ASX Announcement
16 September 2019

NORTHERN STAR TO EXPAND POGO PLANT BY 30%

Commitment to invest US$30M to grow Pogo production rate to 1.3Mtpa made in light of highly successful change in mining method and strong exploration results at Goodpaster discovery

HIGHLIGHTS

- **Northern Star will invest US$30 million (A$43M) expanding the processing plant at its Pogo gold mine in Alaska**
- **Annual throughput capacity will be increased from 1 million tonnes to 1.3 million tonnes**
- **Work on the expansion will start this financial year and is expected to be completed in early CY2021**
- **Northern Star expects to invest US$10M in the expansion project this financial year, with the remaining US$20M to be invested in FY2021**
- **The US$30 million investment is in addition to Northern Star's current capital expenditure budgets**
- **Expansion decision taken in light of increased mining rates following change in mining method, implementation of the new mining fleet and the upgrading of Pogo's Resources and Reserves**
- **New discovery at Goodpaster immediately along strike from the Pogo mining area demonstrates the camp scale potential of the district**
- **Significant Goodpaster exploration drilling results include (all results are true widths):**
  - **4.0m at 67.5gpt (discovery hole)**
  - **5.2m at 15.7gpt**
  - **0.6m at 100.1gpt**
  - **5.2m at 9.5gpt incl. 2.4m at 18.1gpt**
  - **0.3m at 129.0gpt**
  - **1.8m at 13.2gpt**
  - **2.1m at 44.5gpt**
  - **2.2m at 28.1gpt**
  - **0.3m at 170.2gpt**
  - **8.1m at 5.0gpt**
  - **1.3m at 27.5gpt**

Northern Star Resources is pleased to announce that it will invest US$30 million (A$43M) in an expansion of the processing plant at its Pogo gold mine in Alaska.

Under the expansion plan, the annual throughput capacity of the Pogo plant will be increased from one million tonnes to 1.3 million tonnes.

POGO PLANT EXPANSION AND GOODPASTER EXPLORATION

Work on the expansion will start this financial year and is expected to be completed in early CY2021.

Northern Star expects to invest US$10M in the expansion project this financial year, with the remaining US$20M to be invested in FY2021.

The US$30 million investment is in addition to Northern Star's current capital expenditure budgets and will be funded from ongoing cashflow.

Northern Star Executive Chairman Bill Beament said the decision to increase Pogo's production rate reflected the significant confidence the Company has in this world-class asset.

"The extensive changes we have implemented and our ongoing optimisation program, including the introduction of long-hole stoping and the use of bigger, more efficient mobile mining equipment, have been highly successful," Mr Beament said.

"We now know that Pogo in the future can comfortably sustain a mining rate of 1.3 million tonnes a year. The progress we are making and the visibility we now have, shows that this is the optimal run-rate for Pogo in terms of sustainability and cost-effectiveness.

"With this confidence in the mining operation now well-established, we will move quickly to begin expanding the plant, driving further efficiencies in the process."

Mr Beament said Northern Star's confidence in the outlook for Pogo was also underpinned by the strong exploration results being generated from the new discovery in the Goodpaster prospect located just 1km from the existing mining areas.

Initially intersected in late 2017, the discovery hole 17-041 assayed 4.0m (tw) at 64.5gpt.

The Goodpaster prospect is considered the continuation of the main Pogo mineralised trend across a major NE trending fault system broadly coincident with the Goodpaster River valley. The initial drilling is focussed approximately 1km west of the recently announced Central Veins discovery area adjacent to the existing Pogo production areas (see diagram below).

Since acquisition, Northern Star has rapidly advanced exploration drilling in the initial Goodpaster area with mineralised intersections now known to extend over a strike distance of 2.3km, to a depth of 500m and remains open in every direction. Mineralisation occurs in a series of stacked flat-dipping (Liese-type) and steeply dipping (North Zone type) vein structures across the prospect area.

Key drilling results from Northern Star's recent drilling, including (all results are true widths):

- 18-050 - 2.1m at 44.5gpt
- 18-051 - 5.2m at 15.7gpt
- 18-052 - 2.2m at 28.1gpt
- 18-057 - 8.1m at 5.0gpt
- 18-058 - 0.6m at 100.1gpt
- 18-069 - 0.3m at 170.2gpt
- 19-080 - 0.3m at 129.0gpt
- 19-083 - 5.2m at 9.5gpt incl. 2.4m at 18.1gpt
- 19-084 - 1.3m at 27.5gpt and 1.8m at 13.2gpt
- 19-101 - 1.7m at 19.4gpt

These drilling results support Northern Star's view that Goodpaster hosts extensive mineralisation in part of a large stacked vein system with many similar geological characteristics to the Pogo deposit.

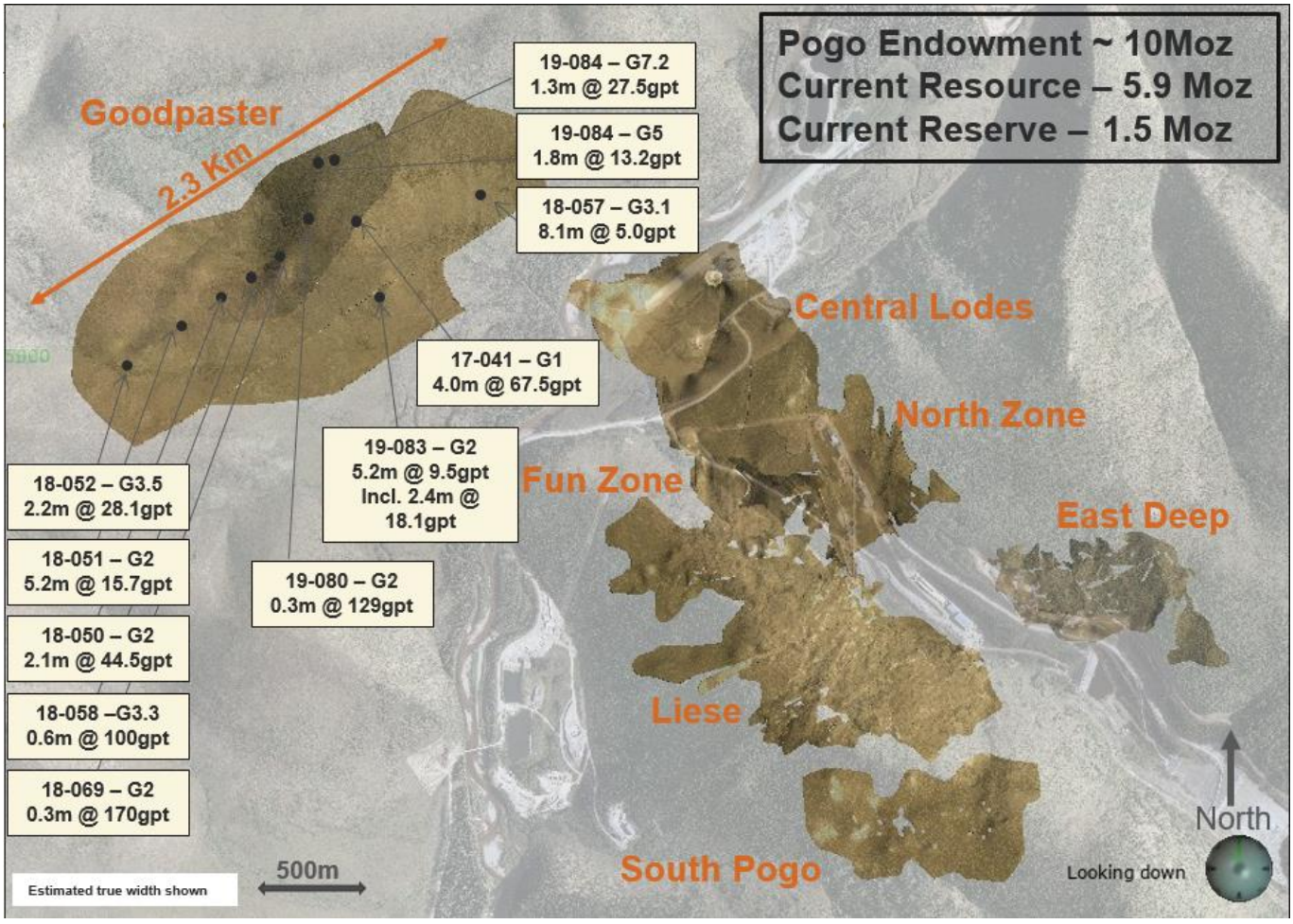
POGO PLANT EXPANSION AND GOODPASTER EXPLORATION

Surface drilling is continuing with four diamond drill rigs in operation from road and helipad positions across the site road with a large number of assay results still pending for the current program.

In conjunction with the Central Veins discovery, permitting has been established to allow the development of initial underground access into the Central Veins and potentially the Goodpaster area for further exploration and pre-development activities.

"We have owned Pogo for only a year and our exploration results already provide strong evidence that it is an emerging camp-scale system with huge potential to grow the inventory and mine life beyond the current 10Moz# endowment," Mr Beament said.

"The combination of the exploration success at Goodpaster and the effectiveness of the operational changes made in the mine leaves us in no doubt that investing in the plant expansion will generate strong returns for our shareholders and local stakeholders at Pogo."



POGO PLANT EXPANSION AND GOODPASTER EXPLORATION

Yours faithfully

BILL BEAMENT
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Mineral Resources and Ore Reserves

The information in this announcement that relates to Mineral Resource estimations, exploration results, data quality and geological interpretations for the Company's Pogo operations is based on information compiled by Michael Mulroney, 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 Mulroney 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 Project areas. Mr Mulroney consents to the inclusion in this announcement of the matters based on this information in the form and context in which it appears.

The Mineral Resources and Ore Reserves information reported in accordance with the 2012 edition of the Joint Ore Reserves Committee's Australasian Code for Reporting of Mineral Resources and Ore Reserves ("JORC Code") in this presentation for the Company's Pogo operations is extracted from the reports entitled "Resource and Reserve Update" dated 1 August 2019, available at www.nsrltd.com and www.asx.com. For the purposes of ASX Listing Rule 5.23, Northern Star confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. Northern Star confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.

* All currency conversions in this document were converted at a spot conversion rate of USD:AUD of 0.70

APPENDIX A: DRILLING RESULTS

POGO SIGNIFICANT INTERSECTIONS - GOODPASTER											
Drill Hole #	Easting (AKSP3)	Northing (AKSP3)	Drill hole collar RL (AKSP3)	Dip (Degrees)	Azimuth (degrees, Mag North)	End of Hole Depth (m)	Downhole From (m)	Downhole To (m)	Downhole Intersection (m)	Au (gpt) uncut	Est True Thickness (m)
17-040	1805945	3826187	1405	-85	176	550.2	183.0	184.0	1.0	9.1	0.9
						and	209.2	209.5	0.4	28.3	0.2
						and	256.7	258.1	1.4	7.7	1.4
17-041	1805945	3826187	1405	-60	176	550.2	45.9	46.8	0.9	9.3	0.3
						and	166.5	168.0	1.5	4.8	1.0
						and	176.3	176.7	0.4	15.4	0.3
						and	231.2	235.9	4.7	67.5	4.0
17-042	1805945	3826187	1405	-60	120	479.8	86.5	87.3	0.9	4.1	0.8
17-045	1805945	3826187	1405	-55	230	378.9	108.5	109.9	1.4	5.7	1.3
						and	162.1	163.3	1.2	4.1	0.8
						and	227.1	227.5	0.4	7.9	0.4
						and	251.6	251.9	0.3	48.1	0.3
						and	312.0	313.0	1.0	5.6	1.0
17-046	1805945	3826187	1405	-70	296	410.9	87.9	88.2	0.3	26.9	0.2
						and	139.4	140.1	0.6	3.7	0.6
						and	164.5	165.8	1.3	4.1	1.0
						and	196.7	197.4	0.7	8.2	0.6
						and	317.8	318.8	1.0	6.2	1.0
18-035	1803599	3824906	1533	-70	178	571.5	88.1	94.6	6.5	1.3	0.1
18-036	1803591	3824905	1533	-74	79	481.9	102.5	103.5	1.0	3.2	0.7
						and	308.5	309.0	0.5	4.8	1.3
18-037	1803593	3824899	1532	-75	359	736.4	130.6	130.9	0.3	3.9	0.8
						and	427.4	431.6	4.2	3.7	2.8
18-038	1800185	3822121	1995	-50	178	757.4	488.3	488.5	0.2	12.0	0.1
18-041	1806701	3826959	1454	-55	180	438.3	131.6	140.0	8.4	3.9	7.7
						and	259.7	260.6	0.9	17.5	0.9
18-042	1806701	3826959	1454	-85	180	545.3	198.8	204.6	5.8	2.9	4.8
						and	309.7	312.6	3.0	0.4	7.9
18-043	1804525	3826017	1605	-55	192	500.8	189.8	190.2	0.4	7.2	1.2
18-045	1803602	3824896	1529	-77	252	490.4	243.3	243.4	0.2	22.6	0.1
						and	303.5	304.9	1.4	12.8	1.0
18-046	1802349	3825064	1678	-67	83	674.8	318.4	320.3	1.9	3.7	5.4
18-047	1802349	3825064	1678	-74	41	726.9	266.1	266.8	0.7	2.1	0.1
						and	563.5	564.6	1.1	10.8	0.8
						and	608.5	609.0	0.5	52.5	0.1
18-048	1802349	3825064	1678	-78	247	714.8	315.6	316.9	1.3	9.3	1.2
						and	362.8	363.0	0.2	19.7	0.1
18-049	1803592	3824891	1530	-56	112	399.6	140.2	140.4	0.2	7.5	0.7
						and	268.3	269.4	1.1	10.6	1.0
18-050	1802829	3826265	1802	-60	115	787.3	681.3	683.5	2.1	44.5	2.1
18-051	1802829	3826265	1802	-65	142	763.5	539.9	540.5	0.6	0.2	0.6
						and	620.4	625.9	5.5	15.7	5.2
						and	660.2	661.8	1.6	2.4	0.8
18-052	1802349	3825064	1678	-83	67	616.2	353.7	356.4	2.7	28.1	2.2
						and	547.4	550.8	3.4	0.2	8.5
18-053	1804525	3826017	1605	-67	83	541.6	416.6	416.9	0.3	77.1	0.2
						and	532.3	533.4	1.1	0.0	0.5
18-054	1804525	3826017	1605	-50	125	512.1	241.0	242.6	1.5	2.4	1.1
						and	375.8	377.2	1.4	9.8	0.9
18-055	1802829	3826265	1802	-65	142	763.5	554.6	555.0	0.4	0.0	0.4
						and	604.9	606.7	1.8	8.5	1.7
						and	716.1	717.3	1.2	0.2	1.2
18-056	1806701	3382659	1454	-63	240	518.8	172.4	176.1	3.7	8.7	2.4
						and	218.7	222.0	3.3	3.2	2.5
						and	359.1	365.4	6.3	2.7	3.7
18-057	1806708	3826983	1460	-60	88	481.2	149.2	157.8	8.7	5.0	8.1
						and	165.9	166.2	0.3	9.7	0.3
18-058	1804525	3826017	1605	-78	282	701.3	413.1	414.0	0.9	100.1	0.6
						and	497.5	498.1	0.6	30.0	0.5
						and	540.9	541.6	0.7	0.9	2.1
18-067	1802800	3826286	1833	-68	90	839.7	672.3	673.9	1.6	2.5	1.5
18-068	1802349	3825064	1678	-82	360	739.4	377.8	378.0	0.2	8.0	0.2
18-069	1804525	3826017	1605	-78	18	660.2	210.6	210.8	0.2	37.7	0.1

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						and	363.4	363.7	0.3	19.7	0.2
						and	387.9	388.3	0.4	38.9	0.3
						and	404.0	405.9	2.0	18.1	1.4
						and	449.7	450.1	0.4	170.2	0.3
						and	494.5	494.6	0.1	27.0	0.1
19-068	1803783	3827654	1912	-52	173	858.0	448.1	448.7	0.6	5.2	0.5
19-069	1803762	3827618	1902	-57	155	850.7	530.8	531.3	0.5	9.4	0.1
						and	752.9	753.6	0.7	30.1	0.6
19-070	1803762	3827618	1902	-66	202	912.9	222.2	223.6	1.4	15.5	1.2
						and	235.6	235.9	0.3	5.9	0.2
19-080	1804860	3827611	1806	-62	180	701.0	334.1	336.2	2.1	5.0	1.6
						and	601.7	602.3	0.6	129.1	0.3
						and	622.3	623.3	1.0	4.8	1.0
19-081	1804860	3827611	1806	-67	146	653.5	262.1	262.5	0.4	22.1	0.2
						and	284.2	284.5	0.3	3.5	0.3
						and	291.6	292.7	1.1	6.1	0.9
						and	322.5	322.8	0.3	5.7	0.2
						and	325.1	325.5	0.4	9.4	0.3
						and	377.5	377.9	0.4	4.3	0.3
						and	393.2	393.5	0.3	69.6	0.2
						and	399.1	399.7	0.6	6.5	0.6
						and	467.9	468.9	1.1	6.4	1.1
						and	508.7	509.0	0.3	26.0	0.2
						and	589.8	590.7	0.9	4.4	0.5
19-082	1804860	3827611	1806	-49	169	712.0	89.3	89.9	0.6	4.3	0.6
						and	596.5	596.9	0.4	27.6	0.4
						and	609.1	609.9	0.9	5.8	0.9
						and	630.0	635.8	5.8	3.3	5.7
						incl.	631.2	632.0	0.8	17.7	0.8
19-083	1804893	3827644	1820	-51	145	651.4	100.2	100.6	0.4	5.2	0.2
						and	386.9	387.2	0.3	4.7	0.3
						and	406.3	406.6	0.3	8.4	0.2
						and	553.1	553.8	0.8	6.1	0.8
						and	559.3	564.5	5.2	9.5	5.2
						incl.	559.3	561.7	2.4	18.1	2.4
						incl.	563.9	564.5	0.6	9.7	0.5
						and	571.3	571.7	0.4	4.6	0.4
19-084	1804860	3827611	1806	-76	219	764.4	222.6	223.2	0.6	12.1	0.5
						and	228.9	229.2	0.3	4.8	0.2
						and	253.9	254.5	0.6	3.7	0.2
						and	262.1	263.7	1.5	5.9	1.3
						and	268.2	270.0	1.8	27.5	1.3
						and	333.4	336.2	2.7	13.2	1.8
						and	341.4	342.5	1.2	4.9	0.4
						and	364.7	365.1	0.4	17.6	0.3
19-090	1805476	3827876	1773	-54	139	629.4	139.3	143.3	4.0	10.5	2.8
						and	157.9	158.2	0.3	3.9	0.3
						and	164.0	165.5	1.6	3.1	1.2
						and	406.4	406.7	0.3	4.7	0.2
						and	421.5	422.0	0.5	4.1	0.4
						and	534.2	535.7	1.5	3.9	0.5
						and	552.5	552.8	0.3	14.2	0.3
						and	559.8	560.1	0.3	9.1	0.3
19-091	1805476	3827876	1773	-60	171	645.6	208.3	209.5	1.2	3.9	0.5
						and	236.9	237.3	0.3	7.7	0.3
						and	251.6	251.9	0.3	7.4	0.3
						and	257.3	258.0	0.8	19.3	0.6
						and	278.0	278.3	0.3	8.5	0.2
19-092	1805476	3827876	1773	-70	136	687.9	256.0	257.9	2.0	3.5	1.9
						and	295.3	295.7	0.4	129.3	0.1
						and	328.1	328.5	0.3	3.9	0.3
						and	408.8	409.2	0.4	21.7	0.4
						and	531.1	531.7	0.6	15.8	0.5

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Drill Hole #	Easting (AKSP3)	Northing (AKSP3)	Drill hole collar RL (AKSP3)	Dip (Degrees)	Azimuth (degrees, Mag North)	End of Hole Depth (m)	Downhole From (m)	Downhole To (m)	Downhole Intersection (m)	Au (gpt) uncut	Est True Thickness (m)
						and	565.4	566.0	0.5	21.8	0.4
19-093	1805476	3827876	1773	-57	108	648.6	540.8	541.1	0.3	6.4	0.3
						and	545.6	546.3	0.7	6.5	0.6
						and	591.1	591.9	0.8	9.8	0.7
						and	596.0	596.8	0.8	53.8	0.6
19-101	1807005	3828137	1663	-62	190	609.0	485.6	487.5	1.9	19.4	1.7
						and	485.6	486.6	1.0	32.6	0.9
19-102	1807005	3828137	1663	-62	103	572.4	502.9	504.3	1.3	7.8	1.3
						and	513.5	514.0	0.5	8.5	0.4
						and	533.9	535.1	1.1	11.9	0.9
19-104	1807005	3828137	1663	-53	143	581.2	329.0	329.3	0.3	8.2	0.3
						and	336.3	336.7	0.4	3.8	0.3

APPENDIX B: TABLE 1

JORC Code, 2012 Edition – Table 1 Report
Goodpaster Gold Mine – 16 September 2019
Section 1 Sampling Techniques and Data

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

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 down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.	The Goodpaster prospect was sampled using diamond drill holes (DD) completed from surface campaigns drilled between 2011 and 2019.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	Geological or mineralisation boundaries identified by geologists are, where possible, not crossed for sampling purposes. Diamond sampling intervals are set at a minimum sample size of 0.5ft (0.15m) and a maximum sampled interval of 5ft (1.52m). The sampling lengths are measured and plotted with assays once received for record keeping and validation.
	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 30g charge for fire assay'). In other cases, more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.	Industry standard sampling methods are used at Pogo. Diamond drilling are the predominant sampling methods used to inform this announcement. All drill core is comprehensively logged and intervals for sampling selected based on geological and mineralogical observations by the geologist. Where practicable, samples are not collected across lithological or mineralisation boundaries. Sampling protocols at Pogo vary dependent on the purpose of the drill hole: • Exploration Core Drilling: Wide-spaced drilling or holes drilled for non-resource conversion purposes are cut using an Almonte core saw and half core submitted for analysis. The non-assayed portion of the core is stored on-site for a period of five years; For NQ core samples, minimum sample size of 0.5ft (0.15m) and a maximum sampled interval of 5ft (1.52m). For HQ drill core that is whole core sampled, samples are collected at a minimum interval of 4 inches (0.1m) and a maximum of 2.5ft (0.76m). When the HQ samples are half-core cut, the maximum sample is extended to 5ft (1.52m). Quartz vein, fault zones, silica flooding and quartz stockwork zones are sampled plus the adjacent five feet (1.52m) above and below the quartz or fault zone. Samples are crushed to 70% passing 2 mm. A 250-gram split is taken of all sample types, including sludge hole samples, which is then pulverised. A 30-gram sub-sample of all sample types is then selected for fire assay with a gravimetric finish (underground holes) or atomic absorption spectroscopy (AAS) finish (surface holes).
	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.).	Drilling has been carried out from surface. Surface drill holes are typically collared using PQ / HQ diameter tools and reduced to NQ2/NQ2 where necessary. Core drilled between 2009 and 2017 was generally not oriented. Since 2018, orienting of exploration drill holes using the Reflex Act III tool was introduced.
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and results assessed.	Core recovery is recorded for all DD holes. Recovery is measured to the tenth of a foot (~3cm) and was historically recorded in the Recovery tab using Rockware Logplot 7 software. In general, recoveries are excellent and no significant issues with core loss are recognised.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	Core is processed at the Pogo core processing facility. For DD the contractors adjust their rate of drilling and method if recovery issues arise. All recovery is recorded by the drillers on core blocks. This is checked and compared to the measurements of the core by the geological team. Any issues are communicated back to the drilling contractor
	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.	There is no known relationship between sample recovery and grade. Overall recoveries are excellent and no significant issues with core loss are recognised.
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.	Core logging is carried out in accordance with Pogo Mines core logging procedures manual, which is an extensive and comprehensive document. Data recorded includes, but is not limited to, lithology, structure, alteration assemblages, sulphide mineralogy, geotechnical parameters (recovery and RQD), and the presence of visible gold.

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Criteria	JORC Code explanation	Commentary
		Drill core was logged electronically using Rockware Logplot 7 software and since 2019 on the AcQuire database system. Logging and sampling are carried out according to Pogo Mines protocols and are consistent with industry standards. Lithology is measured to the tenth of a foot (~3cm) scale marked from the closest core block. Rock codes have been set up specifically for the project. Logging is to a sufficient level of detail to support appropriate Mineral Resource estimation and mining studies.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.	Drill logging is both qualitative (geological features) and quantitative (geotechnical parameters) in nature. Every core tray is photographed wet.
	The total length and percentage of the relevant intersections logged.	All drill holes are logged in full, from start to finish of the hole. All intersections are logged.
Sub-sampling techniques and sample preparation	If core, whether cut or sawn and whether quarter, half or all core taken.	Core drilled for exploration purposes is cut in half onsite using an industry standard Almonte core saw.
	If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.	Not applicable
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	All sample preparation and assaying of Pogo drill core is currently being performed by Bureau Veritas (BV). Pogo sends drill core to BV in Fairbanks where the core is prepared, and a pulp is sent to the BV laboratory in Reno, Nevada or Vancouver, British Columbia for assay. Typically, the gold assays are completed in Reno and the multi-element assays are completed in Vancouver. Sample preparation includes drying, crushing to 70% passing 2 mm, splitting of a 250 g subsample, and pulverising to 85% passing 75 µm. The sample preparation techniques are considered appropriate for the style of mineralisation.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	Pogo Mine uses an industry standard QAQC programme involving standards, blanks and field duplicates which are introduced in the assay batches at an approximate rate of one control sample per eight normal samples. QC results are analysed immediately upon return of a sample batch and reported to management monthly. Overall results demonstrate no significant QAQC issues with the analytical laboratory and no systematic bias observed. Protocols are in place to deal with QAQC results that fail. In addition to Pogo QAQC, the analytical laboratory is ISO certified and conducts rigorous internal QAQC checks. Internal QAQC reports provided to Pogo personnel do not indicate any issues with the quality of the analysis provided.
	Measures taken to ensure that the sampling is representative of the in-situ material collected, including for instance results for field duplicate / second-half sampling.	Field duplicates are submitted when half core is taken to ensure that the sampling is representative of the in-situ material being collected. Similarly, field duplicates are collected where RC drilling is employed.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	Duplicate sample results correlate well, hence sample sizes are considered to be acceptable to accurately represent the gold mineralisation at Pogo Mine. Sample sizes are considered to be appropriate and correctly represent the style and type of mineralisation.
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.	The samples are analysed using industry standard analytical techniques. Historically, underground holes were analysed for gold by a 30 g fire assay with a gravimetric finish. In holes drilled for exploration purposes, gold content is determined by 30 g fire assay with atomic absorption finish (AAS). Since 2019, all underground holes were analysed using the AAS method. Exploration and underground results analysed by fire assay with the AAS finish returning > 10 ppm (0.292 oz/ton) gold are re-assayed by fire assay with gravimetric finish Select samples are assayed for forty-five elements multi-acid digestion and ICP-MS/ES finish. The technique is considered total and appropriate for the style of mineralisation under consideration.
	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 in this release.

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Criteria	JORC Code explanation	Commentary
	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.	Quality control samples are inserted into the sample stream. A mixture of both Certified Reference Materials and non-certified standards, blanks and duplicates are inserted randomly, however aim to achieve an insertion rate of approximately one in every eight samples. The Pogo Mine both generates its own in-house standards from ore grade material from the mine and uses Certified reference Materials (CRMS) sourced from CDN Laboratories. In-house standards are prepared at the Pogo assay laboratory, with a round-robin approach to determine the recommended value and acceptable limits. Blanks are also produced in-house and are generated from a local source of barren basalt and crushed to nominal one-inch size and inserted into sample bags prior to including into the laboratory submittal. Sand is also used as a blank. Monitoring of QA/QC results is performed by the resource geologists upon importing the individual assay certificates into the drill hole database. When failures occur, the resource geologists notify the geologist responsible for the drill hole or the core processing facility supervisor.
Verification of sampling and assaying	The verification of significant intersections by either independent or alternative company personnel.	Significant intersections are routinely inspected by senior company personnel. Core photographs of significant intersections reviewed to ensure mineralised zones are consistent with known Pogo mineralisation styles.
	The use of twinned holes.	No twinned holes have been complete at Pogo.
	Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.	All diamond core is logged in detail. Logging takes place at the core processing facility. Core logging (geological and geotechnical) was historically completed using Logplot 7 software. Since Northern Star acquisition, data capture has transition to the AcQuire database and logging systems. The core logging procedures manual provides guidance to the user. All Pogo data is stored as in industry-standard AcQuire database. Validation protocols are built into the importation process ensure data integrity.
	Discuss any adjustment to assay data.	No adjustments were made to the 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.	Drill rigs are aligned using the Reflex TN14 Gyrocompass. On surface, collar locations are surveyed using a Leica RTK-GPS survey station. Surface drill holes are survey every 200 ft. A final survey is taken at the end of all drill holes. Deviation at the initial survey is checked against plan and the hole is redrilled if there is excessive deviation (>5%).
	Specification of the grid system used.	The grid system used is the North American Datum of NAD83 (NAD83) AKSP-3.
	Quality and adequacy of topographic control.	High quality LiDAR topographic mapping is utilised at Pogo.
Data spacing and distribution	Data spacing for reporting of Exploration Results.	Drill hole spacing is highly variable. Well-drilled areas are tested by drilling on approximately 20 by 20 feet patterns, extending out to 200 feet at the peripheries of the deposits. The Goodpaster area contains drill spacing up to a maximum of 1000ft by 1000ft.
	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.	Not applicable for Exploration Results.
	Whether sample compositing has been applied.	No compositing was applied prior to submission of samples for analysis.
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.	Where practicable, the drilling was designed to intersect the mineralisation as perpendicular as possible to the dominant vein geometries. In some circumstances, the lack of drill positions resulted in holes that were oblique to the mineralisation.
	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.	The Competent Persons believe that no bias has been introduced to the data, as no single potentially bias inducing orientation dominates in any given area.
Sample security	The measures taken to ensure sample security.	Chain of custody is managed by Pogo Mine personnel. All core samples are received intact and in their entirety in their core trays at the Company's secure core processing facility. All sampling and work on the samples is carried out within the confines of this secure facility. Pogo uses pre-numbered sample ticket books for sample numbers. The drill hole number, sample interval, and date are recorded on each ticket and the tear-off ticket is labelled with the sample interval and stapled onto the core box. Core is placed in bags with the sample number marked in permanent marker and the bar code stapled to the bag.

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Criteria	JORC Code explanation	Commentary
		After sampling is complete, the sample bags are scanned and placed in rice bags labelled with the drill hole number and the sample sequence, ready for submission to the laboratory. Bags are sealed with a zip-tie. Samples are transported via road to the sample preparation facility in Fairbanks, Alaska. Upon receipt, any issues with sample condition is reported to Pogo personnel.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	In March 2018, Sumitomo Metal Mining Pogo LLC (SMM Pogo) commissioned Mine Technical Services Ltd. (MTS) to complete a review audit of standard procedures currently in use at the Pogo Mine in Central Alaska. Drilling, logging, sampling, analytical, QA/QC, database, modelling, density, ore control, resource estimation, mine planning, metallurgy and reconciliation procedures were audited. While minor recommendations for improvement were made, sampling techniques and data were generally found to be well-considered and consistent with industry good practise. Northern Star Resources personnel completed validation of the Goodpaster database for internal consistency and any obvious errors prior to preparation of this release, which incorporates results acquired prior to 2018. Northern Star have completed validation checks of all data reported in this release. Checks were completed for overlapping intervals, sample intervals extending beyond the hole depth, from > to intervals, and missing from or to values.

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.	The total tenement area comprising the Pogo project consists of 1,259 state mining claims (17,079 ha) in addition to the mine lease claim (641 ha) and the mill site lease (1,385 ha). The Pogo operation is 100% owned by Northern Star Resources. There are no known royalties on the area subject the resource reported in this release.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	Detailed legal due diligence completed as part of the Pogo acquisition demonstrates that the tenure is in good standing and secure. Pogo is a fully permitted and operational mine, and there are no foreseen permitting issues that will prevent development of the resource or any future exploration activities.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	The first modern-day exploration was conducted in the Pogo area by WGM Inc, in 1981, where strong gold-arsenic-tungsten anomalies were identified in stream sediment samples collected from the Pogo and Liese Creeks during regional reconnaissance surveys. WGM staked mining claims over the area. In 1991, the area was incorporated into the Stone Boy Joint Venture, which consisted of large claim groups focused on the Chena, Salcha and Goodpaster River basins. As part of the Stone Boy JV, exploration was conducted by WGM and financed by Sumitomo Mining Metal Corporation Ltd. and others (that later withdrew) as part of an earn-in agreement. Regional grid-based soil sampling was completed between 1991 and 1994, with three diamond drill holes funded by the Japan Oil Gas and Metals National Corporation drilled in 1994 to test a prominent gold-in soil anomaly. Based on successful anomalism returned in the initial three holes, a further 13 were drilled in the Liese Creek are in 1995, one of which was the discovery hole for the Liese vein system and graded 22.7ft at 1.838opt (6.92m @ 63.0gpt). In 1997, Sumitomo signed an agreement with Teck Resources Ltd. to acquire a 40% interest in the Pogo claims and assumed operatorship of the project in 1998. Further surface definition drilling was completed between 1998 and 2004, with the mining operation commencing in 2006.
Geology	Deposit type, geological setting and style of mineralisation.	The Project is located in the Tintina Mineral Belt, which is a 200 km-wide, 1,200 km-long arc, broadly bounded by the Tintina-Kaltag fault systems to the north and the Denali-Fairwell fault systems to the south. The region is containing numerous economic deposits of gold in addition to copper, lead, zinc, silver and tungsten deposits. The lithological units in the Pogo deposit area are dominantly high grade metamorphics and later felsic to intermediate intrusive units. Key metamorphic rocks include biotite feldspar gneiss, augen gneiss and mafic schist derived from both sedimentary and igneous protoliths. Metamorphic mineral assemblages observed consist of quartz, feldspar, biotite, chlorite, muscovite, sillimanite, andalusite and garnet. The 50km long

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Criteria	JORC Code explanation	Commentary
		Goodpaster batholith (granite-tonalite-diorite) is the dominant intrusive complex in the district. Locally small felsic to intermediate stocks and dykes are present. The principal mineralisation is hosted in biotite-quartz-feldspar paragneiss and orthogneiss, although all other lithologies are cut. Where the veins cross intrusives, they tend to split and become stockwork zones. Gold at Pogo is predominantly hosted within laminated quartz veins ranging in thickness from <0.5m to >10m. Mineralised veins contain around 3% sulphides (arsenopyrite, pyrite, pyrrhotite, loellingite, chalcopyrite, bismuthinite, sphalerite, galena, molybdenite, tetradymite, maldonite) and, a variety of Bi-Pb-Ag sulphosalts. The Pogo gold deposit is considered to be an example of a Reduced Intrusive Related Gold Deposit (RIRGD), characterised by a low sulphide content, (typically <5%) and a reduced ore mineral assemblage, that typically comprises pyrite and lacks primary magnetite or hematite. In brief, these deposits typically have the following characteristics; o Mineralisation occurs as sheeted vein deposits or stockwork assemblages and often combines gold with variably elevated Bi, W, As, Mo, Te, and/or Sb, but low concentrations of base metals o Restricted and commonly weak proximal hydrothermal alteration o Spatially and temporally related to reduced intrusions of intermediate to felsic composition.
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: o easting and northing of the drill hole collar o elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar o dip and azimuth of the hole o down hole length and interception depth o hole length.	Tables with the drill hole information accompany this release.
	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.	Material information for the finalised drilling completed to the 1st of September 2019 has been provided with this 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 assays have been length weighted to provide an intersection width. Where lower grade stockwork veining and/or barren material is present between sheeted veins, length weighted calculations may include these mineralized material intervals.
	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
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	Not applicable given metal equivalent values are not being reported.
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results.	Prior to September 2018, estimated true width intersections of mineralized material were calculated fusing GEMS GEOVIA software based on interpreted vein orientations. From October 2018 to present, true width intersections are estimated using trigonometry calculations of the vein angle to the core axis (Estimated true thickness = intercept length X sin (vein angle to core axis)).
	If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	Both the downhole width and estimated true widths have been clearly stated when used.
	If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').	Where mineralization orientations are unknown, true width intersections are estimated using trigonometry calculations of the vein angle to the core axis (see above).

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Criteria	JORC Code explanation	Commentary
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.	Diagrams have been included in the body of the announcement.
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 practiced to avoid misleading reporting of Exploration Results.	Both high and low grades have been reported accurately, clearly identified with the drill hole attribute 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, geotechnical and rock characteristics; potential deleterious or contaminating substances.	Nil
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).	Surface exploration diamond drilling on the Goodpaster vein system is ongoing with a fleet of 4 diamond drill rigs from multiple surface and heli-supported drill pads.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	Diagrams have been included in this announcement.