

## QUARTERLY REPORT 30 JUNE 2022

29 July 2022

### HIGHLIGHTS

- **Black Swan Disseminated Mineral Resource Update**
  - Updated Black Swan Mineral Resource Estimate of **28.9Mt at 0.63% nickel containing 181kt nickel**
  - Measured and Indicated Resources now have 35% more contained nickel compared to the 2014 Resource
- **Silver Swan Mineral Resource Update**
  - Total Indicated and Inferred Resource at Silver Swan now **130kt @ 9.6% Ni for 12.4kt Ni** at a 4.5% Ni cut off
  - High-grade Indicated Mineral Resources from both Golden Swan and Silver Swan now total 250kt @ 7.10% Ni for 17.6kt Ni, a 75% increase of nickel metal reported in 2019
- **Black Swan Bankable Feasibility Study**
  - Solid progress made on the Black Swan Feasibility Study
  - Preliminary metallurgical testwork demonstrates amenability of concentrates from both serpentinite and talc carbonate ore types to pressure oxidation, producing mixed hydroxide precipitate
  - Internal preliminary economic assessment supports various restart options including a 2.2 Mtpa processing plant throughput case
- **Corporate**
  - Discussions progressing with Pure Battery Technologies on providing concentrate feed to their proposed Kalgoorlie pCAM refinery
  - Cash and investments – \$11.1 million at the 30 June 2022

**Poseidon Nickel (ASX: POS, “the Company”)** is pleased to report on its activities for the June quarter 2022.

Managing Director and CEO, Peter Harold, commented: *“The Company achieved an important milestone during the quarter with the release of the updated Black Swan Disseminated and Silver Swan Mineral Resource Estimates resulting in an increase in the total resources at Black Swan to 206,000 tonnes of nickel.*

*We have made solid progress on the Black Swan Bankable Feasibility Study with a 2.2 Mtpa throughput operation now being considered in addition to the 1.1 Mtpa case to potentially take advantage of the opportunity presented by the proposed PBT Kalgoorlie refinery hub and/or supplying rougher concentrate to other third parties in WA.*

*This was re-enforced by the internal Preliminary Economic Assessment undertaken during the quarter that concluded there was rationale for considering the 2.2Mtpa throughput case in addition to the 1.1Mtpa Base Case.”*

## BLACK SWAN

### Black Swan Disseminated Mineral Resource Estimate Update

The updated Black Swan Disseminated (**BSD**) Mineral Resource Estimate (**MRE**) now totals 28.9Mt at 0.63% nickel grade for 181kt of nickel contained (refer to Appendix 1 for Mineral Resource Statement). The updated MRE significantly increased the Company's confidence in the nickel grade and distribution of the metallurgically important serpentine and talc-carbonate hosted disseminated mineralisation. The MRE was prepared by independent resource consultants Golder Associates Pty Ltd (**Golder**) using all available assay data as of June 2022.

The MRE replaces the previous Black Swan MRE completed by Golder in 2014 (*refer to Company announcement "Black Swan Mineral Resource" dated 4 August 2014*) which reported 29.1 Mt @ 0.59% Ni for 170.9kt of nickel contained excluding stockpiles which have not been updated at this time.

**TABLE 1 - COMPARISON BETWEEN 2014 MRE AND 2022 MRE AT 0.4% NI CUT-OFF**

	2022			2014		
	Tonnage (mt)	Ni (%)	Ni (kt)	Tonnage (mt)	Ni (%)	Ni (kt)
<b>Measured</b>	<b>0.8</b>	<b>0.76</b>	<b>6</b>			
<b>Indicated</b>	<b>9.9</b>	<b>0.75</b>	<b>74</b>	8.4	0.70	59
<b>Inferred</b>	<b>18.2</b>	<b>0.55</b>	<b>101</b>	20.7	0.54	112
<b>TOTAL</b>	<b>28.9</b>	<b>0.63</b>	<b>181</b>	29.1	0.59	171

Totals may not add due to rounding to appropriate reporting precision

### Silver Swan Mineral Resource Estimate Update

The updated Silver Swan MRE was compiled by independent contractors Snowden Optiro Pty Ltd post-completion of a 38-hole, 8,179 metre exploration and resource drilling program. The drilling program largely focused on the Tundra Mute mineralised shoot with less emphasis on the other three mineralised areas, Goose, Fledgling-Canard and Peking Duck. The Goose mineralised shoot includes some remnant mineralisation, and the top 15 metres of the Fledgling-Canard shoot has also been mined. The Peking Duck and Tundra Mute shoots are unmined.

The program increased the geological understanding and confidence of the Tundra Mute area and upgraded a significant portion of the Inferred Resource to the Indicated category. The Indicated category can be used to compile a mining inventory and a Reserve, subject to the appropriate physical and economic assumptions.

The Silver Swan MRE totals 130,000t at 9.6% nickel for 12,400t of contained nickel and was reported in accordance with the JORC 2012 Code at a 4.5% nickel cut-off grade (refer to Appendix 1 for Mineral Resource Statement).

### Bankable Feasibility Study

The Company continues to make solid progress with the Bankable Feasibility Study (**BFS**). The updated BSD MRE was a significant milestone that has provided a better understanding of the serpentine and talc-carbonate hosted mineralisation that will be mined in the open pit. This is important as it helps to identify mining blocks suitable to produce a smelter grade concentrate.

A laboratory pressure oxidation (**POX**) test was completed on concentrate produced from a ~50:50 talc-carbonate/serpentine ore blend earlier this year. The extraction results were excellent and demonstrated the amenability of concentrate produced from high talc ore blends to POX. This has the potential to significantly increase the volume of ore from the BSD resource that could be economically mined and processed.

An internal Preliminary Economic Assessment was undertaken during the quarter to assist management and the Board make decisions in relation to the required workstreams and approval of selected expenditure. The Company concluded there was rationale to consider both the 1.1Mtpa and 2.2Mtpa throughput scenarios for the Black Swan restart. The Company has requested GR Engineering Services (**GRES**) to investigate increasing the throughput of the concentrator to 2.2Mtpa (nameplate) concurrently with 1.1Mtpa process plant and infrastructure study. This will include capex and opex estimates to produce approximately 100ktpa of concentrate to feed into a POX circuit to produce a mixed hydroxide precipitate (**MHP**).

The potential to process concentrate produced from higher talc ore types through POX opens up a path way to market for these ore types and will assist the Company in its discussions with Pure Battery Technologies (**PBT**) in relation to the potential supply of concentrate to their proposed Kalgoorlie pCAM refinery hub and/or to other third-party processor in WA.

The Company will continue with the studies on both these scenarios to determine the restart option which presents the most attractive economic outcome. The 1.1Mtpa BFS is on track to be completed at the end of September 2022, with the 2.2Mtpa studies requiring further work beyond this date to achieve a bankable feasibility level of accuracy.

The following table summarises the completion status for key BFS workstreams.

**TABLE 2 – BLACK SWAN BFS COMPLETION STATUS**

Note: each shaded block of scale represents 25% completion of study workstream (i.e. 75% complete: )

BFS Workstream	Completion Status	Comment
Mineral Resource Estimate		<ul style="list-style-type: none"> <li>Black Swan resource drilling &amp; Mineral Resource Estimate</li> <li>Silver Swan resource drilling &amp; Mineral Resource Estimate</li> <li>Golden Swan resource drilling &amp; maiden Resource Estimate</li> <li>Ongoing review of additional drilling requirements to increase indicated resource, particularly for 2.2Mtpa throughput case</li> </ul>
Mine Planning for 1.1Mtpa operation		<ul style="list-style-type: none"> <li>Black Swan Serpentinite mine plan optimisation for 1.1Mtpa throughput</li> <li>Silver Swan Mine Planning</li> <li>Golden Swan Mine Planning</li> </ul>
Mine Planning for 2.2Mtpa operation		<ul style="list-style-type: none"> <li>Golden Swan and Silver Swan mine planning as per 1.1Mtpa throughput</li> <li>Black Swan serpentinite and talc carbonate mine plan optimisations for 2.2Mtpa throughput</li> </ul>
BSD talc distribution		<ul style="list-style-type: none"> <li>Quantification of talc content and distribution (QXRD testing) ongoing</li> <li>QXRD results to be mapped into BSD Mineral Resource to assist mine planning and ore blending</li> </ul>
Underground rehabilitation works		<ul style="list-style-type: none"> <li>Ladderway refurbishment completed, ongoing maintenance</li> <li>Silver Swan decline rehabilitation completed</li> </ul>
Mine waste dump and tailings design		<ul style="list-style-type: none"> <li>Integrated Waste Rock Landform (IWRL) design nearing completion</li> </ul>
Silver Swan tailings		<ul style="list-style-type: none"> <li>Silver Swan Tailings reclamation report issued</li> </ul>
GRES 1.1Mtpa engineering Study		<ul style="list-style-type: none"> <li>Mechanical Equipment Lists completed</li> <li>Design criteria and mass balances completed</li> <li>Capital and operating cost Request for Quotation (RFQ) process ongoing</li> </ul>
GRES 2.2Mtpa engineering Study		<ul style="list-style-type: none"> <li>As per 1.1Mtpa engineering study</li> </ul>
GRES POX engineering study		<ul style="list-style-type: none"> <li>Scoping level POX engineering study underway</li> </ul>
Power supply		<ul style="list-style-type: none"> <li>Load studies progressing with Western Power to access 18MVA from grid</li> </ul>

BFS Workstream	Completion Status	Comment
Water supply		<ul style="list-style-type: none"> <li>Formal agreement executed to access up to 3,600m<sup>3</sup> of groundwater per day from existing open pits proximal to Black Swan</li> </ul>
Non-processing infrastructure		<ul style="list-style-type: none"> <li>Investigating workforce accommodation options</li> </ul>
Concentrate transport		<ul style="list-style-type: none"> <li>Concentrate logistics options study</li> </ul>
Permits / regulatory approvals		<ul style="list-style-type: none"> <li>Current permits suitable for start-up, amendments for Silver Swan tailings and larger waste and tailings facilities for 2.2Mtpa throughput</li> </ul>
Traditional owners		<ul style="list-style-type: none"> <li>Preliminary discussions held with traditional owners are progressing</li> </ul>
ESG & sustainability		<ul style="list-style-type: none"> <li>ESG framework developed</li> <li>ESG audit to be completed following finalisation of mining and engineering studies</li> </ul>
Offtake		<ul style="list-style-type: none"> <li>Significant number of approaches from potential offtake partners</li> <li>Mine production schedules to be finalised</li> </ul>
Funding		<ul style="list-style-type: none"> <li>Approaches received from parties interested in offtake and debt &amp; equity funding arrangements</li> </ul>

**Other**

Other activities were progressed over the quarter to prepare for the restart of Black Swan. Rehabilitation of the Silver Swan decline was completed and dewatering of the open pit commenced.



**FIGURE 1 – SILVER SWAN DECLINE REHABILITATION**



**FIGURE 2 – BLACK SWAN OPEN PIT**



**FIGURE 3 – SCALING THE SILVER SWAN DECLINE**



FIGURE 4 – INSPECTING A NEW MONO PUMP

## LAKE JOHNSTON

### Lake Johnston Exploration Update

The Company is investing all its available time and resources into completing the Black Swan Feasibility Study. A Lake Johnston exploration program is planned in the future with a Program of Works approved earlier this year to undertake a 15,000m drilling program targeting the Western Ultramafic Unit.

During the quarter, discussion continued with the Lake Johnston native title party on the Company proposed activities, re-logging of selected drill holes and the clean up the on-site core farm.

## WINDARRA

### Windarra Gold Tailings Project

Terms have been agreed with the preferred JV partner for the Windarra Gold Tailings Project and a draft Heads of Agreement is being prepared. This prospective JV partner has extensive experience developing and operating tailings projects.

## OPERATIONS

### Operating Update

#### Black Swan

Black Swan was on care and maintenance during the quarter. Activities over the period included rehabilitation works on the Silver Swan decline and commencement of the Black Swan open pit dewatering.

Activities on site were completed without any significant safety incidents.

## Windarra

Windarra remained on care and maintenance during the quarter.

## Lake Johnston

Lake Johnston remained on care and maintenance during the quarter.

## CORPORATE

### Pure Battery Technologies

In July 2021, Poseidon signed an MOU with Pure Battery Technologies (**PBT**) which has plans to build and operate a refinery hub for production of battery precursor Cathode Active Materials (**pCAM**) in Kalgoorlie, Western Australia. If PBT's pCAM hub is constructed, it could be of great benefit to Poseidon by maximising margins on concentrates supplied to the refinery as well as potentially being able to treat a "rougher" nickel concentrate from Black Swan produced by blending both serpentinite and talc-carbonate ores.

Discussions with PBT to supply concentrate from Black Swan as a base load feed for their proposed Kalgoorlie pCAM refinery project remained ongoing during the quarter.

### Personnel

Warren Hallam, a highly experienced resource executive, company director, metallurgist, and mineral economist joined the Poseidon board in June. Warren is an important addition to the board given his experience in base metal project financing, development and operations and in particular nickel given his time with Western Mining Corporation.

### COVID Update

The Company and its contractors continue to operate within the safe operating parameters specified by the Western Australian Government.

### Financial

As at 30 June 2022, the Company held cash and current investments totalling \$11.1 million.

Over the June 2022 quarter, Poseidon's net cash outflow from operating and investing activities totalled \$5.6 million which included \$2.5 million of exploration and evaluation costs.

Costs incurred over the quarter of \$5.2 million were consistent with a forecast of \$5.3 million.

There were no production or development activities conducted over the quarter and as such no production or development expenditures were incurred.

Related party expenses over the quarter totalled \$51,591, all of which were fees paid to Directors.

With feasibility study workstreams on the Black Swan restart accelerating Poseidon has forecasted costs of \$5.5 million over the next quarter.

### Other

Lake Johnston tenement E63/1784 was surrendered over the period. There were no other changes in mineral tenements during the period.

*This Quarterly Activities Report was authorised for release by the Poseidon Board of Directors.*



**Peter Harold**  
**Managing Director and CEO**

29 July 2022

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## About Poseidon Nickel Limited

Poseidon Nickel Limited (ASX Code: POS) is a nickel sulphide exploration and development company with three projects located within a radius of 300km from Kalgoorlie in the Goldfields region of Western Australia and a resource base of around 400,000 tonnes of nickel and 180,000 ounces of gold.

Poseidon's strategy is focused on the exploration and eventual restart of its established nickel operations in Western Australia. A critical element of this strategy has been to acquire projects and operations with significant existing infrastructure, large nickel resources and geological prospectivity likely to lead to resource growth through the application of modern exploration techniques.

Poseidon owns the Windarra, Black Swan and the Lake Johnston Nickel Projects. In addition to the mines and infrastructure including concentrators at Black Swan and Lake Johnston, these projects have significant exploration opportunities demonstrated by the discovery of the Golden Swan Resource at Black Swan and the Abi Rose mineralisation at Lake Johnston.

Black Swan will be the first project to restart followed by Lake Johnston and then Windarra, subject to favourable Feasibility Studies, appropriate project financing structures being achieved, the outlook for the nickel price remaining positive and all necessary approvals being obtained.

The Company completed a Definitive Feasibility Study on retreating the gold tailings at Windarra and Lancefield in July 2021 and is currently investigating potential partners to develop the project and monetise the asset.

### COMPETENT PERSON STATEMENTS:

The information contained within this announcement is extracted from the reports titled:

- "Black Swan Restart Update" released 12 July 2022
- "More Nickel in Updated Black Swan Mineral Resource" released 4 July 2022
- "Non-Executive Director Warren Hallam Appointment" released 1 June 2022
- "Silver Swan Resource Update" released 27 April 2022
- "Golden Swan Maiden Resource" released 27 October 2021
- "Silver Swan Tailings – Maiden Resource Estimate" released 15 September 2021
- "Gold Tailings Resource at Windarra updated to JORC 2012 Indicated" 22 Jun 2020.

which are available to view on [www.poseidon-nickel.com.au](http://www.poseidon-nickel.com.au). The Company confirms that it is not aware of any new information or data that materially affects the information included in the original announcement and, in the case of Minerals Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement 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 materially modified from the original market announcement."

The Australian Securities Exchange has not reviewed and does not accept responsibility for the accuracy or adequacy of this release.

### FORWARD LOOKING STATEMENTS:

This release contains certain forward looking statements including nickel production targets matters that may involve risks or uncertainties and may involve significant items of subjective judgement and assumptions of future events that may or may not eventuate (Forward Statements). Often, but not always, forward looking statements can generally be identified by the use of forward-looking words such as "may", "will", "except", "intend", "plan", "estimate", "anticipate", "continue", and "guidance", or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, anticipated production and expected costs. Indications of, and guidance on future earnings, cash flows, costs, financial position and performance are also forward-looking statements. No independent third party has reviewed the reasonableness of any such statements or assumptions. None of the Company, their related bodies corporate and their respective officers, directors, employees, or advisers represent or warrant that such Forward Statements will be achieved or will prove to be correct or gives any warranty, express or implied, as to the accuracy, completeness, likelihood of achievement or reasonableness of any Forward Statement contained in this release. Except as required by law or regulation, the Company assumes no obligation to release updates or revisions to Forward Statements to reflect any changes. Recipients should form their own views as to these matters and any assumptions on which any of the Forward Statements are based and not place reliance on such statements.

# APPENDIX 1 - MINERAL RESOURCE STATEMENT

## Nickel Projects Mineral Resource Statement

Nickel Sulphide Resources	JORC Compliance	Cut Off Grade	MINERAL RESOURCE CATEGORY															
			MEASURED			INDICATED			INFERRED			TOTAL						
			Tonnes (Kt)	Ni% Grade	Ni Metal (t)	Tonnes (Kt)	Ni% Grade	Ni Metal (t)	Tonnes (Kt)	Ni% Grade	Ni Metal (t)	Tonnes (Kt)	Ni% Grade	Ni Metal (t)	Co% Grade	Co Metal (t)	Cu% Grade	Cu Metal (t)
<b>BLACK SWAN PROJECT</b>																		
Black Swan	2012	0.4%	800	0.76	6,000	9,900	0.75	74,000	18,200	0.62	101,000	28,900	0.63	181,000	0.01	4,500	0.02	5,800
Silver Swan	2012	4.5%	-	-	-	138	9.00	12,450	8	6.00	490	146	9.50	12,940	0.16	240	NA	-
Golden Swan	2012	1.0%	-	-	-	112	4.70	5,200	48	2.20	1,050	160	3.90	6,250	0.08	120	0.30	480
Silver Swan Tailings	2012	NA	675	0.92	6,200	-	-	-	-	-	-	675	0.92	6,200	0.07	450	0.04	250
<b>LAKE JOHNSTON PROJECT</b>																		
Maggie Hays	2012	0.8%	-	-	-	2,600	1.60	41,900	900	1.17	10,100	3,500	1.49	52,000	0.05	1,800	0.10	3,400
<b>WINDARRA PROJECT</b>																		
Mt Windarra	2012	0.9%	-	-	-	922	1.56	14,000	3,436	1.66	57,500	4,358	1.64	71,500	0.03	1,200	0.13	5,700
South Windarra	2004	0.8%	-	-	-	772	0.98	8,000	-	-	-	772	0.98	8,000	NA	-	NA	-
Cerberus	2004	0.75%	-	-	-	2,773	1.25	35,000	1,778	1.91	34,000	4,551	1.51	69,000	NA	-	0.08	3,600
<b>TOTAL</b>																		
Total Ni, Co, Cu Resources	2004 & 2012		1,475	0.83	12,200	17,217	1.11	190,550	24,370	0.84	204,140	43,062	0.94	406,890	0.02	8,310	0.04	19,230

Note: totals may not sum exactly due to rounding. NA = Information Not Available from reported resource model.

- **Black Swan Resource** as at 4 July 2022 (see ASX announcement "More Nickel in Updated Black Swan Mineral Resource" released 4 July 2022)
- **Silver Swan Resource** as at 27 April 2022 (see ASX announcement "Updated Silver Swan Resource underpins significant increase in high-grade Indicated resource base" released 27 April 2022)
- **Golden Swan Resources** as at 27 October 2021 (see ASX announcement "Golden Swan Maiden Resource" released 27 October 2021).
- **Silver Swan Tailings Resource** as at 15 September 2021 (see ASX announcement "Silver Swan Tailings – Maiden Resource Estimate" released 15 September 2021)
- **Maggie Hays Resource** as at 17 March 2015 (see ASC announcement "50% Increase in Indicated Resources at Lake Johnston" released 17 March 2015)
- **Mt Windarra Resource** as at 7 November 2014 (see ASX announcement "Poseidon Announces Revised Mt Windarra Resource" released 7 November 2014)
- **South Windarra and Cerberus Resource** as at 30 April 2013 (see ASX announcement "Resource Increase of 25% at Windarra Nickel Project" released 1 December 2011)

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

## Gold Projects Ore Resource Statement

Table 2A Windarra Gold Tailings Project North and South Dams Mineral Resource – JORC 2012 Tabulation

INDICATED							
	Tonnes (t)	AU (g/t)	Au (oz)	Ag (g/t)	As (ppm)	CU (ppm)	Ni (ppm)
North Dam	3,902,000	0.78	98,000	1.9	1,805	365	975
South Dam	850,000	0.50	14,000	0.6	645	355	2,533
<b>Total</b>	<b>4,752,000</b>	<b>0.73</b>	<b>112,000</b>	<b>1.7</b>	<b>1,600</b>	<b>363</b>	<b>1,250</b>

Table 2B Windarra Gold Tailings Project Central Dam Mineral Resource – JORC 2012 Tabulation

INDICATED						
	Tonnes (t)	AU (g/t)	Au (oz)	As (ppm)	CU (ppm)	Ni (%)
Central	6,198,000	0.37	74,000	435.0	270	0.3

**Windarra Gold Tailings North and South Dams Resource:** no cut-off grade has been used to report the resource, as potential mining method dictates removal of the entire dams. a dry bulk in situ density of 1.6 t/m<sup>3</sup> has been used to derive tonnages. resource numbers in Table 3A may not sum exactly due to rounding.

**Windarra Gold Tailings central Dam Resource:** No cut-off grade has been used to report the resource, as the potential mining method dictates removal of the entire dam down to a specified elevation. The mineralisation has been reported above a flat elevation of 446 mRL; there are tailings below this level but these have been shown by drilling to contain no gold, and it is anticipated that the proposed mining method will not treat material below this elevation. A dry bulk in situ density of 1.6 t/m<sup>3</sup> has been used to derive tonnages. Resource totals may not sum exactly due to rounding.

Windarra Gold Tailings Resource as at 22 June 2020 (see ASX announcement "Gold Tailings Resource at Windarra updated to JORC 2012 Indicated" 22 Jun 2020).

## TENEMENTS HELD

**Table 3: Tenements Held as at 30 June 2022**

AREAS OF INTEREST	TENEMENTS	ECONOMIC ENTITY'S INTEREST
Western Australia		
Windarra Nickel Assets	MSA 38/261, G38/21, L38/121, L39/184, L38/199, L38/218, L39/221	100%
Windarra South	MSA 38/261, L38/119, L38/122, L38/220	100%
Woodline Well	M39/1075, L39/224	100%
Pool Well	M38/1244, M38/1245, L38/118	100%
Lake Johnston Nickel Assets	G63/0008, G63/0005, L63/0051, L63/0052, L63/0055, L63/0057, M63/0163, M63/0282, M63/0283, M63/0284, M63/0292, M63/0293, M63/0294, M63/0522, M63/0523, M63/0524, E63/1067	100%
Black Swan Nickel Assets	M27/0039, M27/0200, M27/0214, M27/0216, L27/0057, L27/0058, L27/0059, L27/0074, L27/0075, L27/0077, L27/0078, L24/0219, L24/0222, G27/0002	100%

E = Exploration Licence M = Mining Lease MSA = Mining Tenement State Act PL = Prospecting Licence L = Miscellaneous Licence

Mining Tenements Acquired or Disposed during the June 2022 Quarter

E63/1784 (Exploration Licence surrendered during the period)

Beneficial Percentage Interests Held in Farm-In or Farm-Out Agreements during the June 2022 Quarter

Nil

Beneficial Percentage Interests Held in Farm-In or Farm-Out Agreements Acquired or Disposed of during the June 2022

Nil