

08 June 2023

## Potential Primary REE Targets at Quicksilver

Golden Mile Resources Limited (ASX: G88; “Golden Mile”; “the Company”) has identified promising primary rare earth elements (“REE”) targets at its Quicksilver Nickel-Cobalt Project (“Quicksilver”) located approximately 300km south-east of Perth, near Lake Grace, in Western Australia.

- Review identifies potential carbonatite source for the significant oxide clay hosted REE mineralisation encountered in nickel-cobalt resource drilling at Quicksilver, either at depth or along strike (“Quicksilver Primary”). Best results within the oxide include<sup>1&2</sup>:
  - QAC0010: **4m @ 3,295ppm** TREO (including **1m @ 7,915ppm** TREO), QRC0039: **10m @ 2,548ppm** TREO (including **1m @ 3,949ppm**), QRC0135: **1m @ 10,600ppm** TREO from 57m and QRC0061: **1m @ 6,700ppm** TREO from 8m.
- Petrographic evidence of primary REE mineralisation at depth from diamond core sample<sup>3</sup>.
- Stock work veining and alteration present in deeper diamond core<sup>3</sup> along strike is also indicative of structurally controlled hydrothermal fluid and intrusion activity.
- 3D Geochemical modelling of resource drilling identified a carbonatite magmatic signature associated with an interpreted fault that transects the Quicksilver Nickel-Cobalt Oxide resource<sup>4</sup>.
- Deeper drilling to test below the oxide zone is planned while the metallurgical testing is currently being carried out.
- Further 3D Modelling also indicates the oxide clay hosted REE mineralisation remains open to both the northwest and southeast limits of the resource drilling.
- REE testwork incorporated into Stage 3 Metallurgical testwork<sup>5</sup> to determine the product stream(s) where the REE’s are concentrated from the beneficiation process.

Golden Mile CEO Mr Damon Dormer said *“Determining what lies underneath the Nickel and Cobalt is crucial for optimising infrastructure positioning. The fact that there is the potential for further REE mineralisation underneath the nickel and cobalt is hugely exciting for a deposit that just seems to keep on giving.*

*“The original plan was to test what lies beneath the resource as a part of the infill drilling to confirm the infrastructure strategy, however it makes sense to accelerate this work based on the improved geological understanding.*

*“It will also be fascinating to see the resultant REE grades in the concentrates from the metallurgical testwork.”*

## Summary

A review was completed by Golden Mile to understand the potential source of the significant REE mineralisation encountered at Quicksilver. The Company has interpreted a regional fault with a carbonatite magmatic signature that transects the nickel–cobalt resource (**Fig 1 & 2**).

This interpreted fault has a strong spatial correlation with REE mineralisation leading the Company to believe there is potential carbonatite intrusions or veins emplaced along this fault into the underlying ultramafic rocks. This could explain the significant REE mineralisation encountered in the overlying clay oxide zone.

Carbonatites can contain economic concentrations of REE and therefore drill testing the Quicksilver bedrock is a high priority.

### Quicksilver Primary - REE

The Company previously announced significant REE mineralisation associated with the large nickel-cobalt oxide resource at Quicksilver<sup>1&2</sup>. Best results announced to date include:

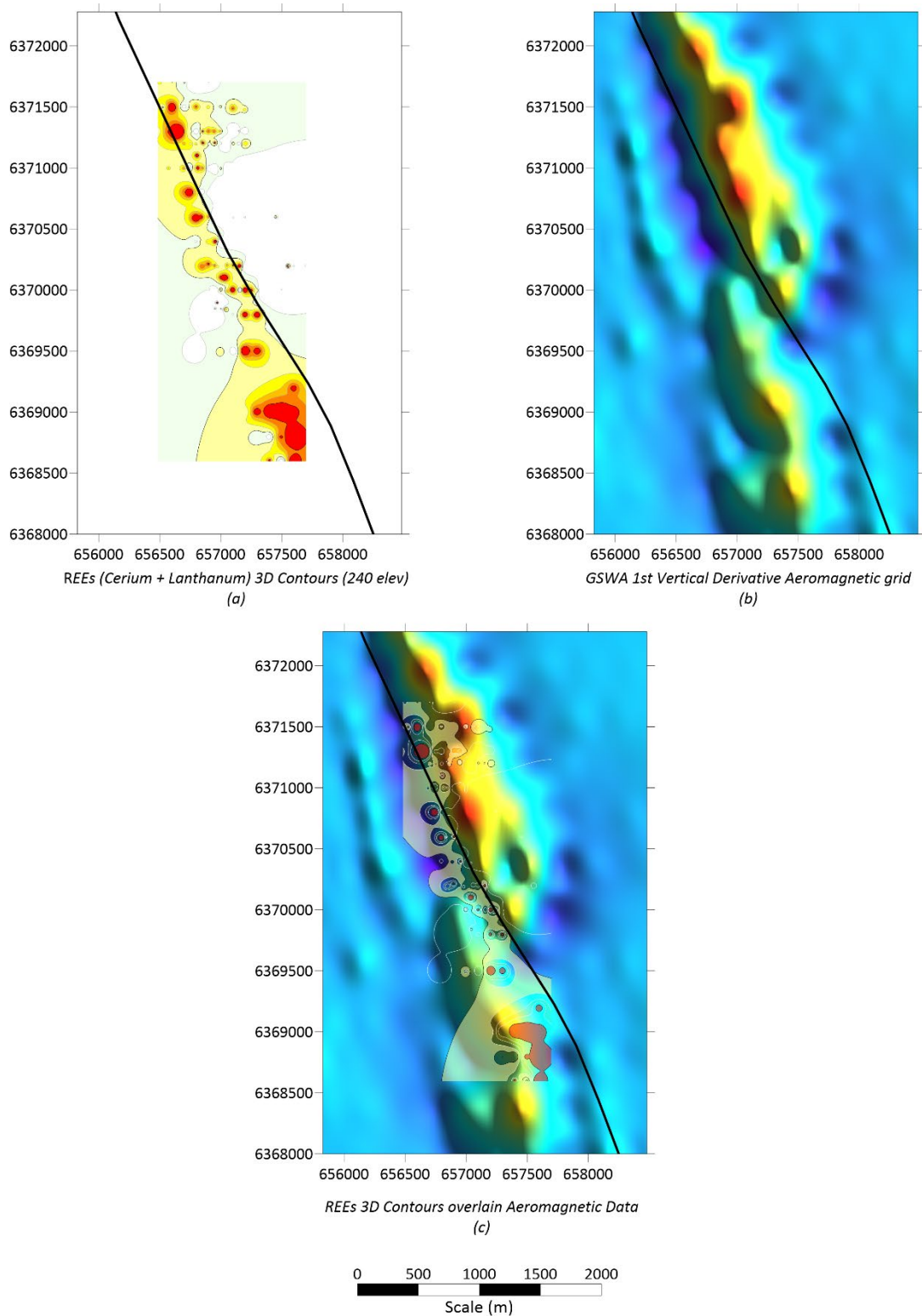
- QAC0010: **4m @ 3,295ppm** TREO (including **1m @ 7,915ppm** TREO) from 42m.
- QRC0039: **10m @ 2,548ppm** TREO (including **1m @ 3,949ppm**) from 21m.
- QRC0135: **1m @ 10,600ppm** TREO from 57m.
- QRC0061: **1m @ 6,700ppm** TREO from 8m.

The REE mineralisation encountered so far is clay hosted within the oxide zone. The vast majority of drilling has been vertical and shallow to delineate the nickel-cobalt oxide resource, and the underlying bedrock remains mostly untested. The oxidized protolith rock type is a high- grade metamorphic rock which is thought to have been a layered ultramafic intrusion and is the assumed source for the nickel - cobalt resource and high grade scandium mineralisation.

Stage 3 metallurgical testwork to further develop the proposed beneficiation process flowsheet for nickel and cobalt extraction has commenced<sup>5</sup>. REE beneficiation potential (producing a concentrate without the need for hydrometallurgy) has also been added to this testwork.

The Company has completed a review of the exploration potential for primary REE mineralisation within the underlying unoxidized (fresh) zone associated with carbonatite intrusions or veining and carbonatite associated rocks (“CARS”).

Ultramafic rocks are commonly associated with carbonatite formations in which carbonatites often occur as intrusive bodies or as veins within ultramafic complexes. Conventional theory is that this relationship is due to both ultramafic and carbonatite magmas intruding along the same faults which in turn focus them to the same location. In addition, ultramafic rocks may also provide a source of alkaline elements and carbonate-rich minerals which contribute to the formation of carbonatites.



**Figure 1.** (a) REE (Cerium + Lanthanum) 3D contours at 240 msl with interpreted fault (b) regional aeromagnetic map which clearly shows a structural break in the main magnetic unit interpreted as a fault (c) REE 3D contour overlain the aeromagnetic map to show how closely the REE mineralisation correlates to the structural break

A more recent theory is that the interaction of carbonatite magma with quartz-rich rocks, including granites and gneisses, transforms them into ultramafic rocks<sup>6</sup>. The unusual formation of ultramafic rock proposed by this theory may explain the unique mineralogy encountered within the large Quicksilver nickel – cobalt oxide resource.

It's this unique mineralogy that Golden Mile is looking to exploit by developing a low energy beneficiation process for extraction of nickel, cobalt, iron, chromium and now REE without the need for any hydrometallurgical processes, greatly reducing complexity and costs.

The Company completed 3D geochemical modelling of the sum of REEs cerium ("Ce") and lanthanum ("La") which are the only two REEs which were consistently included in the assay technique used for the nickel–cobalt resource calculation\*. In addition to the two REEs mentioned above, the Company also modelled the common carbonatite pathfinder elements barium ("Ba"), strontium ("Sr"), phosphorous ("P"), titanium ("Ti") and thorium ("Th").

There is clear spatial association with all the REE and pathfinder elements with a large fault interpreted from the regional aeromagnetic data (**Fig 1 & Fig 2**). The Company believes this is an indication that the distribution of the REE mineralisation is structurally controlled and has a carbonatite magmatic signature.

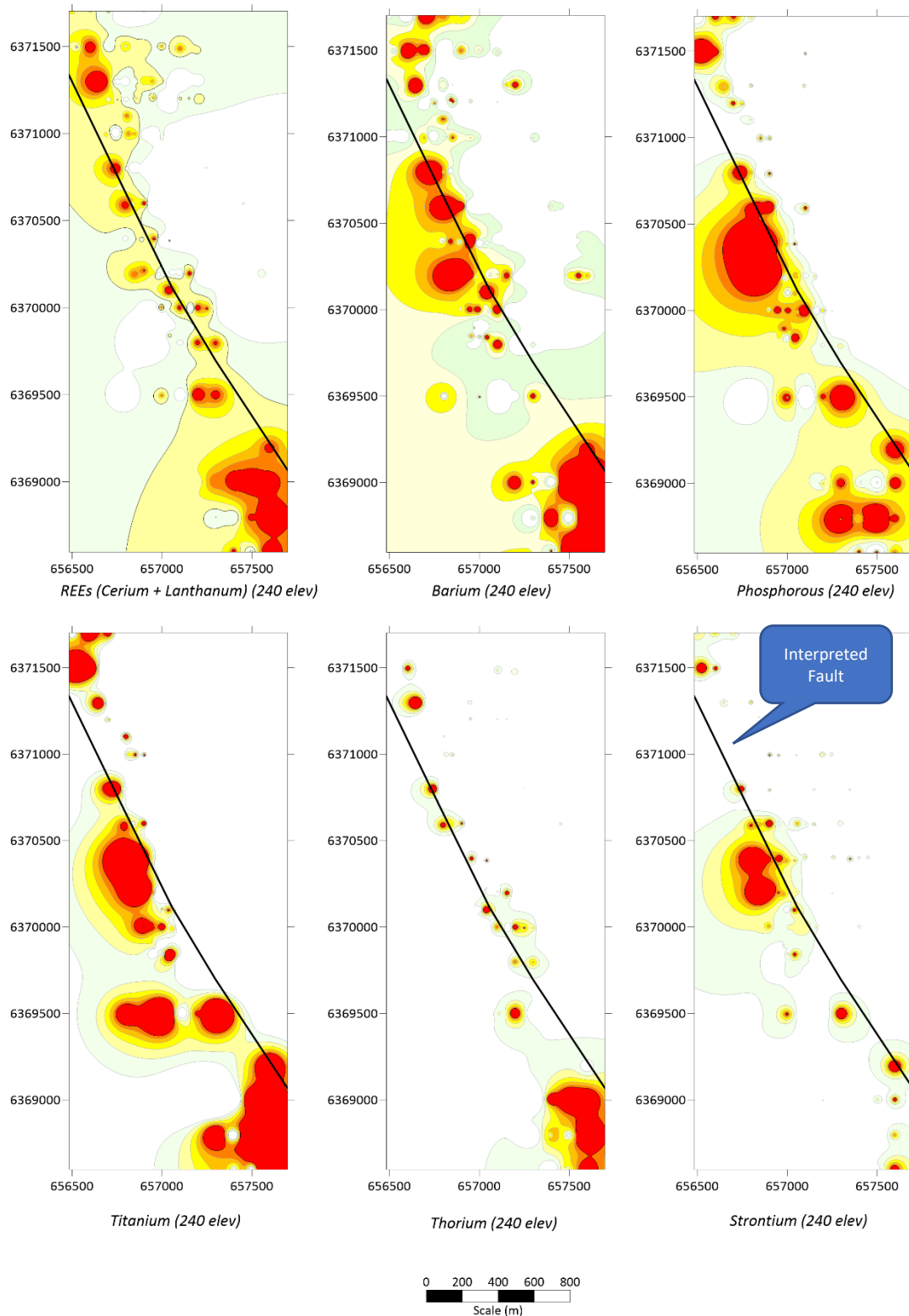
A petrographic sample from a diamond drill hole (124m depth; QD0005) completed by Golden Mile in 2018<sup>3</sup> to test a basement conductor, located approximately 750m north of the main nickel–cobalt resource, recorded traces of monazite and minor graphite interlocked with pyrite and pyrrhotite.

Monazite is one of the main REE primary minerals and therefore provides some direct evidence of primary REE mineralisation. Monazite and graphite do not normally occur in unaltered ultramafic intrusions and therefore their presence is an indication that REE rich fluids may have been introduced during the subsequent alteration of the ultramafic rocks for these minerals to form. Furthermore, monazite and graphite/pyrite intergrowths are a common feature of carbonatite formations.

The Company is interpreting that the Quicksilver geological setting is highly prospective for primary REE mineralisation related to carbonatite intrusions or veining at depth under the existing nickel-cobalt oxide resource or nearby along strike of the interpreted regional fault.

An exploration drill programme ("Quicksilver Primary REE") consisting of approximately 1,500m RC is being designed and will initially target the fresh rock directly underneath the nickel-cobalt oxide resource focussing on the interpreted fault. The Company will provide further details of this programme once rig availability and approvals have been confirmed with a proposed start date.

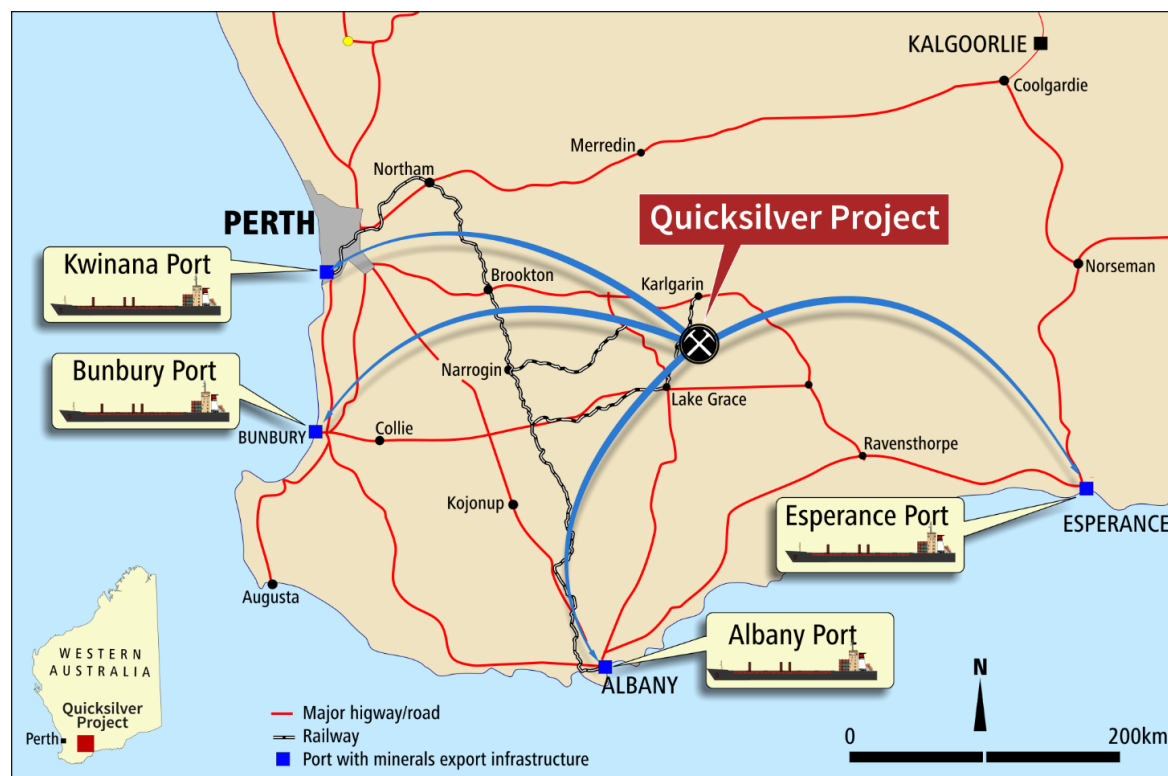
*\*It should be noted that the analysis at the time was optimised for nickel and cobalt and therefore the actual Ce and La assays used in this modelling are indicative only. Notwithstanding these limitations the Company believes that they are still suitable to identify any general trends or relationships for further exploration drill targeting. Modelling was optimised to enhance trends not quantity.*



**Figure 2.** Geochemical 3D contours at the 240 elevation from modelling of resource drillhole data. There is a clear spatial correlation between the carbonatite pathfinder elements REE, barium, phosphorous, titanium, thorium and strontium and the interpreted fault from aeromagnetic data. The Company believes this demonstrates the REE mineralisation has a carbonatite magmatic signature

### About Quicksilver Nickel-Cobalt Project

The Quicksilver Nickel-Cobalt Project is approximately 50km<sup>2</sup> in area and covers a belt of mafic-ultramafic rocks (greenstones) prospective for nickel sulphide and nickel laterite mineralisation. The Project is located near the town of Lake Grace (approximately 300km SE of Perth) on privately owned farmland in an area with excellent local infrastructure, including easy access to grid power, sealed roads, and a railway line connected to key ports (Fig 3).



**Figure 3.** Location of Quicksilver Nickel-Cobalt Project

In 2018 the Company announced a maiden indicated and inferred Resource estimate of:

Classification	Tonnes (Mt)	Ni Grade (%)	Co Grade (%)	Contained Ni (t)	Contained Co (t)
Indicated	4.4	0.72	0.049	31,900	2,100
Inferred	21.9	0.63	0.042	136,600	9,100
<b>Total</b>	<b>26.3</b>	<b>0.64</b>	<b>0.043</b>	<b>168,500</b>	<b>11,300</b>

*cut-off grade >0.5% Ni or >0.05% Co*

for the Quicksilver deposit<sup>4</sup>. Metallurgical testwork completed last year significantly developed the understanding of the unique saprolitic mineralisation at the Project and a potential pathway to production<sup>7</sup>.

The Company has identified a customised multi-products flowsheet to produce nickel-cobalt and iron-nickel-cobalt-chromium concentrates as well as industrial products<sup>5</sup>. The process would be low energy using the physical attributes of the free digging ore.

Golden Mile is continuing to develop the metallurgical flowsheet and is gaining more confidence in the process with results to date encouraging the Company to continue this work. The Company has now commenced Stage 3 metallurgical diamond drilling and testwork to further de-risk the process flowsheet and provide the confidence to proceed to a scoping study<sup>5</sup>. The Company will also incorporate additional studies to explore downstream options to produce secondary nickel products suitable for EV batteries as well as high value industrial products which may add further value but is not required for the current business model.

## References

- |   |             |
|---|-------------|
| <sup>1</sup> <a href="#">Further REE &amp; Scandium Mineralisation at Quicksilver Project</a>   | 01 MAR 2023 |
| <sup>2</sup> <a href="#">REE Mineralisation Confirmed at Quicksilver Ni-Co Project</a>  | 18 JAN 2023 |
| <sup>3</sup> <a href="#">Results of Diamond Drilling and Exploration Update</a>   | 17 OCT 2018 |
| <sup>4</sup> <a href="#">Quicksilver Nickel-Cobalt - Significant Maiden Resource</a>  | 19 NOV 2018 |
| <sup>5</sup> <a href="#">Diamond Drilling Completed at Quicksilver</a>  | 05 APR 2023 |
| <sup>6</sup> Carbonatite metasomatism, the key to unlocking the carbonatite-phoscorite-ultramafic rock paradox; O.V. Vasyukova , A.E. Williams-Jones. Chemical Geology 2022 |             |
| <sup>7</sup> <a href="#">Potential to Develop Beneficiated Products at Quicksilver</a>  | 18 MAY 2022 |

### *JORC Disclosures*

The resource drilling and diamond drilling referenced in this article and used for the 3d geochemical modelling has been previously disclosed with accompanying JORC tables in the above references no 3 and 4.

The aeromagnetic data referred to in this article is the publicly available GSWA 40m Merge State Grids and was downloaded from the GSWA website.

There are no new results released in this article. The first mention of any previous results has a superscript that matches the above references that is the original release that contains the disclosure JORC tables.

*This Announcement has been approved for release by the Board of Golden Mile Resources Limited.*

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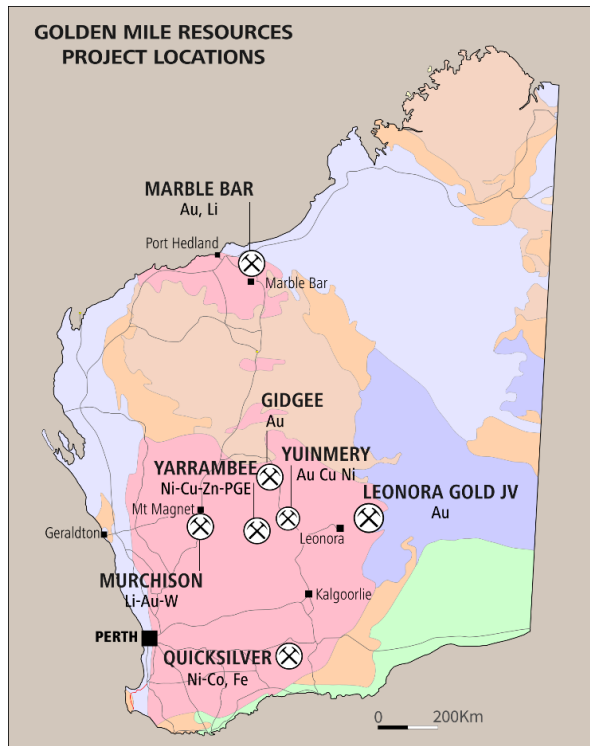
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*Note 1: Refer ASX announcement on the said date for full details of these results. Golden Mile is not aware of any new information or data that materially affects the information included in the said announcement.*

## About Golden Mile Resources Ltd



Golden Mile Resources Ltd (Golden Mile; ASX: G88) is an ASX listed, Western Australian based, resource company with a focus on nickel, copper and lithium.

The 100% owned Quicksilver Ni-Co Project, located about 300km southeast of Perth, has an Indicated and Inferred Resource of 26.3 Mt @ 0.64% Ni & 0.04% Co (cut-off grade >0.5% Ni or >0.05% Co) and the Company is conducting metallurgical testwork to unlock significant value from the Project.

The ~816km<sup>2</sup> Yarrambee Ni, Cu, Zn, PGE & Au Project is within the Narndee Igneous Complex, located in the Murchison region, WA.

Golden Mile's Marble Bar and Murchison greenfield lithium Projects were acquired in 2022.

The Company's gold projects are in the highly prospective Eastern Goldfields region and includes the Yuinmery (100%) and Leonora JV (Kin Mining earning up to 80%) Projects.

Golden Mile is focused on creating shareholder value through exploration success. Its Board has a proven track record of exploration, development, and production success.

### **Competent Persons Statement**

*The information in this report that relates to Exploration Results is based upon and fairly represents information compiled by Mr Jordan Lockett, a Competent Person who is a Member of the Australasian Institute of Mining and Metallurgy. Mr Lockett is a full-time employee of the Company and owns Shares and Options in the Company. Mr Lockett has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Lockett consents to the inclusion in the report of the matter based on his information in the form and context in which it appears.*

*The Company confirms it is not aware of any new information or data that materially affects the exploration results set out in the in the original announcements referenced in this announcement and all material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original announcements.*

### **Forward-Looking Statements**

*This document may include forward-looking statements. Forward-looking statements include, but are not limited to, statements concerning Golden Mile Resources Ltd (ASX: G88) planned exploration program and other statements that are not historical facts. When used in this document, the words such as "could," "plan," "estimate," "expect," "intend," "may", "potential," "should," and similar expressions are forward-looking*



*statements. Although Golden Mile Resources Ltd (ASX: G88) believes that its expectations reflected in these forward-looking statements are reasonable, such statements involve risks and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements.*