

Sunshine Metals Limited ABN 12 063 388 821 1/23 Mackley Street, Garbutt, Qld 4814

24 August 2023

# **ASX Release**

# Final Liontown assays include 7m @ 2.06% copper

Results from 25 hole drill program to be incorporated in Resource update

## **Highlights**

- Assays from final three drill holes at Liontown, Ravenswood Consolidated Project, return significant intersections including:
  - 7.0m @ 2.06% Cu (6.33% ZnEq\*, from 187.0m, Carrington, LTDD22076) including
    2.0m @ 4.13% Cu (12.82% ZnEq\*, from 187.0m), and
    1.1m @ 5.12% Cu (14.64% ZnEq\*, from 190.9m)

1.0m @ 1.13% Cu and 4.54g/t Au (11.31% ZnEq\*, from 261.0m, Carrington, LTDD22073)

3.85m @ 6.79% Zn and 2.99% Pb (8.61% ZnEq\*, from 47m, New Queen, LTDD22075) including 1.85m @ 0.42% Cu, 11.91% Zn and 5.52% Pb (15.18% ZnEq\*, from 49m)

• Overall, best results from the 25 hole diamond drill program include:

**11.0m @ 1.74g/t Au, 0.86% Cu, 9.17% Zn, 5.05% Pb, 179 g/t Ag** (**19.02% ZnEq**\*, from 173.4m, LTDD22057A)

8.1m @ 10.65g/t Au (17.77% Zn Eq\*, from 152.2m, LTDD22055)

7.0m @ 2.50g/t Au, 0.41% Cu, 11.89% Zn, 5.04% Pb (18.61% ZnEq\*, from 94.0m, LTDD22070)

9.0m @ 1.54g/t Au, 1.67% Cu, 5.29% Zn (12.51% ZnEq\*, from 79.0m, LTDD22080)

3.9m @ 0.24g/t Au, 8.30% Cu (23.30% ZnEq\*, from 99.0m, LTDD22074)

8.5m @ 5.47g/t Au, 0.39% Cu (10.17% ZnEq\*, from 73.5m, LTDD22068)

8.7m @ 1.31g/t Au, 1.88% Cu, 2.19% Zn (9.73% ZnEq\*, from 128.0m, LTDD22072)

5.0m @ 0.29g/t Au, 4.99% Cu, 1.32% Zn (15.91% ZnEq\*, from 288.8m, LTDD22052)

5.3m @ 4.95g/t Au, 1.36% Cu, 2.46% Zn (14.46% ZnEq\*, from 195.0m, LTDD22054)

5.5m @ 1.65g/t Au, 0.41% Cu, 6.21% Zn (13.39% ZnEq\*, from 202.0m, LTDD22056)

• These results will be incorporated into a Resource update in the December 2023 quarter.

Sunshine Metals Limited (ASX:SHN, "Sunshine") has reported further high grade zinc, copper and gold intersections from its remaining three diamond drill holes at Liontown, Ravenswood Consolidated Project (100%), North Queensland<sup>1</sup>.

<sup>&</sup>lt;sup>1</sup> Cautionary Statement: Sunshine has entered into binding agreements to acquire 100% of Greater Liontown in two separate transactions with unrelated, third parties. These acquisitions are subject to the satisfaction of certain conditions prior to completion of the transactions. Greater Liontown is not yet owned by Sunshine. Conditions precedent are to be satisfied prior to completion. \*ZnEq% is an estimate of recoverable zinc equivalent as calculated on Page 6.



**Sunshine Managing Director, Dr Damien Keys, commented** "These excellent results would have cost over \$1 million to drill and highlight the value we obtained through the Greater Liontown transaction. This new data, along with many more drilled after November 2019, will be included in what we expect to be a significantly upgraded Resource in the December 2023 quarter. We also have strong vectors for future extensional drilling between and/or around Liontown and Liontown East."

### **Cu-Au rich Carrington Lode extended**

Modelling of the Liontown Resource indicates the deposit is comprised of both Cu-Au rich and Zn-Pb rich lodes within a Volcanogenic Massive Sulphide (VMS) system. The hangingwall lodes, such as Main Lode and New Queen, trend towards more Pb-Zn dominant; whereas the footwall lodes, such as Carrington, Western Footwall and the Gap, are more Cu-Au enriched.

The final drill holes (LTDD22073, LTDD22075 and LTDD22076) at Liontown targeted the Western Footwall and Carrington Lodes. Results included:

7.0m @ 2.06% Cu (6.33% ZnEq\*, from 187.0m, Carrington, LTDD22076)

- Incl. 2.0m @ 4.13% Cu (12.82% ZnEq\*, from 187.0m)
- And 1.1m @ 5.12% Cu (14.64% ZnEq\*, from 190.9m)
- 1.0m @ 1.13% Cu and 4.54g/t Au (11.31% ZnEq\*, from 261.0m, Carrington, LTDD22073)
- 3.85m @ 6.79% Zn and 2.99% Pb (8.61% ZnEq\*, from 47m, New Queen, LTDD22075)
- Incl. 1.85m @ 0.42% Cu, 11.91% Zn and 5.52% Pb (15.18% ZnEq\*, from 49m)

1.55m @ 2.95% Cu, 0.55g/t Au and 2.83% Zn (11.93% ZnEq\*, from 70m, Carrington, LTDD22075)

	402500mE Liontown Deposit	403000mE	
Western Footwall	Carrington	Gap Lode	7743000mN – Liontown East ~500m
LTDD22076 LTDD2207	73 Sediments Main Lode New Queen		
Zn dominant lenses Cu-Au dominant lenses Lenses shown at 200mRL		0	250m

Importantly, the Carrington Lode in LTDD22073 sits outside the current Resource.

*Figure 1:* Plan view of the main Liontown lodes, showing Zn-dominant lenses (blue) to the south (hangingwall) and Cu-Au enriched lodes (red) to the north (footwall).



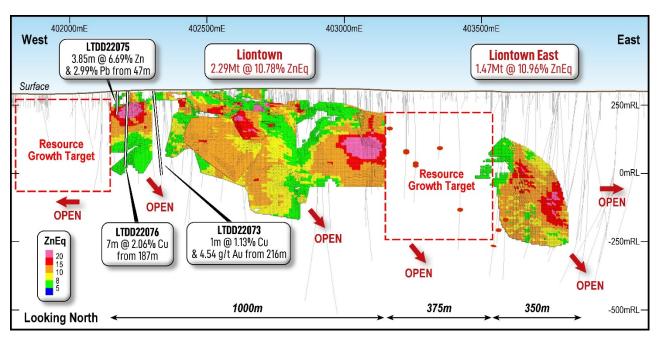


Figure 2: Long section of current Resources at Liontown and Liontown East highlighting the clear growth potential between the two deposits, west of Liontown and at depth.

## Completion of the Liontown Diamond Drill Assay Program

The 2022 diamond drilling at Liontown has now been fully logged, sampled and assayed. The drilling targeted Cu-Au rich portions of the Liontown Resource including the Gap, Carrington and Western Footwall lodes. The program was mainly designed to infill drilling to convert a significant portion of the Resource from Inferred to Indicated status.

The program has been highly successful in confirming the continuity of mineralisation on the western (Carrington and Western Footwall) and eastern margins (Gap Lode) of the current Resource. Extensional drilling was also conducted and provides confidence in the continuity of mineralisation between the Liontown and Liontown East Resource areas.

Assay results are shown in Table 1.

#### Next Steps – Liontown Resource Update

These results will be incorporated into a Resource update in the December 2023 quarter. A review of drilling completed since the Resource was last completed in March 2020, is also being compiled and will be announced in August 2023.



 Table 1: Significant intercepts from the drill holes obtained as part of the Liontown acquisition (ASX 8 May 2023, 30 May 2023, 4 July 2023, 21 July 2023, 28 July 2023, 4 August 2023). Stronger Cu, Zn and Au results are highlighted.

BHID	From	То	Interval	Cu %	Pb%	Zn%	Au (g/t)	Ag (g/t)	%ZnEq	ZnEq*m
LTDD22057A	173.4	184.4	11.0	0.86	5.05	9.17	1.74	178.73	19.02	208.28
LTDD22055	152.2	160.3	8.1	0.16	0.25	0.28	10.65	3.50	17.77	143.94
LTDD22070	94.0	101.0	7.0	0.41	5.04	11.89	2.50	14.60	18.61	130.27
LTDD22080	79.0	89.1	9.0	1.67	1.07	5.29	1.54	20.22	12.51	112.59
LTDD22074	99.0	102.9	3.9	8.30	0.03	0.08	0.24	10.01	23.20	90.49
LTDD22068	73.5	82.0	8.5	0.39	0.07	0.38	5.47	3.68	10.17	86.43
LTDD22072	128.0	136.7	8.7	1.88	0.61	2.19	1.31	16.00	9.73	84.65
LTDD22052	288.8	293.7	5.0	4.99	0.56	1.32	0.29	23.44	15.91	78.76
LTDD22054	195.0	200.3	5.3	1.36	0.99	2.46	4.95	12.39	14.46	76.64
LTDD22056	202.0	207.5	5.5	0.41	2.95	6.21	1.65	149.87	13.39	73.65
LTDD22061	219.3	223.0	3.7	6.54	0.15	0.49	0.63	14.55	19.56	72.37
LTDD22065	152.8	158.4	5.6	0.29	2.78	6.45	0.88	62.79	10.47	58.63
LTDD22065	175.8	180.1	4.4	1.37	1.73	8.55	0.18	23.30	12.91	56.16
LTDD22072	58.4	60.6	2.2	2.33	4.40	7.94	4.36	54.30	25.22	55.48
LTDD22074	143.8	151.0	7.2	1.02	0.71	3.17	0.88	8.72	7.51	54.06
LTDD22059	205.5	209.4	3.9	0.48	3.67	7.03	1.19	85.61	12.88	50.25
LTDD22076	187.0	194.0	7.0	2.06	0.06	0.54	0.04	8.67	6.33	44.32
LTDD22062	264.1	266.3	2.2	2.03	0.90	2.64	6.73	27.73	19.50	42.90
LTDD22069A	298.0	301.0	3.0	0.34	0.06	0.26	7.63	3.28	13.35	40.04
LTDD22058	137.5	141.6	4.1	0.42	1.84	6.99	0.33	51.66	9.73	39.89
LTDD22071	50.6	54.3	3.7	1.74	2.43	1.07	1.14	106.63	10.66	39.44
LTDD22062	257.5	258.7	1.2	0.43	0.05	0.06	16.34	6.85	27.28	32.74
LTDD22063	213.4	216.5	3.1	0.64	0.04	0.32	4.72	5.05	9.63	29.86
LTDD22070	134.0	135.0	1.0	4.31	2.72	3.29	7.59	32.70	28.73	28.73
LTDD22075	49.0	50.9	1.9	0.07	15.72	0.42	5.52	11.91	15.18	28.09
LTDD22060	242.2	245.3	3.1	0.25	2.21	5.42	0.54	77.08	8.83	27.37
LTDD22071	46.5	48.1	1.7	3.08	9.82	0.65	1.06	10.62	16.30	26.90
LTDD22195A	168.0	170.6	2.6	3.10	0.13	0.33	0.96	9.93	10.49	26.74
LTDD22053	257.0	261.6	4.6	0.64	0.04	0.29	2.31	2.22	5.73	26.07
LTDD22066	208.1	211.0	2.9	0.27	2.86	6.52	0.16	28.62	8.81	25.55
LTDD22055	132.6	134.4	1.8	0.04	6.35	11.10	0.28	10.20	14.04	25.27
LTDD22074	269.0	274.0	5.0	0.79	0.05	0.48	1.40	4.72	4.90	24.48
LTDD22080	73.0	74.0	1.0	1.35	0.74	2.64	9.33	19.20	21.52	21.52
LTDD22056	212.3	214.0	1.8	0.53	1.76	9.63	0.12	13.41	11.32	19.80
LTDD22053	280.8	284.0	3.2	0.52	0.11	0.85	2.26	2.57	5.85	18.72
LTDD22075	70.0	71.6	1.6	2.95	0.40	2.83	0.55	19.61	11.93	18.50
LTDD22063	219.5	220.2	0.8	1.26	2.60	9.82	6.44	39.11	24.41	18.31
LTDD22065	171.0	173.6	2.6	0.25	1.68	4.45	0.37	33.75	6.71	17.45
LTDD22067	159.3	161.0	1.7	0.33	1.45	9.09	0.14	14.24	10.16	17.28
LTDD22179A	117.0	117.9	0.9	1.08	1.08	11.98	2.39	20.33	18.23	16.41
LTDD22080	96.0	99.0	3.0	1.44	0.02	1.14	0.10	5.43	5.17	15.52
LTDD22074	83.0	86.0	3.0	0.99	0.06	2.49	0.08	5.90	5.14	15.43
LTDD22072	91.0	92.0	1.0	1.02	0.27	2.71	4.97	7.10	13.31	13.31
LTDD22078	121.0	123.0	2.0	2.11	0.05	0.40	0.07	8.20	6.36	12.72



BHID	From	То	Interval	Cu %	Pb%	Zn%	Au (g/t)	Ag (g/t)	%ZnEq	ZnEq*m
LTDD22064	167.7	167.9	0.3	1.03	3.54	1.77	27.70	35.90	50.87	12.72
LTDD22074	112.0	114.1	2.1	0.06	0.31	6.23	0.08	3.66	6.00	12.60
LTDD22051	332.0	332.9	0.9	0.75	1.19	10.98	0.12	38.33	13.22	11.90
LTDD22064	171.4	172.5	1.1	3.69	0.01	0.27	0.20	5.47	10.70	11.77
LTDD22059	217.4	218.1	0.7	0.83	4.18	12.45	0.23	36.20	16.52	11.57
LTDD22052	299.0	300.1	1.1	1.37	0.17	6.72	0.33	11.10	10.44	11.49
LTDD22051	295.9	296.8	1.0	0.48	3.66	6.90	0.71	90.60	12.09	11.48
LTDD22053	249.6	250.9	1.3	3.00	0.02	0.09	0.27	6.38	8.79	11.43
LTDD22073	261.0	262.0	1.0	1.13	0.97	0.31	4.54	12.80	11.31	11.31
LTDD22066	196.4	198.0	1.7	0.18	1.61	4.11	0.25	51.13	6.27	10.34
LTDD22078	183.6	185.0	1.4	2.63	0.01	0.08	0.07	7.30	7.46	10.22
LTDD22078	92.0	93.0	1.0	0.79	0.17	8.15	0.22	21.90	10.14	10.14
LTDD22072	79.5	80.7	1.2	1.38	2.14	2.70	0.15	33.00	8.13	9.76
LTDD22063	185.2	185.7	0.5	6.96	0.11	0.05	0.11	15.50	19.48	9.74
LTDD22052	232.0	232.6	0.6	4.49	0.01	0.03	2.34	10.70	16.15	9.69
LTDD22050A	320.9	321.9	1.0	1.92	0.28	1.61	0.16	14.70	8.91	8.91
LTDD22053	270.0	271.0	1.0	0.71	0.19	0.11	3.14	13.90	7.34	7.34
LTDD22067	193.4	194.5	1.1	1.02	0.06	3.70	0.07	16.39	6.46	7.10
LTDD22068	89.0	90.0	1.0	0.57	0.42	1.43	2.35	5.40	6.84	6.84
LTDD22072	147.6	148.6	1.1	0.31	2.31	4.09	0.17	11.40	6.20	6.51
LTDD22057A	186.5	187.7	1.2	0.54	0.69	3.63	0.07	11.28	5.35	6.42
LTDD22071	65.8	67.0	1.2	1.84	0.08	0.07	0.07	8.20	5.35	6.42
LTDD22052	220.7	221.5	0.9	0.53	0.05	0.44	3.46	2.20	7.38	6.27
LTDD22055	161.3	162.3	1.0	2.17	0.01	0.05	0.15	3.30	6.24	6.24
LTDD22070	137.0	138.0	1.0	1.03	1.73	2.14	0.07	17.80	6.06	6.06
LTDD22070	141.0	142.0	1.0	1.13	0.20	2.92	0.05	10.80	6.01	6.01
LTDD22080	144.0	145.0	1.0	0.18	0.32	1.03	2.46	6.60	5.58	5.58
LTDD22057A	190.0	191.0	1.0	0.08	1.23	4.59	0.07	8.50	5.20	5.20
LTDD22073	107.0	108.0	1.0	0.94	0.09	2.50	0.08	11.10	5.11	5.11
LTDD22065	161.8	162.8	1.0	0.06	0.61	4.77	0.10	11.10	5.06	5.06

## **Planned activities**

Sunshine has a busy period ahead including the following key activities and milestones:

- Aug 2023: Greater Liontown transaction completion
- Aug 2023: Summary of results from holes drilled post the March 2020 Resource -Ravenswood Consolidated
- Sept 2023: Fieldwork update: Coronation & Cardigan Dam Ravenswood Consolidated
- Sept 2023: Drilling commences Coronation, Liontown Ravenswood Consolidated

#### Attending:

• 29-30 August 2023: Australian Gold Conference, Sydney



#### **Recoverable Zinc Equivalent calculation**

The zinc equivalent grades for Greater Liontown (% ZnEq) are based on the following prices: US\$2,500t Zn, US\$8,500t Cu, US\$2,000t Pb, US\$1,900oz Au, US\$20oz Ag

Metallurgical metal recoveries are supported by metallurgical test work undertaken and are: 88.8% Zn, 80% Cu, 70% Pb, 65% Au, 65% Ag

The ZnEq calculation is as follows:

ZnEq = Zn grade% \* Zn recovery + (Cu grade % \* Cu recovery % \* (Cu price \$/t/ Zn price \$/t)) + (Pb grade % \* Pb recovery % \* (Pb price \$/t/ Zn price \$/t \* 0.01)) + (Au grade g/t /31.103 \* Au recovery % \* (Au price \$/oz/ Zn price \$/t)) + (Ag grade g/t /31.103 \* Ag recovery % \* (Ag price \$/oz/ Zn price \$/t \* 0.01)).

It is the opinion of Sunshine and the Competent Person that all elements and products included in the ZnEq formula have reasonable potential to be recovered and sold.

Prospect	Resource Class	Tonnage (kt)	Copper (%)	Lead (%)	Zinc (%)	Gold (g/t)	Silver (g/t)	Zinc Eq. (%) *
Liontown Oxide	Inferred	144	0.6	1.7	1.0	2.1	30	5.76
	Total	144	0.6	1.7	1.0	2.1	30	5.76
LIONTOWN								
Main Lode	Indicated	529	0.5	2.2	7.8	0.4	48	11.04
Main Lode	Inferred	717	0.6	1.8	6.4	0.3	32	9.32
	Total	1,246	0.6	2.0	7.0	0.4	39	10.05
Western Footwall	Indicated	-	-	-	-	-	-	-
Western Footwall	Inferred	200	1.4	0.5	2.5	3.8	15	12.48
	Total	200	1.4	0.5	2.5	3.8	15	12.48
Gap	Indicated	-	-	-	-	-	-	-
Gap	Inferred	376	1.7	0.8	1.9	3.6	13	12.87
	Total	376	1.7	0.8	1.9	3.6	13	12.87
New Queen	Indicated	328	0.3	2.1	5.5	2.3	44	11.14
New Queen	Inferred	129	0.2	1.7	5.9	0.9	12	8.35
	Total	457	0.3	2.0	5.6	1.9	35	10.35
Carrington	Indicated	-	-	-	-	-	-	-
Carrington	Inferred	14	0.4	1.4	4.8	1.4	28	8.66
	Total	14	0.4	1.4	4.8	1.4	28	8.66
LIONTOWN TOTAL	Total	2,293	0.8	1.7	5.5	1.5	32	10.78
Liontown East	Inferred	1,470	0.5	2.5	7.5	0.7	29	10.96
	Total	1,470	0.5	2.5	7.5	0.7	29	10.96
Waterloo	Indicated	402	2.6	2.1	13.3	1.4	68	23.40
Waterloo	Inferred	271	0.8	0.8	6.8	0.4	24	9.26
	Total	673	1.9	1.6	10.7	1.0	50	17.71
Orient	Indicated	329	1.1	2.5	10.9	0.2	55	15.20
Orient	Inferred	32	0.9	2.2	14.5	0.2	51	17.74
	Total	361	1.0	2.5	11.2	0.2	55	15.43
GRAND TOTAL		4,941	0.8	2.0	7.1	1.1	35.00	11.97

Table 2: Resource tonnage & grade by metal, recoverable zinc equivalent, deposit and category.



#### Sunshine's Board has authorised the release of this announcement.

For more information, please contact:

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#### **Competent Person's Statement**

The information in this report that relates to Exploration Results is based on, and fairly represents, information compiled by Mr Matt Price, a Competent Person who is a Member of the Australian Institute of Geoscientists (AIG) and the Australian Institute of Mining and Metallurgy (AusIMM). Mr Price has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration, and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Price consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Mineral Resources at Waterloo and Orient is based on information compiled and reviewed by Mr Stuart Hutchin, who is a Member of the Australian Institute of Geoscientists (AIG) and is a Principal Geologist employed by Mining One Pty Ltd. Mr Stuart Hutchin has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Mineral Resources. Mr Stuart Hutchin consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

The information in this report that relates to Mineral Resources at Liontown and Liontown East is based on information compiled and reviewed by Mr Peter Carolan, who is a Member of the Australasian Institute of Mining and Metallurgy and was a Principal Geologist employed by Red River Resources Ltd. Mr Peter Carolan has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Mineral Resources. Mr Peter Carolan consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.



## **About Sunshine Metals**

## Two projects. Big System Potential.

*Triumph Project (Au):* More than 85% of Triumph's Inferred Resource of 118,000oz @ 2.03g/t Au<sup>2</sup> is <100m deep and largely located within 1.2km of strike within a 6km long trend. Recent drilling has confirmed Triumph's intrusion-related gold system is analogous to the large Ravenswood Mine (5.6Moz Au Resource).

*Ravenswood Consolidated Project*<sup>3</sup> (*Zn-Cu-Pb-Au-Ag-Mo*): Located in the Charters Towers-Ravenswood district which has produced over 20Moz Au and 14mt of VMS Zn-Cu-Pb-Au ore. The project comprises:

- o a Zn-Cu-Pb-Au VMS Resource of 4.94mt @ 12.0% ZnEq (32% Indicated);
- 26 drill ready VMS Zn-Cu-Pb-Au IP geophysical targets where testing of a similar target has already lead to the Liontown East discovery which hosts a current Resource of 1.47mt @ 11.0% ZnEq;
- the under-drilled Carrington Au Lode in the footwall of the Liontown VMS deposits with significant intersections including 3m @ 46.2 g/t Au from 20m (LRC0018) and 2m @ 68.6 g/t Au from 24m (LRC0043);
- advanced Cu-Au VMS targets at Coronation analogous to the nearby Highway-Reward Mine (4mt @ 6.2% Cu & 1.0 g/t Au mined);
- overlooked orogenic, epithermal and intrusion related Au potential with numerous historic gold workings and drill ready targets; and
- o a Mo-Cu Exploration Target at Titov of 5-8mt @ 0.07-0.12% Mo & 0.28-0.44% Cu.

*Investigator Project*<sup>4</sup> (*Cu*): Located 100km north of the Mt Isa, home to rich copper-lead-zinc mines that have been worked for almost a century. Investigator is hosted in the same stratigraphy and similar fault architecture as the Capricorn Copper Mine, located 12km north.

*Hodgkinson Project<sup>4</sup> (Au-W):* Located between the Palmer River alluvial gold field (1.35 Moz Au) and the historic Hodgkinson gold field (0.3 Moz Au) and incorporates the Elephant Creek Gold, Peninsula Gold-Copper and Campbell Creek Gold prospects.

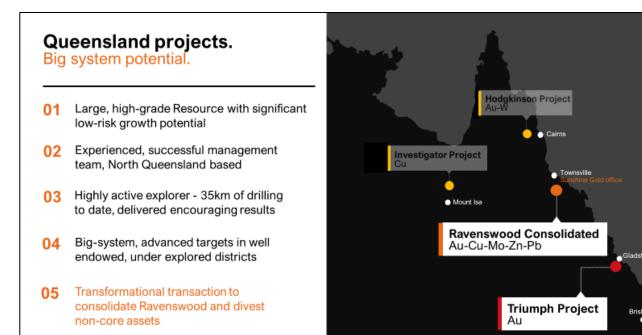
<sup>&</sup>lt;sup>2</sup> SHN ASX Release, 31 March 2022, "Robust Maiden Resource at Triumph Gold Project".

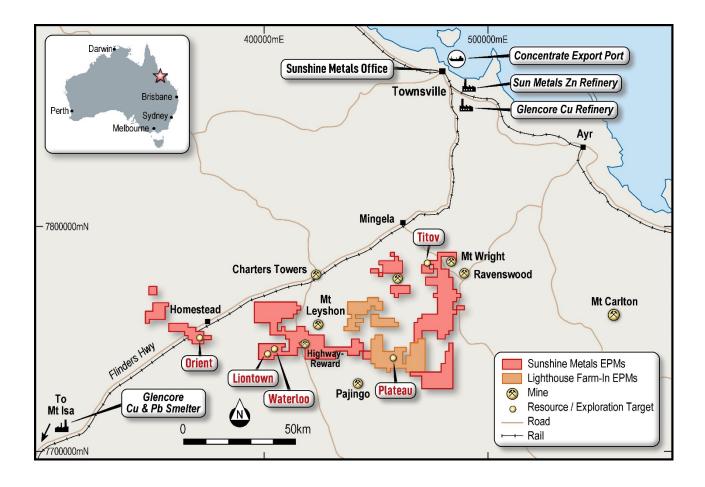
No new information has been collected and all material assumptions remain unchanged.

<sup>&</sup>lt;sup>3</sup> Cautionary Statement: Sunshine has entered into binding agreements to acquire 100% of Greater Liontown in two separate transactions with unrelated, third parties. These acquisitions are subject to the satisfaction of certain conditions prior to completion of the transactions. Greater Liontown is not yet owned by Sunshine. Conditions precedent are to be satisfied prior to completion.

<sup>&</sup>lt;sup>4</sup> A number of parties have expressed interest in our other quality projects (Investigator Cu and Hodgkinson Au-W). These projects will be divested in an orderly manner in due course.









## Attachment A: Drill Collar, Survey and Status of Resource Infill and Extensional Drilling, Liontown Resource.

Hole ID	Resource	Tenement (collar)	Prospect	Drill Method	Planned Easting	Planned Northing	Planned Elevation	Dip	NAT Grid AZI	Est PCD Depth	Actual EOH Depth	Status
LTDD22071	Liontown	ML10277	Western Footwall	PCD-NQ	402397	7742817	298.3	-54.7	358.2	40	213.2	Assays received
LTDD22179A	Liontown	EPM14161	The Gap	NQ	403133	7742904	213.8	-60.5	359.0	0	174.6	Assays received
LTDD22062	Liontown	EPM14161	The Gap	PCD-NQ	402951	7742808	299.3	-67.0	8.0	60	281.7	Assays received
LTDD22055	Liontown	EPM14161	The Gap	PCD-NQ	403003	7742819	299.0	-58.9	354.7		176.9	Assays received
LTDD22065	Liontown	EPM14161	Main Lode Upper	PCD-NQ	402549	7742729	292.0	-57.0	6.8	70	213.8	Assays received
LTDD22054	Liontown	EPM14161	The Gap	PCD-NQ	403003	7742819	299.0	-64.0	9.0		243.2	Assays received
MET02	Liontown	ML10277	New Queen Met	HQ	402602	7742855	300.0	-50.0	357.0	20	128.2	Assays received
LTDD22053	Liontown	EPM14161	The Gap	PCD-NQ	403003	7742819	299.0	-71.9	353.0		304.9	Assays received
LTDD22061	Liontown	EPM14161	The Gap	PCD-NQ	402951	7742808	299.3	-75.0	8.0	60	302.2	Assays received
LTDD22063	Liontown	EPM14161	The Gap	PCD-NQ	402951	7742808	299.3	-62.0	8.0	60	242.2	Assays received
LTDD22072	Liontown	ML10277	Western Footwall	PCD-NQ	402279	7742969	297.5	-54.0	147.5	70	157.9	Assays received
LTDD22066	Liontown	EPM14161	Main Lode Upper	PCD-NQ	402469	7742689	291.0	-56.0	7.0	70	251.0	Assays received
LTDD22067	Liontown	EPM14161	Main Lode Upper	PCD-NQ	402416	7742715	290.0	-59.0	352.8	70	235.9	Assays received
LTDD22064	Liontown	EPM14161	The Gap	PCD-NQ	402951	7742808	299.3	-52.0	8.0	60	215.2	Assays received
LTDD22080	Liontown	ML10277	Western Footwall	PCD-NQ	402205	7742869	291.6	-52.0	358.9	64	209.0	Assays received
LTDD22070	Liontown	EPM14161	The Gap	PCD-NQ	403084	7742852	296.9	-71.0	353	60	180.2	Assays received
LTDD22181A	Liontown	EPM14161	The Gap	NQ	403120	7742807	293.0	-62.0	0.0		252.0	Assays received
LTDD22078	Liontown	ML10277	Western Footwall	PCD-NQ	402292	7742813	294.7	-62.0	353.5	70	278.0	Assays received
LTDD22069A	Liontown	EPM14161	The Gap	PCD-NQ	403090	7742802	296.9	-83.0	355.0	60	337.2	Assays received
LTDD22068	Liontown	ML10277	Western Footwall	PCD-NQ	402293	7742867	297.1	-60.0	355.0	59	203.1	Assays received
LTDD22073	Liontown	ML10277	Western Footwall	PCD-NQ	402326	7742826	295.7	-76.0	359.0	70	311.2	Assays received
LTDD22074	Liontown	ML10277	Western Footwall	PCD-NQ	402326	7742826	296.1	-64.0	357.9	70	299.2	Assays received
LTDD22075	Liontown	ML10277	Western Footwall	PCD-NQ	402162	7742879	291.9	-61.0	359.8	68	156.8	Assays received
LTDD22076	Liontown	ML10277	Western Footwall	PCD-NQ	402205	7742802	292.8	-65.0	357.8	80	326.0	Assays received
LTDD21039	Liontown	EPM14161	Main Lode Lower	PCD-NQ	402697	7742600	290.5	-60.0	5.0		210.0	Abandoned



## Section 1 - Sampling Techniques and Data

Criteria	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 'in dustry 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 30 g 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.	<ul> <li>LIONTOWN DRILLING</li> <li>Sample intervals were selected by company geologists based on visual mineralisation and geological boundaries with an ideal sample length of one metre.</li> <li>Samples were sawn in half onsite using an automatic core saw.</li> <li>Independent certified assay laboratories were used for analysis.</li> <li>Recent sampling was analysed at Intertek Genalysis Laboratory or Australian Laboratory Services (ALS) in Townsville where samples were crushed to sub 6mm, split and pulverised to sub 75µm. A sub sample was collected for a four-acid digest and ICP-OES analysis of the following elements: Ag, As, Ba, Bi, Ca, Cu, Fe, K, Mg, Mn, Na, Pb, S, Sb, Ti, Zn &amp; Zr (at Intertek); and Ag, Al, As, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, K, La, Li, Mg, Mn, Mo, Na, Ni, P, Pb, S, Sb, Sc, Sr, Th, Ti, TI, U, V, W, Zn (at ALS). Samples were assayed for Au using either a 30g or 50g Fire Assay technique.</li> </ul>
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	<ul> <li>LIONTOWN DRILLING</li> <li>Mud rotary, RC and Diamond drilling methods were used.</li> <li>Mud rotary was used to establish hole collars to the base of the cover sequence then a change of drilling method to Diamond core (HQ size) or RC was undertaken. For most holes a further change</li> </ul>



Criteria	Explanation	Commentary
	other type, whether core is oriented and if so, by what method, etc.).	<ul> <li>in method to Diamond core NQ2 or BQ size took place for intersecting the target zone and drilling to end of hole.</li> <li>Reverse circulation drilling used a 5.5" bit</li> <li>Mud rotary drilling used a 7 7/8" PCD bit.</li> </ul>
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. 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.	<ul> <li>LIONTOWN DRILLING</li> <li>Core loss was recorded by company geologists. Recovery within the sulphide zones was 98%.</li> <li>Partial core loss occurs within shear zones.</li> <li>LIONTOWN DRILLING</li> <li>Holes were logged to a level of detail that would support mineral resource estimation.</li> <li>Qualitative logging includes lithology, alteration and textures.</li> <li>Quantitative logging includes sulphide and gangue mineral percentages.</li> <li>All drill core was photographed.</li> <li>Drill holes were logged in full.</li> </ul>
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.	<ul> <li>LIONTOWN DRILLING</li> <li>Diamond core was placed in core trays for logging and sampling.</li> <li>Diamond core was cut in half using a core saw.</li> <li>Sample intervals were sampled to geological boundaries.</li> <li>The sample sizes are considered to be sufficient to correctly represent the mineralisation style.</li> </ul>



Criteria	Explanation	Commentary
	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.	
Quality of	The nature, quality and appropriateness of the	LIONTOWN DRILLING
assay data	assaying and laboratory procedures used and	The assay methods employed are considered appropriate for near total digestion.
and Laboratory tests	whether the technique is considered partial or total. For geophysical tools, spectrometers, handheld XRF	<ul> <li>Various degrees of Quality Assurance and Quality Control processes were implemented through the different drilling programs. Records post 2007 are available.</li> </ul>
lesis		<ul> <li>Red River Resources used blanks and standard reference material inserted at a rate of 1 in 20. Certified standards returned results within an acceptable range. No field duplicates were submitted for diamond core.</li> </ul>
	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.	<ul> <li>Drill holes processed by SHN have inserted blanks and standard reference material at a rate of 1 in 30. Certified standards returned results within an acceptable range with the exception of one CRM which assayed below 3SD for Au within LTDD22070. This is in further review although is not expected to materially affect any results. Field duplicates have been submitted as quarter core and have returned acceptable results.</li> </ul>



Criteria	Explanation	Commentary
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	<ul> <li>LIONTOWN DRILLING</li> <li>Laboratory results have been reviewed by Company geologists and laboratory technicians.</li> </ul>
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.	<ul> <li>LIONTOWN DRILLING</li> <li>Holes LTDD21039 and LTDD22181A were surveyed with RTKGPS.</li> <li>Remaining holes in Appendix A have been picked up with a handheld GPS unit (accuracy to 5m).</li> <li>A resurvey of 105 historic drill collars was carried out by Liontown Resources Limited in 2007. Recent down hole surveys conducted with digital magnetic multi-shot camera at 20-40m intervals. Historic drill hole surveys were taken using Eastman single shot cameras.</li> <li>Coordinate system used is MGA94 Zone 55.</li> <li>Topographic control is based on a detailed 3D Digital Elevation Model.</li> </ul>
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.	LIONTOWN RESOURCE DRILLING The drilling has infilled and extended Resource classified material at Western Footwall, Main Lode, New Queen, Carrington and the Gap Lode. The distribution of drilling provides drill intersection spacings of: 10 – 40m for majority of New Queen Lode 20 – 70m for the Main Lens upper sections 60 – 100m for the Inferred area of the Main Lode 15 – 70m for the Western Footwall Lode



Criteria	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.	<ul> <li>15 - 150m for the Gap Lode</li> <li>The drill spacing provides evidence of mineralised zone contintuity for the purposes of resource estimation. Compositing of within mineralisaed domains of raw assay data to approximate 1m intervals was completed in preparation for the resource estimation process.</li> <li>LIONTOWN DRILLING <ul> <li>Where possible holes were orientated to ensure drill intersections were approximately perpendicular to the strike of the ore lenses and overall geological sequence. Dip intersections to the plane of mineralisation generally occur between 45° and 80°.</li> <li>The orientation of the multiple lenses varies resulting in some intersections being less than perpendicular.</li> <li>Some holes were drilled approximately down dip for comprehensive investigation of the ore zones.</li> <li>The effect of local sampling biases due to orientation and spacing of drill holes is mitigated in the estimation process.</li> </ul> </li> <li>Drill holes are orientated perpendicular to the strike of the host lithologies and mineralised zone.</li> <li>The drilling direction and inclination is designed to not bias sampling</li> <li>The orientation of the drill core for structural assessment is determined using a downhole digital orientation tool.</li> </ul>
Sample security	The measures taken to ensure sample security.	<ul> <li>LIONTOWN DRILLING</li> <li>During Red River drill programs, samples were overseen by company staff during transport from site to Laboratories. Sample security for earlier programs cannot be validated. Given the primarily base metal nature of the deposit, sample security is not considered as a significant risk.</li> </ul>



Criteria	Explanation	Commentary
Audits or	The results of any audits or reviews of sampling	LIONTOWN DRILLING
reviews	•	• A review of the resource estimation process for Liontown was completed by Mining One Consultants in November 2015.
		A due diligence review of the resource estimation was also completed by Mining One Consultants in November 2013.
		• A review of the assay data was completed by McDonald Speijers Consultants in 2008.
		• Earlier data reviews were carried out and documented by the various previous owners of the project.

## **Section 2 - Reporting of Exploration Results**

(Criteria listed in the preceding section also apply to this section.)

Criteria	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.	The acquired leases consist of those granted to Cromarty Resources Pty Ltd and Hebrides Resources Pty Ltd. The Exploration Permits are: EPMs 10582, 12766, 14161, 16929, 26718, 27168, 27221, 27223, 27357, 27520 and 27731 and Mining Lease Applications 100221, 100290 and 100302 (Cromarty) for a total of 463km2; and EPMs 18470, 18471, 18713, 25815 and 25895 (Hebrides) for a total of 221km2. The tenements are in believed to be in good standing and no known impediments exist. The Thalanga mill and mining operation was abandoned by administrators to Red River Resources. A restricted area has been placed over the mill, dumps and tailings facilities. The Queensland Department of Environment is now responsible for the rehabilitation of the aforementioned facilities. There are no known other Restricted Areas located within the tenure. Five third-party Mining Leases are present exist on the Exploration Permits – named MLs 1571, 1734, 1739 and 10028 (Thalanga Copper Mines Pty Ltd) and 100021 (Clyde Ian Doxford).



Criteria	Explanation	Commentary
		Liontown, Waterloo and the majority of tenure exist on the native land of the Jangga People #2 claim, with northwestern tenure located on the native land of the Gudjala People.
		A 0.8% Net Smelter Return (NSR) royalty is payable to Osisko Ventures Ltd and a 0.7% NSR royalty payable to the Guandong Guangxin Mine Resources Group Co Ltd (GMRG) on sale proceeds of product extracted form EPM 14161.
Exploration	Acknowledgment and appraisal of exploration by other	LIONTOWN RESOURCE AND LIONTOWN EAST RESOURCE DRILLING
done by other parties	parties.	Exploration activities have been carried out by Nickel Mines(1970-1973), Esso (1982-1983), Great Mines (1987), Pancontinental (1994-1995), and Liontown Resources (2007). Work programs included surface mapping, and sampling, costeans, drilling and geophysics. Historic exploration was carried out by Esso Exploration and Pancontinental Mining. This included drilling and geophysics. Historic drilling over the Liontown East area is shallow and did not intercept the current Mineral Resource mineralisation.
Geology	Geology Deposit type, geological setting and style of mineralisation.	LIONTOWN RESOURCE AND LIONTOWN EAST RESOURCE DRILLING
		<ul> <li>The Liontown and Liontown East deposits are hosted within Cambro-Ordovician marine volcanic and volcano-sedimentary sequences of the Mt Windsor Volcanic sub-province</li> <li>The Liontown and Liontown East deposits are volcanogenic massive sulphide (VMS) base metal style deposits.</li> <li>Liontown East consists of stratiform massive and stringer sulphide zones developed within the lower units of a thick sedimentary package immediately above a rhyodacite pumice breccia. Lenses of Cu Au dominated mineralisation continue into the footwall.</li> <li>The Carrington Au lodes are considered to be formed during a later orogenic Au event.</li> </ul>
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:	<ul> <li>LIONTOWN RESOURCE AND LIONTOWN EAST RESOURCE DRILLING</li> <li>The estimate is based on 7 major drilling programs by 6 companies over a period spanning 40 years. Drill intersections from 241 drill holes were used in the Liontown estimation.</li> </ul>
	• easting and northing of the drill hole collar	All drill holes comprising the resources are listed in Appendix A of this report.



Criteria	Explanation	Commentary
	<ul> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> 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.	The zinc equivalent grades for Greater Liontown (Zn Eq) are based on zinc, copper, lead, gold and silver prices of US\$2500/t Zinc, US\$8500/t Copper, US\$2000/t Lead, US\$1900/oz Gold and US\$20/oz Silver with metallurgical metal recoveries of 88.8% Zn, 80% Cu, 70% Pb, 65% Au and 65% Ag and are supported by metallurgical test work undertaken.
	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 zinc equivalent calculation is as follows: Zn Eq = Zn grade% * Zn recovery + (Cu grade % * Cu recovery % * (Cu price \$/t/ Zn price \$/t)) + (Pb grade % * Pb recovery % * (Pb price \$/t/ Zn price \$/t)) + (Au grade g/t /31.103 * Au recovery % * (Au price \$/oz/ Zn price \$/t* 0.01)) + (Ag grade g/t /31.103 * Ag recovery % * (Ag price \$/oz/ Zn price \$/t * 0.01)).
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	It is the opinion of Sunshine Metals and the Competent Person that all elements and products included in the metal equivalent formula have a reasonable potential to be recovered and sold.
		LIONTOWN RESOURCE AND LIONTOWN EAST RESOURCE DRILLING
		• The exploration results reported for Liontown and Liontown East were included as weighted average assay intervals for Zn, Cu, Ag and Pb. Assays are reported as either a 1% ZnEq cut off, or 5% ZnEq cut off for higher grade areas. No top cutting of high grades was completed when reporting as exploration results.



Criteria	Explanation	Commentary
Relationship between mineralisation widths and intercept length	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').	<ul> <li>LIONTOWN RESOURCE AND LIONTOWN EAST RESOURCE DRILLING</li> <li>The mineralisation is stratabound and interpreted to be dipping at ~70 degrees, drill holes have been designed to intercept the mineralisation as close to perpendicular as possible.</li> <li>Where down hole intercepts are reported, true widths are likely to be ~75%.</li> <li>The typical drill sample interval is 1m in length</li> <li>At Liontown East the average downhole thickness of the mineralised zone is 8.2m.</li> </ul>
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.	All diagrams are located within the body of this report
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.	All drill intercepts are recorded within the body of this report
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.	All meaningful and material data is reported



Criteria	Explanation	Commentary
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.	<ul> <li>Further extensional drining will be required to test possible extensions to mineralisation.</li> <li>Exploration will continue within the target VMS horizons</li> </ul>