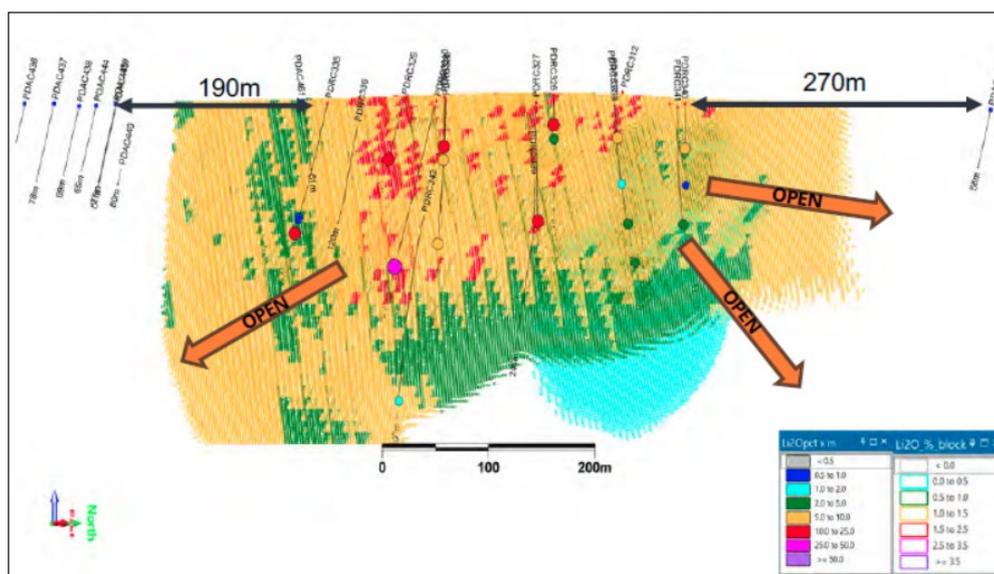
Figure 8: Cade deposit cross section, looking north



Source: Essential

- ◆ The orientation and thickness of the mineralisation make it amenable to open cut mining.
- ◆ Heller and Davy (Figure 9) are generally thinner (averaging around 10 m), and are hosted along sheared contacts between basalts and pyroxene dominant ultramafics - these are also smaller and of lower grade than Cade.
- ◆ The pegmatites are typically zoned, with some areas not being lithium mineralised.

Figure 9: Davy long section, looking west



Source: Essential

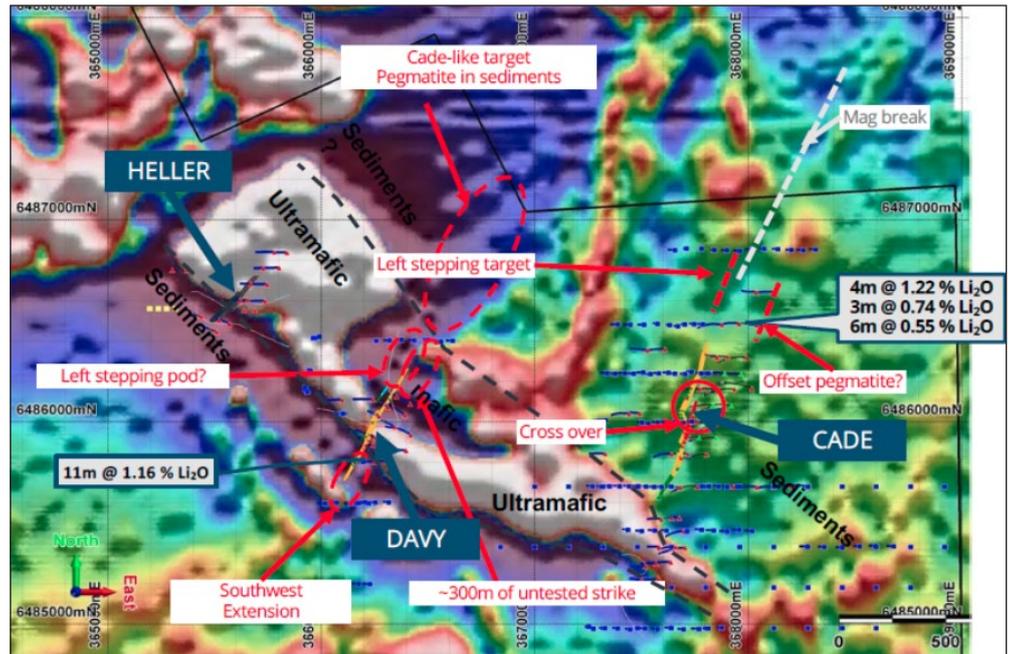
### Lithium Metallurgy

- ◆ Essential has commissioned independent Scoping Study level sighter metallurgical testwork on two composites from the Cade deposit; the testwork was mainly heavy liquid separation followed by flotation (a common processing route for spodumene mineralisation), with a whole of ore test also being undertaken - all included magnetic separation to remove iron bearing minerals.
- ◆ The whole of ore returned the best grade, with a concentrate grading 6.06%  $\text{Li}_2\text{O}$  and 0.7%  $\text{Fe}_2\text{O}_3$  being produced with a lithia recovery of 66% - the applicability of whole of ore flotation however largely relies on water quality.
- ◆ The DMS/float samples had better recoveries to a lower grade, including 5.65%  $\text{Li}_2\text{O}$  and 0.7%  $\text{Fe}_2\text{O}_3$  with a 74% recovery.
- ◆ Ongoing testwork should result in improvements to grades and recoveries, however the work to date shows that there is the potential to produce a marketable concentrate.

### Lithium Upside

- ◆ Additional lithium resources need to be delineated to reach a critical mass that would justify development studies - in our view that would be in the order of 15 - 20 Mt at  $>1\%$   $\text{Li}_2\text{O}$ .
- ◆ As such, the Company is now actively looking for additional mineralisation, with two main targets; firstly looking for extensions and repeats of the Dome North mineralisation, and secondly exploring for new deposits within the tenement.
- ◆ A summary of targets at Dome North is shown in Figure 10; this is in addition to the potential for incremental shallow increases at Davy (Figure 9), with gaps in the drilling to the north and south, and at Cade, where there is a 160 m gap to the north of the current resource.
- ◆ Also, as mentioned previously, they are open at depth, however this is heading into potential underground mining territory, such as included in the development studies of Liontown Resources (ASX: LTR, "Liontown") and Core.
- ◆ Figure 10 highlights that the best potential for additional mineralisation is in strike extensions at Davy, where the structure trends into the Black Flag Group, and for parallel lenses at Cade; potential for a strike extension at Cade is more limited due to the proximity to the tenement boundary (shown in black on Figure 10) and the results of drilling.

Figure 10: Dome North targets on magnetics image



Source: Essential

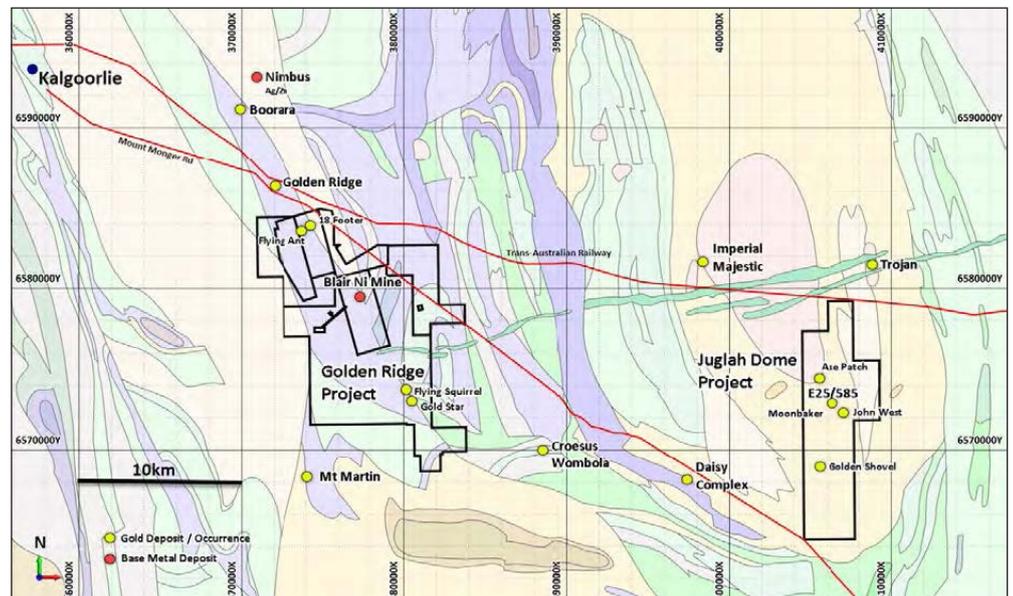
- ◆ The Company has identified a large area of interest from a review of the tenement wide soil sample database, along with magnetic and structural data - the geochemical work included an analysis of lithium, rubidium and tantalum - these are within the "Goldilocks Zone" as shown in Figure 5.
- ◆ This includes the southwestern quadrant, mapped as granite, but which field work and the magnetics indicate may contain appreciable Black Flag Beds, a good host for pegmatite mineralisation.
- ◆ Drilling to test a number of targets is expected to commence in the September 2021 quarter.

## JUGLAH DOME - ESS 100%

### LOCATION, TENURE AND INFRASTRUCTURE

- ◆ Juglah Dome comprises a single ~50 km<sup>2</sup> tenement, E25/585, that was granted to Essential on 29/7/2020, and is valid for five years.
- ◆ The tenement is located ~65 km ESE of Kalgoorlie (Figure 11), and is readily accessible from the Mt Monger haul road and Trans-Australian Railway service road.

Figure 11: Juglah Dome and Golden Ridge projects showing tenements and geology

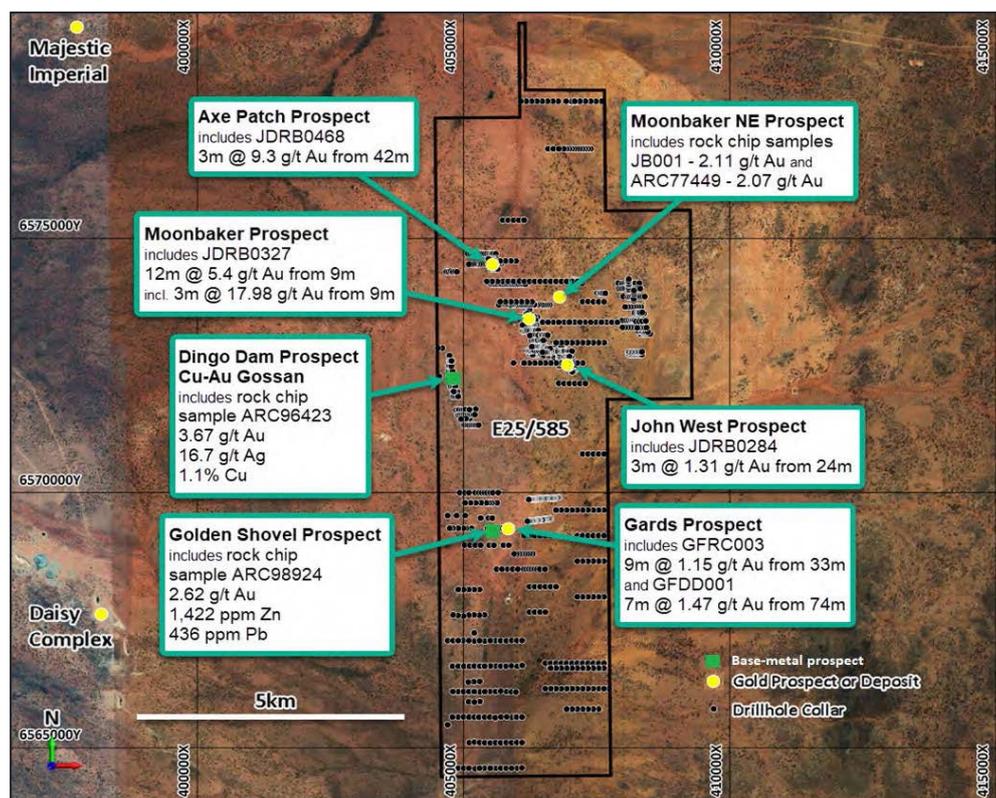


Source: Essential

## HISTORY

- ◆ The region has seen extensive exploration for both base and precious metals by numerous operators, largely since the 1990s.
- ◆ This work has been largely for gold, however Mt Martin Mines (WMC) undertook gold and base metal exploration in the 1990s.
- ◆ Subsequent exploration, which has identified several gold prospects, continued through to 2010, with this undertaken by a number of companies, including Newcrest Mining Ltd (ASX: NML, "Newcrest").
- ◆ A summary of historic activities, including drilling results, is shown in Figure 12.

Figure 12: Juglah Dome, showing results of previous work.



Source: Essential

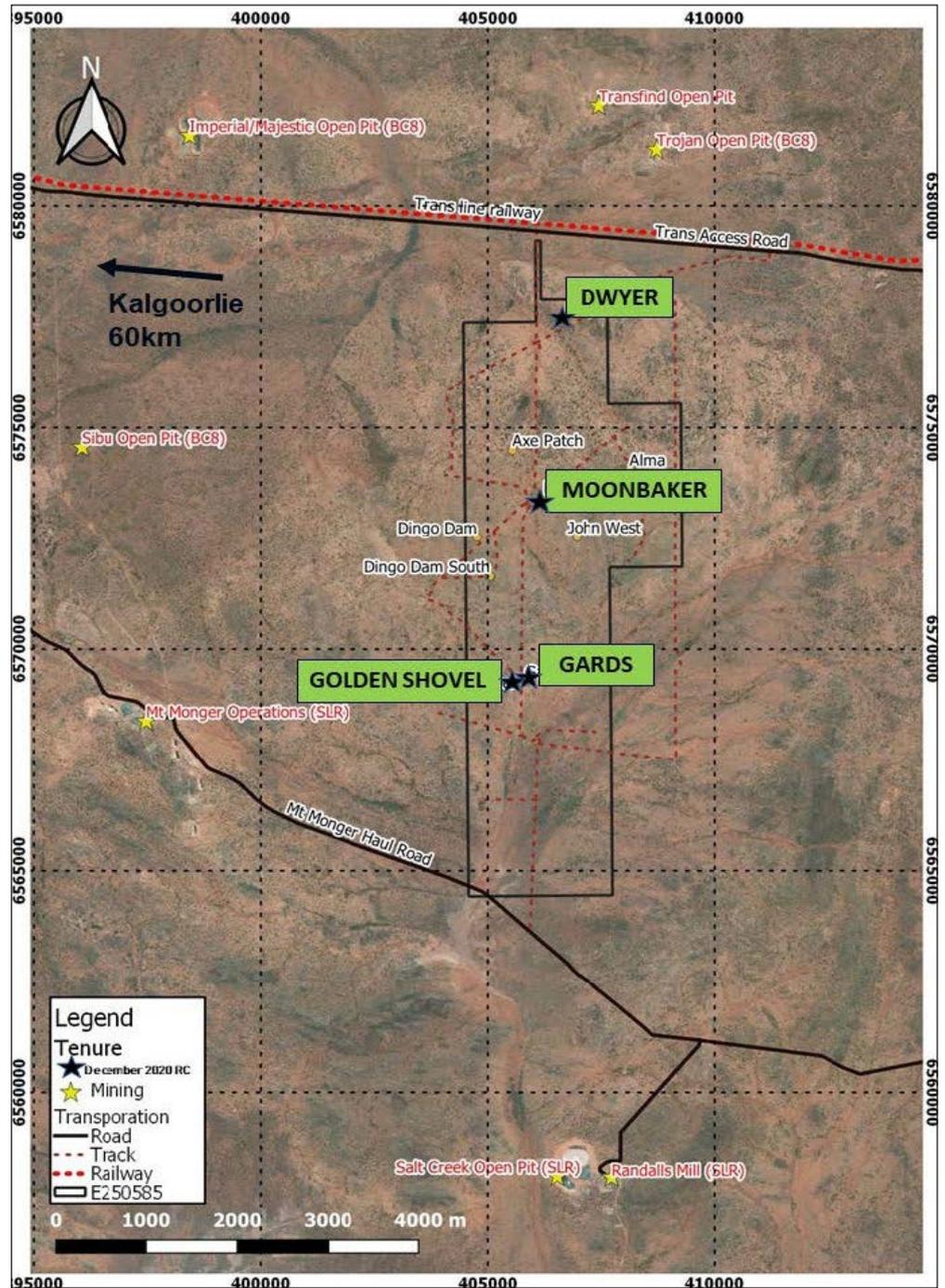
## GEOLOGY AND MINERALISATION

- ◆ The project is located within the Kurnalpi Terrane, and includes a lower sequence of chert, intermediate to felsic volcanics and volcanoclastics, overlain by basalts - the sequence has been folded and intruded by the Juglah Monzogranite, which forms the core of the NW-trending Bulong anticline, of which the project is at the southern end (Figure 11).
- ◆ Mineralisation is largely related to NNW to NW trending shear zones, and also NNE-NE cross structures - it is also generally hosted within felsic porphyry dykes and felsic volcanics.
- ◆ The axis of the anticline is also a control on mineralisation, with the Moonbaker, John West and Axe Patch prospects occurring along this NW trend.
- ◆ Juglah Dome is located near advanced projects and mines, including Black Cat Syndicate's (ASX: BC8, "Black Cat") Majestic/Imperial and Trojan open pits - these were previously part of Silver Lake Resources' (ASX: SLR, "Silver Lake") Mt Monger operations.

## WORK BY ESSENTIAL

- ◆ Work by Essential to date has included some ground truthing, RC drilling and ongoing aircore drilling.
- ◆ The RC drilling included 23 holes for 2,355 m, with 11 holes for 1,093 m being drilled at the Gards prospect, which returned the best results - other prospects drilled included Dwyer (2 holes, 220 m), Moonbaker (4 holes, 400 m) and Golden Shovel (6 holes, 642 m, Figure 13).

Figure 13: Juglah Dome, showing Essential prospects.

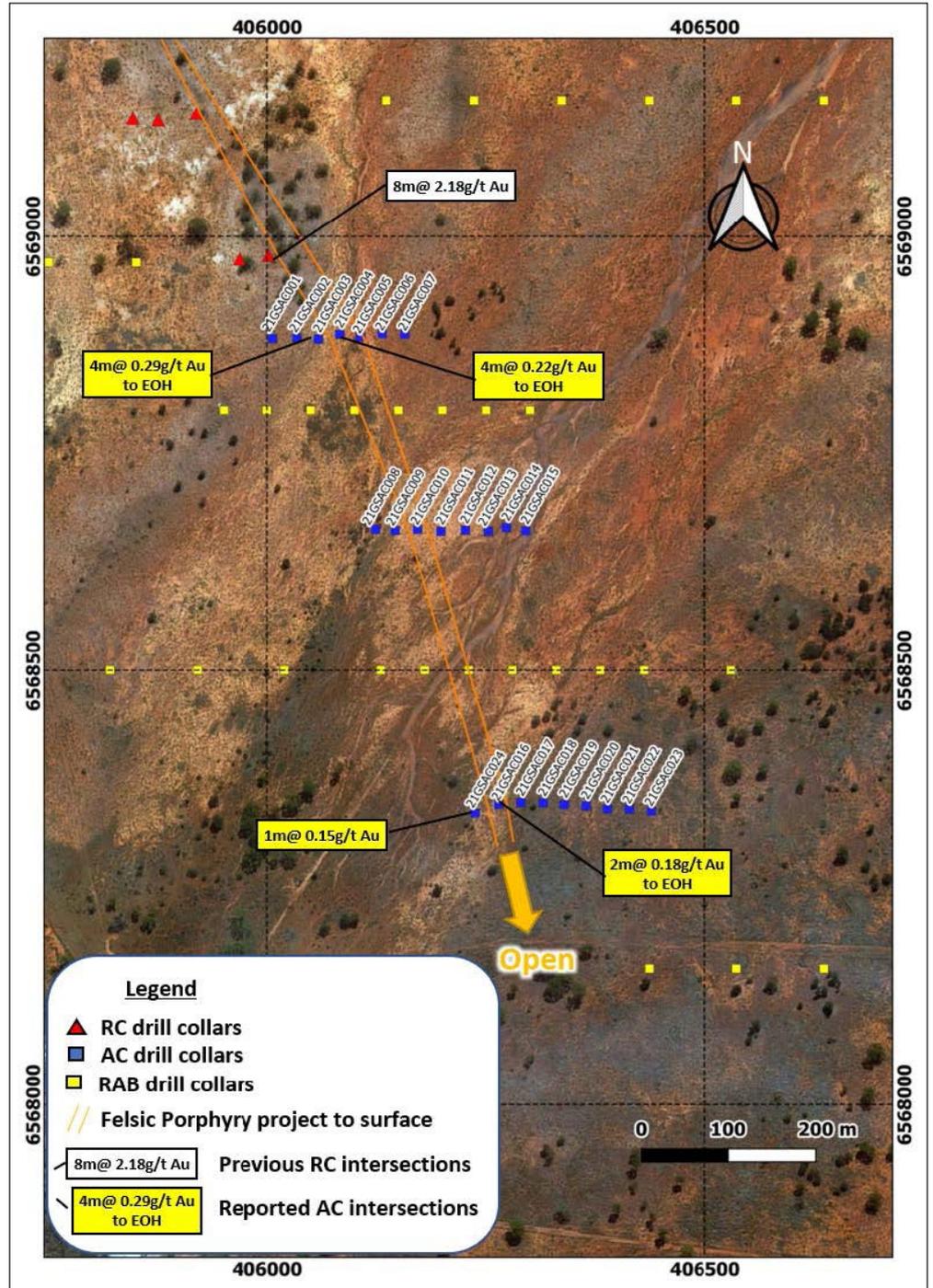


Source: Essential

### Gards Prospect

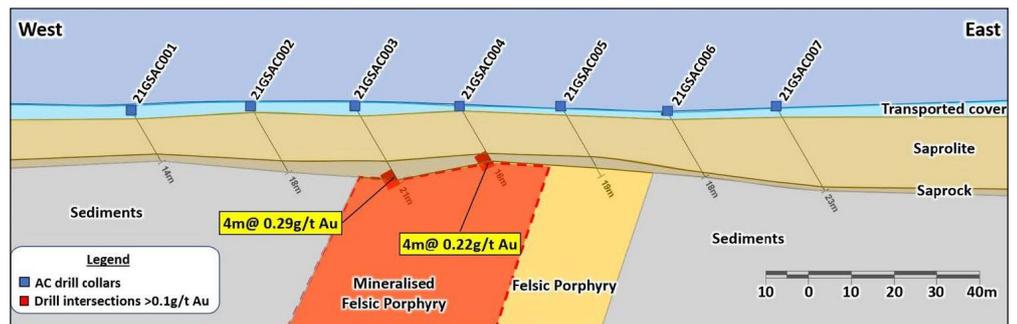
- ◆ Mineralisation at Gards is hosted in a NNW trending felsic dyke (Figure 14), with the late 2020 RC drilling intersecting up to 8 m @ 2.18 g/t Au from 34 m (Figure 14).
- ◆ Follow up aircore drilling (24 holes for 420 m) intersected relatively low grade gold in some holes into the felsic porphyry (Figures 14 and 15), however has extended the strike of potentially mineralised porphyry to 1,175 m, and is still open along strike to the south.
- ◆ It is interpreted that the porphyry is thickening to the south, with the upcoming RC drilling designed to test this - the potential for mineralisation to continue through the porphyry is highlighted in Figure 15, with two adjacent aircore holes both intersecting anomalous gold within this unit.
- ◆ Another target of drilling is the intersection of cross structures with the dyke - it is expected that these areas will be the focus of higher grades - grades along the unit to date are relatively "spotty", although drilling is wide spaced.

Figure 14: Gards prospect drilling results



Source: Essential

Figure 15: Gards - southern aircore section



Source: Essential

## GOLDEN RIDGE - ESS 100%, (EXCEPT NICKEL)

### LOCATION, TENURE AND INFRASTRUCTURE

- ◆ Golden Ridge comprises four MLs, three ELs and one L for a total area of 145 km<sup>2</sup> - all tenements are currently in good standing.
- ◆ On February 9, 2021, the Company announced that it was farming out the nickel rights to Crest, with Crest to earn 75% of the rights through the expenditure of A\$4 million over four years, with a minimum annual spend of A\$750,000 - Essential will retain the rights to all other minerals.
- ◆ Directors and investors in Crest include Peter Langworthy (ex-Jubilee Mines) and Heath Hellewell (ex-IGO)
- ◆ The Project is located approximately 25 km SE of Kalgoorlie, and is readily accessible (Figure 12).

### HISTORY

- ◆ The area has seen significant exploration, originally for nickel, and later for gold - this includes work by WMC commencing in the 1960s.
- ◆ The tenements include the Blair Nickel Mine, which operated in three periods from 1989 to 2008, when low nickel prices and the GFC curtailed operations.
- ◆ Reported production was 1,256,777 tonnes @ 2.62% Ni, for 32,390 tonnes of contained nickel metal from the Kambalda style, komatiite-hosted deposit.
- ◆ Both the gold and nickel exploration has identified several other prospects, with the Company currently testing some of the gold prospects - previous work by Essential at Golden Ridge had been concentrated on the nickel.
- ◆ Gold prospects include the pre-existing Flying Ant and 18-Footer targets as well as the newly identified prospects, AC75, Scandia and Maximus.
- ◆ Previous drilling has returned up to 21 m @ 2.5 g/t Au - a list of historic drill holes is included in the Company's April 1, 2021 release.

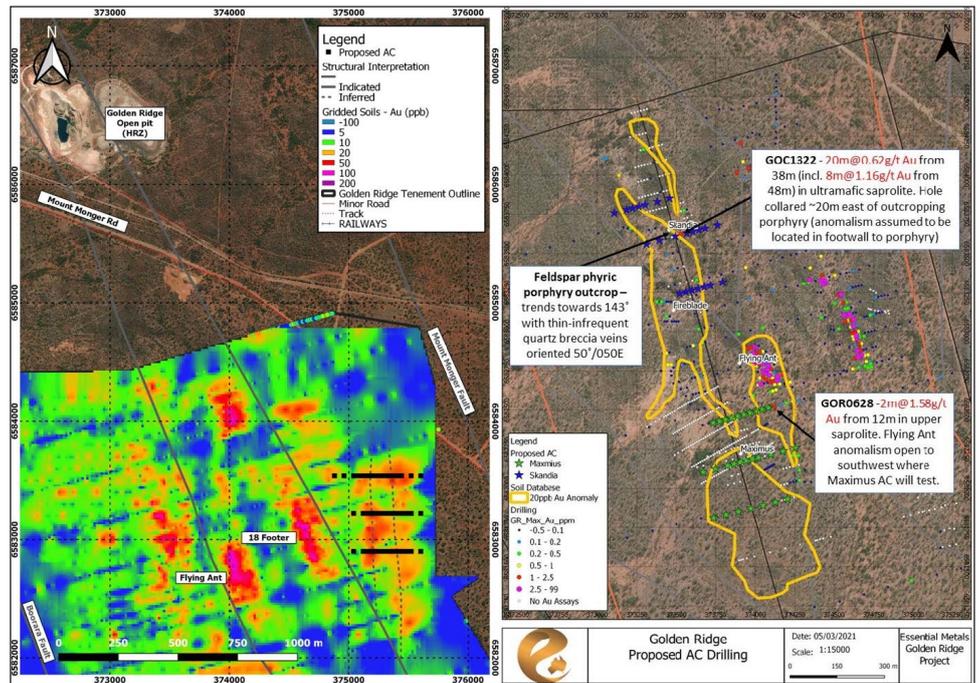
### GEOLOGY AND MINERALISATION

- ◆ Golden Ridge straddles the Boorara Shear Zone ("BSZ"), as well as the Ockerburry Fault Zone, which forms the boundary between the Kalgoorlie and Kurnalpi Terranes.
- ◆ The BSZ is an elongate NNW trending zone, that extends from Menzies in the north to south of Golden Ridge, and is the host for several gold deposits, including Paddington/ Broad Arrow and Golden Ridge - the total in-situ resource at the 1985 commencement of mining at Paddington was 8.4 Mt @ 3.2 g/t Au for 860,000 oz of contained gold.
- ◆ The Paddington mill is still operating, treating material from other deposits in the region.
- ◆ In addition, Horizon owns and operates the Boorara Gold Project immediately along strike to the NNW of the Golden Ridge tenements, with this including the 448 koz Boorara deposit, with total resources of 19.02 Mt @ 1.66 g/t gold for 1.02 Moz of contained gold.
- ◆ Within the tenements, the rocks are dominated by mafics and ultramafics (including komatiitic lavas) of the Kalgoorlie Group; some areas of the Black Flag Group and the Kurnalpi Terrane volcanics are also present in the north, along with units of the younger Panglo sedimentary basin.
- ◆ Previous work by Essential (then Pioneer) suggested that the area forms an ultramafic dome ("Blair Dome"), with geological similarities to the Kambalda and Tramways Domes, both hosts to world-class nickel mineralisation - in this work the Company also identified ~12 km of the ultramafic basal contact, the preferred position for the komatiite channel associated nickel sulphide mineralisation as seen at the Blair nickel mine.
- ◆ The gold occurrences are largely concentrated in what has been mapped as the younger volcanic and sedimentary successions in the northern part of the tenement package and proximal to the Ockerburry Fault Zone, however the area is marked by limited outcrop.

### WORK BY ESSENTIAL

- ◆ Essential has recently completed a 92 hole, 6,080 m aircore drilling programme over the AC75, Scandia and Maximus prospects - this was following up on gold-in-soil geochemical anomalies and historic drilling (Figure 16).

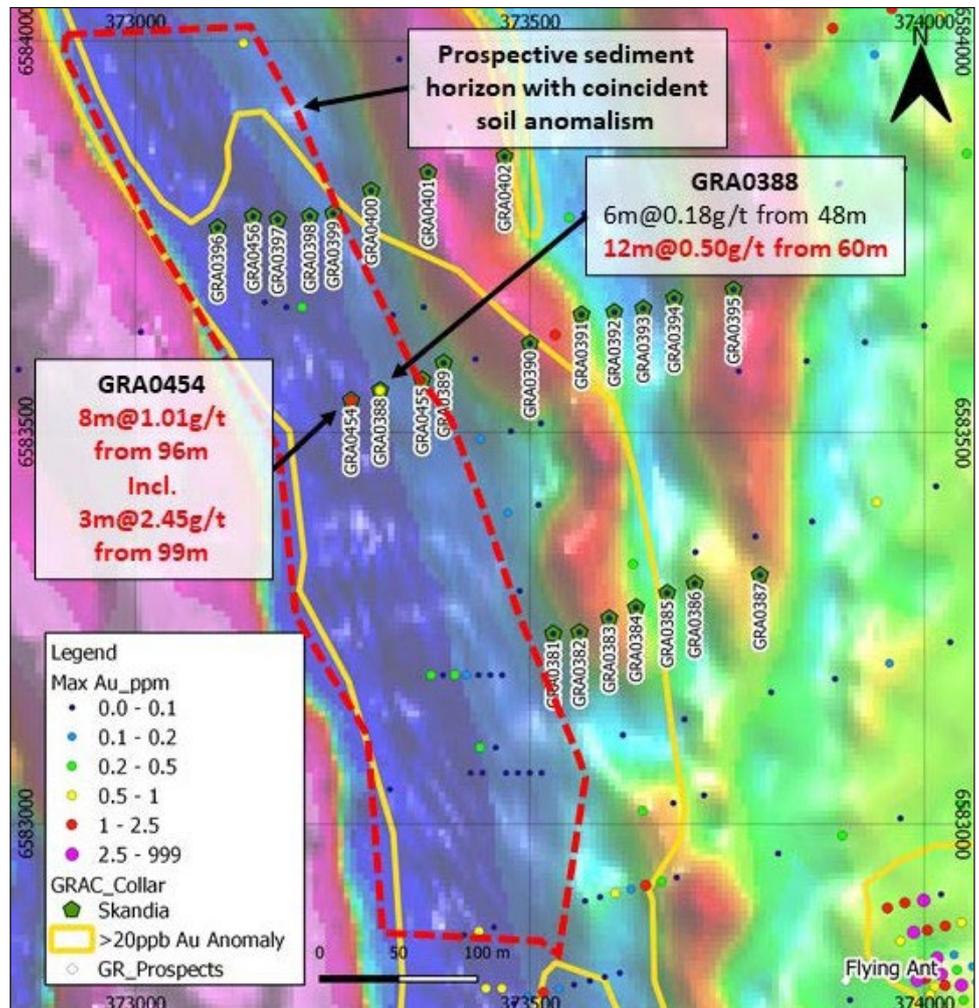
Figure 16: AC75 (left) and Maximus/Scandia (right) aircore drilling



Source: Essential

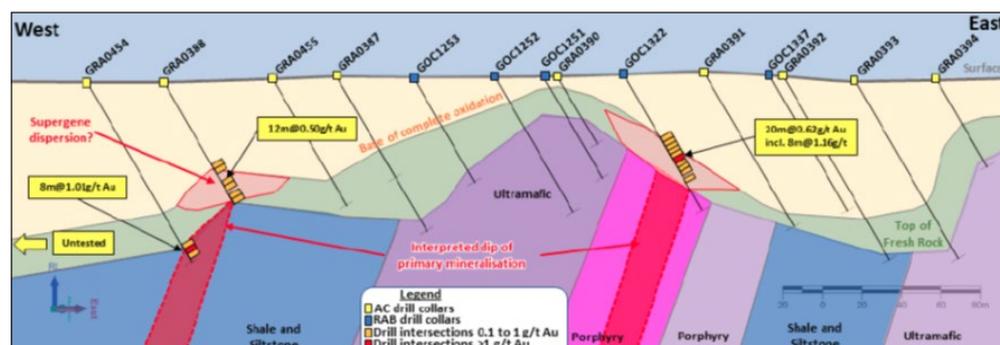
- ◆ Results at all prospects were encouraging, intersecting up to 8 m @ 1.10 g/t from 96 m at Skandia, 3.0 m @ 3.0 g/t Au from 30 m at Maximus and 12 m @ 0.49 g/t Au from 51 at AC75.
- ◆ We have included results from Skandia in Figures 17 (plan) and 18 (section) - results from all prospects are presented in the Company’s announcement of July 8, 2021.

Figure 17: Skandia drilling plan and results



Source: Essential

Figure 18: Skandia cross section



- ◆ The Skandia drilling tested Au, As and Mo soil anomalism, and intersected gold in holes GRA0454 and GRA0388, associated with a thick shale/siltstone unit between two ultramafic units, with this exhibiting moderate quartz brecciation and sulphidation.
- ◆ At Maximus anomalous gold is associated with quartz veining hosted in siltstone and adjacent ultramafics, with a NW trending, largely untested structure also being associated with the anomalous intercepts, and that at AC75 is associated with a north striking weakly brecciated shale/chert unit, interpreted as being an interflow sediment.

## PLANNED ACTIVITIES

- ◆ With ~A\$6.23 million in the bank as of March 31, 2021, the Company is well funded to progress exploration activities on all projects.
- ◆ Our view is that the key is expanding lithium resources, both either through expansion of the identified deposits, and through new discoveries.
- ◆ As mentioned earlier, the Company is currently undertaking reconnaissance activities over targets that have been identified, and plans to commence resource expansion drilling at Dome North early in the September quarter.
- ◆ Further RC drilling is planned at the Gards prospect at Juglah Dome, and further work at Golden Ridge is also planned, following up on the results of the recent drilling.
- ◆ This will include re-sampling anomalous composites to get the individual one meter splits, infill soil sampling over priority targets and further field checking and geological mapping - results will be used to plan further drilling, planned for the December quarter.

## PEERS

- ◆ Given the focus, Essential's peer group comprises hard-rock lithium explorers and potential developers.
- ◆ Table 2 presents a list of such lithium companies, including domestic and overseas operators - the average EV/tonne contained Li<sub>2</sub>O for this group is A\$440/tonne, although some companies have other projects, including Ardiden amongst others, which has an emphasis on gold.
- ◆ Note that the resources are included on a global basis; however the EV/tonne takes account for the equity share of resources held by the respective company.
- ◆ In terms of resources, a close match to Essential is Core, with the Finnis Project in the Northern Territory - in addition to the Resource, Core has an exploration target of 9.8 to 16.2 Mt @ 0.8% to 1.4% Li<sub>2</sub>O.
- ◆ The Finnis Project is also well advanced, being permitted, having an offtake agreement (as part of Tesla's supply chain) in place, and being advanced on financing and additional offtake.
- ◆ Another close match in Resource size is the recently listed Global Lithium Resources, with their earlier stage project near Marble Bar.
- ◆ In our view the highlights the upside potential for Essential, should the resource grow, and the project advance.

**Table 2: Lithium explorers/developers**

Lithium explorers/developers							
Company	EV	Key Projects	Stage	Global Resource (Mt)	Global Li <sub>2</sub> O Grade	Equity Contained Li <sub>2</sub> O	EV/Tonne Li <sub>2</sub> O
Sayona Mining Limited	A\$ 490.0 m	Authier (80%)	Development studies	20.9 Mt	1.00%	168 kt	\$2,912
Piedmont Lithium Inc.	A\$ 429.1 m	Piedmont, (100%), Authier (20%)	Scoping - 22,700 tpa LiOH.H <sub>2</sub> O	48.8 Mt	1.06%	352 kt	\$1,220
Core Lithium Ltd	A\$ 223.2 m	Finniss (100%)	Development Studies	14.7 Mt	1.32%	194 kt	\$1,149
Liontown Resources Limited	A\$ 1,521 m	Kathleen Valley, Buldania (both 100%)	Development Studies	171 Mt	1.31%	2,245 kt	\$678
Ardiden Ltd	A\$ 15.2 m	Various	Assessment, exploration	4.8 Mt	1.24%	60 kt	\$255
Prospect Resources Limited	A\$ 96.8 m	Arcadia (70%)	Development	43.2 Mt	1.41%	427 kt	\$227
Global Lithium Resources Limited	A\$ 23.5 m	Marble Bar (100%)	Assessment, exploration	10.6 Mt	1.00%	106 kt	\$221
AVZ Minerals Limited	A\$ 543.2 m	Manono (60%)	Permitting, Development	400 Mt	1.65%	3,960 kt	\$137
Essential Metals Limited	A\$ 14.9 m	Pioneer Dome (100%), Mavis Lake (51%)	Assessment, exploration	11.2 Mt	1.22%	136 kt	\$109

Source: IRESS, company reports and releases

## BOARD AND MANAGEMENT

- ◆ **Mr Craig McGown - Non-Executive Chairman:** Mr McGown is an investment banker with over 35 years of experience consulting to companies in Australia and internationally, particularly in the natural resources sector. He holds a Bachelor of Commerce degree and is an executive director of the corporate advisory business New Holland Capital Pty Ltd. Mr McGown has had extensive experience in the corporate finance sector, including mergers and acquisitions, capital raisings in both domestic and international financial markets, asset acquisitions and asset disposals, initial public offerings and corporate restructurings. Mr McGown is also currently a Non-Executive Director of Sipa Resources Limited.
- ◆ **Mr Tim Spencer - Managing Director:** Mr Spencer has over 25 years' experience in the resources sector and precious metals markets, working in various executive, accounting, treasury and finance roles including with three mining companies as an executive director and/or Chief Financial Officer and Company Secretary as well as with a large gold refining and trading enterprise. He joined Essential Metals in October 2017, and prior to his appointment as Managing Director has served in the roles of Chief Financial Officer, Company Secretary, and CEO.
- ◆ **Mr Paul Payne - Non-Executive Director:** Mr Payne is an experienced geologist with a strong technical background as well as senior executive and board experience across a range of commodities in both Australia and internationally. Mr Payne's experience includes the role of founding Managing Director of Dacian Gold Limited where he was instrumental in the major initial gold discoveries at its Mount Morgans project. Mr Payne is currently non-executive director of a number of ASX listed resource companies and continues to provide expert technical services to the resources industry through his consultancy (PayneGeo).
- ◆ **Mr Warren Hallam - Non-Executive Director:** Mr Hallam is a Metallurgist, a Mineral Economist and holds a Graduate Diploma in Business. He has over 35 years of technical and commercial experience across numerous commodities and businesses within the resources industry including with top-tier mining companies Western Mining Corporation, Metals X Limited, Westgold Resources and is currently Chairman of ASX listed Nelson Resources.

Mr Hallam was a member of the senior leadership team at Metals X (both as Executive Director and Managing Director) and played a critical role in the development of Metals X as a leading global tin producer and top-10 gold producer. Mr Hallam also held a range

of senior operation, strategic and business development roles with diversified ASX-100 resource company Western Mining Corporation.

- ◆ **Mr Andrew Dunn - Exploration Manager:** Andrew has over 17 years of experience in brownfield and grassroots exploration, as well as exposure to the mine environment throughout his career with both Gold Fields and Millennium Minerals. His geological expertise spans a variety of commodities, including gold and copper.
- ◆ **Mr Carl Travaglini – Company Secretary:** Mr Travaglini is a Chartered Accountant and Chartered Company Secretary. Before joining Essential Metals in 2020, Mr Travaglini worked for a number of WA based lithium and gold producers and explorers.



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