ASX: NST

NORTHERN STAR RESOURCES LIMITED

ASX Announcement
17 October 2019

SEPTEMBER 2019 QUARTERLY ACTIVITIES REPORT

Strong Performance at Australian operations; Pogo expansion strategy progressing well

Strong performance at Australian operations with quarterly gold sales of 155,043oz at AISC of A$1,250/oz running comfortably within FY20 guidance; Pogo growth strategy proceeding well, with mine development rates already close to the increased monthly target and stoping continuing to provide a growing percentage of total ore tonnages

- **Gold sold in the September quarter of 184,005oz at an AISC of A$1,493/oz (US$1,024/oz)***
  - **Australian operations sold 155,043oz at an AISC of A$1,250/oz (US$858/oz)**
  - **Pogo operations sold 28,962oz at an AISC of US$1,919/oz**
- **Underlying free cash flow of A$28M for the September quarter; this was despite investing ~A$43M in growth capital and exploration**
- **Cash, bullion and investments at 30 September increased by A$11M to A$372M (A$361M at 30 June)**
- **September quarter production:**
  - **Jundee Gold Operations:**
    - **105,265oz mined and 81,427oz sold at an AISC A$985/oz (US$676/oz). Ore stockpiles grew by 11,268oz to 45,668oz, predominantly from Ramone open pit mining**
  - **Kalgoorlie Gold Operations:**
    - **78,714oz mined and 73,616oz sold at an AISC A$1,542/oz (US$1,058/oz)**
  - **Pogo Gold Operations:**
    - **35,883oz mined and 28,962oz sold at an AISC US$1,919/oz**
- **Pogo growth strategy advancing well and on track to meet increased processing rate of 1.3Mtpa in early CY2021 (see ASX presentation "Pogo Q1 Operational Update")**
  - **Mine development rates have increased significantly since the introduction of new equipment early in the calendar year – development metres up 26% in September quarter from June quarter**
  - **Monthly development rate hit 1,400m in August and September (project expansion target is 1,500m)**
  - **Stoping provided 37% of total mined ore tonnages in the September quarter, up from 33% in the March quarter (project expansion target is 60%)**
  - **Physical AISC spend per month of US$19M is within budget, higher AISC is reflective of ounces sold**

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- **Production and costs in the Sept quarter stemmed directly from lower grade mining sequences and scheduling; head grade will rise as development accesses new mining zones and stoping tonnes increase as a percentage of total processing tonnes, costs will then decline on a $/oz basis**
- **Commitment made to invest US$30M expanding Pogo plant capacity from 1Mtpa to 1.3Mtpa**
- **Northern Star will invest US$10M in the expansion project this financial year and US$20M in FY2021 (in addition to existing capex budgets)**

- **Decision to expand the plant made in light of successful transition to stoping now underway and the rapid growth of the Resources and Reserves since the acquisition a year ago**
- **Post quarter's end, further strong exploration results from the Goodpaster discovery adjacent to and immediately along strike from the Pogo mining area. These demonstrate camp-scale potential of the district**
  - **Hole 19-087 - 0.2m @ 588.7gpt, 4.5m @ 21.0gpt and 2.7m @ 6.0gpt**
  - **Hole 19-085 - 1.4m @ 19.3gpt and 0.9m @ 15.7gpt**
  - **Hole 19-073 - 1.1m @ 23.0gpt**
  - **Hole 19-091 - 1.0m @ 11.4gpt**
- **Significant Goodpaster exploration drilling results during the September qtr include (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**
  - **2.0m at 44.5gpt**
  - **2.2m at 28.1gpt**
  - **0.3m at 170.1gpt**
  - **8.9m at 5.0gpt**
  - **1.3m at 27.5gpt**
- **At South Kalgoorlie in WA, strong regional exploration results show the outstanding potential for this recently acquired project; Results included:**
  - **Visible gold from initial surface drilling at the Triumph deposit; Partial assays from first hole include 35.4m at 7.8gpt, incl 4.4m @ 48gpt**
  - **Six holes at the Samphire prospect all hit mineralisation; Assays include 1.2m at 23.1gpt and 1.6m at 12.9gpt**
- **Subsequent to the end of the quarter, Northern Star took control of Echo Resources (ASX: EAR) and had a 57.69% interest as at October 16, 2019**
- **Northern Star will host a quarterly conference call today, 17 October 2019 at 9:30am AEDT (6:30am AWST). The call can be accessed: https://webcasting.boardroom.media/broadcast/5d9d279d203ad5593b9cbf33**

Northern Star Resources Limited (ASX: NST) is pleased to report that its Australian operations recorded a strong performance in the September quarter while the Company made more significant progress with the growth strategy at its Pogo gold mine in Alaska.

The strong production performance in Australia enabled Northern Star to generate underlying free cashflow of A$28 million in the September quarter despite investing ~A$43 million in growth capital and exploration. This led to the Company's holdings of cash, bullion and investments rising A$11 million to A$372 million over the quarter.

The Australian operations performed comfortably within the Company's annual guidance range, with gold sales of 155,043oz at an all-in sustaining cost (AISC) of A$1,250/oz (US$858/oz).

The results from the Jundee Operations were particularly outstanding. The total gold mined was 105,265oz with sales of 81,427oz at an AISC of A$985/oz (US$676/oz). In addition, ore stockpiles grew by 11,268oz to 45,668oz, predominantly from Ramone open pit mining.

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At the Kalgoorlie Operations, gold mined totalled 78,714oz, sales were 73,616oz at an AISC of A$1,542/oz (US$1,058/oz).

Northern Star Executive Chairman Bill Beament said while the lower grades which stemmed from the Pogo mine sequence had impacted overall production and costs, the underlying performances were strong for the Company's transition plan.

"The Australian operations, underpinned by Jundee, were comfortably in line with our production guidance and ensured we generated strong cashflow as a group for the quarter," Mr Beament said.

"At Pogo, we made more significant progress with our growth strategy. This is demonstrated by further increases in the mine development rates, which are now on the cusp of hitting the increased monthly target of 1,500 metres.

"We also continued the key trend of increasing stoping tonnages, which accounted for 37 per cent of total ore tonnages in the quarter, up from 33 per cent in the previous quarter and virtually zero a year ago. We are well on track to meeting our target of 60 per cent.

"This transition to long-hole stoping is at the centre of our growth strategy and is crucial to ensuring the mine can feed the processing plant when it is expanded to 1.3Mtpa in early 2021.

"We have no doubt that the grade will improve as we access new mining zones and increase the stoping tonnes. This mine development will also end the need for us to utilise lower-grade feed as a supplement."

"We are advancing towards our target of 60,000 stoping tonnes a month," he said. "We believe this will lead to higher grades, increased production and lower costs. These trends will also be supported by the benefits of the expanded processing plant."

During the quarter, Northern Star committed to expanding the Pogo processing plant from 1Mtpa to 1.3Mtpa at a cost of US$30 million.

"This decision was driven by the great exploration results we are seeing in the mine and at Goodpaster," Mr Beament said. "Goodpaster is an outstanding discovery and the exploration results there continue to demonstrate exceptional grades.

"We have repeatedly hit high-grade mineralisation over a strike length of 2.3km and to a depth of 500m. And it remains open in every direction.

"We see significant potential to increase the existing 5.95Moz Resource and 1.5Moz Reserve, therefore growing both the mine life and production profile courtesy of the expanded plant.

"Our decision to expand the plant also reflects the success we are seeing with the transition to long-hole stoping and the benefits of more productive equipment we have brought into the mine.

"This will lead to both increased ore tonnages and a return to higher grades as we access new mining areas and bring stopes online. When these factors are combined with the expanded plant, the result will be higher production, lower costs and increased financial returns, as well as longer mine life.

"That's why we believe Pogo is well on the way to being the number one asset in our portfolio."

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Northern Star	Units	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr	FYTD
Ore Hoisted	Tonnes	1,471,614	1,379,931	1,583,079	1,439,654	1,439,654
Mined Grade	gpt Au	4.4	4.6	4.8	4.4	4.4
Gold in Ore Hoisted	Oz	208,930	205,332	245,436	204,590	204,590
Open Pit Ore Mined	Tonnes	-	-	214,388	302,093	302,093
Mined Grade	gpt Au	-	-	1.5	1.6	1.6
Gold in Open Pit Ore Mined	Oz	-	-	10,245	15,272	15,272
Total Mined Ounces	Oz	208,930	205,332	255,681	219,862	219,862
Milled Tonnes	Tonnes	1,511,547	1,454,762	1,620,301	1,530,243	1,530,243
Head Grade	gpt Au	4.4	4.4	4.8	4.3	4.3
Ounces Produced	Oz	213,829	206,731	250,572	211,553	211,553
Recovery	%	90	90	90	89	89
Gold Recovered	**Oz**	**193,252**	**186,254**	**226,028**	**188,175**	**188,175**
Ounces Sold	**Oz**	**210,561**	**185,296**	**232,042**	**184,005**	**184,005**
Cash Operating Cost	**A$/oz**	**1,108**	**1,164**	**1,074**	**1,170**	**1,170**
All-in Sustaining Cost	**A$/oz**	**1,365**	**1,369**	**1,238**	**1,493**	**1,493**
Total Stockpiles Contained Gold	Oz	81,783	78,721	84,857	93,474	93,474
Gold in Circuit (GIC)	Oz	23,173	26,991	21,753	25,429	25,429
Gold in transit	Oz	3,642	358	-	-	-

Northern Star	Units	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr	FYTD
Revenue – Gold	A$M	362.6	329.7	426.8	372.9	372.9
Average Price	A$/oz	1,722	1,779	1,839	2,027	2,027

Table 1: Key Group Performance Figures (Quarterly)

Northern Star	Units	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr	FYTD
Underground Mining	A$/oz	644	720	629	729	729
Open Pit Mining	A$/oz	-	-	14	28	28
Processing	A$/oz	274	311	279	354	354
Site Services	A$/oz	91	97	83	90	90
Ore Stock & GIC Movements	A$/oz	64	5	40	(74)	(74)
Royalties	A$/oz	29	33	32	46	46
Ore Purchase	A$/oz	8	1	-	-	-
By Product Credits	A$/oz	(3)	(3)	(3)	(3)	(3)
Rehabilitation-Accretion & Amortisation	A$/oz	7	9	7	6	6
Corporate Overheads	A$/oz	44	44	48	58	58
Mine Development/Sustaining CAPEX	A$/oz	182	123	82	225	225
Mine Exploration	A$/oz	25	29	27	35	35
All-in Sustaining Costs	**A$/oz**	**1,365**	**1,369**	**1,238**	**1,493**	**1,493**
Depreciation & Amortisation	A$/oz	281	359	345	415	415

Table 2: Key Group Cost per Ounce Measures

SEPTEMBER 2019 QUARTERLY ACTIVITIES REPORT

Production KPIs September Quarter	Units	Kalgoorlie Operations	Jundee	Pogo	Total
Ore Hoisted	Tonnes	703,942	540,226	195,486	1,439,654
Mined Grade	gpt Au	3.5	5.2	5.7	4.4
Gold in Ore Hoisted	Oz	78,714	89,993	35,883	204,590
Open Pit Ore Mined	Tonnes	-	302,093	-	302,093
Mined Grade	gpt Au	-	1.6	-	1.6
Gold in Open Pit Ore Mined	Oz	-	15,272	-	15,272
Total Mined Ounces	Oz	78,714	105,265	35,883	219,862
Milled Tonnes	Tonnes	743,532	586,588	200,123	1,530,243
Head Grade	gpt Au	3.4	5.0	5.5	4.3
Recovery	%	90	90	83	89
Gold Recovered	Oz	73,861	84,846	29,468	188,175
Gold Sold	Oz	73,616	81,427	28,962	184,005
Cash Operating Costs	**A$/oz**	**1,199**	**770**	**2,221**	**1,170**
All-In Sustaining Costs	**A$/oz**	**1,542**	**985**	**2,798**	**1,493**
Depreciation & Amortisation	A$/oz	441	371	441	415

Table 3: Key Quarterly Mine Production Performance

FINANCE

The following is a table of the cash, bullion and investments held at the end of each quarter:

		Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr
Cash at bank	A$M	$229.8	$218.8	$266.2	$319.1
Bullion awaiting settlement [1]	A$M	$16.6	$20.1	$44.3	$0.1
Equity Investments	A$M	$45.3	$48.8	$50.9	$52.9
Total	**A$M**	**$291.7**	**$287.7**	**$361.4**	**$372.1**

[1] Bullion awaiting settlement is dore which has been received by the refiner in the quarter and is awaiting settlement.

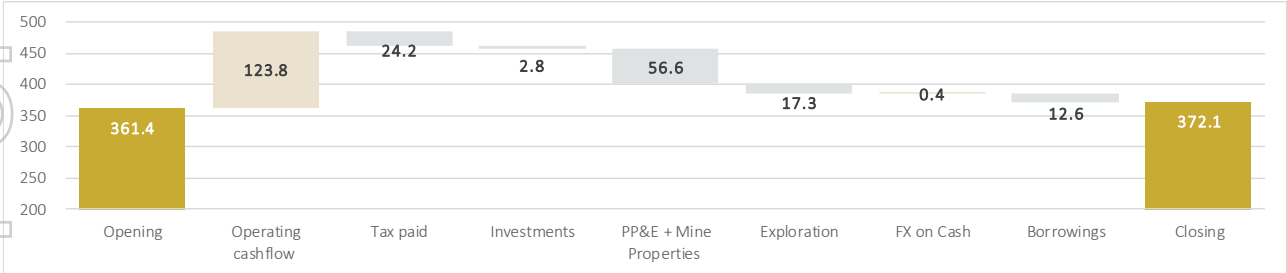
Table 4: Cash, bullion and equity investments

The below table sets out the total of surface gold inventories:

Gold Inventories	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr
Stockpiles contained gold (oz)	81,783	78,721	84,857	93,474
Gold in circuit (oz)	23,173	26,991	21,753	25,429
Gold in transit (oz)	3,642	358	-	-
Total Gold Inventories (oz)	**108,598**	**106,070**	**106,610**	**118,903**

Table 5: Gold Inventories

The below waterfall chart highlights the September quarter's operating cash flow together with movements in cash, bullion and investments (A$M):



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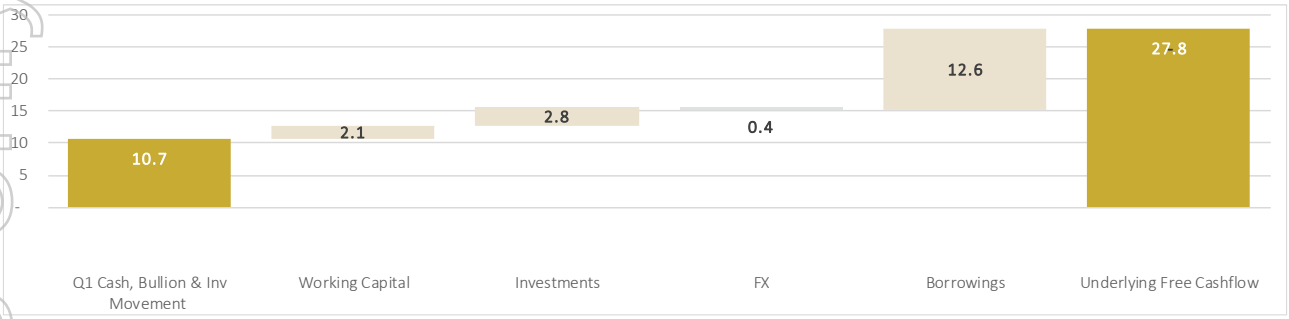
The below waterfall chart highlights the underlying free cash flow for the September quarter (A$M):



Banking Facilities

At 30 September 2019, Northern Star has in place undrawn corporate debt facilities with a self-arranged syndicate of Banks.

Hedging

The below table outlines the Company's hedging position at 30 September 2019:

Term	Dec-19 Half	Jun-20 Half	Dec-20 Half	Jun-21 Half	Total
Ounces	67,187	85,000	100,000	60,000	312,187
Gold Price/oz	A$1,868	A$1,803	A$1,802	A$1,906	A$1,836
Ounces	7,500	15,000	-	-	22,500
Gold Price/oz	US$1,270	US$1,281	-	-	US$1,277

Table 6: Hedging commitments

OPERATIONS

Jundee Gold Operations

Production Summary Jundee Operations		Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr	FYTD
Ore Mined - Underground	Tonnes	480,388	508,361	575,181	540,226	540,226
Mined Grade	gpt Au	4.4	5.0	4.8	5.2	5.2
Ounces Mined - Underground	Oz	67,211	81,089	89,549	89,993	89,993
Ore Mined - Open Pit	Tonnes	-	-	214,388	302,093	302,093
Mined Grade	gpt Au	-	-	1.5	1.6	1.6
Ounces Mined - Open Pit	Oz	-	-	10,245	15,272	15,272
Total Mined Ounces	Oz	67,211	81,089	99,794	105,265	105,265
Milled Tonnes	Tonnes	493,593	490,934	634,216	586,588	586,588
Head Grade	gpt Au	4.4	4.9	4.6	5.0	5.0
Recovery	%	92	90	91	90	90
Gold Recovered	**Oz**	**63,650**	**70,154**	**84,647**	**84,846**	**84,846**
Gold Sold	**Oz**	**69,403**	**67,420**	**89,395**	**81,427**	**81,427**
Cost per Ounce						
Underground Mining	A$/oz	576	637	550	496	496
Open Pit Mining	A$/oz	-	-	33	59	59
Processing	A$/oz	176	188	204	167	167
Site Services	A$/oz	45	45	33	39	39
Ore Stock Movements	A$/oz	53	(38)	2	(46)	(46)
Royalties	A$/oz	43	43	45	58	58
By Product Credits	A$/oz	(3)	(3)	(3)	(3)	(3)
Cash Operating Costs	**A$/oz**	**890**	**872**	**864**	**770**	**770**
Rehabilitation - Accretion & Amortisation	A$/oz	3	4	3	2	2
Corporate Overheads	A$/oz	44	43	49	56	56
Mine Development / Sustaining CAPEX	A$/oz	104	76	19	127	127
Jundee Mine Exploration	A$/oz	11	26	22	30	30
All-in Sustaining Costs	**A$/oz**	**1,052**	**1,021**	**957**	**985**	**985**
Depreciation & Amortisation	A$/oz	124	210	254	371	371

Table 7: Summary Details – Jundee Operations

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Kalgoorlie Gold Operations

Production Summary Kalgoorlie Operations		Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr	FYTD
Ore Mined	Tonnes	766,710	699,750	804,985	703,942	703,942
Mined Grade	gpt Au	3.4	3.8	4.1	3.5	3.5
Ounces Mined	Oz	82,500	84,492	105,321	78,714	78,714
Milled Tonnes	Tonnes	789,351	772,960	780,451	743,532	743,532
Head Grade	gpt Au	3.4	3.7	4.2	3.4	3.4
Recovery	%	91	91	91	90	90
Gold Recovered	**Oz**	**79,496**	**82,720**	**95,787**	**73,861**	**73,861**
Gold Sold	**Oz**	**83,624**	**81,648**	**94,638**	**73,616**	**73,616**
Cost per Ounce						
Mining	A$/oz	673	686	631	814	814
Ore Purchase	A$/oz	20	3	-	-	-
Processing	A$/oz	243	273	244	382	382
Site Services	A$/oz	70	63	64	66	66
Ore Stock Movements	A$/oz	30	14	50	(111)	(111)
Royalties	A$/oz	38	39	37	52	52
By Product Credits	A$/oz	(4)	(4)	(3)	(4)	(4)
Cash Operating Costs	**A$/oz**	**1,070**	**1,074**	**1,023**	**1,199**	**1,199**
Rehabilitation - Accretion & Amortisation	A$/oz	8	6	5	7	7
Corporate Overheads	A$/oz	44	44	49	57	57
Mine Development / Sustaining CAPEX	A$/oz	234	180	136	232	232
Kalgoorlie Operations Mine Exploration	A$/oz	50	43	44	47	47
All-in Sustaining Costs	**A$/oz**	**1,406**	**1,347**	**1,257**	**1,542**	**1,542**
Depreciation & Amortisation	A$/oz	389	447	434	441	441

Table 8: Summary Details – Kalgoorlie Operations

Pogo Gold Operations

Production Summary Pogo Operations		Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr	FYTD
Ore Mined	Tonnes	224,516	171,820	202,913	195,486	195,486
Mined Grade	gpt Au	8.2	7.2	7.8	5.7	5.7
Ounces Mined	Oz	59,219	39,750	50,566	35,883	35,883
Milled Tonnes	Tonnes	228,603	190,868	205,634	200,123	200,123
Head Grade	gpt Au	7.8	6.2	7.8	5.5	5.5
Recovery	%	88	89	88	83	83
Gold Recovered	**Oz**	**50,106**	**33,381**	**45,594**	**29,468**	**29,468**
Gold Sold	**Oz**	**57,534**	**36,227**	**48,009**	**28,962**	**28,962**
Cost per Ounce						
Mining	A$/oz	686	953	774	1,162	1,162
Processing	A$/oz	436	623	488	825	825
Site Services	A$/oz	178	268	216	295	295
Ore Stock Movements	A$/oz	128	68	91	(58)	(58)
By Product Credits	A$/oz	(2)	(3)	(3)	(3)	(3)
Cash Operating Costs	**A$/oz**	**1,426**	**1,909**	**1,566**	**2,221**	**2,221**
Rehabilitation - Accretion & Amortisation	A$/oz	11	25	16	15	15
Corporate Overheads	A$/oz	45	44	46	61	61
Mine Development / Sustaining CAPEX	A$/oz	199	84	96	478	478
Pogo Mine Exploration	A$/oz				23	23
All-in Sustaining Costs	**A$/oz**	**1,681**	**2,062**	**1,724**	**2,798**	**2,798**
Depreciation & Amortisation	A$/oz	300	420	312	441	441

Table 9: Summary Details - Pogo Operations

Additional information on the individual operations can be found in Appendix 1.

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EXPLORATION AND DEVELOPMENT - OPERATIONS

The Group's in-mine drilling activity accelerated in Australia with a significantly expanded exploration program at Jundee and the transition to the new underground drilling contractor at Pogo.

Jundee

At Jundee, the underground diamond drill fleet increased to 14 rigs with an expanded focus on resource extension and exploration drilling across all mining areas.

Reserve definition programs were completed at Deakin South, NIM Deeps, Wilson, Armada, Gateway and Barton with all results within expectations.

Resource extension drilling within historical systems targeted several areas within Westside, Throssell, Nexus, Gateway, Deakin South, Westside Deeps, Armada with particularly strong results recorded in the extensions to the Lyons system both north and south of the current infrastructure.

Exploration programs recommenced with the initial focus on targets associated with the Lyons South/Hughes area, Revelation trend and the "Invicta Gap" area. Excellent early results were recorded in the Lyons South area and southern areas of the Invicta Gap with significant potential extensions to the Deakin, Cardassian and Hughes mineralisation highlighted.

Kanowna Belle

Underground diamond drilling continued across the upper levels within the Kanowna Belle mine on resource extension and exploration programs with a strong focus on the hanging wall Sims and Troy systems.

Extensional drilling in the hanging wall of the main Lowes ore system focussed heavily on expanding strongly mineralised structures on the Sims and Troy trends across A, B and C Block areas with scattered high-grade intersections recorded in all areas.

Exploration drilling targeted potential eastward extensions of the main Lowes ore system across B and C blocks with mixed results.

At Velvet, exploration drilling focussed on the down plunge potential of the main VM01 trend and associated hanging wall structures.

Kundana

Underground diamond drilling resource definition programs were completed at Pope John and Xmas deposits during the quarter with all results within expectations.

Exploration drilling recommenced late in the quarter programs testing potential depth extensions to the Xmas and Millennium.

EKJV (NST 51%)

Two drill rigs continued underground resource definition drilling programs across the EKJV mining complex during the quarter. Diamond drilling from underground platforms at Pegasus and Raleigh was entirely focussed on extensional and in-fill resource definition programs into the new Falcon trend located midway between Pegasus and Raleigh mines. The Falcon mineralised corridor has been traced for over 1.5 kilometres and remains open to the north and south with drilling continuing underway from both platforms.

South Kalgoorlie

In-mine exploration underground resource definition drilling programs continued targeting extensions to both the NOZ and Jubilee ore trends. Drilling results continue to extend the NOZ trend northwards and outlined a possible new parallel mineralised trend in the footwall of the NOZ. Full assay results are pending.

In addition, surface exploration diamond drilling continued to target extensions to the NOZ mineralisation in the Mutooroo B Block area together and the potential of cross-cutting Mutooroo West structures with early success.

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Pogo

The underground diamond drill fleet changeover continued throughout the quarter with seven rigs operational with the final rig due to be commissioned early next quarter.

Underground reserve definition and extension drilling remains focussed on all the major Liese Vein systems (L1, L2, L3), North Zone, X-Vein, South Pogo and Fun Zone areas with excellent intersections recorded from the extensions to all known systems.

REGIONAL EXPLORATION

Regional exploration activity increased across all sites with Pogo regional exploration accelerated across the warmer summer season.

Jundee

Regional exploration continued in the Deep Well region, located 35 kilometres south east of the Jundee mill, focussed on the areas surrounding the new Ramone open pit.

Initial RC drilling programs continued at Cornell, Tosh, Barrett and Mercury prospects to test anomalous gold trends revealed by regional aircore drilling. Positive assay results were received for the Cornell and Barrett prospects while new mineralised trends were outlined at Tosh. Further drilling is planned for next quarter.

Kanowna

Relogging and core sampling programs are in progress across several prospect areas (Downtown, Minnie Mabel, Duke, Red Hill), targeting untested zones of mineralisation within Kanowna Belle hanging wall stratigraphy immediately east of the Kanowna Belle Mine.

At Location 41, located 25 kilometres north east of the HBJ mining complex, surface diamond drilling at the November-Echo prospect confirmed extensions to both target structures, which are characterised by quartz-pyrite stockwork veinlets in variably brecciated and sheared granodiorite. An updated geological model is in preparation to support resource estimation and optimisation studies.

Kundana

An initial RC drilling program is underway at the Bee Eater prospect, located 8 kilometres north east of Millennium, beneath an extensive salt lake system. The program is targeting a series of untested historical geochemical anomalies coincident with prospective lithological contacts.

Pogo

Surface exploration drilling at Pogo project was focussed on the Goodpaster Project area with four diamond drill rigs in operation from road and helipad positions across the quarter.

As recently announced (see ASX announcement dated 16 September 2019), the Goodpaster Project is considered the continuation of the main Pogo mineralised trend focussed approximately 1km west of the recently announced Central Veins discovery area adjacent to the existing Pogo production areas.

Since acquisition, Northern Star has rapidly advanced exploration drilling in the 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. Recent results have continued to return further significant intersections from within the main Goodpaster Project area including:

Hole 19-073 - 1.1m @23.0gpt;
Hole 19-085 - 0.9m @ 15.7gpt and 1.4m @ 19.3gpt;
Hole 19-087 - 0.2m @ 588.7gpt, 2.7m @ 6.0gpt and 4.5m @ 21.0gpt;
Hole 19-091 - 1.0m @ 11.4gpt;

with a significant quantity of assay results still pending.

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In addition, a regional geochemical sampling campaign from West Knoll area across the Burns prospect area, located to the south of the Goodpaster Project area, located evidence of additional quartz boulder trails. All assay results are pending.

South Kalgoorlie

Regional exploration across the extensive South Kalgoorlie tenements continued across a range of project areas with continued success in several areas.

Resource development drilling programs on the Boulder-Lefroy Fault Corridor continued with diamond drilling at Mutooroo and West Mutooroo successfully intersecting extensions of the NOZ mineralisation associated porphyry intrusions and initially testing a series of shallow-dipping, east-west oriented quartz veins mapped at surface.

An initial surface diamond drilling program was completed at the Triumph deposit, located 6 kilometres north west of HBJ, testing for repetitions of the shallow-dipping Triumph and Argo mineralised structures at depth. All four holes intersected zones of significant quartz ± sulphide ± visible gold veining within a granophyric gabbro unit of the Condenser Dolerite. Partial assay results received for the first hole revealed several significant intersections including a standout high grade intersection of:

TRIDD20002A - 35.4m @ 7.77gpt gold including 4.36m @ 48.0gpt gold;

with the remaining assay results for this hole and for the rest of the program still pending.

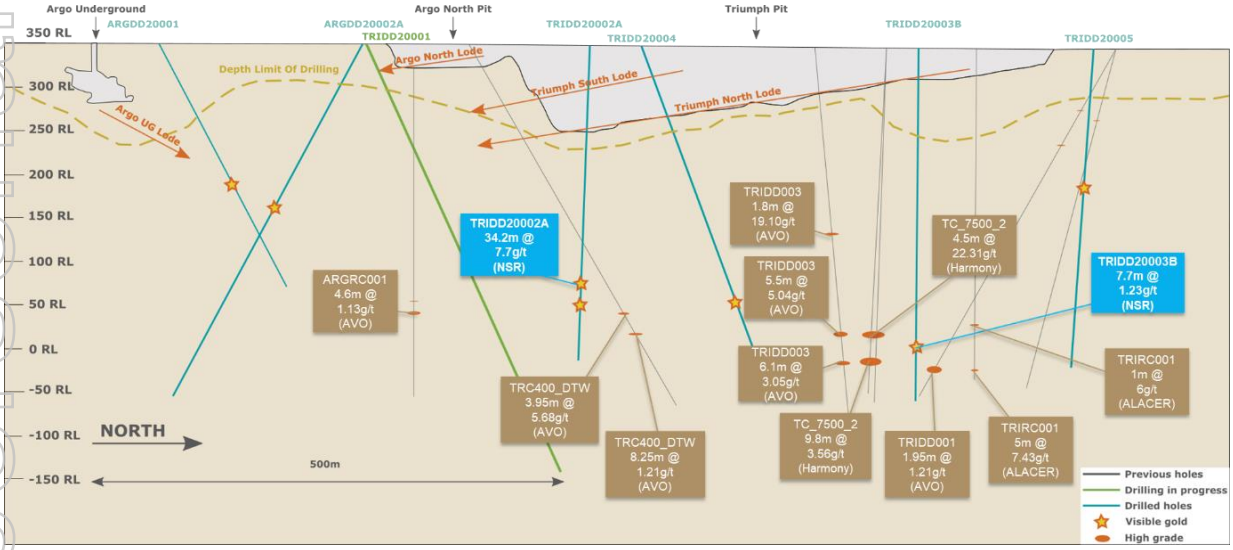

Figure 1 - Schematic cross section of the Triumph deposit illustrating target location, drill hole traces and significant intersection.

East of the HBJ mining centre, a six-hole diamond drilling program at Samphire extended the significant mineralisation located in the FY19 exploration program beneath the Samphire open pit. All holes intersected discrete zones of significant quartz-sulphide mineralisation within the targeted host gabbro intrusion with significant intersections including:

SPDD19003 - 0.4m @ 7.7gpt, 4.4m @ 1.6gpt, 1.5m @5.7gpt;
SPDD19004 - 1.2m @ 23.1gpt, 1.1m @ 6.5gpt, 1.6m @12.9gpt;
SPDD19005 - 1.2m @2.3gpt, 1.2m @3.7gpt, 1.2m @3.2gpt;

with most of the assay results still pending at the end of the quarter.

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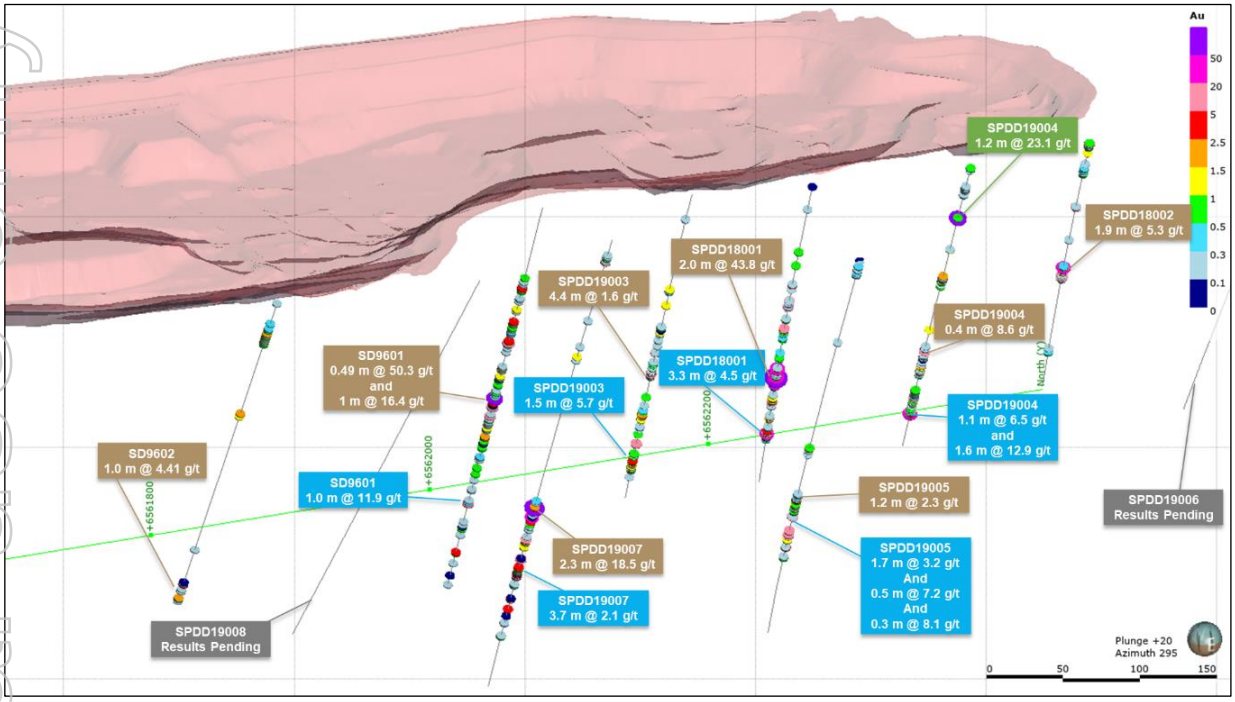

Figure 2 - Oblique sectional view of the Samphire deposit (looking northwest) and location of significant diamond drill results received to date. Two flat-lying structures are interpreted, represented by gold text (upper) and blue text (lower).

Additional RC drilling programs are in progress to test for continuations of near-surface mineralisation both north and south of the Samphire open pit. Assay results are pending.

Further diamond drilling at the Colnago prospect intersected several zones of lower tenor mineralisation but failed to intersect the higher-grade mineralised structure delineated in prior drilling. A comprehensive structural review of the prospect is underway to determine further drilling priorities.

Carbine

Surface diamond drilling at Phantom successfully outlined extensions to the Phantom main lode trend together with significant new, parallel hangingwall trends containing visible gold mineralisation.

Regional aircore drilling immediately northeast of the Carbine and Phantom deposits targeted geophysical anomalies in the Carbine-Phantom hangingwall stratigraphy. Early assay results have extended strike length of the Eremenco mineralised trend by 450 metres with further assays pending.

Carnage

Regional aircore drilling at the Thunderstruck prospect, located 3 kilometres west of Carnage, successfully targeted key lithological contacts across a Kundana-equivalent mine geology sequence.

Central Tanami Project (NST 40%)

Ground gravity geophysical surveys were completed over the Solaris, Crusade and portions of the Cave Hill project areas. Regional aircore drilling continued with a program completed over areas of structural complexity within interpreted Tanami Group stratigraphy at Cave Hills. All assays are pending.

Late in the quarter, a program of extensional RC drilling commenced at the Ripcord deposit, located to the south east of Groundrush mining area.

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Tanami Regional Project (100% NST)

Regional aircore drilling at the remote Stubbins prospect recommenced targeting previously recorded coincident gold-multielement anomalies. Drilling in the central part of the prospect intersected zones of quartz veining in sedimentary and felsic porphyry units. All assay results are pending.

Western Tanami

Surface RC/diamond drilling is in progress at the Gremlin prospect at the end of the quarter. The program is co-funded by the WA Exploration Incentive Scheme and is designed to test a newly defined composite geophysical anomaly. RC drilling also targeted a discrete magnetic high at Gremlin South, located approximately three kilometres south of the Gremlin prospect. Drilling intersected narrow quartz veins in predominantly amphibolite host rock with all assay results pending.

A ground gravity geophysical survey was completed over the Cactus prospect area.

CORPORATE

- The Company announced its off market takeover bid for Echo Resources Limited and entered into a Bid Implementation Agreement with Echo Resources Limited on 26 August 2019. The Company acquired over 50% and control of Echo Resources Limited on 14 October 2019, extending the offer period by two weeks to 28 October 2019.
- The Company's 2019 Annual Report and its 2019 Corporate Governance Statement were released on 27 August 2019.
- The Company published its 2019 Tax Corporate Governance Statement on its website as part of its commitment to tax transparency.
- A fully franked final dividend of 7.5 cents per share has been declared with a record date of 30 October 2019. Payment of the dividend is to occur on 20 November 2019.
- The Company's Notice of Annual General Meeting was released on 14 October 2019, convening the 2019 Annual General Meeting on Thursday 14 November 2019 at 10:00am AWST.
- The Company announced a tenement exchange agreement with Horizon Minerals Limited on 12 September 2019. The Company is exchanging its 100% interest in the Rosehill, Brilliant North and Gunga West projects in Coolgardie, Western Australia and the Golden Ridge, Balagundi, Abattoir and Mt Monger projects in Kalgoorlie, for Horizon's 100% interest in the Anthill, Blister Dam, New Mexico, White Flag and Kanowna North tenements in Western Australia. The transaction is expected to complete in November 2019.
- During the quarter, Northern Star hosted its annual strategy day in Perth, attended the Diggers and Dealers conference in Kalgoorlie, conducted an institutional roadshow through Sydney and Melbourne to market the company's annual 2019 financial results, attended the annual Citi Gold day in Sydney and attended the annual Denver Gold Forum. The Company also hosted a site tour to its Kundana operation and Pogo operation in Alaska. The Company maintains a proactive presentation calendar to stockbroking firms, institutional and retail investors to promote the Company and its activities.
- At the Diggers and Dealers Mining Forum in Kalgoorlie, Western Australia in August 2019, Northern Star was honoured to receive the 2019 Dealer Award for its acquisition of the Pogo Operations in Alaska on 28 September 2018.

The issued capital of the Company at the date of this report is:

Class of Securities	Issued Capital
Fully Paid Ordinary Shares	639,592,634
Unlisted Performance Rights	10,175,787

Table 10: Issued Capital

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Yours faithfully

BILL BEAMENT
Executive Chairman
Northern Star Resources Limited

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Forward Looking Statements

Northern Star Resources Limited has prepared this announcement based on information available to it. No representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions and conclusions contained in this announcement. To the maximum extent permitted by law, none of Northern Star Resources Limited, its directors, employees or agents, advisers, nor any other person accepts any liability, including, without limitation, any liability arising from fault or negligence on the part of any of them or any other person, for any loss arising from the use of this announcement or its contents or otherwise arising in connection with it.

This announcement is not an offer, invitation, solicitation or other recommendation with respect to the subscription for, purchase or sale of any security, and neither this announcement nor anything in it shall form the basis of any contract or commitment whatsoever. This announcement may contain forward looking statements that are subject to risk factors associated with gold exploration, mining and production businesses. It is believed that the expectations reflected in these statements are reasonable but they may be affected by a variety of variables and changes in underlying assumptions which could cause actual results or trends to differ materially, including but not limited to price fluctuations, actual demand, currency fluctuations, drilling and production results, Resource or Reserve estimations, loss of market, industry competition, environmental risks, physical risks, legislative, fiscal and regulatory changes, economic and financial market conditions in various countries and regions, political risks, project delay or advancement, approvals and cost estimates.

Mineral Resources and Ore Reserves

The information in this announcement that relates to exploration results, data quality and geological interpretations for the Company's Project areas 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, Ore Reserves and exploration results 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 all the Company's projects is extracted from the reports entitled "Resource and Reserve Update" dated 1 August 2019, and "Pogo Plant Expansion and Goodpaster Exploration" dated 16 September 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 announcements and that all material assumptions and technical parameters underpinning the estimates in the relevant market announcements 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 announcements.

Currency Conversion Rate

*All currency conversions in this announcement have been converted at a currency of A$/US$ conversion rate of A$0.686

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APPENDIX 1 – ADDITIONAL INFORMATION - OPERATIONS

Kalgoorlie Gold Operations

- **Introduction**

Kalgoorlie Gold Operations consist of the Millennium, EKJV (East Kundana Joint Venture), Kanowna Belle and HBJ (South Kalgoorlie) operations.

- **Safety**

There were zero (0) Lost Time Injuries during the quarter.

- **Underground Production**

Mine Development:

	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr
Decline	750m	296m	641m	647m
Level	4,477m	2,649m	1,410m	3,230m
Strike driving [1]	3,988m	3,514m	4,786m	4,064m
Total (metres)	**9,215m**	**6,459m**	**6,836m**	**7,941m**

Note (1) includes development through paste-fill

Table 1: Underground Production – Mine Development (physicals represent 100% share of EKJV development metres)

Access and strike development focus was the priority across all Kalgoorlie mines. At the Millennium operations the establishment of the Moonbeam portal was completed and the decline advanced 126m by the end of September. Kanowna Belle's focus is still on establishment of the HW ore zones in SIMS and A-Block. Decline and level access is a priority in the NOZ area as stope extraction advances well in the upper NOZ and COZ areas.

	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr
Development ore (t)	246,865	167,610	203,250	196,877
Development grade (gpt)	3.0	3.0	3.1	2.7
Stope ore (t)	510,833	532,139	601,735	507,065
Stope grade (gpt)	3.6	4.0	4.4	3.8
Total ore (t)	766,710	699,750	804,985	703,942
Total grade (gpt)	3.4	3.8	4.1	3.5
Contained gold (oz)	**82,500**	**84,492**	**105,321**	**78,714**

t=tonnes, gpt=grams per tonne, oz=ounces

Table 2: Underground Production – Ore Production (physicals represent Northern Star's 51% share of JV ore)

Ore development performance across the operations continued strongly for the September quarter.

- **Gold Production**

A total of 743,532 (NSR) tonnes of ore was milled in the September quarter at 3.4gpt and 90% recovery for 73,861oz produced utilising the Northern Star owned processing plants and additional contracted third-party facilities.

Processing throughput was impacted at the South Kalgoorlie Operations with mechanical issues on the tertiary crusher.

Ore stocks at the end of the quarter totalled 47,806oz of gold, with a further 14,804oz in GIC.

- **Gold Sales**

73,616oz were sold.

Jundee Gold Operations

- **Safety**

There were zero Lost Time Injuries during the quarter.

- **Underground Production**

Mine Development:

	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr
Decline	683m	394m	259m	334m
Level	1,294m	670m	129m	963m
Operating	3,421m	3,175m	3,383m	3,461m
Total (metres)	**5,398m**	**4,239m**	**3,771m**	**4,758m**

Table 3: Underground Production – Mine Development

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Decline development continued in the Nexus, Nimary, Deakin South and Upper Gringotts. Capital development continued through the Nexus Fresh Air connection, the Deakin South, Nimary East, West Side North and Upper Gringotts. Drill drive development continued for Gateway South, Armada, Throssel, Deakin and Revelation (Lower).

	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr
Development ore (t)	138,978	120,531	131,109	159,292
Development grade (gpt)	2.2	1.5	3.2	3.7
Stope ore (t)	341,410	387,830	444,072	380,934
Stope grade (gpt)	5.2	6.0	5.3	5.8
Total ore (t)	480,388	508,361	575,181	540,226
Total grade (gpt)	4.4	5.0	4.8	5.2
Contained gold (oz)	**67,211**	**81,089**	**89,549**	**89,993**

t=tonnes, gpt=grams per tonne, oz=ounces
Table 4: Underground Production – Ore production

Jundee achieved record single jumbo development advance in a bolt/mesh/bore cycle in August at the Invicta mine with 754.3m achieved.

Open Pit Production

Open pit mining continued in September 2019 at Ramone, south of Jundee with mining continuing to the 0525 level bench.

Mine Movements:

	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr
Waste Mined (BCM)		1,323	917,661	685,837
Ore Mined (BCM)			111,085	127,733
Total Mine Movement (BCM)			**1,028,746**	**813,570**

Table 5: Open Pit Movement

	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr
Total Ore (t)			214,388	302,093
Total Grade (gpt)			1.5	1.6
Contained gold (oz)			**10,245**	**15,272**

t=tonnes, gpt=grams per tonne, oz=ounces
Table 6: Open Pit Production – Ore Mined

Gold Production

Jundee ore milled in the September quarter was 586,588 tonnes at 5.0gpt and 90% recovery for 84,846oz ounces produced.

Ore stocks at the end of the quarter totalled 45,668oz of gold, with a further 7,572oz in GIC.

Gold Sales

81,427oz were sold.

Pogo Operations

Safety

There was one Lost Time Injury during the quarter.

Underground Production

Mine Development:

	Sep-18 Qtr	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sept-19 Qtr
Decline	586m	367m	41m	82m	143m
Level	429m	415m	78m	252m	1,157m
Operating	3,429m	3,942m	2,637m	2,781m	2,619m
Total (metres)	**4,444m**	**4,724m**	**2,756m**	**3,114m**	**3,919m**

Table 7: Underground Production – Mine Development

	Sep-18 Qtr	Dec-18 Qtr	Mar-19 Qtr	Jun-19 Qtr	Sep-19 Qtr
Development ore (t)	184,256	219,093	152,360	134,653	122,840
Development grade (gpt)	11.2	8.3	6.9	6.4	4.8
Stope ore (t)	0	5,422	19,460	68,260	72,647
Stope grade (gpt)	0	3.9	9.9	10.3	7.2
Total ore (t)	184,256	224,516	171,820	202,913	195,486
Total grade (gpt)	11.2	8.2	7.2	7.8	5.7
Contained gold (oz)	**66,364**	**59,219**	**39,750**	**50,556**	**35,883**

t=tonnes, gpt=grams per tonne, oz=ounces
Table 8: Underground Production – Ore production

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Ore during the September quarter was sourced from the Liese, East Deep, South Pogo, X Vein, North and Fun Zones.

The operation continued to access new areas of the mine, allowing an increased number of headings and more efficient use of capital infrastructure. Progression to long-hole stoping as the dominant ore source progressed with stoping ounces exceeding development ounces at the end of the quarter. Grade was lower than previous months due to scheduling and sequence of areas mined.

- **Gold Production**

Pogo ore milled in the September quarter was 200,123 tonnes at 5.5gpt and 83% recovery for 29,468oz.

There was a total of 3,053oz in GIC.

- **Gold Sales**

28,962 oz were sold.

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APPENDIX 2 – DRILLING RESULTS

GOODPASTER SIGNIFICANT INTERSECTIONS											
Hole ID	Easting (AKSP3)	Northing (AKSP3)	Collar RL (AKSP3)	Dip (degrees)	Azi (Mag North)	Hole depth (m)	From (m)	To (m)	Width (m)	Grade Au (gpt)	Est True Width (m)
19-072	1803764	3827654	1913	-62	130	834.2	620.6	620.9	0.4	3.9	0.3
							731.4	731.6	0.3	9.2	0.2
19-073	1803756	3827658	1913	-80	62	922.0	754.4	755.9	1.5	23.0	1.1
						Incl.	754.4	755.1	0.8	44.1	0.5
							841.2	843.0	1.8	3.3	1.5
19-085	1804860	3827611	1806	-83	88	734.0	209.8	210.8	0.9	15.7	0.9
							318.9	319.2	0.3	8.5	0.3
							504.5	505.1	0.5	3.6	0.5
							564.7	566.2	1.5	19.3	1.4
19-086	1804873	3827636	1814	-79	110	739.7	222.7	223.1	0.4	4.7	0.2
							447.8	448.8	1.0	3.6	1.0
							503.7	504.0	0.3	24.9	0.3
							651.0	651.4	0.4	12.8	0.3
19-087	1804870	3827634	1814	-73	201	748.8	583.4	584.6	1.1	4.9	0.3
							589.2	589.5	0.3	588.7	0.2
							649.5	653.0	3.5	6.0	2.7
						Incl.	652.4	653.0	0.5	23.1	0.4
							686.5	687.6	1.1	6.0	0.6
							695.9	701.0	5.2	21.0	4.5
						Incl.	697.1	698.6	1.5	63.7	1.3
19-091	1805476	3827876	1773	-60	171	645.6	370.4	371.0	0.6	5.2	0.5
							529.6	530.6	1.0	11.4	1.0

TRIUMPH_ARGO SIGNIFICANT INTERSECTIONS										
Drill Hole #	Easting (MGA)	Northing (MGA)	Drill hole collar RL (MGA)	Dip (degrees)	Azimuth (degrees, MGA)	End of hole depth (m)	Downhole From (m)	Downhole To (m)	Downhole Intersection (m)	Au (gpt) uncut
TRIDD20002A	366525	6572420	355	-78	258	384.5	285.6	319.8	34.2	7.7
including…							285.6	297.5	11.9	4.6
							303.0	307.4	4.4	48.0
							314.4	319.8	5.4	1.7
TRIDD20003B	366475	6572714	354	-75	276	448.2	350.2	357.9	7.7	1.2
ARGDD20001	366549	6571961	359	-55	24	376.0	results pending			
ARGDD20002A	366316	6572081	359	-55	110	518.4	results pending			
TRIDD20004	366135	6572442	361	-54	62	444.1	results pending			
TRIDD20005	366228	6572898	356	-64	94	414.0	results pending			
TRIUMPH_ARGO HISTORICAL INTERSECTIONS										
TRIRC001	366320	6572833	332	-90	NA	320.0	210.0	211.0	1.0	6.0
TRIRC001	366320	6572833	332	-90	NA	320.0	296.0	301.0	5.0	7.4
TRIDD003	366403	6572614	355	-81	302	441.8	253.0	254.8	1.8	19.1
TRIDD003	366403	6572614	355	-81	302	441.8	315.8	321.3	5.5	5.0
TRIDD003	366403	6572614	355	-81	302	441.8	334.9	341.0	6.1	3.1
TC_7500_2	366375	6572688	354	-90	NA	376.0	312.5	317.0	4.5	22.3
TC_7500_2	366375	6572688	354	-90	NA	376.0	334.2	344.0	9.8	3.6
TRC400_DTW	366332	6572246	359	-59	2	464.8	347.0	351.0	3.9	5.7
TRC400_DTW	366332	6572246	359	-59	2	464.8	377.8	386.0	8.3	1.2
ARGRC001	366459	6572245	340	-90	NA	396.9	303.0	307.6	4.6	1.1

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SAMPHIRE SIGNIFICANT INTERSECTIONS										
Drill Hole #	Easting (MGA)	Northing (MGA)	Drill hole collar RL (MGA)	Dip (degrees)	Azimuth (degrees, MGA)	End of hole depth (m)	Downhole From (m)	Downhole To (m)	Downhole Intersection (m)	Grade Au (gpt) uncut
SPDD18001	360069	6562016	337	-55	284	369.1	233.6	235.7	2.0	43.8
							222.9	224.3	1.4	8.9
						Incl.	223.3	223.6	0.3	35.1
							242.8	243.2	0.4	24.9
							305.3	308.7	3.3	4.5
SPDD18002	360074	6562212	338	-52	285	296.7	151.3	153.2	1.9	5.3
						Incl.	152.9	153.2	0.3	30.7
							216.1	220.5	4.4	1.6
							302.1	303.6	1.5	5.7
SPDD19004	360080	6562121	337	-53	280	332.3	59.9	61.1	1.2	23.1
							218.8	219.2	0.4	8.6
							290.4	291.5	1.1	6.5
							292.5	294.1	1.6	12.9
SPDD19005	360179	6562000	337	-53	280	483.2	314.5	315.7	1.2	2.3
							352.8	354.5	1.7	3.2
							357.1	357.6	0.5	7.2
							359.1	359.4	0.3	8.1
SPDD19006	360142	6562316	333	-50	280	338.2	results pending			
SPDD19007	360126	6561844	340	-58	275	488.7	290.1	292.5	2.3	18.5
							302.2	302.5	0.3	27.3
							363.4	367.1	3.7	2.1
SPDD19008	360087	6561764	337	-50	275	449.4	results pending			
SD9601	359987	6561860	320	-61	275	372.0	187.9	188.4	0.5	50.3
							196.0	197.0	1.0	16.4
							291.0	292.0	1.0	11.9
SD9602	360076	6561628	320	-60	270	301.7	284.0	285.0	1.0	4.4

APPENDIX 3 – TABLE 1

JORC Code, 2012 Edition – Table 1 Report
Goodpaster Gold Mine – 16 October 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.

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Criteria	JORC Code explanation	Commentary
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. 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.

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Criteria	JORC Code explanation	Commentary
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.
	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.

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Criteria	JORC Code explanation	Commentary
	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. 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.

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Criteria	JORC Code explanation	Commentary
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 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.

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Criteria	JORC Code explanation	Commentary
	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).
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.

APPENDIX 3 – TABLE 1

JORC Code, 2012 Edition – Table 1 Report
Samphire, Triumph – 16 October 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. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. 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 1m samples from which 3kg 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.	▪ Sampling was completed using Diamond drilling (DD). ▪ Diamond core was transferred to core trays for logging and sampling. Half core or full core samples were nominated by the geologist from HQ and NQ diamond core, with a minimum sample width of 30cm and a maximum width of 100cm. ▪ Sample widths honour lithological, alteration and structural boundaries unless shorter than the minimum 30cm. ▪ Diamond samples were transported to various analysis laboratories in Kalgoorlie for preparation by drying. ▪ Samples selected for fire assay are subject to crushing to <3mm and pulverizing the entire sample to <75µm. ▪ Samples selected for Photon assay (based on coarse gold or expected high grades) are crushed to <2mm and a 500g sub sample taken for analysis
Drilling techniques	Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	▪ Diamond holes were drilled as HQ (core diameter = 96mm) or NQ (Core diameter = 75.7mm). ▪ Core was orientated using an electronic 'back-end tool' core orientation system.
Drill sample recovery	Method of recording and assessing core and chip sample recoveries and results assessed. Measures taken to maximise sample recovery and ensure representative nature of the samples. 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.	▪ For diamond drilling 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. ▪ Recovery was excellent for diamond core and no relationship between grade and recovery was observed.
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. Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography. The total length and percentage of the relevant intersections logged.	▪ All diamond core is logged for regolith, lithology, veining, alteration, mineralisation and structure. Structural measurements of specific features are taken through oriented zones. All logging is quantitative where possible and qualitative elsewhere. A photograph is taken of every core tray. ▪ All data for diamond and RC was recorded digitally.

APPENDIX 3 – TABLE 1

Criteria	JORC Code Explanation	Commentary
Sub-sampling techniques and sample preparation	If core, whether cut or sawn and whether quarter, half or all core taken. If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry. For all sample types, the nature, quality and appropriateness of the sample preparation technique. Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. 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. Whether sample sizes are appropriate to the grain size of the material being sampled.	▪ The regolith of the diamond core was whole core sampled. ▪ All diamond core that was half-core sampled was cut longitudinally with an automated core saw. ▪ Sample preparation was conducted at various laboratories in Kalgoorlie, commencing with sorting, checking and drying at less than 110°C to prevent sulphide breakdown. Samples are jaw crushed to a nominal -3mm particle size. ▪ For fire assay analysis the entire crushed sample is then pulverized to 90% passing 75µm, using a Labtechnics LM5 bowl pulveriser. 300g Pulp subsamples are then taken with an aluminium scoop and stored in labelled pulp packets. ▪ For Photon Assay (PA) analysis a 500g subsample is taken from the crushed material and stored in a labelled jar. ▪ Grind checks are performed at both the crushing stage (3mm) and pulverising stage (75µm), requiring 90% of material to pass through the relevant size to ensure consistent sample preparation. ▪ Photon Assay (PA) analysis was completed on selected samples where coarse visible gold was observed in the core.
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. 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. 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.	▪ For samples selected for fire assays, a 40-50g fire assay charge is used with a lead flux, dissolved in the furnace. The prill is totally digested in HCl and HNO3 acids before Atomic Absorption Spectroscopy (AAS) determination for gold analysis. This method ensures total gold is reported appropriately. ▪ For samples selected for Photon Assay (based on coarse gold or expected high grades), analysis involves alternately activating the sample using high power X-ray source and measuring the signal from the excited gold atoms. ▪ No geophysical tools were used to determine any element concentrations. ▪ Certified Reference Materials (CRMs) are inserted into the sample sequence randomly at a rate of 1 per 20 samples to ensure correct calibration. Any values outside of 3 standard deviations are scrutinised and re-assayed with a new CRM if the failure is deemed genuine. ▪ Blanks are inserted into the sample sequence at a rate of 1 per 20 samples. Failures above 0.2g/t are scrutinised, and re-assayed if required. New pulps are prepared if failures remain. ▪ All sample QAQC results are assessed by geologists to ensure the appropriate level of accuracy and precision when the results have been returned from the laboratory.
Verification of sampling and assaying	The verification of significant intersections by either independent or alternative company personnel. The use of twinned holes. Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. Discuss any adjustment to assay data.	▪ All significant intersections are verified by the senior geologist during the drill hole validation process. ▪ No holes were twinned as part of the programs in this report. ▪ Geological logging was captured using Acquire database software. Electronic copies of these are stored. Assay files are received in .csv format and loaded directly into the database by the supervising geologist who then checks that the results have been inserted correctly. Electronic copies of these are also kept. No adjustments are made to this assay data.
Location of data points	Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. Specification of the grid system used. Quality and adequacy of topographic control.	▪ A planned hole is pegged using a GPS by the field assistants for surface holes. ▪ During surface diamond hole drilling continuous gyroscopic surveys are conducted at 0m and then every 30m down hole to design depth to ensure the hole remains close to design. ▪ The final hole collar for each diamond hole is picked up after drillhole completion by DGPS in the MGA94_51 grid for surface holes. ▪ Good quality topographic control has been achieved through regional topographic maps (±2.5m) based on photogrammetry data.
Data spacing and distribution	Data spacing for reporting of Exploration Results. 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. Whether sample compositing has been applied.	▪ Early stage diamond drilling is variably spaced to effectively test the desired target. Spacings of the regional drilling programmes range from 80m apart through to several hundred metres apart through to isolated single drillholes in some cases. These variable spacings are considered appropriate for early-stage testing of exploration targets. ▪ No compositing has been applied to these exploration results, although composite intersections are reported.

APPENDIX 3 – TABLE 1

Criteria	JORC Code Explanation	Commentary
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. 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.	▪ All drilling is oriented as close as practical to perpendicular to the target structures. Drill holes are only designed where meaningful intercept angles can be achieved. ▪ No sampling bias is considered to have been introduced by the drilling orientation.
Sample security	The measures taken to ensure sample security.	▪ Prior to laboratory submission samples are stored by Northern Star in a secure yard. Once submitted to the laboratories they are stored in a secure fenced compound and tracked through their chain of custody via audit trails.
Audits or reviews	The results of any audits or reviews of sampling techniques and data.	▪ No audits or reviews have recently been conducted on sampling techniques; however, lab audits are conducted on a regular basis.

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 security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	▪ All drill holes mentioned in this report are located on freehold land Location 50 and Location 53 all of which are owned and managed by Northern Star Resources Ltd. ▪ A 3% of gross proceeds where the gold price is below $525/oz, 4% of gross proceeds where the gold price is between $525/oz and $580/oz, and 5% of gross proceeds where the gold price is above $580/oz is payable under a private royalty to Pacific-Nevada Mining on Location 50. ▪ No state government royalty is payable on exempt Locations 50 and 53.
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	▪ Exploration work in the Samphire area first commenced by WMC Ltd and defined the northern boundary of Location 53. Further exploration work by Hampton Areas Australia Pty Ltd (a subsidiary of Poseidon Gold Ltd) confirmed the mineralisation continued into Location 53. ▪ Exploration work in the Triumph area first commenced during 1986 by Newmont Australia Limited, whom confirmed the Triumph Gabbro to be stratigraphically like the Golden Mile and Junction Dolerites during 1989. Further exploration work conducted by Newcrest (1997), Harmony (2003), Avoca Resources & Alacer Gold (2013) and Northern Star Resources (2019). ▪ Historical intercepts of previous operators of the South Kalgoorlie Operations as shown in the figures for Samphire and Triumph have not been independently verified by Northern Star Resources, however Northern Star drilling results confirm significant gold mineralisation of the targeted structures consistent with the historical results.
Geology	Deposit type, geological setting and style of mineralisation.	▪ Samphire – Quartz veining hosted in a differentiated dolerite sill within sediments of the Black Flag Group. ▪ Triumph – Quartz veining hosted in a differentiated dolerite sill within the Black Flag Group Sediments and proximal to the Boulder-Lefroy Fault System.
Drill hole Information	A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: ▪ easting and northing of the drill hole collar ▪ elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar ▪ dip and azimuth of the hole ▪ down hole length and interception depth	▪ Refer to the various tables in the body of this report. ▪ Exploration results that are not material to this report are excluded for some drill programmes. ▪ Historical drilling of previous operators of the Samphire and Triumph projects have been shown where relevant and provide important context. These results have not been independently verified by Northern Star but were drilled sampled and assayed under high standard systems and processes.

APPENDIX 3 – TABLE 1

Criteria	JORC Code Explanation	Commentary
	▪ hole length. 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.	
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. 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. The assumptions used for any reporting of metal equivalent values should be clearly stated.	▪ Diamond drill results are reported as aggregates across the target zone. ▪ Aggregate intercepts only use low grade results where such inclusion results in grades and thicknesses consistent with realistic mining widths. ▪ No metal equivalents are used.
Relationship between mineralisation widths and intercept lengths	These relationships are particularly important in the reporting of Exploration Results. If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. 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').	▪ Due to the early nature of both projects, downhole widths are reported.
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.	▪ Refer to the figures the body of this report for the spatial context of all holes planned and drilled to date.
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.	▪ Exploration results that are not material to this report are excluded for some drill programmes, however the drill physicals are all detailed for all drilling regardless of the outcome.
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.	▪ No other material exploration data has been collected for this drill program.
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). Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	▪ Further diamond drilling along strike and down dip (3000m) and RC drilling along strike (1500m) is scheduled for Samphire. ▪ Infill RC drilling to establish grade continuity is planned to be completed before CY19 with diamond drilling to follow at Triumph.