IN THE SUPREME COURT OF WESTERN AUSTRALIA COR 163 of 2024

IN THE MATTER OF PANORAMIC RESOURCES LIMITED (SUBJECT TO DEED OF COMPANY ARRANGEMENT) (RECEIVERS AND MANAGERS APPOINTED) (ACN 095 792 288)

EX PARTE

WOODHOUSE, WARWICK AND WHITE IN THEIR CAPACITIES AS JOINT AND SEVERAL DEED ADMINISTRATORS OF PANORAMIC RESOURCES LIMITED (SUBJECT TO DEED OF COMPANY ARRANGEMENT) (RECEIVERS AND MANAGERS APPOINTED) (ACN 095 792 288) First Plaintiffs

PANORAMIC RESOURCES LIMITED (SUBJECT TO DEED OF COMPANY ARRANGEMENT) (RECEIVERS AND MANAGERS APPOINTED) (ACN 095 792 288) Second Plaintiff

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SECOND AFFIDAVIT OF PAUL JOHN DUNBAR AFFIRMED 17 DECEMBER 2024

Case Manager: The Honourable Justice Hill

Date of document: 17 December 2024

Filed on behalf of: The Plaintiffs

Date of filing: 17 December 2024

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Document Number	Details	Page
1.	Affidavit of Paul John Dunbar affirmed 17 December 2024	1 - 19
2.	Attachment **PJD-5**: Copy of 2015 VALMIN Code	20 - 61
3.	Attachment **PJD-6**: Copy of 2012 JORC Code	62 - 105
4.	Attachment **PJD-7**: Copy of Panoramic ASX announcement dated August 2023 entitled "Diggers and Dealers Presentation"	106 - 121
5.	Attachment **PJD-8**: Copy of Panoramic ASX announcement dated 20 September 2023 entitled "2023 Sustainability Report"	122 - 211

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6.	Attachment **PJD-9**: Copy of Panoramic ASX announcement dated 6 April 2021 entitled "Savannah Restart"	212 - 234
7.	Attachment **PJD-10**: Copy of Panoramic ASX announcement dated 23 December 2019 entitled "Receipt of Independent Expert's Report"	235 - 499
8.	Attachment **PJD-11**: Copy of Tyler, I.M., et al, "Are there terranes within the Lamboo Complex of the Halls Creek Orogen", Geological Survey of Western Australia, 1993-94 Annual Review (1995)	500 - 511
9.	Attachment **PJD-12**: Copy of Maidment, DW, et al, "Geochronology of etasedimentary and igneous rocks in the Lamboo Province, Kimberley region: reassessing collisional geodynamic models: Geological Survey of Western Australia, Report 215" (2022)	512 - 598
10.	Attachment **PJD-13**: Copy of Hicks, J.D., et al, "Savannah nickel sulfide deposits", Australian Ore Deposits, the Australian Institute of Mining and Metallurgy: Melbourne (2017)	599 - 604
11.	Attachment **PJD-14**: Copy of Page, RW and Hoatson, DM, "Geochronology of the mafic– ultramafic intrusions, in Geology and economic potential of the Palaeoproterozoic layered mafic–ultramafic intrusions in the East Kimberley", Australian Geological Survey Organisation Bulletin 246 (2000)	605 - 614
12.	Attachment **PJD-15**: Copy of Kemp, AIS, et al, "Constraints on Paleoproterozoic crust–mantle evolution from the Hf, Nd and O isotope record of igneous rocks in the Lamboo Province of the Halls Creek and King Leopold Orogens", GSWA Kimberley Workshop 2014: Extended Abstracts (2015)	615 - 616
13.	Attachment **PJD-16**: Copy of Mole, DR, et al, "Timing, geochemistry and tectonic setting of Ni–Cu sulfide-associated intrusions of the Halls Creek Orogen, Western Australia": Lithos (2018)	617 - 638
14.	Attachment **PJD-17**: Copy of Hoatson, D.M., and Blake, D.H., "Geology and Economic Potential of the Paleoproterozoic Layered Mafic-Ultramafic Intrusions in the East Kimberley, Western Australia" Bulletin 246 (Australian Geological Survey Organisation: Canberra) (2000)	639 - 1136
15.	Attachment **PJD-18**: Copy of Panoramic ASX announcement dated 5 October 2023 entitled "Savannah Nickel Project - 2023 Mineral Resource and Ore Reserve Statement"	1137 - 1173

16.	Attachment **PJD-19**: Copy of Panoramic ASX announcement dated 31 January 2024 entitled "Quarter Activities Report for the period ending 31 December 2023"	1174 - 1183
17.	Attachment **PJD-20**: Copy of Panoramic ASX announcement dated 18 September 2023 entitled "Broad, high-grade extension of mineralisation at Savannah below 900 Fault"	1184 - 1196
18.	Attachment **PJD-21**: Copy of Panoramic ASX announcement dated 8 May 2023 entitled "Savannah Drilling and DHEM Program Update"	1197 - 1209
19.	Attachment **PJD-22**: Copy of Panoramic ASX announcement dated 19 October 2023 entitled "Quarterly Activities Report for the period ending 30 September 2023"	1210 - 1226
20.	Attachment **PJD-23**: Copy of Panoramic ASX announcement dated 26 July 2023 entitled "Quarterly Activities Report for the period ending 30 June 2023"	1227 - 1241
21.	Attachment **PJD-24**: Copy of Panoramic ASX announcement dated 20 October 2023 entitled "Annual General Meeting"	1242 - 1258
22.	Attachment **PJD-25**: Copy of Panoramic ASX announcement dated 26 August 2015 entitled "Savannah North - potential strike extent could be 2km"	1259 - 1271
23.	Attachment **PJD-26**: Copy of Panoramic ASX announcement dated 31 January 2017 entitled "Quarterly Report for the period ending 31 December 2016"	1272 - 1285
24.	Attachment **PJD-27**: Copy of Cube Consulting Pty Ltd, "Summary Report Mineral Resource Estimate Savannah North, Savannah Nickle Project by Cube Consulting Pty Ltd" dated 30 June 2023	1286 - 1398
25.	Attachment **PJD-28**: Copy of Cube Consulting Pty Ltd, "Technical Memorandum - Model Handover - Savannah Sub-900 fault update estimate" dated 22 May 2023	1399 - 1401
26.	Attachment **PJD-29**: Copy of Cube Consulting Pty Ltd, "Technical Memorandum - Model Handover - Updated Savannah North Mineral Resource Estimate (MRE) and Savannah Project total MRE Statement Depleted to 30 June 2023" dated 17 July 2023	1402 - 1405
27.	Attachment **PJD-30**: Copy of Cube Consulting Pty Ltd, "Technical Memorandum - Model Handover - Savannah Sub-900 fault update estimate" dated 22 September 2023	1406 - 1409

28.	Attachment **PJD-31**: Copy of Entech Mining Consultants draft report entitled "Savannah Underground Nickel Mine Life of Mine Plan and Ore Reserve Report" by dated July 2020	1410 - 1516
29.	Attachment **PJD-32**: Copy of Panoramic ASX announcement dated 29 September 2022 entitled "Savannah Project - 2022 Mineral Resource and Ore Reserve Statement"	1517 - 1537
30.	Attachment **PJD-33**: Copy of Panoramic data room document entitled "Savannah Project Ore Reserve Estimate - 1 July 2023"	1538 - 1550
31.	Attachment **PJD-34**: Copy of Panoramic ASX announcement dated 25 May 2023 entitled "Savannah Regional Exploration Update"	1551 - 1555
32.	Attachment **PJD-35**: Copy of Panoramic ASX announcement dated 31 October 2019 "Quarterly Report for period ending 30 September 2019"	1556 - 1575
33.	Attachment **PJD-36**: Copy of Green Critical Minerals ASX announcement dated 8 July 2024 entitled "Clarification and Retraction Announcement"	1576 - 1598
34.	Attachment **PJD-37**: Copy of Thompson D. and Hutton D., "Breakaway Resources Ltd, Annual Report on the East Kimberley Project for the Period 16 February 2008 to 15 February 2009, Kimberley Mineral Field, Western Australia" (2019)	1599 - 1628
35.	Attachment **PJD-38**: Copy of Kilburn, L.C., "Valuation of mineral properties which do not contain exploitable reserves", CIM Bulletin (1990)	1629 - 1632
36.	Attachment **PJD-39**: Copy of Onley, P.G, "Multiples of Exploration Expenditure as a Basis for Mineral Valuation", Mineral Valuation Methodologies Conference, Sydney 27-28 October 1994	1633 - 1639
37.	Attachment **PJD-40**: Copy of BHP ASX announcement dated 15 February 2024 entitled "Half Year 2024 Exceptional Items Update"	1640 - 1644
38.	Attachment **PJD-41**: Copy of BHP ASX announcement dated 11 July 2024 entitled "Western Australia Nickel to temporarily suspend operations"	1645 - 1647
39.	Attachment **PJD-42**: Copy of BHP ASX announcement dated 20 February 2024 entitled "Half Yearly Report and Accounts"	1648 - 1716

40.	Attachment **PJD-43**: Copy of Cassidy, K, et all, "A revised geological framework for the Yilgarn Craton, Western Australia: Geological Survey of Western Australia", Record 2006/8 (2006)	1717 - 1730
41.	Attachment **PJD-44**: Copy of Gresham JJ and Loftus-Hills GD, "The geology of the Kambalda nickel field, Western Australia: Economic Geology" (1981)	1731 - 1773
42.	Attachment **PJD-45**: Smithies RH, et al, "Geochemical characterization of the magmatic stratigraphy of the Kalgoorlie and Black Flag Groups - Ora Banda to Kambalda region: Geological Survey of Western Australia", Report 226 (2022)	1774 - 1880
43.	Attachment **PJD-46**: Hicks JD and Parkinson RG, "Deacon nickel sulfide deposit, Tramways Dome, Kambalda", Australian Ore Deposits, The Australasian Institute of Mining and Metallurgy: Melbourne, Monograph 32 (2017)	1881 - 1884
44.	Attachment **PJD-47**: Panoramic ASX announcement dated 28 April 2011 entitled "Cruickshank Resource Upgraded 26% to 33,560t Ni"	1885 - 1887
45.	Attachment **PJD-48**: Panoramic ASX announcement dated 12 October 2011 entitled "Business Review 2011"	1888 - 1927
46.	Attachment **PJD-49**: Panoramic ASX announcement dated 13 September 2013 entitled "Resources and Reserves at 30 June 2013 and Exploration Update"	1928 - 1935
47.	Attachment **PJD-50**: Panoramic ASX announcement dated 6 December 2018 entitled "Lanfranchi Sale Completed"	1936
48.	Attachment **PJD-51**: Black Mountain, Press Release dated 5 October 2021, "Black Mountain Metals and Tembo Capital Forge Battery Metal Partnership"	1937 - 1942
49.	Attachment **PJD-52**: Panoramic ASX announcement dated 30 September 2015 entitled "Mineral Resources and Ore Reserves as at 30 June 2015"	1943 - 2026
50.	Attachment **PJD-53**: Panoramic ASX announcement dated 28 April 2016 entitled "Quarterly Report for the period ending 31 March 2016"	2027 - 2056
51.	Attachment **PJD-54**: Panoramic ASX announcement dated 30 September 2016 "Mineral Resources and Ore Reserves at 30 June 2016"	2057 - 2082

I, Paul John Dunbar, of Level 1, 168 Stirling Highway, Nedlands, in the state of Western Australia, principal, solemnly and sincerely declare and affirm:

1 I am a principal at VRM. I am authorised to affirm this affidavit on behalf of VRM.

2 This is my second affidavit affirmed in these proceedings. Unless otherwise indicated, I adopt the defined terms used in my first affidavit affirmed 13 December 2024 (**First Affidavit**).

3 Except where I state otherwise, I make this affidavit from facts within my own knowledge. Where I have relied on facts outside my personal knowledge, I am informed by the stated source of the facts and believe those facts to be true.

Documents referred to in my Panoramic Group Report

4 In the Panoramic Group Report, I refer to several documents, which I attach to this affidavit as follows, and refer to information that has been obtained from the sources noted below:

	IER reference(s)	Document description	Attachment
4.1	Page vii	Copy of Zeta DOCA dated 23 October 2024	Copy at DHW-1 to the affidavit of Daniel Hillston Woodhouse affirmed 25 October 2024, which I have seen
4.2	Page vii, [1.1], [1.4], [3.3], [5], [5.6.2], [6.2.5], [8.1]	Copy of Australasian Code for Public Reporting of Technical Assessments and Valuations of Mineral Assets - the 2015 VALMIN Code (**VALMIN Code**)	**PJD-5**
4.3	Page vii, [1.1], [1.4], [8.1]	Copy of Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (**2012 JORC Code**)	**PJD-6**
4.4	[1.3]	Copy of ASIC Regulatory Guide 111: Content of Expert Reports	Copy at PJD-3 (at pages 398 - 420) of my First Affidavit

4.5	[1.3]	Copy of ASIC Regulatory Guide 112: Independence of Experts	Copy at PDJ-3 (at pages 421 - 460) of my First Affidavit
4.6	Page ix, [3.6] (Table 7), [6.1]	Copy of Gordon Brothers' valuation report dated 7 November 2024	Copy at PJD-2 (at pages 88 - 114) of my First Affidavit
4.7	[2.1] (Figure 2), [2.6] (Figure 6)	Copy of Panoramic ASX announcement dated August 2023 entitled "Diggers and Dealers Presentation"	**PJD-7**
4.8	[2.1] (Figure 3)	These images were downloaded by VRM from Geological Survey of Western Australia (**GSWA**) and overlain by VRM on Bing satellite imagery	-
4.9	[2.1], [2.2], [2.3]	Copy of Panoramic ASX announcement dated 20 September 2023 entitled "2023 Sustainability Report"	**PJD-8**
4.10	[2.2]	Copy of Panoramic ASX announcement dated 6 April 2021 entitled "Savannah Restart"	**PJD-9**
4.11	[2.4], [4.1] (Table 8), [5.1]	Copy of Panoramic ASX announcement dated 23 December 2019 entitled "Receipt of Independent Expert's Report"	**PJD-10**
4.12	[2.5]	Copy of Tyler, I.M., et al, "Are there terranes within the Lamboo Complex of the Halls Creek Orogen?", GSWA, 1993-94 Annual Review (1995)	**PJD-11**

4.13	[2.5] (Figures 4 & 5), [8.1]	Copy of Maidment, DW, et al, "Geochronology of etasedimentary and igneous rocks in the Lamboo Province, Kimberley region: reassessing collisional geodynamic models: Geological Survey of Western Australia, Report 215" (2022)	**PJD-12**
4.14	[2.5], [2.6] (Figure 7), [8.1]	Copy of Hicks, J.D., et al, "Savannah nickel sulfide deposits" Australian Ore Deposits, the Australian Institute of Mining and Metallurgy: Melbourne (2017)	**PJD-13**
4.15	[2.5], [2.6], [8.1]	Copy of Page, RW and Hoatson, DM, "Geochronology of the mafic– ultramafic intrusions, in Geology and economic potential of the Palaeoproterozoic layered mafic–ultramafic intrusions in the East Kimberley", Australian Geological Survey Organisation Bulletin 246 (2000)	**PJD-14**
4.16	[2.5], [8.1]	Copy of Kemp, AIS, et al, "Constraints on Paleoproterozoic crust–mantle evolution from the Hf, Nd and O isotope record of igneous rocks in the Lamboo Province of the Halls Creek and King Leopold Orogens", GSWA Kimberley Workshop 2014: Extended Abstracts (2015)	**PJD-15**
4.17	[2.5], [8.1]	Copy of Mole, DR, et al, "Timing, geochemistry and tectonic setting of Ni–Cu sulfide-associated intrusions of the Halls Creek	**PJD-16**

		Orogen, Western Australia": Lithos (2018)	
4.18	[2.6], [8.1]	Copy of Hoatson, D.M., and Blake, D.H., "Geology and Economic Potential of the Paleoproterozoic Layered Mafic-Ultramafic Intrusions in the East Kimberley, Western Australia" Bulletin 246 (Australian Geological Survey Organisation: Canberra) (2000)	**PJD-17**
4.19	[3.1] (Table 1), [3.1] (Figure 8), [3.1.3] (Table 2), [3.3] (Table 3), [3.3.10], [3.4] (Figure 17), [3.4] (Table 4)	Copy of Panoramic ASX announcement dated 5 October 2023 entitled "Savannah Nickel Project - 2023 Mineral Resource and Ore Reserve Statement"	**PJD-18**
4.20	[3.2.1], [3.2.2] (Figure 9), [3.3.9], [3.4]	Copy of Panoramic ASX announcement dated 31 January 2024 entitled "Quarter Activities Report for the period ending 31 December 2023"	**PJD-19**
4.21	[3.2.2]	Copy of Panoramic ASX announcement dated 18 September 2023 entitled "Broad, high-grade extension of mineralisation at Savannah below 900 Fault"	**PJD-20**
4.22	[3.2.2]	Copy of Panoramic ASX announcement dated 8 May 2023 entitled "Savannah Drilling and DHEM Program Update"	**PJD-21**
4.23	[3.2.2]	Copy of Panoramic ASX announcement dated 19 October	**PJD-22**

		2023 entitled "Quarterly Activities Report for the period ending 30 September 2023"	
4.24	[3.2.2] (Figure 11)	Copy of Panoramic ASX announcement dated 26 July 2023 entitled "Quarterly Activities Report for the period ending 30 June 2023"	**PJD-23**
4.25	[3.2.2] (Figure 12), [3.2.3] (Figure 16)	Copy of Panoramic ASX announcement dated 20 October 2023 entitled "Annual General Meeting"	**PJD-24**
4.26	[3.2.3]	Copy of Panoramic ASX announcement dated 26 August 2015 entitled "Savannah North – potential strike extent could be 2km"	**PJD-25**
4.27	[2.6] (Figure 7), [3.2.3] (Figure 7), [3.2.3] (Figure 13)	Copy of Panoramic ASX announcement dated 31 January 2017 entitled "Quarterly Report for the period ending 31 December 2016"	**PJD-26**
4.28	[3.3.1], [3.2.3], [3.2.3] (Figures 14 & 15), [3.3], [8.1]	Copy of Cube Consulting Pty Ltd, "Summary Report Mineral Resource Estimate Savannah North, Savannah Nickle Project by Cube Consulting Pty Ltd" dated 30 June 2023	**PJD-27**
4.29	[3.3]	Copy of Cube Consulting Pty Ltd, "Technical Memorandum - Model Handover - Savannah Sub-900 fault update estimate" dated 22 May 2023	**PJD-28**

4.30	[3.3]	Copy of Cube Consulting Pty Ltd, "Technical Memorandum - Model Handover - Updated Savannah North Mineral Resource Estimate (MRE) and Savannah Project total MRE Statement Depleted to 30 June 2023" dated 17 July 2023	**PJD-29**
4.31	[3.3]	Copy of Cube Consulting Pty Ltd, "Technical Memorandum - Model Handover - Savannah Sub-900 fault update estimate" dated 22 September 2023	**PJD-30**
4.32	[3.4], [3.5] (Tables 6 & 18)	Copy of Entech Mining Consultants draft report entitled "Savannah Underground Nickel Mine Life of Mine Plan and Ore Reserve Report" by dated July 2020	**PJD-31**
4.33	[3.4]	Copy of Panoramic ASX announcement dated 29 September 2022 entitled "Savannah Project - 2022 Mineral Resource and Ore Reserve Statement"	**PJD-32**
4.34	[3.4], [6.2.1]	Copy of Panoramic data room document entitled "Savannah Project Ore Reserve Estimate - 1 July 2023"	**PJD-33**
4.35	[4.2] (Figure 20 & 21)	Copy of Panoramic ASX announcement dated 25 May 2023 entitled "Savannah Regional Exploration Update"	**PJD-34**
4.36	[4.3] (Figure 22)	Copy of Panoramic ASX announcement dated 31 October	**PJD-35**

		2019 "Quarterly Report for period ending 30 September 2019"	
4.37	[4.3]	Copy of Green Critical Minerals ASX announcement dated 8 July 2024 entitled "Clarification and Retraction Announcement"	**PJD-36**
4.38	[4.3] (Tables 9 & 23), [8.1]	Copy of Thompson D. and Hutton D., "Breakaway Resources Ltd, Annual Report on the East Kimberley Project for the Period 16 February 2008 to 15 February 2009, Kimberley Mineral Field, Western Australia" (2019)	**PJD-37**
4.39	[5.3], [5.4]	Nickel, Copper and Cobalt Commodity Prices as at 31 October 2024, which VRM obtained from S&P Capital IQ	-
4.40	[5.6.1]	Copy of Kilburn, L.C., "Valuation of mineral properties which do not contain exploitable reserves", CIM Bulletin (1990)	**PJD-38**
4.41	[5.6.2], [8.1]	Copy of Onley, P.G, "Multiples of Exploration Expenditure as a Basis for Mineral Valuation", Mineral Valuation Methodologies Conference, Sydney 27-28 October 1994	**PJD-39**
4.42	[6.2.1], [6.2.5]	Copy of Panoramic's data room document titled "02.01.01 Pan Res LOMP_63_DRupload.xlsx", being an Excel spreadsheet containing Panoramic's Life of Mine Plan (**LOMP**) and Discount Cashflow Model (**DCF**) financial model. Due to the nature and	-

		size of this Excel spreadsheet, I am unable to annex a readable copy of the financial model to this affidavit.	

Documents referred to in my Cherish Report

5 In the Cherish Report, I refer to several documents, which I either attach to this affidavit as follows, and refer to information that has been obtained from the sources noted below:

	IER reference(s)	Document description	Attachment
5.1	Executive Summary, [6]	Copy of Federal Court's Expert Evidence Practice Note, attaching Code	Copy at PJD-3 (at page 385 - 397) of my First Affidavit
5.2	Executive Summary, [9] - [13], [14], [18], [54], [78] - [79], [123], [128]	Copy of 2015 VALMIN Code	Copy at PJD-5
5.3	Executive Summary, [9], [10], [12], [18] - [19], [71]	Copy of 2012 JORC Code	Copy at PJD-6
5.4	[6], [14]	Copy of ASIC Regulatory Guide 111: Content of Expert Reports	Copy at PJD-3 (at pages 398 - 420) of my First Affidavit
5.5	[6], [14]	Copy of ASIC Regulatory Guide 112: Independence of Experts	Copy at PDJ-3 (at pages 421 - 460) of my First Affidavit
5.6	Page 5 (Answer 3), [94], [96]	Copy of BHP ASX announcement dated 15 February 2024 entitled "Half Year 2024 Exceptional Items Update"	**PJD-40**
5.7	Page 5 (Answer 3), [96]	Copy of BHP ASX announcement dated 11 July 2024 entitled	**PJD-41**

		"Western Australia Nickel to temporarily suspend operations"	
5.8	Page 5 (Answer 3), [97]	Copy of BHP ASX announcement dated 20 February 2024 entitled "Half Yearly Report and Accounts"	**PJD-42**
5.9	Figure 3	Cherish website page, "Lanfranchi Nickle Mine - Project Overview"	Copy at PJD-3 (at page 179) of my First Affidavit
5.10	[29]	Cherish's tenement list which VRM obtained from DEMIRS on 1 December 2024	-
5.11	Figure 3	These images were downloaded by VRM from GSWA and overlain by VRM on Bing satellite imagery	-
5.12	Figure 4 & 5	Nickel production tonnage from Lanfranchi 1976-2015 obtained by VRM from Cherish's website	-
5.13	[40]	Copy of Cassidy, K, et all, "A revised geological framework for the Yilgarn Craton, Western Australia: Geological Survey of Western Australia", Record 2006/8 (2006)	**PJD-43**
5.14	[41]	Woodall RW, "Structure of the Kalgoorlie goldfield, in Geology of Australian ore deposits, v. I, Commonwealth Mining & Metallurgical Congress" (8th: Australia and New Zealand) edited by J McAndrew (2nd edition): Australasian Institute of Mining and Metallurgy (1965), pp 71 - 79	-

5.15	[41]	Copy of Gresham JJ and Loftus-Hills GD, "The geology of the Kambalda nickel field, Western Australia: Economic Geology" (1981)	**PJD-44**
5.16	[41]	Roberts D, "Kambalda – St Ives area nickel sulphide and gold deposits, in Excursion guidebook: Boddington and Eastern Goldfields, Western Australia" edited by BH Smith, CA Stoakes, AL Govey, and CJ Oates: The second international conference on prospecting in arid terrain, Perth, Western Australia, 26 April 1988, The University of Western Australia: Department of Geology and University Extension, Publication no. 18 (1988), pp 68 - 76	-
5.17	[42]	Copy of Smithies RH, et al, "Geochemical characterization of the magmatic stratigraphy of the Kalgoorlie and Black Flag Groups — Ora Banda to Kambalda region: Geological Survey of Western Australia", Report 226 (2022)	**PJD-45**
5.18	[43]	Champion, D.C., and Sheraton, J.W., "Geochemistry and Nd isotope systematics of Archaean granites of the Eastern Goldfields, Yilgarn Craton, Australia; implications for crustal growth processes: Precambrian	-

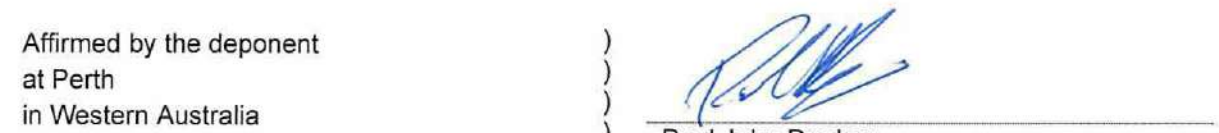
		Research", v. 83 (1997), pp 109 - 132	
5.19	[44]	Blewett RS, Czarnota K and Henson PA, "Structural-event framework for the eastern Yilgarn Craton, Western Australia, and its implications for orogenic gold: Precambrian Research", v 183 (2010), pp 203 - 209	-
5.20	Figure 6	GSWA Interpreted Geology 2016, which VRM obtained from the DEMIRS MINEDEX platform	-
5.21	Figure 7 & 8, [47]	Copy of Hicks JD and Parkinson RG, "Deacon nickel sulfide deposit, Tramways Dome, Kambalda", Australian Ore Deposits, The Australasian Institute of Mining and Metallurgy: Melbourne, Monograph 32 (2017)	**PJD-46**
5.22	Table 2, [49], [52], [54]	Copy of Cherish website page, "Mineral Resources 2024" (as of June 30, 2024)	Copy at PJD-3 (at page 180) of my First Affidavit
5.23	[51], Figure 13 & 14, [77]	Copy of Cherish, "October 2023 - Corporate Presentation - Australian Nickel Conference"	Copy at PJD-3 (at pages 181 - 207) of my First Affidavit
5.24	[54]	Copy of Panoramic ASX announcement dated 28 April 2011 entitled "Cruickshank Resource Upgraded 26% to 33,560t Ni"	**PJD-47**
5.25	[54]	Copy of Panoramic ASX announcement dated 12 October	**PJD-48**

		2011 entitled "Business Review 2011"	
5.26	[36], [54]	Copy of Panoramic ASX announcement dated 13 September 2013 entitled "Resources and Reserves at 30 June 2013 and Exploration Update"	**PJD-49**
5.27	[36]	Copy of Panoramic ASX announcement dated 6 December 2018 entitled "Lanfranchi Sale Completed"	**PJD-50**
5.28	[37]	Copy of Black Mountain, Press Release dated 5 October 2021, "Black Mountain Metals and Tembo Capital Forge Battery Metal Partnership"	**PJD-51**
5.29	[54]	Copy of Panoramic ASX announcement dated 30 September 2015 entitled "Mineral Resources and Ore Reserves as at 30 June 2015"	**PJD-52**
5.30	[54]	Copy of Panoramic ASX announcement dated 28 April 2016 entitled "Quarterly Report for the period ending 31 March 2016"	**PJD-53**
5.31	[54]	Copy of Panoramic ASX announcement dated 30 September 2016 "Mineral Resources and Ore Reserves at 30 June 2016"	**PJD-54**

5.32	[75]	Copy of Cherish, Press Release dated 5 December 2022 entitled "Significant Drilling Intercepts Expand Lower Lanfranchi Nickel Deposit"	Copy at PJD-3 (at pages 207 - 216) of my First Affidavit
5.33	[75]	Copy of Cherish, Press Release dated 19 June 2023 entitled "Continued diamond drilling success down plunge at Lower Lanfranchi with significant intervals of Nickel Sulphide intersected"	Copy at PJD-3 (at pages 217 - 225) of my First Affidavit
5.34	[75], Figure 11	Copy of Cherish, Press Release dated 4 September 2023 "Discovery of new Nickel Sulphide Channel adjacent to the existing Lower Schmitz ore body"	Copy at PJD-3 (at pages 226 - 237) of my First Affidavit
5.35	[75], Figure 10 & 12	Copy of Cherish, Press Release dated 2 October 2023 entitled "Outstanding diamond drilling results (10.55m @ 12.21% Ni) further down plunge at Lower Lanfranchi"	Copy at PJD-3 (at pages 238 - 247) of my First Affidavit
5.36	[81]	Copy of Panoramic ASX announcement dated 23 December 2019 entitled "Receipt of Independent Expert's Report"	Copy at PJD-10
5.37	Figure 15	Nickel Commodity Prices obtained from S&P Global	-
5.38	[113]	Copy of Kilburn, L.C., "Valuation of mineral properties which do not contain exploitable reserves", CIM Bulletin (1990)	Copy at PJD-39

5.39	[124]	Copy of Onley, P.G, "Multiples of Exploration Expenditure as a Basis for Mineral Valuation", Mineral Valuation Methodologies Conference, Sydney 27-28 October 1994	Copy at PJD-40

Affirmed by the deponent)
at Perth)
in Western Australia)
on 17 December 2024)
Before me:)



Paul John Dunbar



Signature of witness

JESSICA MAY EDMEADES, a legal practitioner who has held a practice certificate for at least 2 years and who holds a current practice certificate

AUSTRALASIAN CODE FOR PUBLIC REPORTING OF TECHNICAL ASSESSMENTS AND VALUATIONS OF MINERAL ASSETS



THE VALMIN CODE
2015 EDITION



AUSTRALIAN INSTITUTE OF GEOSCIENTISTS

Supporting Geoscientists

AusIMM
THE MINERALS INSTITUTE

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Prepared by The VALMIN Committee, a joint committee of the Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists

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Preface

The Australasian Code for the Public Reporting of Technical Assessments and Valuations of Mineral Assets (VALMIN Code) has been prepared by the VALMIN Committee, a joint committee of The Australasian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Geoscientists (AIG), with the participation of the Minerals Council of Australia (MCA) and other key stakeholder representatives.

There have been three previous versions of the VALMIN Code, the first applicable from 1 July, 1995, the second applicable from 1 April, 1998 and the third applicable from 29 April 2005. The Minerals Industry Consultants Association (MICA) was a member of the joint committee and a major contributor to earlier Codes.

The VALMIN Code provides a set of fundamental principles (Competence, Materiality and Transparency), mandatory requirements and supporting recommendations accepted as representing good professional practice to assist in the preparation of relevant Public Reports on any Technical Assessment or Valuation of Mineral Assets. It is a companion to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). The VALMIN Code provides guidance on matters that may be subject to Australian regulations, other provisions of law and the published policies and guidance of the Australian Securities and Investments Commission (ASIC) and the Listing Rules of the Australian Securities Exchange (ASX) or of other relevant securities exchanges.

The VALMIN Code is written from a Minerals perspective and uses terminology consistent with the JORC Code.

Terminology

Definitions of introductory terms are listed at the end of the VALMIN Code. Definitions that are associated with the VALMIN Code's fundamental principles and minimum requirements are incorporated in the text and are printed in **bold** text.

The word '**must**' denotes a VALMIN Code requirement that is mandatory.

The words 'should' and 'may' indicate that discretion can be used depending on the particular circumstances of a Public Report and providing that the VALMIN Code's fundamental principles are not transgressed.

Defined terms are capitalised.

Guidelines are in *italics*.

The singular includes the plural and vice versa.

Petroleum

The VALMIN Code is suggested as a guide to good practice for Public Reporting of technical assessments and valuations of Petroleum Assets. The reader is referred to Chapter 5 of the ASX Listing Rules for requirements on reporting of Petroleum assets in Australia.

Disclaimer

The VALMIN Code does not constitute legal advice and may not consider all matters relevant to the preparation of a Public Report. It is the responsibility of Practitioners to determine their legal obligations in relation to the preparation of a Public Report and to seek legal advice when necessary.

Contents

1. Introduction 6
1.1. Purpose 6
1.2. Context 6
1.3. Scope 8
2. VALMIN Practitioners 9
2.1. Who is a Practitioner? 9
2.2. Requirements of Practitioners 9
3. Code Principles 11
3.1. Competence 11
3.2. Materiality 11
3.3. Transparency 12
4. Additional requirements 13
4.1. Reasonableness 13
4.2. Independence 14
5. Public Report 15
5.1. Intent of a Public Report 15
5.2. Report content 15
5.3. Technical Assessment Report 18
5.4. Valuation Report 18
5.5. Independent Expert Report/Specialist Report 18
6. Commissioning a Public Report 19
6.1. Written engagement 19
6.2. Scope 19
6.3. Cost 20
6.4. Provision of previous reports 20
6.5. Confidential information 20
7. Technical Assessment 22
7.1. Study terminology 22
7.2. Tenure Status 22
7.3. Mineralisation, Mineral Resources and Ore Reserves 23
7.4. Mineral Extraction 23
7.5. Capital and Operating Costs 25
7.6. Revenue 27

Note: Procedural and mandatory items are in normal typeface, with the word '**must**' in **bold**; guideline items are in boxes and italics and those definitions incorporated in the text of the Code are in **bold.**

8. Valuation 28
8.1 Basis of Value 28
8.2. Common Valuation Approaches 28
8.3. Appropriate Valuation Approach 29
8.4. In Situ Values 30
8.5. Use of Ore Reserves and Mineral Resources 30
8.6. Range 30
8.7. Market premium or discount 30
9. Financial Modelling 31
9.1. Taxation and royalties 31
9.2. Financing 31
9.3. Liabilities, commitments and financial exposures 31
9.4. Forecasts 32
10. Risks and opportunities 33
11. Other 34
11.1. Site inspection 34
11.2. Draft reports 34
11.3. Records 34
11.4. Indemnities 34
12. Declarations 35
12.1 Standard 35
12.2. Professional Organisation 35
12.3. Qualifications and Organisations 36
12.4. Corporation and licences 36
12.5. Sign-off 36
13. Acronyms 37
14. Definitions 38
15. Glossary 41

1. Introduction

1.1. Purpose

The purpose of the Australasian Code for the Public Reporting of Technical Assessments and Valuations of Mineral Assets (VALMIN Code) is to provide a set of fundamental principles, minimum requirements and supporting recommendations to assist in the preparation of relevant Public Reports on Mineral Assets. The VALMIN Code is based on international good practice as currently employed in the Mineral industry, but allows for professional judgement in certain instances.

The resulting Public Reports **must** be reliable and should be clear, concise, effective and include all the Material information required by investors and their advisers when making investment decisions.

Subject to provisions in paragraph 1.3, AIG and AusIMM Members **must** adhere to the VALMIN Code regardless of where or for whom the Public Reports are prepared or the location of the Mineral Assets under consideration.

1.2. Context

The VALMIN Code is designed to fit within the Australian regulatory framework comprising the Corporations Act, and various ASIC Regulatory Guidelines and ASX Listing Rules. It is a companion to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Any references to the JORC Code relate to the 2012 edition or the most recent subsequent edition.

> Refer to http://www.valmin.org for further information.

(a) Corporations Act

The Corporations Act 2001 (Cth) is the legislation that has the principal legal influence on the themes of the VALMIN Code. The Corporations Act sets out laws dealing with Australian companies and corporate activity in Australia.

> Refer to http://www.comlaw.gov.au for further information.

(b) ASIC Regulatory Guidelines

The ASIC Regulatory Guidelines (RG) and Information Sheets provide guidance to regulated entities by:

(i) explaining when and how ASIC will exercise specific powers under legislation (primarily the Corporations Act); (ii) explaining how ASIC interprets the law;

(iii) describing the principles underlying ASIC's approach; and

(iv) giving practical guidance.

> Practical guidance includes describing the steps of a process such as applying for an Australian Financial Services Licence (AFSL), or providing practical examples of how regulated entities may decide to meet their obligations.

At the time of drafting the VALMIN Code, the key relevant guidelines for the preparation of Public Reports relating to Mineral Assets include, but are not limited to:

(i) RG 55 – Statements in Disclosure Documents and PDSs: Consent to Quote,

(ii) RG 111 – Content of Expert Reports,

(iii) RG 112 – Independence of Experts,

(iv) RG 170 – Prospective Financial Information,

(v) RG 228 – Prospectuses: Effective disclosure for retail investors,

(vi) RG 230 – Disclosing non-IFRS financial information,

(vii) ASIC Class Orders CO 07/428 and 429 – Consent to Quote, and

(viii) ASIC Information Sheet – Mining and resources – Forward-looking statements.

Refer to http://www.asic.gov.au for further information and recent updates.

(c) ASX Listing Rules

The ASX Listing Rules set out the requirements for corporations in order to be listed on the ASX. The ASX Listing Rules include:

(i) continuous disclosure obligations, which require companies to immediately notify the ASX of any information that may affect the share price of the company,

(ii) rules governing how new share issues **must** be carried out,

(iii) guidance as to how share registries and registration should be maintained, and

(iv) mining specific reporting requirements, under Chapter 5 which references the JORC Code.

In addition to the ASX Listing Rules, the ASX provides guidance through its regularly updated Guidance Notes and FAQs (frequently asked questions).

For further information refer to http://www.asx.com.au.

(d) JORC Code

The JORC Code sets out minimum standards, recommendations and guidelines for Public Reports in Australasia for Exploration Results, Mineral Resources and Ore Reserves.

The ASX incorporates the JORC Code into Chapter 5 of the Listing Rules to mandate that a Public Report concerning Exploration Results, Mineral Resources or Ore Reserves is prepared in accordance with the JORC Code.

The JORC Code is binding on any Member of the AIG or the AusIMM.

For further information refer to http://www.jorc.org.

(e) Petroleum Resources Management System

The SPE-PRMS is the petroleum industry's global standard for resource and reserve classification and reporting. SPE-PRMS is referenced in Chapter 5 of the ASX Listing Rules, and Public Reports concerning petroleum exploration, resources or reserves **must** be prepared in accordance with that system.

Refer to http://www.spe.org/industry/reserves.php for further information.

1.3. Scope

As of 1 July 2016, this version of the VALMIN Code is binding on Members of the AusIMM and AIG. Members of Recognised Professional Organisations may be bound by VALMIN or a compatible code.

The VALMIN Code applies in any particular circumstance only if, and to the extent that, it is not inconsistent with the Corporations Act or other provisions of Australian law, ASIC policy and guidance, the ASX Listing Rules and guidance or the requirements of the relevant recognised Securities exchange. Guidance on the VALMIN Code's applicability is presented in Figure 1.

The VALMIN Code is considered to be broadly consistent in terms of fundamental principles and general approach with relevant international codes, templates, standards and guidelines (eg SAMVAL – South African Code for the Reporting of Mineral Asset Valuation, CIMVal – Standards and Guidelines for Valuation of Mineral Properties, CRIRSCO – Committee for Mineral Reserves International Reporting Standards template and the IMVAL Template – International Mineral Valuation Standards template). VALMIN Practitioners preparing Public Reports in jurisdictions other than Australia should be aware of and take note of the specific content of relevant codes, templates, standards and guidelines other than VALMIN.

Refer to http://www.samcode.co.za, http://web.cim.org, http://www.ivsc.org and http://www.crirsco.com for further information.

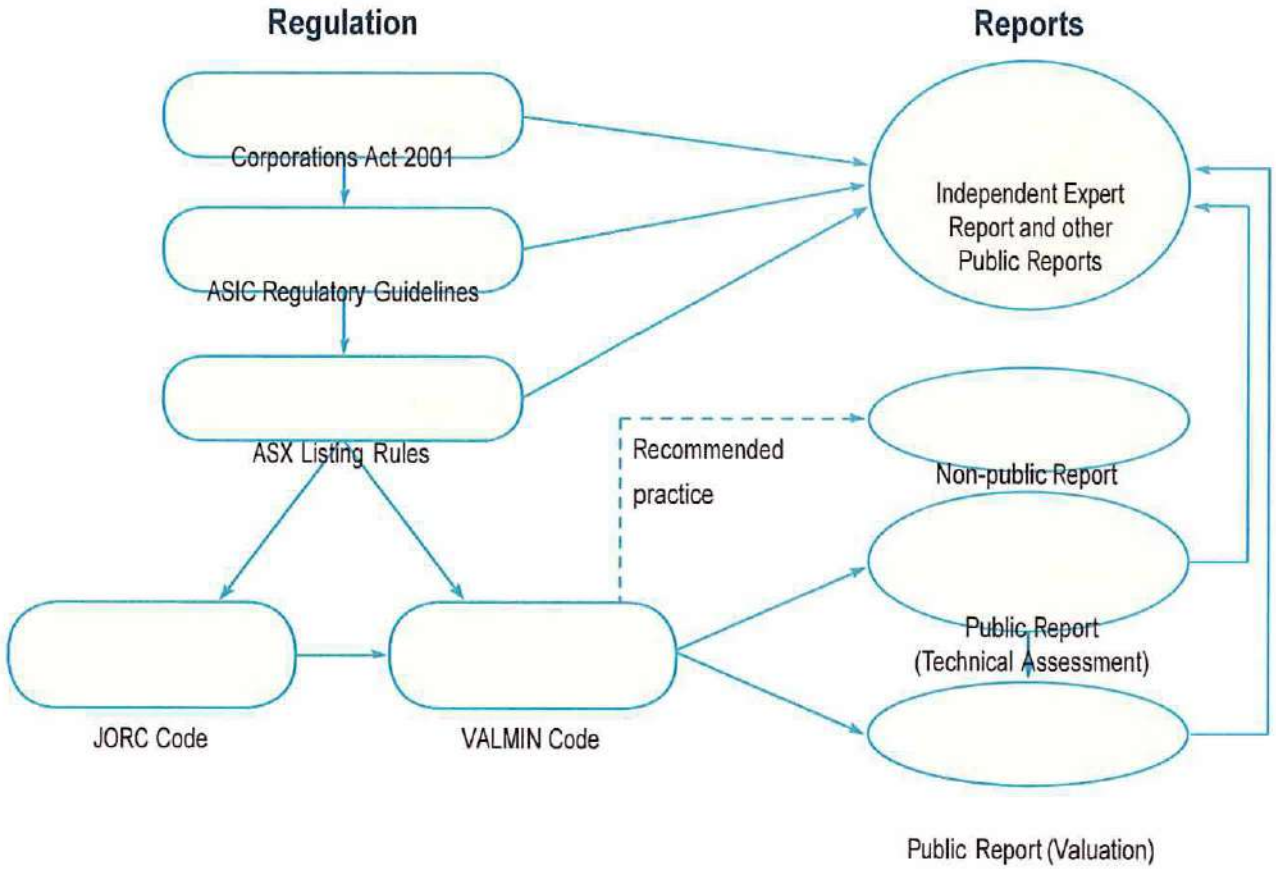


Figure 1 – General relationship between VALMIN, Public Reports and Regulations.

Note: Procedural and mandatory items are in normal typeface, with the word **'must'** in **bold**; guideline items are in boxes and italics and those definitions incorporated in the text of the Code are in **bold.**

2. VALMIN Practitioners

2.1. Who is a Practitioner?

A **Practitioner** is an Expert as defined in the Corporations Act, who prepares a Public Report on a Technical Assessment or Valuation Report for Mineral Assets or Securities. This collective term includes Specialists and Securities Experts. The

following categories of Expert are recognised and are broadly aligned with ASIC Regulatory Guide 112:

(a) **Specialists** are persons whose profession, reputation and relevant industry experience in a technical discipline (such as geology, mine engineering or metallurgy) provides them with the authority to assess or value Mineral Assets, and who prepare and accept responsibility for a Public Report.

(b) **Securities Experts** are persons whose profession, reputation or experience provides them with the authority to assess or value Securities, and who prepare and accept responsibility for a Public Report.

Where the relevant criteria in Clause 2.2 are met, the Securities Expert and Specialist may be the same person.

Where a Specialist is not personally Competent to prepare certain sections of Public Reports, they should retain suitably qualified professionals who are Competent regarding those matters.

Representative Specialists are persons who are the nominated representative(s) of a legally constituted body, and who supervise the preparation of a Public Report and accept responsibility for it on behalf of that body. Representative Specialists are Specialists.

> The Code uses the term Practitioner for situations that refer to either a Securities Expert or a Specialist; for example, a Public Report:
>
> (i) is prepared by a Practitioner;
>
> (ii) regarding Mineral Asset Valuation is prepared by a Practitioner;
>
> (iii) regarding Technical Assessment can only be undertaken by a Specialist; and
>
> (iv) regarding Securities Valuation can only be undertaken by a Securities Expert.

2.2. Requirements of Practitioners

A Specialist **must**:

(a) be Competent in, and have had at least five years of recent and relevant industry experience in relation to, the specific Mineral Asset to be reported upon;

(b) have at least five years of recent and relevant experience in Technical Assessment, and where a Valuation is being prepared, have at least an additional five years (totalling a minimum of ten years) of recent and relevant experience in the valuation of Mineral Assets;

(c) be a member of a Professional Organisation with an enforceable professional Code of Ethics and understand that a violation of the VALMIN Code may result in an investigation in accordance with the rules of the Professional Organisation; and

(d) be familiar with the VALMIN Code, the JORC Code, the relevant requirements of the Corporations Act, the public policies of ASIC, the ASX or other recognised Securities exchanges, and court decisions that may be relevant to the Public Report being prepared.

If a Specialist is reporting on Mineral Assets that are entirely of an Early-Stage Exploration Project or Advanced Exploration Project status, the relevant experience **must** be in the Technical Assessment and Valuation of Mineral Assets of this status.

If one or more of the Mineral Assets are of Pre-Development or more advanced status, the relevant experience **must** be in the Technical Assessment and Valuation of Mineral Assets of at least this level of development.

The key qualifier in the requirements of a Specialist is the word 'relevant'. Determining what constitutes relevant experience can be difficult and common sense **must** be exercised. 'Relevant' also means that it is not necessary for a person to have five years' experience in each and every type of Mineral Asset under consideration in order to act as a Specialist. For example, where a Specialist has relevant experience in the mineral types that are Material to a Technical Assessment of Mineral Assets, then that Specialist may not need to have five years experience for the other Mineral Assets being assessed where they are not Material. Nevertheless, an understanding of key geological, mining, processing, social and marketing parameters and risks for the specific Mineral Asset under consideration is required.

As a general guide, a person being called upon to act as a Specialist should be clearly satisfied in their own mind that they could face their peers and demonstrate competence in the evaluation of the Mineral Asset under consideration. If doubt exists, the person should either seek opinions from appropriately experienced colleagues or decline to act as a Specialist.

Technical Assessments and Valuations of Mineral Assets may be a collaborative effort. Where there is a clear division of responsibilities, each person **must** accept responsibility for their own contribution.

If only one Specialist signs the Technical Assessment or Valuation, that person is responsible and accountable for the whole of the documentation under the VALMIN Code. It is important in this situation that the Specialist accepting overall responsibility for a Technical Assessment or Valuation and supporting documentation is satisfied that the work of the other contributors is acceptable.

Where a Securities Expert participates in a Valuation of, or is seen to be providing advice in relation to, Mineral Securities (as opposed to the valuation of the underlying related Mineral Assets) or provides a Vendor Consideration Opinion, they **must** hold appropriate financial licences. In Australia, this is an AFSL as required by Chapter 7 of the Corporations Act.

3. Code Principles

The fundamental Principles of the VALMIN Code are Competence, Materiality and Transparency.

3.1. Competence

(a) Requirement

Competence or being **Competent** requires that the Public Report is based on work that is the responsibility of a suitably qualified and experienced person who is subject to an enforceable professional Code of Ethics.

(b) Responsibility

A Practitioner **must** be involved in the preparation of a Public Report and may be required to seek assistance from other relevant professionals.

All Practitioners must have Competence in the relevant technical and commercial disciplines. Depending on the nature of the Public Report involved, Competence in geosciences, engineering, metallurgy, environmental assessment, geopolitics, finance, tax, law, Tenure, valuation, commerce and the Modifying Factors may all be required.

Practitioners **must** be able to demonstrate to the Commissioning Entity and those entitled to receive a Public Report that they are sufficiently Competent to either prepare or contribute to a Public Report.

3.2. Materiality

(a) Requirement

Materiality or being **Material** requires that a Public Report contains all the relevant information that investors and their professional advisors would reasonably require, and reasonably expect to find in the report, for the purpose of making a reasoned and balanced judgement regarding the Technical Assessment or Mineral Asset Valuation being reported.

(b) Responsibility

All assumptions **must** be set out clearly in the Public Report, including appropriate reference to confidential information that is not disclosed as described in Clause 6, regarding:

(i) Material, technical and commercial parameters;

(ii) the risks associated with those assumptions; and

(iii) the Valuation Approaches and Valuation Methods used.

Any departures from the VALMIN Code **must** not have a Material effect on the Technical Assessment or Valuation and **must** be disclosed and justified in the Public Report.

Where it is impossible or impracticable to obtain sufficiently accurate or reliable data, this **must** be stated in the Public Report.

> Additional detail on the Australian regulatory requirement can be found in ASIC Regulatory Guide (as at the date of this Code) RG 111.

(c) Determination

The determination of what is Material depends on both qualitative and quantitative factors. A parameter may be Material in the qualitative sense because of its nature (for example, country risk). Practitioners **must** ensure that all Material information is considered.

A general rule in determining if information is Material is:

- '... if its omission or misstatement could influence the economic decisions of users taken on the basis of the Public Report (International Accounting Standard Committee, 1989)

> Guidance for the determination of Materiality as a percentage variation can be found in the Australian Accounting and International Financial Reporting referencing standard:
>
> - an amount that is equal to or greater than 10% may be presumed to be Material unless there is evidence or a convincing argument to the contrary;
> - an amount that is equal to or less than 5% may be presumed to not be Material unless there is evidence or a convincing argument to the contrary.

Two tests should be used in determining whether an item is Material:

- a quantitative test (a percentage variation); this is an area that requires a degree of professional judgment to identify information that is relevant and to determine between information that is 'need to know' and that which is 'nice to know'; and
- a qualitative test; that is, the nature of the item and whether knowledge of it would influence the economic decisions of investors.

> Guidance on qualitative factors may be found in the ASX Listing Rules, (as at the date of this Code) Guidance Note 31.

3.3. Transparency

(a) Requirement

Transparency or being **Transparent** requires that the reader of a Public Report is provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and not be misled by this information or by omission of Material information.

(b) Responsibility

Both the process and Public Report **must** be as Transparent, objective and rigorous as the data and other Material information available to the Practitioner will allow. The conclusion of a Public Report will depend on the key assumptions that the Practitioner **must** reasonably disclose and discuss.

This may include the assessment of:

(i) Mineral Resources, Ore Reserves, extraction, mining, processing, marketing, valuation, mine closure and Tenure issues,

(ii) Modifying Factors,

(iii) the approach adopted, and

(iv) the methodology or methodologies used, which **must** be clearly set out in the Public Report.

Where it is not possible to provide an appropriate description, the reason for not doing so should be presented on an 'if not, why not basis'.

4. Additional requirements

Further to the Code Principles, additional requirements are Reasonableness and Independence.

4.1. Reasonableness

(a) Requirement

Reasonableness requires that an assessment that is impartial, rational, realistic and logical in its treatment of the inputs to a Valuation or Technical Assessment has been used, to the extent that another Practitioner with the same information would make a similar Technical Assessment or Valuation.

(b) Responsibility

A **Reasonableness Test** means the Practitioner **must**:

(i) perform an impartial assessment to determine if the overall Valuation Approach, Valuation Method and Valuation, or Technical Assessment used is reasonable. Such a test will serve to identify Technical Assessments and Valuations that may be out of line with industry standards and norms;

(ii) meet the Reasonable Grounds Requirement;

(iii) make a positive statement that the inputs, assumptions, Valuation Approaches, Valuation Methods and Technical Assessment or Valuation meet the Reasonable Grounds Requirement; and

(iv) not disclaim liability for the Valuation Approach, Valuation Method and Valuation, or Technical Assessment.

> Guidance on making positive statements and disclaimers can be gained from ASIC Regulatory Guides (as at the date of this Code) RG 111, RG 170 and the ASIC Information Sheet – Mining and resources –. Forward-looking statements.

(c) Determination

The test for whether reasonable grounds exist is objective.

Sections of the Corporations Act and sections of the Australian Securities and Investments Commission Act require statements about future matters to be based on reasonable grounds at the time of making the statement, or they will be taken to be misleading.

> The Reasonable Grounds Requirement can be found in the Corporations Act, (as at the date of this Code) Sections 670A(2), 728(2) and 769(C) and the Australian Securities and Investment Commission Act, (as at the date of this Code) Section 12BB and find guidance in the ASIC Information Sheet – Mining and resources –. Forward-looking statements.

The Reasonable Grounds Requirement extends to all existing or potential Mineralisation as well as the Modifying Factors. A Public Report **must** not be provided unless a suitably objective Reasonableness Test is applied.

4.2. Independence

(a) Requirement

Independence or being **Independent** requires that there is no present or contingent interest in the Mineral Asset(s), nor is there any association with the Commissioning Entity or related parties that is likely to lead to bias.

Where the legal definition of Independence or Independent differs from the above, the legal definition takes precedence.

(b) Responsibility

Independence is not a formal requirement under the VALMIN Code. However, Practitioners **must** familiarise themselves and **must** conform to the relevant statutory and regulatory definitions and requirements of independence in the relevant jurisdictions.

The Corporations Act and ASIC Regulatory Guidelines are to the effect that Practitioners **must** be, and **must** appear to be, Independent when preparing reports for certain transactions. In addition, an AFSL Licensee must comply with conflict management provisions.

> ASIC may determine whether an Expert is independent and whether disclosures in relation to this are adequate as per ASIC Regulatory Guide (as at the date of this Code) RG 112.

(c) Disclosure

In order to support a declaration of Independence or to enable Practitioners to assess whether or not they may be deemed to be Independent, they **must** disclose in the Public Report any interest that could be seen as compromising their Independence. Such disclosures **must**:

(i) be made as early as possible to the Commissioning Entity;

(ii) be prominently included in the Public Report;

(iii) include declaration of any previous reports that the Practitioner has prepared relating to the Mineral Assets being assessed or valued; and

(iv) not absolve the Practitioner from any legal requirement to be Independent.

> A Practitioner previously engaged by the Commissioning Entity or an associated party should not necessarily be considered to have their Independence impaired. Each circumstance should be assessed, taking into account the facts.

5. Public Report

5.1. Intent of a Public Report

The intent of a Public Report is to gather, summarise and interpret the Material information related to the Mineral Assets under consideration along with the opinions of the Practitioner, which are to be presented clearly, concisely and accurately.

The Practitioner **must** state in the Public Report its specific purpose (and that of any subsidiary reports), its terms of reference and if there are any limitations on its use for other purposes.

Public Reports include, but are not limited to:

(a) Technical Assessment Report,

(b) Valuation Report,

(c) Independent Expert Report,

(d) corporate presentations, and

(e) news releases relating to points (a), (b), (c) or (d).

5.2. Report content

(a) Clear, concise and effective

Public Reports should be worded and presented in a clear, concise and effective manner. This applies to both the wording of information (for example, choice of language) and the presentation (for example, choice of communication tools) of a Public Report.

Practitioners **must** be aware of the wording and presentation requirements of the relevant jurisdiction.

In Australia, guidance on this matter may be obtained from documents including ASIC Regulatory Guide (as at the date of this Code) RG 228, which directly references the VALMIN Code.

Detailed technical information and data **must** be included in the Public Report if it is Material to the Technical Assessment or Valuation. Explanations of unusual or new technical processes and activities that may be Material to the understanding of the Technical Assessment or Valuation should be included.

A Public Report is ultimately an opinion based on a reasonable assessment of the available factual data. Public Reports prepared by different Practitioners may result in different conclusions.

The Public Report should include relevant tables, legible and appropriately scaled maps, graphical presentations and a glossary of terms and acronyms.

(b) Information

A Public Report **must** contain all the information that the Commissioning Entity (and others, including investors and their professional advisors) would reasonably require and expect to find to make an informed decision about the subject of the Public Report.

A Public Report should contain:

(i) an executive summary setting out the key data, important assumptions made and conclusions drawn by the Practitioner,

(ii) a summary of contributing authors to the report and areas of responsibility within the report, which should outline the names, qualifications and relevant experience of the Practitioner,

(iii) the effective date of the Public Report,

(iv) a statement specifying the relevant currency used in any Valuation,

(v) a description of the relevant Mineral Assets, including their location, plant, equipment, infrastructure and ownership,

(vi) an account of the Material history of the Mineral Assets,

(vii) a balanced, impartial statement of the Practitioner's review and conclusions so that an informed person can have a clear understanding of the merit of the Mineral Assets, their value (if applicable) and associated risks,

(viii) information regarding the sources of data used,

(ix) sufficient information to convey how the Public Report was prepared, including details of the approaches and methods employed, and sufficient information so that another Practitioner can understand and replicate the outcome,

(x) a review of any other matters that are Material to the Public Report,

(xi) advice on reliance on third party personnel and/or disclaimers, and

(xii) an outline of any areas within a report where there is non-conformance with the VALMIN Code and the impact of this on Materiality.

The Practitioner **must** be familiar with the content requirement of the relevant jurisdiction.

In Australia, guidance pertaining to a Public Report's content may be obtained from ASIC Regulatory Guide (as at the date of this Code) RG 111.

(c) Sources

The Practitioner **must** state the sources of all Material information and data used in preparing a Public Report. Subject to any confidentiality, regulatory requirements and consents, references to the relevant published and unpublished reports and records **must** be provided. It may also be necessary to cite reports, data and records that were either available or known to the Practitioner that were possibly Material but not used, and the reasons why they were not used.

Practitioners should ensure the accuracy of summaries of or extracts from existing reports prepared by others, with any quotations used being in the form and context intended by the original authors.

The Practitioner **must** be familiar with the consent requirements of the relevant jurisdiction.

In Australia, guidance on obtaining consent to quote other authors can be found in ASIC Regulatory Guide (as at the date of this Code) RG 55 and ASIC Class Orders CO 07/428 and 429.

Practitioners **must** not rely uncritically on the data and information. They **must** undertake suitable checks, enquiries, analyses and verification procedures considered by the Practitioners as meeting the Reasonable Grounds Requirement for the soundness of the inputs that lead to the conclusions drawn in a Public Report.

The data and information **must** not have been rendered invalid due to the passage of time and circumstance at the date of the Technical Assessment or Valuation. Such changes may include capital and operating cost structures, exploration techniques, geological interpretation and mining and metallurgical technologies.

(d) Responsibility

The Specialist **must** accept responsibility for assessing the technical data and information, interpretations, discussions and conclusions, forecasts and parameters used in a Technical Assessment or Valuation of a Mineral Asset. For Mineral Asset Valuations undertaken by the Specialist, the Specialist **must** also accept responsibility for the Valuation Approach, Valuation Methods and Public Report conclusion.

Technical Assessments and Valuations of Mineral Assets may be a collaborative effort. Where there is a clear division of responsibilities, each person **must** accept responsibility for their own contribution.

The Practitioner **must** clearly state within the Public Report under what conditions the work of other third parties has been relied upon and identify such other persons.

(e) Figures, maps, diagrams and tables

Maps and plans displaying Mineral Assets should employ the standard co-ordinate system adopted in the jurisdiction in which the Mineral Asset is located.

A Public Report should include appropriate photographs, plans, diagrams, graphs and maps, including one showing the geographical location of the Mineral Asset in relation to a capital city or major town. Maps, plans or other graphic information should be sufficient to illustrate the geology and other pertinent features. In particular, a map should show local landmarks and boundaries, dimensions and location relative to nearby projects that may have a significant bearing on the Mineral Asset.

Maps and graphics in a Public Report should:

(i) be of a suitable scale and with a recognised co-ordinate system;

(ii) show a bar scale and a direction arrow pointing north, designated as either magnetic, true or grid north;

(iii) show key area infrastructure where appropriate (eg ports, roads, power and water supply);

(iv) be readable and prepared so that no data is lost or obscured if it has been reduced in size for printing;

(v) if showing Exploration Results, be of such a scale so as to assist in the assessment of sampling and other exploration procedures; and

(vi) use standard industry symbols.

Where the exploration potential of Tenure is based on the results of geophysical or geochemical surveys, some form of graphical interpretation showing the results and interpretations of the surveys should be included in the Public Report.

5.3. Technical Assessment Report

A **Technical Assessment Report** involves the Technical Assessment of elements that may affect the economic benefit of a Mineral Asset.

5.4. Valuation Report

A **Valuation Report** expresses an opinion as to monetary Value of a Mineral Asset but specifically excludes commentary on the value of any related corporate Securities.

5.5. Independent Expert Report/Specialist Report

An **Independent Expert Report** is a type of Public Report which may be required by the Corporations Act, the Listing Rules of the ASX or other security exchanges. A report will only be an Independent Expert Report when the Practitioners are Independent of the Commissioning Entity and are perceived and acknowledged to be so by the Commissioning Entity.

When an Independent Expert Report requires a Technical Assessment and/or Valuation of Mineral Assets (the Specialist Report), the Specialist Report **must** be prepared by a Specialist.

The purposes for which the Code may apply include, but are not limited to:

(a) compensation for compulsory acquisitions,

(b) protection of the rights of shareholders in transactions between associated parties,

(c) public floats,

(d) 'fairness and reasonableness' reports (RG111) relating to an expressed opinion on a proposed acquisition or disposal of an asset or Securities,

(e) the justification for raising debt or equity finance from an outside party,

(f) facilitating negotiations between partners,

(g) the assessment of Government charges and taxes,

(h) estate settlements,

(i) litigation,

(j) reports for receivers and administrators, or

(k) accounting and financial reporting.

6. Commissioning a Public Report

6.1. Written engagement

When a Practitioner is not an employee of the Commissioning Entity, they **must** enter into a written agreement with the Commissioning Entity. This may be by an exchange of letters or emails specifying the terms governing the preparation of a Public Report.

> This written agreement should include contractually binding terms of engagement from the Commissioning Entity that were agreed upon prior to the commencement of the report. The terms of engagement should specify the requested information required to complete the exercise in accordance with the VALMIN Code and the effective date of the Public Report.

In Australia, the Commissioning Entity has a statutory obligation to provide the Practitioner with all the information it is aware of about the subject of the Public Report in sufficient detail to enable the Practitioner to determine its relevance.

> Further guidance on the relationship between the Commissioning Entity and Practitioners may be found in Australian Corporations Act 2001 s648A(3) and s667B(2), ASIC RG 112.31–112.37.

6.2. Scope

The written agreement with the Commissioning Entity **must** cover the scope and purpose of the Public Report.

> The agreement should address, but is not limited to, such matters as:
>
> (a) the purpose of the Public Report;
>
> (b) name(s), qualifications and relevant experience of the Practitioner;
>
> (c) an acknowledgement of the Independence and Competence of the Practitioner;
>
> (d) the effective date as agreed by the Commissioning Entity and the Practitioner; (e) name(s) or title(s) of the subject of the Public Report and of the Mineral Assets;
>
> (f) the basis for the cost of the Public Report;
>
> (g) when the Practitioner may refuse to provide an opinion or report as it is impossible or impractical to obtain sufficient accurate or reliable data or information;
>
> (h) with respect to an Independent Expert Report, the Practitioner to be engaged, their terms of engagement and the areas in which they are to contribute to the Public Report;
>
> (i) the right and obligation of the Practitioner to base findings on information within their own knowledge or acquired as a result of their own investigations, as well as on the information provided by the Commissioning Entity;

(j) acknowledgement that the Practitioner is obliged to conform with the VALMIN Code;

(k) a program for the progress and completion of the Public Report; this may include the dates for the completion of intermediate activities, the provision of data and information by the Commissioning Entity, the review of data and information by the Practitioner and the issuing of a draft of the Public Report to the Commissioning Entity;

(l) notification that the Practitioner should keep records of discussions with the Commissioning Entity, a list of all documents to be referred to in the Public Report, copies of all Material source documents and due diligence notes; and

(m) the provision of draft reports is for the purpose of factual checking by the Commissioning Entity.

Further guidance on the provision of draft reports and keeping records may be found in ASIC Regulatory Guide (as at the date of this Code) RG 112.

6.3. Cost

The cost of a Public Report will normally reflect the complexity of the Technical Assessment or Valuation, the amount of and state of the data available and the specific assessment or valuation difficulties encountered. Fees or the provision of further work to the Practitioner **must** not be dependent on the:

(a) conclusions of the Technical Report; or

(b) success or failure of the reason for which the Public Report was commissioned.

Time and cost constraints **must not** compromise the fundamental principles and requirements of the VALMIN Code. Any restrictions negatively affecting the depth of analysis or the extent of detail required **must** be recorded in the Public Report.

The cost of providing the Public Report **must** be disclosed.

6.4. Provision of previous reports

The Practitioner **must** seek from the Commissioning Entity the results of any Public Report it commissioned with respect to the Technical Assessment or Valuation of the Mineral Assets in question that could reasonably be considered to be Material. This should include any reports previously commissioned and completed but not made public.

If any Material Public Report is not presented to a Practitioner, the Commissioning Entity **must** ensure that the Practitioner is aware of the omission. The Practitioner **must** ensure that any resultant reports are qualified accordingly.

A Practitioner should make written enquiries of the directors or management of the Commissioning Entity about any other prior relevant technical, valuation or similar assessment reports. The Practitioner should interview relevant personnel and review the Commissioning Entity's database, responses to enquiries, reports and all other information and data relevant to the Public Report.

6.5. Confidential information

Some of the information that a Commissioning Entity holds concerning the subject matter of a Public Report may be regarded as confidential (such as offtake agreements for mineral concentrates). Therefore, it may not appear in a Public Report, even though it may be taken into account in the Technical Assessment and/or Valuation. However, there is no express exemption in the Corporations Act for disclosure of confidential information in Public Reports and disclosure may be required.

A Practitioner **must** obtain written confirmation from the Commissioning Entity as to whether any information is confidential. The Practitioner **must** take reasonable steps to gain access to all relevant confidential information from the Commissioning Entity. The Practitioner **must** then inform any other involved professional of any confidential information requirements. The Practitioner **must** review what aspects of the information needs to be disclosed in the Public Report.

In cases where commercially sensitive information is excluded from a Public Report, the report should provide summary information and context for the purpose of informing investors or potential investors and their advisers.

> For example, explain the methodology used to determine economic assumptions where the numerical value of those assumptions are commercially sensitive.

7. Technical Assessment

A **Technical Assessment** is an evaluation prepared by a Specialist of the technical aspects of a Mineral Asset.

Depending on the development status of the Mineral Asset, a Technical Assessment may include any or **all** of:

(a) Tenure,

(b) regional and local geology,

(c) Mineralisation, hosting potential and prospectivity,

(d) exploration and production history,

(e) Mineral Resources, Ore Reserves, Exploration Results and Exploration Targets,

(f) extraction methods and design,

(g) processing methods, flowsheets and recoveries,

(h) infrastructure availability and requirements,

(i) estimated capital and operating costs,

(j) actual and projected, or forward estimate, production,

(k) environmental, social and heritage impacts,

(l) JORC Code Modifying Factors and other aspects that could reasonably be expected to impact on the economic potential, and

(m) product pricing and revenue factors.

7.1. Study terminology

The various levels of assessment commonly use a number of technical terms. The terminology used in a Public Report **must** be consistent with the Definitions and Glossary.

7.2. Tenure Status

The Status of Tenure is Material and requires disclosure. A determination of the Status of Tenure is necessary and **must** be based on a sufficiently recent inquiry to ensure that the information is accurate for the purposes of the Public Report in question. A Practitioner **must** determine whether this inquiry is to be conducted by a Specialist or another suitably qualified party, but Tenure that is Material **must** be or recently have been verified independently of the Commissioning Entity.

A Public Report **must** contain a list of all Material Tenure that is prepared by or on behalf of the Practitioner, unless that information is provided in an accompanying report.

Note: Procedural and mandatory items are in normal typeface, with the word '**must**' in **bold**; guideline items are in boxes and italics and those definitions incorporated in the text of the Code are in **bold**.

A Tenure list should specify:

(a) Tenure area, expiry and renewal dates,

(b) expenditure commitments, rents and rates, security bonds or reclamation liability,

(c) obligations to any third party, including, but not limited to, joint venture or royalty agreements, and

(d) title and location of any contiguous and geologically related Tenure that, in the opinion of the Practitioner, may have a Material bearing on the value of the Tenure under consideration.

7.3. Mineralisation, Mineral Resources and Ore Reserves

(a) Definitions

Mineral Resources, **Ore Reserves** and **Exploration Targets** have the same meanings as in the current version of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code).

(b) Quality and Reasonableness

The Specialist **must** comment on the quality and Reasonableness of any Mineral Resource or Ore Reserve estimates. The extent to which they have been reported in accordance with applicable statutory requirements, applicable Listing Rules and the JORC Code **must** be presented.

Exploration Targets involve forward-looking statements, for which there **must** meet the Reasonable Grounds Requirement.

(c) Correlation and causation

Where Mineralisation on a nearby property is noted in the Public Report, maps or sections should indicate the relationship of its geology to that of any Tenure that is the subject of the Public Report.

Where comparisons are made with geological situations at known Mineral occurrences, all relevant factors should be presented. Where a causal relationship such as continuity of geological structures is claimed, a Specialist should clearly show how the claimed continuity is considered relevant to the Public Report. Where a comparison has been made and there is no causal relationship, this **must** be stated.

The absence of mineralisation on adjoining or nearby Tenure may be as important as its presence. When Material to a Public Report, the Specialist should disclose and explain the presence or absence of known mineralisation or Exploration Results.

7.4. Mineral Extraction

A Public Report that deals with current or proposed mining and processing **must** include:

(i) a description of mining or recovery methods with the relevant forecast and realised mining or recovery statistics;

(ii) a description of plant, technology and operating practices, together with actual or forecast process plant recoveries from mill feed to marketable products; and

(iii) if relevant, reasons to support any recommendation to reopen facilities that are either on care and maintenance or have been abandoned.

A **Production Target** is a projection or forecast of the amount of Mineral to be extracted from particular Tenure for a period that extends past the current year and the forthcoming year.

Production Targets involve forward-looking statements, for which there **must** meet the Reasonable Grounds Requirement.

In Australia, the ASX and ASIC regulate the reporting of Production Targets.

(a) Practices

Any existing or proposed operating, environmental and social practices **must** be reviewed to establish the technical, economic, environmental and social feasibility of the operation.

Matters to be reviewed for Mineral Assets may include, but are not limited to:

(i) mining and processing methods,
(ii) grade control, mining loss and dilution,
(iii) geotechnical, hydrological and climatic conditions,
(iv) mineralogical and metallurgical factors likely to affect process recovery,
(v) flow sheet design,
(vi) variability of the mineralised body's physical and chemical properties,
(vii) metallurgical recoveries and performance,
(viii) tailings and waste disposal,
(ix) quantity and quality of final and intermediate products and waste,
(x) labour sources, requirements and productivity,
(xi) operating practices and technologies employed or to be employed;
(xii) equipment availability, utilisation and performance,
(xiii) energy and water sources,
(xiv) recent trial mining and treatment data (for proposed operations),
(xv) construction and commissioning schedules,
(xvi) marketability of products, revenue factors, commodity prices and exchange rates,
(xvii) product transport and realisation issues,
(xviii) environmental, legal, statutory and social constraints and commitments, and
(xix) closure and post-closure activities and schedules.

(b) Performance estimates

Comparison of proposed performance estimates to relevant prior performance.

Such comparisons should include, but are not limited to:

(i) tonnage or volumes mined and, where applicable, processed,
(ii) reconciliation of past production to Ore Reserve estimates,
(iii) product quantity and quality, and
(iv) production cost.

(c) Other factors

A Public Report **must** disclose any Material existing or potential obstacles to exploring, developing or mining activity related to the Mineral Asset. This may include statutory, legal, technical, environmental, commercial, socio-political or other obstacles to future exploration, development or production.

7.5. Capital and Operating Costs

(a) Estimates

A Public Report should outline the range or assessed order of accuracy of forecast capital and operating cost estimates that have been adopted, together with supporting data and date reference.

The Specialist should review and describe the actual and forecast capital and operating costs for the estimated productive life of the Mineral Assets subject to the Public Report.

Where a Public Report includes information relating to projected costs, the Specialist **must** apply the Reasonableness Test to these costs and make any adjustments if necessary.

(b) Adequacy

The Specialist should report the adequacy of (and obstacles to) accessing appropriate services and infrastructure, and at what cost.

Capital and operating cost estimates should take into account any likely changes with time in factors such as work practices and productivity, and be sufficiently detailed to assess whether they are realistic and achievable.

Estimates of capital costs are likely to include, but are not be limited to:

(i) feasibility and associated studies costs,

(ii) acquisition cost,

(iii) construction, implementation and commissioning costs,

(iv) working capital,

(v) owner's cost,

(vi) sustaining capital,

(vii) decommissioning, rehabilitation and site restoration costs,

(viii) contingency allowance, and

(ix) a stated level of accuracy of cost estimates.

Estimates of operating costs are likely to include but are not limited to:

(i) workforce employment,

(ii) consumables and spare parts,

(iii) power, water and other services,

(iv) contract services,

(v) equipment lease and hire,

(vi) on-site and off-site administration,

(vii) environmental protection and monitoring, and non-capitalised rehabilitation,

(viii) transport and accommodation of workforce,

(ix) social and community programs,

(x) product marketing, transport and realisation,

(xi) taxes, royalties and other governmental charges,

(xii) contingency allowance, and

(xiii) a stated level of accuracy of cost estimates.

Services and infrastructure to be considered include power, water supply, transport, communications, security, workforce accommodation, housing, medical services and waste and tailings treatment and/ or disposal facilities. The Public Report should also review any access and terrain conditions that may affect the logistics of exploration and development.

(c) Comparison

Where the Practitioner considers it appropriate, capital and operating cost estimates should be compared to relevant similar operations.

Both capital and operating costs should be set out under broad functional headings and in terms of a suitable unit such as 'per ounce of gold produced' or 'per tonne of annual plant throughput', in addition to total capital and total annual operating costs.

7.6. Revenue

(a) Assumptions

A Public Report should assess the Mineral Asset's potential revenue stream over an appropriate period.

Where a Public Report includes information relating to forecast revenue, it **must** set out a reasonable basis for price-related assumptions applying to any product(s) derived from the Mineral Asset.

The price-related assumptions may include, but are not limited to:

(i) forecast product prices, smelter treatment and refinery charges, current and forecast market conditions and the likely quantity and quality of product,

(ii) penalty and premium components of the product,

(iii) variation in product price and basis and source of forecast product prices used,

(iv) size, nature and location of markets,

(v) commodity market imbalances and pricing discounts or premiums,

(vi) sales volumes,

(vii) price escalation,

(viii) exchange rates,

(ix) hedging or forward sales contracts, and

(x) residual value.

The potential revenue estimates should be clearly stated as being either in real or nominal currency terms.

Where by-product credits are a Material contributor to revenue, costs of production should be documented with and without by-product credits.

A Practitioner **must** apply the Reasonableness Test to revenue assumptions and make any adjustments if necessary.

(b) Market assessment

Consideration of the proposed production volume and product quality with likely market opportunities and available Mineral Resources and/or Ore Reserves should be incorporated into the Public Report.

8. Valuation

8.1 Basis of Value

A Public Report must disclose the basis of value. The basis of value is a statement of the fundamental measurement assumptions of a valuation. The VALMIN Code primarily uses the terms Market Value and Technical Value, although circumstance may require the use of alternative definitions.

Technical Value is an assessment of a Mineral Asset's future net economic benefit at the Valuation Date under a set of assumptions deemed most appropriate by a Practitioner, excluding any premium or discount to account for market considerations.

> The term Technical Value has an intended meaning that is similar to the IVSC term Investment Value.

Market Value is the estimated amount (or the cash equivalent of some other consideration) for which the Mineral Asset should exchange on the date of Valuation between a willing buyer and a willing seller in an arm's length transaction after appropriate marketing where the parties had each acted knowledgeably, prudently and without compulsion.

> The term Market Value has the same intended meaning and context as the IVSC term of the same name. This has the same meaning as Fair Value in RG111. In the 2005 edition of the VALMIN Code this was known as Fair Market Value.

Market Value may be higher or lower than Technical Value. A Public Report should take such factors into account, stating the results of the principal Valuation Method(s) used and disclosing the amount of and reasons for the difference between the Market Value and Technical Value.

A Valuation Report **must** state the nature of the Value(s) determined and their Valuation Date(s).

As the Values of Mineral Assets are likely to fluctuate over time, a Practitioner **must** ensure that the opinion expressed and the Valuation provided is consistent with circumstances as of the Valuation Date.

8.2. Common Valuation Approaches

The selection of the Valuation Approach and underlying Valuation Method used is the responsibility of a Practitioner and **must** not be influenced by the Commissioning Entity or other parties.

Within each Valuation Approach, there are Valuation Methods that share a common rationale or basis but differ in how they are calculated.

Three widely accepted Valuation Approaches are:

(a) **Market-based**, which is based primarily on the notion of substitution. In this Valuation Approach the Mineral Asset being valued is compared with the transaction value of similar Mineral Assets under similar time and circumstance on an open market.

> Valuation Methods include but are not limited to comparable sales transactions and joint venture terms.

(b) **Income-based**, which is based on the notion of cashflow generation. In this Valuation Approach the anticipated benefits of the potential income or cash flow of a Mineral Asset are analysed.

> Valuation Methods include but are not limited to discounted cashflow and multiples of earnings.

(c) **Cost-based**, which is based on the notion of cost contribution to Value. In this Valuation Approach the costs incurred on the Mineral Asset are the basis of analysis.

> Valuation Methods include but are not limited to sunk costs or current replacement costs.
>
> Guidance on Valuation Approaches and Valuation Methods may be obtained from International Financial Reporting Standard number 13.

8.3. Appropriate Valuation Approach

While each Valuation is time- and circumstance-specific, a general guide to the applicability of each Valuation Approach is outlined in Table 1.

TABLE 1

Valuation Approach	Exploration Projects	Pre-development Projects	Development Projects	Production Projects
Market	Yes	Yes	Yes	Yes
Income	No	In some cases	Yes	Yes
Cost	Yes	In some cases	No	No

> For papers on valuation in the minerals sector, refer to the OneMine Global Library on the AusIMM web site (http://www.ausimm.com.au) and the Publications section of the AIG web site (http://www.aig.org.au).

A Valuation Report should make use of at least two Valuation Approaches. Where more than one Valuation Approach is used, the Practitioner should comment on how the results compare and on the reasons for selecting the Value adopted. If it is impractical to use two Valuation Approaches, the Practitioner **must** clearly and unambiguously outline the reasons for not doing so.

A Practitioner **must** make use of Valuation Methods that are suitable for the Mineral Assets under consideration. Selection of an appropriate Valuation Method will depend on such factors as the:

(a) nature of the Valuation;

(b) development status of the Mineral Assets; and

(c) extent and reliability of available information.

The Practitioner **must** disclose and discuss in the Public Report the Valuation Method(s) used, having regard to each of these factors so that another Practitioner can understand the procedure and arrive at a similar conclusion within reasonable bounds. It may also be desirable to discuss why a particular Valuation Method has not been used.

8.4. In Situ Values

Consistent with the JORC Code, in ground (in situ) values **must** not be reported in a Public Report.

> For example, applying a $1,500 ounce gold price to a 100,000 ounce gold deposit and reporting an in situ value of $150,000,000 is not permissible as this approach ignores appropriate Modifying Factors such as metallurgical recovery and is a misleading statement.

8.5. Use of Ore Reserves and Mineral Resources

All Ore Reserves and Mineral Resources **must** be considered in a Technical Assessment or Valuation. When the Reasonable Grounds Requirement has been met for a Valuation, it is generally acceptable to use all Proved and Probable Ore Reserves in the Income Approach. It may sometimes be appropriate to include other classifications, but these **must**, subject to the Reasonableness Test:

(a) meet the minimum reporting requirements of the ASX Listing Rules and guidance, the ASIC Regulatory Guidelines and guidance, and the JORC Code;

(b) not include Exploration Targets that have not been converted to Production Targets;

(c) be scheduled for extraction behind Proved and Probable Ore Reserves, where practical to do so;

(d) include a statement by the Specialist that confirms the appropriateness of the Modifying Factors along with a description of their level of certainty relative to those of a Feasibility Study or Pre-Feasibility Study; and

(e) be discounted in a manner that is commensurate with the increased uncertainty.

8.6. Range

A range of values (high/most likely/low) **must** be determined and stated in a Public Report to reflect any uncertainties in the data and the interaction of the various assumptions made; however, the range should not be so wide as to render the conclusion of the Public Report meaningless.

A Public Report should also include a sensitivity analysis showing the effects of changing the most significant assumptions. In all cases, a most likely outcome should be identified. Any reasons for not doing so **must** be stated in the Public Report.

8.7. Market premium or discount

When a premium or discount is used in determining a Market Value, a Practitioner **must** state how these have been taken into account.

> For example, based on empirical evidence from relevant data points, a controlling stake (eg 51%) may have a Market Value that is other than 51% of the 100% equivalent transaction.

9. Financial Modelling

9.1. Taxation and royalties

The basis for using income tax and other taxes, royalties, cost escalation, inflation and exchange rates in a cash flow model for Valuation purposes **must** be stated in the Public Report.

> For guidance regarding the structure and good practice for financial modelling, refer to the "Guidelines for Technical Economic Evaluation of Minerals Industry Projects", which is included in Appendix 1 of the AusIMM Mine Manager's Handbook – Monograph 26 or (as at the date of this Code) is available from http://www.ausimm.com.au/content/docs/guidelines_tech_economic_evaluation2012.pdf.

9.2. Financing

The conclusions of a Public Report may be affected by the nature of the financing arrangements for a project. A Practitioner should therefore review any such commitments made and the likelihood and form of financing.

> Depending upon the terms of reference of the Public Report and subject to the Reasonable Grounds Requirement, the Practitioner may need to assume an appropriate standard financing structure and appropriate funding timeframe.
>
> In Australia, guidance on financing factors to be taken into account may be obtained from documents in the ASIC Regulatory Guides.

9.3. Liabilities, commitments and financial exposures

Depending upon the scope of the Public Report, the Practitioner should report upon liabilities, commitments and financial exposures.

> Such financial exposures may include, but are not limited to:
>
> (a) creditors,
>
> (b) expenditure and commitments on exploration Tenures,
>
> (c) the cost of environmental regulatory requirements, rehabilitation and mine closure,
>
> (d) security deposits, and
>
> (e) material agreements and contracts, including development plans, sales contracts, joint venture agreements, royalty agreements, project permits and environmental and access requirements.

The nature and basis of any consideration or benefit payable to a vendor, promoter or provider of seed capital, and of any conditions involved, should be assessed and quantified in a Public Report.

9.4. Forecasts

Current and forecast future economic conditions and Securities markets may influence the economic viability and Value of Mineral Assets. A Public Report should contain a discussion of these conditions, along with supporting evidence.

Financial models use forecast assumptions. Such forecasts may be considered forward-looking statements and therefore the Practitioner **must** be familiar with the relevant requirements about such statements.

> In the Australian context, this may include the provisions of ASIC Regulatory Guide (as at the date of this Code) RG 170.

10. Risks and opportunities

A Public Report should include an evaluation of the risks likely to apply to the Mineral Assets under consideration. A risk evaluation includes an analysis of the uncertainties inherent in the assumptions made and the effects they may have on the outcome.

Risks may arise with respect to the availability, uncertainty and quality of data and other information, including, but not limited to:

(a) geological prospectivity and the possibility that further exploration may fail to demonstrate economic Mineralisation (in the case of projects without defined Ore Reserves),

(b) geology of the mineral deposits,

(c) estimation of Mineral Resources or Ore Reserves,

(d) operational aspects including the mining/extraction method, dilution and mining losses, equipment sizing and efficiencies, use of selective mining assumptions, waste management, meeting regulatory requirements and mine closure,

(e) mineral processing and the variability of metallurgical parameters and wellfield extraction such as recovery rates, process plant availability and the ability of new processes to be financed and perform as forecast,

(f) construction, including unforeseen physical conditions or weather or industrial disputes, which may affect both capital costs and completion date,

(g) provision and adequacy of infrastructure,

(h) commodity price, inflation and exchange rate forecasts,

(i) production of marketable commodities in terms of quality, price and cost of production, (j) sovereign risk involving social, political, environmental, cultural and security factors that cannot be controlled by project operators, and

(k) project funding.

A Practitioner should report upon the likelihood of deviating from base assumptions. These may include delays in completion or commissioning of projects; major changes in operating practices; or possible difficulties with new or scaled-up technologies, especially where such factors may have a significant effect on the technical or financial viability of the Mineral Assets. To indicate the risk profile of the subject of a Public Report, the monetary Value of a Mineral Asset should be expressed numerically as a range, together with the most likely figure.

Where opportunities are presented in a Public Report, they should be addressed separately to any discussion of risks.

11. Other

11.1. Site inspection

Where inspection of a Mineral Asset or Tenure is likely to reveal information or data that is Material to a Public Report, the Specialist should inspect it.

If an inspection is not made, the Specialist **must** be satisfied that there is sufficient current information available to allow an informed evaluation to be made without an inspection and **must** declare the reasons for not undertaking a site visit.

Any decision not to conduct an inspection **must** be made by the Specialist and not by the Commissioning Entity and the reason **must** be disclosed in the Public Report.

> Inspection of Early-stage Exploration Projects would not normally be required, except where the Specialist considers it to be Material to the Public Report.

11.2. Draft reports

A draft copy of a Public Report should be given to the Commissioning Entity so that it can advise the Practitioner of any Material omissions, comment on the factual accuracy, and assumptions made and advise on any included information that is confidential.

11.3. Records

A Practitioner **must** keep records for a minimum of seven years of all correspondence and discussions with the Commissioning Entity, a list of all documents referred to in the Public Report and, subject to confidentiality agreement provisions, copies of all Material source documents.

11.4. Indemnities

A Practitioner should obtain an indemnity from the Commissioning Entity under which they will be compensated for any liability:

(a) resulting from their reliance on information provided by the Commissioning Entity that is Materially inaccurate or incomplete; and

(b) relating to any consequential extension of workload through queries, questions or public hearings arising from the Public Report.

Such an indemnity does not absolve a Practitioner from critically examining the information provided. A

Public Report **must** disclose the nature and Material details of any such indemnity.

12. Declarations

12.1 Standard

A Practitioner **must** declare in a Public Report that the report has been prepared in accordance with the VALMIN Code or indicate those areas where the report is not and explain why this is so. The name of the Practitioner responsible for the Public Report **must** be included and the Practitioner **must** sign off on the Public Report.

Issuing of a Public Report concerning the Technical Assessment and Valuation of Mineral Assets is the responsibility of the Commissioning Entity. The Public Report **must** be based on and fairly reflect the information and supporting documentation prepared by a Practitioner. A Commissioning Entity issuing a Public Report shall disclose the name of the Practitioner, state whether the Practitioner is a permanent employee of the company and, if not, name the Practitioner's employer. The report shall be issued with the written consent of the Practitioner as to the form and context in which it appears.

Appropriate forms of compliance statements may be as follows (delete bullet points that do not apply):

(a) If the required information is in the report:

'The information in this report that relates to Technical Assessment and Valuation of Mineral Assets reflects information compiled and conclusions derived by (insert name of Practitioner), who is a (insert Member or Fellow) of (insert The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a Recognised Professional Organisation included in a list promulgated from time to time).'

(b) If the required information is included in an attached statement:

'The information in the attached report that relates to Technical Assessment and Valuation of Mineral Assets reflects information compiled and conclusions derived by (insert name of Practitioner), who is a (insert Member or Fellow) of (insert The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a Recognised Professional Organisation included in a list promulgated from time to time).'

(c) Whether the Practitioner is a permanent employee of the Commissioning Entity or not:

'(Insert name of Practitioner) is (not) a permanent employee of the company.'

(d) Plus, for all reports:

'(Insert name of Practitioner) has sufficient experience relevant to the Technical Assessment and Valuation of the Mineral Assets under consideration and to the activity which (he/she) is undertaking to qualify as a Practitioner as defined in the 2015 edition of the 'Australasian Code for the Public Reporting of Technical Assessments and Valuations of Mineral Assets'. (Insert name of Practitioner) consents to the inclusion in the report of the matters based on (his/her) information in the form and context in which it appears.'

Documentation detailing Technical Assessment and Valuation of Mineral Assets on which a Public Report on the Technical Assessment or Valuation is based **must** be prepared by, or under the direction of and signed by, a Practitioner. The documentation **must** provide a fair representation of Technical Assessment and/or Valuation being reported.

12.2. Professional Organisation

Where a Public Report is being produced, each of the Practitioners should declare to the Commissioning Entity the name of the Professional Organisation(s) to which they belong and the Codes to which they must comply.

12.3. Qualifications and Organisations

A Public Report **must** state a Practitioner's name, qualifications, memberships of Professional Organisations, relevant experience and any requisite licence details. Practitioners **must** identify the nature and contribution of each author to the Public Report.

12.4. Corporation and licences

Where a Public Report is prepared, the name, registered address and, if registered in Australia, Australian Business Number (ABN), Australian Registered Body Number (ARBN) or Australian Company Number (ACN) should be included. Where relevant, the Australian Financial Services Licence (AFSL) Number should be stated.

12.5. Sign-off

A Practitioner **must** not sign a Public Report unless the Commissioning Entity has confirmed in writing that:

(a) full, accurate and true disclosure of all Material information has been made to the Practitioner;

(b) all necessary access to the Commissioning Entity's personnel and records has been assured;

(c) whether any information from the Commissioning Entity is confidential; and

(d) the integrity of the Practitioner and the conclusion of the Public Report has not been compromised.

The Practitioner **must** be provided with a draft of the Public Report so that the Practitioner can consent in writing to the form and context in which the Practitioner's report will appear.

13. Acronyms

AASB	Australian Accounting Standards Board
ABN	Australian Business Number
ACN	Australian Company Number
AIG	Australian Institute of Geoscientists
ARBN	Australian Registered Body Number
ASIC	Australian Securities and Investments Commission
ASX	Australian Securities Exchange
AusIMM	the Australasian Institute of Mining and Metallurgy
CIMVAL	Standards and Guidelines for Valuation of Mineral Properties Special Committee of the Canadian Institute of Mining, Metallurgy and Petroleum on Valuation of Mineral Properties
CRIRSCO	Committee for Mineral Reserves International Reporting Standards
IFRS	International Financial Reporting Standards
IMVAL	International Mineral Valuation Standards Committee
IVSC	International Valuation Standards Committee
JORC	Joint Ore Reserves Committee
JORC Code	the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
MICA	Mineral Industry Consultants Association
MCA	Minerals Council of Australia
PDS	Product Disclosure Statement (as used in ASIC Regulatory Guide RG55)
PRMS	Petroleum Resources Management System
SAMVAL	the South African Code for the Reporting of Mineral Asset Valuation
VALMIN Code	the Australasian Code for the Public Reporting of Technical Assessments and Valuations of Mineral Assets

14. Definitions

Code Principles means the fundamental principles of the VALMIN Code, which are Competence, Materiality and Transparency.

Commissioning Entity is the organisation, company or person that commissions a Public Report.

Competence or being **Competent** requires that the Public Report is based on work that is the responsibility of suitably qualified and experienced persons who are subject to an enforceable professional Code of Ethics. Also see Clause 3.2 for guidance on Competence.

Effective Date means the date upon which the Technical Assessment or Valuation is considered to take effect. This may be different from the Valuation Date or the date upon which an event (such as preparation, transaction or site visit) actually occurred or is recorded.

Independence or being **Independent** requires that there is no present or contingent interest in the Assets, nor is there any association with the Commissioning Entity or related parties that is likely to lead to bias. Also see Clause 4.2 for guidance on Independence.

Independent Expert Report means a Public Report as may be required by the Corporations Act, the Listing Rules of the ASX or other security exchanges prepared by a Practitioner who is acknowledged as being independent of the Commissioning Entity. Also see ASIC Regulatory Guides RG 111 and RG 112 as well as Clause 5.5 of the VALMIN Code for guidance on Independent Expert Reports.

Market Value means the estimated amount of money (or the cash equivalent of some other consideration) for which the Mineral Asset should exchange on the date of Valuation between a willing buyer and a willing seller in an arm's length transaction after appropriate marketing wherein the parties each acted knowledgeably, prudently and without compulsion. Also see Clause 8.1 for guidance on Market Value.

Materiality or being **Material** requires that a Public Report contains all the relevant information that investors and their professional advisors would reasonably require, and reasonably expect to find in the report, for the purpose of making a reasoned and balanced judgement regarding the Technical Assessment or Mineral Asset Valuation being reported. Where relevant information is not supplied, an explanation must be provided to justify its exclusion. Also see Clause 3.2 for guidance on what is Material.

Mineral Asset means all property including (but not limited to) tangible property, intellectual property, mining and exploration Tenure and other rights held or acquired in connection with the exploration, development of and production from those Tenures. This may include the plant, equipment and infrastructure owned or acquired for the development, extraction and processing of Minerals in connection with that Tenure.

Most Mineral Assets can be classified as either:

(a) **Early-stage Exploration Projects** – Tenure holdings where Mineralisation may or may not have been identified, but where Mineral Resources have not been identified;

(b) **Advanced Exploration Projects** – Tenure holdings where considerable exploration has been undertaken and specific targets identified that warrant further detailed evaluation, usually by drill testing, trenching or some other form of detailed geological sampling. A Mineral Resource estimate may or may not have been made, but sufficient work will have been undertaken on at least one prospect to provide both a good understanding of the type of Mineralisation present and encouragement that further work will elevate one or more of the prospects to the Mineral Resources category;

(c) **Pre-Development Projects** – Tenure holdings where Mineral Resources have been identified and their extent estimated (possibly incompletely), but where a decision to proceed with development has not been made. Properties at the early assessment stage, properties for which a decision has been made not to proceed with development, properties on care and maintenance and properties held on retention titles are included in this category if Mineral Resources have been identified, even if no further work is being undertaken;

(d) **Development Projects** – Tenure holdings for which a decision has been made to proceed with construction or production or both, but which are not yet commissioned or operating at design levels. Economic viability of Development Projects will be proven by at least a Pre-Feasibility Study;

(e) **Production Projects** – Tenure holdings – particularly mines, wellfields and processing plants – that have been commissioned and are in production.

Practitioner is an Expert as defined in the Corporations Act, who prepares a Public Report on a Technical Assessment or Valuation Report for Mineral Assets. This collective term includes Specialists and Securities Experts. Also see Clause 2 for guidance on Practitioners.

Production Target means a projection or forecast of the amount of Minerals to be extracted from particular Tenure for a period that extends past the current year and the forthcoming year.

Public Report means a report prepared for the purpose of informing investors or potential investors and their advisers when making investment decisions, or to satisfy regulatory requirements. It includes, but is not limited to, Annual Reports, Quarterly Reports, press releases, Information Memoranda, Technical Assessment Reports, Valuation Reports, Independent Expert Reports, website postings and Public Presentations. Also see Clause 5 for guidance on Public Reports.

Reasonableness implies that an assessment which is impartial, rational, realistic and logical in its treatment of the inputs to a Valuation or Technical Assessment has been used, to the extent that another Practitioner with the same information would make a similar Technical Assessment or Valuation. Also see Clause 4.1 for guidance on Reasonableness and Reasonableness Test.

Reasonable Grounds Requirement has the meaning referred to in sections of the Corporations Act and sections of the Australian Securities and Investments Commission Act 2001 that require statements about future matters to be based on reasonable grounds (as of the date of making the statement) or else they will be taken to be misleading.

Reasonableness Test is defined in clause 4.1(b).

Recognised Professional Organisation means any professional organisation listed on the VALMIN website as a Recognised Professional Organisation (refer to www.valmin.org/competent.asp)

Representative Specialists are persons who are the nominated representative(s) of a legally constituted body, and who supervise the preparation of a Public Report and accept responsibility for it on behalf of that body. Representative Specialists are Specialists.

Securities has the meaning as defined in the Corporations Act.

Securities Expert are persons whose profession, reputation or experience provides them with the authority to assess or value Securities in compliance with the requirements of the Corporations Act, ASIC Regulatory Guides and ASX Listing Rules.

Specialist are persons whose profession, reputation and relevant industry experience in a technical discipline (such as geology, mine engineering or metallurgy) provides them with the authority to assess or value Mineral Assets.

Specialist Report is defined in Clause 5.5.

Technical Assessment is an evaluation prepared by a Specialist of the technical aspects of a Mineral Asset. Depending on the development status of the Mineral Asset, a Technical Assessment may include the review of geology, mining methods, metallurgical processes and recoveries, provision of infrastructure and environmental aspects.

Technical Assessment Report involves the Technical Assessment of elements that may affect the economic benefit of a Mineral Asset.

Technical Value is an assessment of a Mineral Asset's future net economic benefit at the Valuation Date under a set of assumptions deemed most appropriate by a Practitioner, excluding any premium or discount to account for market considerations.

Tenure is any form of title, right, licence, permit or lease granted by the responsible government in accordance with its mining legislation that confers on the holder certain rights to explore for and/or extract agreed minerals that may be (or is known to be) contained. Tenure can include third-party ownership of the Minerals (for example, a royalty stream). Tenure and Title have the same connotation as Tenement.

Transparency or being **Transparent** requires that the reader of a Public Report is provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and not be misled by this information or by omission of Material information that is known to the Practitioner.

Valuation is the process of determining the monetary Value of a Mineral Asset at a set Valuation Date.

Valuation Approach means a grouping of valuation methods for which there is a common underlying rationale or basis.

Valuation Date means the reference date on which the monetary amount of a Valuation in real (dollars of the day) terms is current. This date could be different from the dates of finalisation of the Public Report or the cut-off date of available data. The Valuation Date and date of finalisation of the Public Report **must** not be more than 12 months apart.

Valuation Methods means a subset of Valuation Approaches and may represent variations on a common rationale or basis.

Valuation Report expresses an opinion as to monetary Value of a Mineral Asset but specifically excludes commentary on the value of any related Securities.

Value means the Market Value of a Mineral Asset. See definition of Market Value.

15. Glossary

Annual Report means a document published by public corporations on a yearly basis to provide shareholders, the public and the government with financial data, a summary of ownership and the accounting practices used to prepare the report.

Australasian means Australia, New Zealand, Papua New Guinea and their off-shore territories.

Code of Ethics means the Code of Ethics of the relevant Professional Organisation or Recognised Professional Organisations.

Corporations Act means the Australian Corporations Act 2001 (Cth).

Experts are persons defined in the Corporations Act whose profession or reputation gives authority to a statement made by him or her in relation to a matter. A Practitioner may be an Expert. Also see Clause 2.1.

Exploration Results is defined in the current version of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). Refer to http://www.jorc.org for further information.

Feasibility Study means a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a Pre-feasibility Study.

Financial Reporting Standards means Australian statements of generally accepted accounting practice in the relevant jurisdiction in accordance with the Australian Accounting Standards Board (AASB) and the Corporations Act.

Information Memoranda means documents used in financing of projects detailing the project and financing arrangements.

Investment Value means the benefit of an asset to the owner or prospective owner for individual investment or operational objectives.

Life-of-Mine Plan means a design and costing study of an existing or proposed mining operation where all Modifying Factors have been considered in sufficient detail to demonstrate at the time of reporting that extraction is reasonably justified. Such a study should be inclusive of all development and mining activities proposed through to the effective closure of the existing or proposed mining operation.

Member means a person who has been accepted and entitled to the post-nominals associated with the AIG or the AusIMM or both. Alternatively, it may be a person who is a member of a Recognised Professional Organisation included in a list promulgated from time to time.

Mineable means those parts of the mineralised body, both economic and uneconomic, that are extracted or to be extracted during the normal course of mining.

Mine Design means a framework of mining components and processes taking into account mining methods, access to the Mineralisation, personnel, material handling, ventilation, water, power and other technical requirements spanning commissioning, operation and closure so that mine planning can be undertaken.

Mine Planning includes production planning, scheduling and economic studies within the Mine Design taking into account geological structures and mineralisation, associated infrastructure and constraints, and other relevant aspects that span commissioning, operation and closure.

Mineral means any naturally occurring material found in or on the Earth's crust that is either useful to or has a value placed on it by humankind, or both. This excludes hydrocarbons, which are classified as Petroleum.

Mineralisation means any single mineral or combination of minerals occurring in a mass, or deposit, of economic interest. The term is intended to cover all forms in which mineralisation might occur, whether by class of deposit, mode of occurrence, genesis or composition.

Mineral Project means any exploration, development or production activity, including a royalty or similar interest in these activities, in respect of Minerals.

Mineral Securities means those Securities issued by a body corporate or an unincorporated body whose business includes exploration, development or extraction and processing of Minerals.

Mineral Resources is defined in the current version of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). Refer to http://www.jorc.org for further information.

Mining means all activities related to extraction of Minerals by any method (eg quarries, open cast, open cut, solution mining, dredging etc).

Mining Industry means the business of exploring for, extracting, processing and marketing Minerals.

Modifying Factors is defined in the current version of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). Refer to http://www.jorc.org for further information.

Ore Reserves is defined in the current version of the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). Refer to http://www.jorc.org for further information.

Petroleum means any naturally occurring hydrocarbon in a gaseous or liquid state, including coal-based methane, tar sands and oil-shale.

Petroleum Resource and **Petroleum Reserve** are defined in the current version of the Petroleum Resources Management System (PRMS) published by the Society of Petroleum Engineers, the American Association of Petroleum Geologists, the World Petroleum Council and the Society of Petroleum Evaluation Engineers. Refer to http://www.spe.org for further information.

Preliminary Feasibility Study (Pre-Feasibility Study) means a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors that are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resources may be converted to an Ore Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study.

Professional Organisation means a self-regulating body, such as one of engineers or geoscientists or of both, that:

(a) admits members primarily on the basis of their academic qualifications and professional experience;

(b) requires compliance with professional standards of expertise and behaviour according to a Code of Ethics established by the organisation; and

(c) has enforceable disciplinary powers, including that of suspension or expulsion of a member, should its Code of Ethics be breached.

Public Presentation means the process of presenting a topic or project to a public audience. It may include, but not be limited to, a demonstration, lecture or speech meant to inform, persuade or build good will.

Quarterly Report means a document published by public corporations on a quarterly basis to provide shareholders, the public and the government with financial data, a summary of ownership and the accounting practices used to prepare the report.

Royalty or Royalty Interest means the amount of benefit accruing to the royalty owner from the royalty share of production.

Scoping Study means an order of magnitude technical and economic study of the potential viability of Mineral Resources. It includes appropriate assessments of realistically assumed Modifying Factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that progress to a Pre-Feasibility Study can be reasonably justified.

Status in relation to Tenure means an assessment of the security of title to the Tenure.

Vendor Consideration Opinion means a Public Report involving a Valuation and expressing an opinion on the fairness of the consideration paid or benefit given to a vendor, promoter or provider of seed capital.

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Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves

JORC
Joint Ore Reserves Committee

The JORC Code

2012 Edition

Australian Institute of Geoscientists
Supporting Geoscientists

AusIMM
THE MINERALS INSTITUTE

Minerals Council of Australia

Effective 20 December 2012 and mandatory from 1 December 2013

Prepared by the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC)

Contents

Foreword	3
Introduction	3
Scope	4
Competence and Responsibility	6
Reporting Terminology	8
Reporting General	9
Reporting of Exploration Results	10
Reporting of Mineral Resources	11
Reporting of Ore Reserves	16
Technical Studies	19
Reporting of Mineralised Fill, Remnants, Pillars, Low Grade Mineralisation, Stockpiles, Dumps and Tailings	21
Reporting of Coal Resources and Reserves	21
Reporting of Diamond Exploration Results, Mineral Resources and Ore Reserves	22
Reporting of Industrial Minerals Exploration Results, Mineral Resources and Ore Reserves	23
Reporting of Metal Equivalents	24
Reporting of *In Situ* or In Ground Valuations	24
Table 1 Checklist of Assessment and Reporting Criteria	26
Section 1 Sampling Techniques and Data	26
Section 2 Reporting of Exploration Results	28
Section 3 Estimation and Reporting of Mineral Resources	29
Section 4 Estimation and Reporting of Ore Reserves	31
Section 5 Estimation and Reporting of Diamonds and Other Gemstones	33
Appendix 1 Generic Terms and Equivalents	36
Appendix 2 Competent Person's Consent Form	37
Appendix 3 Compliance Statements	42
Appendix 4 List of Acronyms	44

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Foreword

1. The *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves* (the 'JORC Code' or 'the Code') sets out minimum standards, recommendations and guidelines for Public Reporting in Australasia of Exploration Results, Mineral Resources and Ore Reserves. The Joint Ore Reserves Committee ('JORC') was established in 1971 and published several reports containing recommendations on the classification and Public Reporting of Ore Reserves prior to the release of the first edition of the JORC Code in 1989.

   Revised and updated editions of the Code were issued in 1992, 1996, 1999, and 2004. This 2012 edition supersedes all previous editions.

   Since 1994, the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) has worked to create a set of standard international definitions for reporting Mineral Resources and Mineral (Ore) Reserves, based on the evolving JORC Code's definitions. CRIRSCO was initially a committee of the Council of Mining and Metallurgical Institutions (CMMI).

   Representatives of bodies from Australia, Canada, South Africa, USA and the UK reached provisional agreement on standard definitions for reporting resources and reserves in 1997. This was followed in 1998 by an agreement to incorporate the CMMI definitions into the International Framework Classification for Reserves and Resources – Solid Fuels and Mineral Commodities, developed by the United Nations Economic Commission for Europe (UN-ECE).

   CMMI was disbanded in 2002 but CRIRSCO remained as a separate entity and now has a relationship with the International Council on Mining and Metals (ICMM). An initiative was commenced by CRIRSCO to develop a Template, largely based on the JORC Code, that was designed to assist countries to develop their own code in line with world best practice. The Template has been recognised as a commodity-specific code in UNFC 2009.

   CRIRSCO's members are National Reporting Organisations (NROs) who are responsible for developing mineral reporting codes or standards and guidelines. The NROs are: Australasia (JORC), Canada (CIM Standing Committee on Reserve Definitions), Chile (National Committee), Europe (PERC), Russia (NAEN), South Africa (SAMCODES) and USA (SME). As a result of the CRIRSCO/CMMI initiative, considerable progress has been made towards widespread adoption of consistent reporting standards throughout the world. In this edition of the JORC Code defined terms are aligned to the CRIRSCO Standard Definitions as revised in October 2012.

Introduction

2. In this edition of the JORC Code, important terms and their definitions are highlighted in bold text. The guidelines are placed after the respective Code Clauses using indented italics. Guidelines are not part of the Code but are intended to provide assistance and guidance to readers and should be considered persuasive when interpreting the Code.

3. The Code has been adopted by The Australasian Institute of Mining and Metallurgy (The AusIMM) and the Australian Institute of Geoscientists (AIG) and is binding on members of those organisations. The Code is endorsed by the Minerals Council of Australia and the Financial Services Institute of Australasia as a contribution to good practice. The Code has also been adopted by and included in the listing rules of the Australian Securities Exchange (ASX) and the New Zealand Stock Exchange (NZX).

   The ASX and NZX have, since 1989 and 1992 respectively, incorporated the Code into their listing rules. Under these listing rules, a Public Report must be prepared in accordance with the Code if it includes a statement on Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves. The incorporation of the Code imposes certain specific requirements on mining or exploration companies reporting to the ASX and NZX. There remain a number of other issues outside of the JORC Code associated with Public Reports that are addressed specifically within the listing rules.

As such, it is strongly recommended that users of the Code familiarise themselves with the listing rules of the relevant exchange that relates to Public Reporting of Exploration Results, Mineral Resources and Ore Reserves.

For Public Reports of initial or materially changed Exploration Results, Mineral Resources or Ore Reserves the JORC Code requires the Competent Person, on whose documentation the Public Report is based, to be named in the Public Report. The Public Report or attached statement must say that the Competent Person consents to the inclusion in the Public Report of the matters based on their information in the form and context in which it appears, and must include the name of the Competent Person's firm or employer.

Users of the Code should refer to Clause 9.

Scope

4. The principles governing the operation and application of the JORC Code are Transparency, Materiality and Competence.

   - **Transparency requires that the reader of a Public Report is provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and not be misled by this information or by omission of material information that is known to the Competent Person.**
   - **Materiality requires that a Public Report contains all the relevant information that investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources or Ore Reserves being reported. Where relevant information is not supplied an explanation must be provided to justify its exclusion.**
   - **Competence requires that the Public Report be based on work that is the responsibility of suitably qualified and experienced persons who are subject to an enforceable professional code of ethics (the Competent Person).**

   Transparency and Materiality are guiding principles of the Code, and the Competent Person must provide explanatory commentary on the material assumptions underlying the declaration of Exploration Results, Mineral Resources or Ore Reserves.

   In particular, the Competent Person must consider that the benchmark of Materiality is that which includes all aspects relating to the Exploration Results, Mineral Resources or Ore Reserves that an investor or their advisers would reasonably expect to see explicit comment on from the Competent Person. The Competent Person must not remain silent on any material aspect for which the presence or absence of comment could affect the public perception or value of the mineral occurrence.

5. Table 1 provides a checklist or reference of criteria to be considered by the Competent Person in developing their documentation and in preparing the Public Report.

   In the context of complying with the principles of the Code, comments relating to the items in the relevant sections of Table 1 should be provided on an 'if not, why not' basis within the Competent Person's documentation. Additionally comments related to the relevant sections of Table 1 must be complied with on an 'if not, why not' basis within Public Reporting for significant projects (see Appendix 1 Generic Terms and Equivalents) when reporting Exploration Results, Mineral Resources or Ore Reserves for the first time. Table 1 also applies in instances where these items have materially changed from when they were last Publicly Reported. Reporting on an 'if not, why not' basis is to ensure that it is clear to an investor whether items have been considered and deemed of low consequence or are not yet addressed or resolved.

   For the purposes of the JORC Code the phrase 'if not, why not' means that each item listed in the relevant section of Table 1 must be discussed and if it is not discussed then the Competent Person must explain why it has been omitted from the documentation.

The Code requires in Clauses 19, 27 and 35 that reporting of first time or materially changed Exploration Results, Mineral Resources or Ore Reserves estimates be accompanied by a technical summary of all relevant sections of Table 1 on an 'if not, why not' basis as an appendix to the Public Report.

A material change could be a change in the estimated tonnage or grade or in the classification of the Mineral Resources or Ore Reserves. Whether there has been a material change in relation to a significant project must be considered by taking into account all of the relevant circumstances, including the style of mineralisation. This includes considering whether the change in estimates is likely to have a material effect on the price or value of the company's securities.

6. **Public Reports are reports prepared for the purpose of informing investors or potential investors and their advisers on Exploration Results, Mineral Resources or Ore Reserves. They include, but are not limited to, annual and quarterly company reports, press releases, information memoranda, technical papers, website postings and public presentations.**

These Public Reports may be to the Australian Securities Exchange and the New Zealand Stock Exchange, or other regulatory authorities or as required by law.

The Code is a required minimum standard for Public Reporting. JORC also recommends its adoption as a minimum standard for other reporting. Companies are encouraged to provide information in their Public Reports that is as comprehensive as possible.

The Code applies to other publicly released company information in the form of postings on company websites and presentation material used in briefings for shareholders, stockbrokers and investment analysts. The Code also applies to the following reports if they have been prepared for the purposes described in Clause 6 including but not limited to: environmental statements, information memoranda, expert reports, and technical papers referring to Exploration Results, Mineral Resources or Ore Reserves.

For companies issuing concise annual reports, inclusion of all material information relating to Exploration Results, Mineral Resources and Ore Reserves is recommended. In cases where summary information is presented it should be clearly stated that it is a summary, and a reference attached giving the location of the Code-compliant Public Reports or Public Reporting on which the summary is based.

It is recognised that companies can be required to issue reports into more than one regulatory jurisdiction, with compliance standards that may differ from this Code. It is recommended that such reports include a statement alerting the reader to this situation. Where members of The AusIMM and the AIG are required to report in other jurisdictions, they are obliged to comply with the requirements of those jurisdictions.

Reference in the Code to 'documentation' is to internal company documents prepared as a basis for, or to support, a Public Report.

It is recognised that situations may arise where documentation prepared by a Competent Person for internal company or similar non-public purposes does not comply with the JORC Code. In such situations, it is recommended that the documentation includes a prominent statement to this effect. This will make it less likely that non-complying documentation will be used to compile Public Reports, since Clause 9 requires Public Reports to fairly reflect Exploration Results, Mineral Resource and/or Ore Reserve estimates, and supporting documentation, prepared by a Competent Person.

While every effort has been made within the Code and Guidelines (including Table 1) to cover most situations likely to be encountered in Public Reporting, there may be occasions when doubt exists as to the appropriate form of disclosure. On such occasions, users of the Code and those compiling reports to comply with the Code should be guided by its intent, which is to provide a minimum standard for Public Reporting, and to ensure that such reporting contains all information that investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources or Ore Reserves being reported.

The JORC Code is a Code for Public Reporting not a Code that regulates the manner in which a Competent Person estimates Mineral Resources or Ore Reserves. The term 'JORC compliant' therefore refers to the manner of reporting not to the estimates. Use of the words 'JORC compliant' to describe resources or estimates is potentially misleading. The words 'JORC compliant' should be interpreted to mean: 'Reported in accordance with the JORC Code and estimated (or based on documentation prepared) by a Competent Person as defined by the JORC Code'.

7. The Code is applicable to all solid minerals, including diamonds, other gemstones, industrial minerals and coal, for which Public Reporting of Exploration Results, Mineral Resources and Ore Reserves is required by the Australian Securities Exchange and the New Zealand Stock Exchange.

The JORC Code is cited by the 'Code and Guidelines for Technical Assessment and/or Valuation of Mineral and Petroleum Assets and Mineral and Petroleum Securities for Independent Expert Reports' (the 'VALMIN Code') as the applicable standard for the Public Reporting of Exploration Results, Mineral Resources and Ore Reserves. References to 'technical and economic studies' and 'feasibility studies' in the JORC Code are not intended as references to Technical Assessments or Valuations as defined in the VALMIN Code.

8. JORC recognises that further review of the Code and Guidelines will be required from time to time.

Competence and Responsibility

9. A Public Report concerning a company's Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is the responsibility of the company acting through its Board of Directors. Any such report must be based on, and fairly reflect, the information and supporting documentation prepared by a Competent Person. A company issuing a Public Report shall disclose the name(s) of the Competent Person, state whether the Competent Person is a full-time employee of the company, and, if not, name the Competent Person's employer.

Any potential for a conflict of interest by the Competent Person or a related party must be disclosed in accordance with the Transparency principle. Any other relationship of the Competent Person with the Company making the report must also be disclosed in the Public Report. The report must be issued with the prior written consent of the Competent Person as to the form and context in which it appears.

Where a company is re-issuing information previously issued with the written consent of the Competent Person, it must state the original report name, the name(s) of the Competent Person responsible for the original report, and state the date and reference the location of the original source public report for public access. In these circumstances the Company is not required to obtain the Competent Person's prior written consent as to the form and context in which the information appears, provided:

- The company confirms in the subsequent public presentation that it is not aware of any new information or data that materially affects the information included in the relevant market announcement. In the case of estimates of Mineral Resources or Ore Reserves, the company confirms that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.
- The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified. Note that for the subsequent public presentation it is the responsibility of the company acting through its Board of Directors to ensure the form and context has not been materially altered.

This relaxation of the requirement to obtain the Competent Person's prior written consent does not apply to the requirements for annual reporting of Mineral Resources and Ore Reserves contained in Clause 15.

All such public disclosure should be specifically reviewed by the company to ensure that the form and context in which the Competent Person's findings are presented have not been materially modified, and to

ensure that the previously issued Exploration Results, Mineral Resources or Ore Reserve remain valid in the light of any more recently-acquired data.

Examples of appropriate forms of compliance statements are provided in Appendix 3.

In order to assist Competent Persons and companies to comply with these requirements a Competent Person's Consent Form has been devised that incorporates the requirements of the Code. The Competent Person's Consent Form is provided in Appendix 2.

The completion of a consent form, whether in the format provided or in an equivalent form, is recommended as good practice and provides readily available evidence that the required prior consent has been obtained.

The Competent Person's Consent Form(s), or other evidence of the Competent Person's written consent, should be retained by the company and the Competent Person to ensure that the written consent can be promptly provided if required.

10. Documentation detailing Exploration Results, Mineral Resource and Ore Reserve estimates, on which a Public Report on Exploration Results, Mineral Resources and Ore Reserves is based, must be prepared by, or under the direction of, and signed by, a Competent Person. If an Exploration Target is included in a Public Report, documentation must also be prepared by, or under the direction of, and signed by, a Competent Person. The documentation must provide a fair representation of the matters being reported.

11. **A 'Competent Person' is a minerals industry professional who is a Member or Fellow of The Australasian Institute of Mining and Metallurgy, or of the Australian Institute of Geoscientists, or of a 'Recognised Professional Organisation' (RPO), as included in a list available on the JORC and ASX websites. These organisations have enforceable disciplinary processes including the powers to suspend or expel a member.**

A Competent Person must have a minimum of five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity which that person is undertaking.

If the Competent Person is preparing documentation on Exploration Results, the relevant experience must be in exploration. If the Competent Person is estimating, or supervising the estimation of Mineral Resources, the relevant experience must be in the estimation, assessment and evaluation of Mineral Resources. If the Competent Person is estimating, or supervising the estimation of Ore Reserves, the relevant experience must be in the estimation, assessment, evaluation and economic extraction of Ore Reserves.

The key qualifier in the definition of a Competent Person is the word 'relevant'. Determination of what constitutes relevant experience can be a difficult area and common sense has to be exercised. For example, in estimating Mineral Resources for vein gold mineralisation, experience in a high-nugget, vein-type mineralisation (such as tin, uranium, etc) may be relevant, whereas experience in (say) massive base metal deposits may not be. As a second example, to qualify as a Competent Person in the estimation of Ore Reserves for alluvial gold deposits, considerable (at least five years) experience in the evaluation and economic extraction of this type of mineralisation may be needed. This is due to the properties of gold in alluvial systems, the particle sizing of the host sediment, and the low grades involved. Experience with placer deposits containing minerals other than gold may not necessarily provide appropriate relevant experience.

The key word 'relevant' also means that it is not always necessary for a person to have five years experience in each and every type of deposit to act as a Competent Person if that person has relevant experience in other deposit types. For example, a person with (say) 20 years experience in estimating Mineral Resources for a variety of metalliferous hard-rock deposit types may not require five years specific experience in (say) porphyry copper deposits to act as a Competent Person. Relevant experience in the other deposit types could count towards the required experience in relation to porphyry copper deposits.

In addition to experience in the style of mineralisation, a Competent Person taking responsibility for the compilation of Exploration Results or Mineral Resource estimates should have sufficient experience in the sampling and analytical techniques relevant to the deposit under consideration to be aware of problems that could affect the reliability of data. Some appreciation of extraction and processing techniques applicable to that deposit type may also be important.

As a general guide, a person being called upon to act as Competent Person should be clearly satisfied in their own mind that they could face their peers and demonstrate competence in the commodity, type of deposit and situation under consideration. If doubt exists, the person should either seek opinions from appropriately experienced peers or should decline to act as a Competent Person.

Estimation of Mineral Resources may be a team effort (for example, involving one person or team collecting the data and another person or team preparing the estimate). Estimation of Ore Reserves is very commonly a team effort involving several technical disciplines. It is recommended that, where there is clear division of responsibility within a team, each Competent Person and his or her contribution should be identified, and responsibility accepted for that particular contribution. If only one Competent Person signs the Mineral Resource or Ore Reserve documentation, that person is responsible and accountable for the whole of the documentation under the Code. It is important in this situation that the Competent Person accepting overall responsibility for a Mineral Resource or Ore Reserve estimate and supporting documentation prepared in whole or in part by others, is satisfied that the work of the other contributors is acceptable.

Complaints made with respect to the professional work of a Competent Person will be dealt with under the disciplinary procedures of the professional organisation to which the Competent Person belongs.

When an Australian Securities Exchange or New Zealand Stock Exchange listed company with overseas interests wishes to report overseas Exploration Results, Mineral Resource or Ore Reserve estimates prepared by a person who is not a member of The AusIMM, the AIG or a RPO, it is necessary for the company to nominate a Competent Person or Persons to take responsibility for the Exploration Results, Mineral Resource or Ore Reserve estimate. The Competent Person undertaking this activity should appreciate that they are accepting full responsibility for the estimate and supporting documentation under Australian Securities Exchange and/or the New Zealand Stock Exchange listing rules and should not treat the procedure merely as a 'rubber-stamping' exercise.

Reporting Terminology

12. Public Reports dealing with Exploration Results, Mineral Resources or Ore Reserves must only use the terms set out in Figure 1.

Figure 1 sets out the framework for classifying tonnage and grade estimates to reflect different levels of geological confidence and different degrees of technical and economic evaluation. Mineral Resources can be estimated on the basis of geoscientific information with some input from other disciplines. Ore Reserves, which are a modified sub-set of the Indicated and Measured Mineral Resources (shown within the dashed outline in Figure 1), require consideration of the Modifying Factors affecting extraction, and should in most instances be estimated with input from a range of disciplines.

'Modifying Factors' are considerations used to convert Mineral Resources to Ore Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.

Measured Mineral Resources may be converted to either Proved Ore Reserves or Probable Ore Reserves. The Competent Person may convert Measured Mineral Resources to Probable Ore Reserves because of uncertainties associated with some or all of the Modifying Factors which are taken into account in the conversion from Mineral Resources to Ore Reserves. This relationship is shown by the broken arrow in Figure 1. Although the trend of the broken arrow includes a vertical component, it does not, in this instance, imply a reduction in the level of geological knowledge or confidence. In such a situation these Modifying Factors should be fully explained.

Refer also to the guidelines to Clause 32.

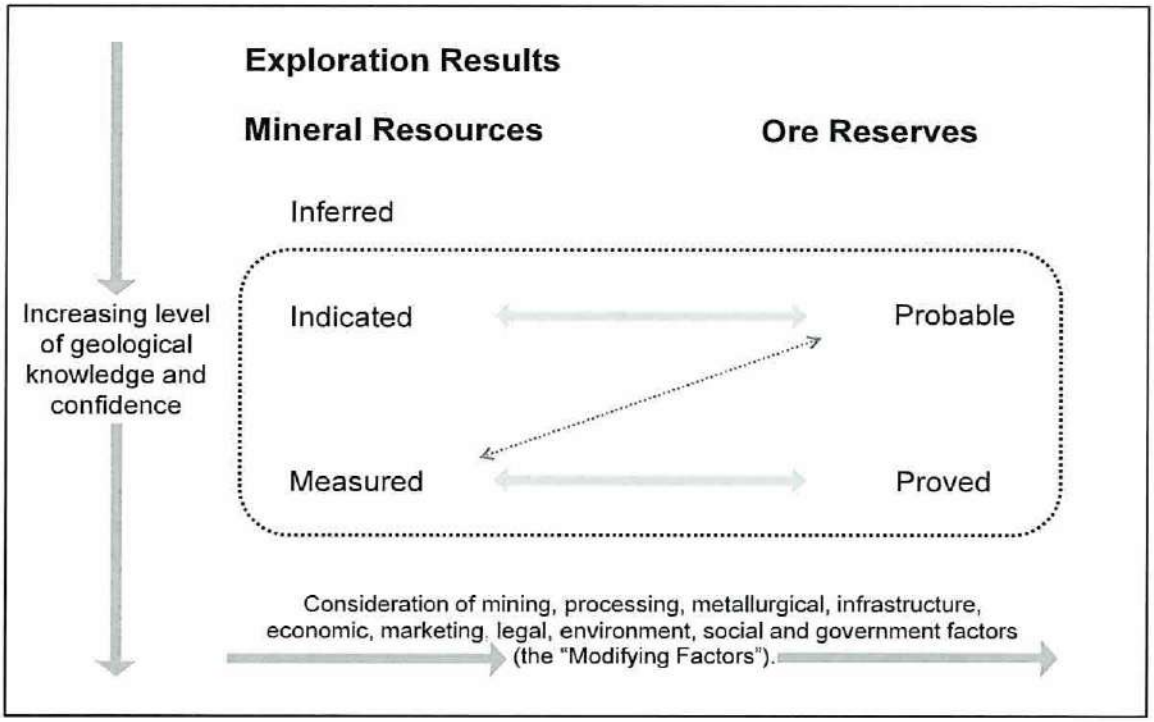


Figure 1 General relationship between Exploration Results, Mineral Resources and Ore Reserves.

Reporting General

13. Public Reports concerning a company's Exploration Results, Mineral Resources or Ore Reserves must include a description of the style and nature of the mineralisation.

14. A company must disclose all relevant information concerning Exploration Results, Mineral Resources or Ore Reserves that could materially influence the economic value of those Exploration Results, Mineral Resources or Ore Reserves to the company. A company must promptly report any material changes in its Mineral Resources or Ore Reserves.

15. Companies must review and publically report their Mineral Resources and Ore Reserves annually. The annual review date must be nominated by the Company in its Public Reports of Mineral Resources and Ore Reserves and the effective date of each Mineral Resource and Ore Reserve statement must be shown. The Company must discuss any material changes to previously reported Mineral Resources and Ore Reserves at the time of publishing updated Mineral Resources and Ore Reserves.

16. Throughout the Code, if appropriate, 'quality' may be substituted for 'grade' and 'volume' may be substituted for 'tonnage'. (Refer to Appendix 1 Generic Terms and Equivalents.)

17. It is recognised that it is common practice for a company to comment on and discuss its exploration in terms of target size and type. However, any such comment in a Public Report must comply with the following requirements.

    An Exploration Target is a statement or estimate of the exploration potential of a mineral deposit in a defined geological setting where the statement or estimate, quoted as a range of tonnes and a range of grade (or quality), relates to mineralisation for which there has been insufficient exploration to estimate a Mineral Resource.

    Any such information relating to an Exploration Target must be expressed so that it cannot be misrepresented or misconstrued as an estimate of a Mineral Resource or Ore Reserve. The terms Resource or Reserve must not be used in this context. In any statement referring to potential quantity and grade of the target, these must both be expressed as ranges and must include:

- a detailed explanation of the basis for the statement, including specific description of the level of exploration activity already completed, and
- a clarification statement within the same paragraph as the first reference of the Exploration Target in the Public Report, stating that the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to estimate a Mineral Resource and that it is uncertain if further exploration will result in the estimation of a Mineral Resource.

Given the level of uncertainty surrounding the supporting data, an Exploration Target tonnage or grade must not be reported as a 'headline statement' in a Public Report.

If a Public Report includes an Exploration Target the proposed exploration activities designed to test the validity of the exploration target must be detailed and the timeframe within which those activities are expected to be completed must be specified.

If an Exploration Target is shown pictorially (for instance as cross sections or maps) or with a graph, it must be accompanied by text that meets the requirements above.

A Public Report that includes an Exploration Target must be accompanied by a Competent Person statement taking responsibility for the form and context in which the Exploration Target appears.

All disclosures of an Exploration Target must clarify whether the target is based on actual Exploration Results or on proposed exploration programmes. Where the Exploration Target statement includes information relating to ranges of tonnages and grades these must be represented as approximations. The explanatory text must include a description of the process used to determine the grade and tonnage ranges used to describe the Exploration Target.

For an Exploration Target based on Exploration Results, a summary of the relevant exploration data available and the nature of the results should also be stated, including a disclosure of the current drill hole or sampling spacing and relevant plans or sections. In any subsequent upgraded or modified statements on the Exploration Target, the Competent Person should discuss any material changes to potential scale or quality arising from completed exploration activities.

Reporting of Exploration Results

18. **Exploration Results include data and information generated by mineral exploration programmes that might be of use to investors but which do not form part of a declaration of Mineral Resources or Ore Reserves.**

    The reporting of such information is common in the early stages of exploration when the quantity of data available is generally not sufficient to allow any reasonable estimates of Mineral Resources.

    If a company reports Exploration Results in relation to mineralisation not classified as a Mineral Resource or an Ore Reserve, then estimates of tonnages and average grade must not be assigned to the mineralisation unless the situation is covered by Clause 17, and then only in strict accordance with the requirements of that Clause.

    Examples of Exploration Results include results of outcrop sampling, assays of drill hole intersections, geochemical results and geophysical survey results.

19. Public Reports of Exploration Results must contain sufficient information to allow a considered and balanced judgement of their significance. Reports must include relevant information such as exploration context, type and method of sampling, relevant sample intervals and locations, distribution, dimensions and relative location of all relevant assay data, methods of analysis, data aggregation methods, land tenure status plus information on any of the other criteria listed in Table 1 that are material to an assessment.

    Public Reports of Exploration Results must not be presented so as to unreasonably imply that potentially economic mineralisation has been discovered. If true widths of mineralisation are not reported, an appropriate qualification must be included in the Public Report.

Where assay and analytical results are reported, they must be reported using one of the following methods, selected as the most appropriate by the Competent Person:

- either by listing all results, along with sample intervals (or size, in the case of bulk samples), or
- by reporting weighted average grades of mineralised zones, indicating clearly how the grades were calculated.

Clear diagrams and maps designed to represent the geological context must be included in the report. These must include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.

Reporting of selected information such as isolated assays, isolated drill holes, assays of panned concentrates or supergene enriched soils or surface samples, without placing them in perspective is unacceptable.

While it is not necessary to report all assays or drill holes, it is a requirement that sufficient information about the omitted data is provided so that a considered and balanced judgement can be made by the reader of the report. Where reports of Exploration Results do not include all drill holes or all intersections of drill holes the Competent Person must provide an explanation of why this information is not considered relevant or why it has not been provided.

As required under Clauses 4 and 5, the Competent Person must not 'remain silent on any issue for which the presence or absence of comment could impact the public perception or value of the mineral occurrence'. For significant projects the reporting of all criteria in sections 1 and 2 of Table 1 on an 'if not, why not basis' is required, preferably as an appendix to the Public Report. Additional disclosure is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results; for example, poor sample recovery, poor repeatability of assay or laboratory results, etc.

Reporting of Mineral Resources

20. **A 'Mineral Resource' is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories.**

All reports of Mineral Resources must satisfy the requirement that there are reasonable prospects for eventual economic extraction (ie more likely than not), regardless of the classification of the resource.

Portions of a deposit that do not have reasonable prospects for eventual economic extraction must not be included in a Mineral Resource. The basis for the reasonable prospects assumption is always a material matter, and must be explicitly disclosed and discussed by the Competent Person within the Public Report using the criteria listed in Table 1 for guidance. The reasonable prospects disclosure must also include a discussion of the technical and economic support for the cut-off assumptions applied.

Where untested practices are applied in the determination of reasonable prospects, the use of the proposed practices for reporting of the Mineral Resource must be justified by the Competent Person in the Public Report.

Geological evidence and knowledge required for the estimation of Mineral Resources must include sampling data of a type, and at spacings, appropriate to the geological, chemical, physical, and mineralogical complexity of the mineral occurrence, for all classifications of Inferred, Indicated and Measured Mineral Resources. A Mineral Resource cannot be estimated in the absence of sampling information.

The term 'Mineral Resource' covers mineralisation, including dumps and tailings, which has been identified and estimated through exploration and sampling and within which Ore Reserves may be defined by the consideration and application of the Modifying Factors.

The term 'reasonable prospects for eventual economic extraction' implies an assessment (albeit preliminary) by the Competent Person in respect of all matters likely to influence the prospect of economic extraction including the approximate mining parameters. In other words, a Mineral Resource is not an inventory of all mineralisation drilled or sampled, regardless of cut-off grade, likely mining dimensions location or continuity. It is a realistic inventory of mineralisation which, under assumed and justifiable technical, economic and development conditions, might, in whole or in part, become economically extractable.

Where considered appropriate by the Competent Person, Mineral Resource estimates may include material below the selected cut-off grade to ensure that the Mineral Resources comprise bodies of mineralisation of adequate size and continuity to properly consider the most appropriate approach to mining. Documentation of Mineral Resource estimates should clearly identify any diluting material included and Public Reports should include commentary on the matter if considered material.

Interpretation of the word 'eventual' in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron ore, bauxite and other bulk minerals or commodities, it may be reasonable to envisage 'eventual economic extraction' as covering time periods in excess of 50 years. However for the majority of smaller deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time. In all cases, the considered time frame should be disclosed and discussed by the Competent Person.

Any adjustment made to the data for the purpose of making the Mineral Resource estimate, for example by cutting or factoring grades, should be clearly stated and described in the Public Report.

Certain reports (eg inventory coal reports, exploration reports to government and other similar reports not intended primarily for providing information for investment purposes) may require full disclosure of all mineralisation, including some material that does not have reasonable prospects for eventual economic extraction. Such estimates of mineralisation would not qualify as Mineral Resources or Ore Reserves in terms of the JORC Code (refer also to the guidelines to Clauses 6 and 42).

21. **An 'Inferred Mineral Resource' is that part of a Mineral Resource for which quantity and grade (or quality) are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade (or quality) continuity. It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.**

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to an Ore Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

Where the Mineral Resource being reported is predominantly an Inferred Mineral Resource, sufficient supporting information must be provided to enable the reader to evaluate and assess the risk associated with the reported Mineral Resource.

In circumstances where the estimation of the Inferred Mineral Resource is presented on the basis of extrapolation beyond the nominal sampling spacing and taking into account the style of mineralisation, the report must contain sufficient information to inform the reader of:

- the maximum distance that the resource is extrapolated beyond the sample points
- the proportion of the resource that is based on extrapolated data
- the basis on which the resource is extrapolated to these limits
- a diagrammatic representation of the Inferred Mineral Resource showing clearly the extrapolated part of the estimated resource.

The Inferred category is intended to cover situations where a mineral concentration or occurrence has been identified and limited measurements and sampling completed, but where the data are insufficient to allow the geological and grade continuity to be confidently interpreted. While it would be reasonable to expect that the majority of Inferred Mineral Resources would upgrade to Indicated Mineral Resources with continued exploration, due to the uncertainty of Inferred Mineral Resources, it should not be assumed that such upgrading will always occur.

Confidence in the estimate of Inferred Mineral Resources is not sufficient to allow the results of the application of technical and economic parameters to be used for detailed planning in Pre-Feasibility (Clause 39) or Feasibility (Clause 40) Studies. For this reason, there is no direct link from an Inferred Mineral Resource to any category of Ore Reserves (see Figure 1).

Caution should be exercised if Inferred Mineral Resources are used to support technical and economic studies such as Scoping Studies (refer to Clause 38).

22. **An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.**

    Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to assume geological and grade (or quality) continuity between points of observation where data and samples are gathered.

    An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Ore Reserve.

    Mineralisation may be classified as an Indicated Mineral Resource when the nature, quality, amount and distribution of data are such as to allow confident interpretation of the geological framework and to assume continuity of mineralisation.

    Confidence in the estimate is sufficient to allow application of Modifying Factors within a technical and economic study as defined in Clauses 37 to 40.

23. **A 'Measured Mineral Resource' is that part of a Mineral Resource for which quantity, grade (or quality), densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.**

    Geological evidence is derived from detailed and reliable exploration, sampling and testing gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, and is sufficient to confirm geological and grade (or quality) continuity between points of observation where data and samples are gathered.

    A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Ore Reserve or under certain circumstances to a Probable Ore Reserve.

    Mineralisation may be classified as a Measured Mineral Resource when the nature, quality, amount and distribution of data are such as to leave no reasonable doubt, in the opinion of the Competent Person determining the Mineral Resource, that the tonnage and grade of the mineralisation can be estimated to within close limits, and that any variation from the estimate would be unlikely to significantly affect potential economic viability.

    This category requires a high level of confidence in, and understanding of, the geological properties and controls of the mineral deposit.

    Confidence in the estimate is sufficient to allow application of Modifying Factors within a technical and economic study as defined in Clauses 37 to 40.

Depending upon the level of confidence in the various Modifying Factors it may be converted to a Proved Ore Reserve (high confidence in Modifying Factors), Probable Ore Reserve (some uncertainty in Modifying Factors) or may not be converted at all (low or no confidence in some of the Modifying Factors; or no plan to mine, eg pillars in an underground mine or outside economic pit limits).

24. The choice of the appropriate category of Mineral Resource depends upon the quantity, distribution and quality of data available and the level of confidence that attaches to those data. The appropriate Mineral Resource category must be determined by a Competent Person.

Mineral Resource classification is a matter for skilled judgement and a Competent Person should take into account those items in Table 1 that relate to confidence in Mineral Resource estimation.

In deciding between Measured Mineral Resources and Indicated Mineral Resources, Competent Persons may find it useful to consider, in addition to the phrases in the two definitions relating to geological and grade continuity in Clauses 22 and 23, the phrase in the guideline to the definition for Measured Mineral Resources: '... any variation from the estimate would be unlikely to significantly affect potential economic viability'.

In deciding between Indicated Mineral Resources and Inferred Mineral Resources, Competent Persons may wish to take into account, in addition to the phrases in the two definitions in Clauses 21 and 22 relating to geological and grade continuity, that part of the definition for Indicated Mineral Resources: **'sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit'**, *which contrasts with the guideline to the definition for Inferred Mineral Resources: 'Confidence in the estimate of Inferred Mineral Resources is not sufficient to allow the results of the application of technical and economic parameters to be used for detailed planning in Pre-Feasibility (Clause 39) or Feasibility (Clause 40) Studies' and 'Caution should be exercised if Inferred Mineral Resources are used to support technical and economic studies such as Scoping Studies (refer to Clause 38)'.*

The Competent Person should take into consideration issues of the style of mineralisation and cut-off grade when assessing geological and grade continuity for the purposes of classifying the resource.

Cut-off grades chosen for the estimation should be realistic in relation to the style of mineralisation and the anticipated mining and processing development options.

25. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. Reporting of tonnage and grade figures should reflect the relative uncertainty of the estimate by rounding off to appropriately significant figures and, in the case of Inferred Mineral Resources, by qualification with terms such as 'approximately' and to emphasise the imprecise nature of a Mineral Resource, the final result should always be referred to as an estimate not a calculation.

In most situations, rounding to the second significant figure should be sufficient. For example 10,863,000 tonnes at 8.23 per cent should be stated as 11 million tonnes at 8.2 per cent. There will be occasions, however, where rounding to the first significant figure may be necessary in order to convey properly the uncertainties in estimation. This would usually be the case with Inferred Mineral Resources.

Competent Persons are encouraged, where appropriate, to discuss the relative accuracy and confidence level of the Mineral Resource estimates with consideration of at least sampling, analytical and estimation errors. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnage. Where a statement of the relative accuracy and confidence level is not possible, a qualitative discussion of the uncertainties should be provided in its place (refer to Table 1).

26. Public Reports of Mineral Resources must specify one or more of the categories of 'Inferred', 'Indicated' and 'Measured'. Categories must not be reported in a combined form unless details for the individual categories are also provided. Mineral Resources must not be reported in terms of contained metal or mineral content unless corresponding tonnages and grades are also presented.

Mineral Resources must not be aggregated with Ore Reserves.

Public Reporting of tonnages and grades outside the categories covered by the Code is not permitted unless the situation is covered by Clause 17, and then only in strict accordance with the requirements of that Clause.

Estimates of tonnage and grade outside of the categories covered by the Code may be useful for a company in its internal calculations and evaluation processes, but their inclusion in Public Reports is not permitted.

27. In a Public Report of a Mineral Resource for a significant project for the first time, or when those estimates have materially changed from when they were last reported, a brief summary of the information in relevant sections of Table 1 must be provided or, if a particular criterion is not relevant or material, a disclosure that it is not relevant or material and a brief explanation of why this is the case must be provided.

For a significant project, when Mineral Resource estimates are first Publicly Reported or when a material change occurs (including classification changes), there is an increased need for transparent discussion of the basis for the new Mineral Resource estimate in order that investors are appropriately informed of the basis for the changes. As noted in Clauses 4 and 5 the benchmark of Materiality is that which an investor or their advisers would reasonably expect to see explicit comment on from the Competent Person, thus the reporting of all relevant criteria in Table 1 on an 'if not, why not' basis is required.

The Code specifies reporting against relevant sections of Table 1 in this Clause. This may be satisfied by reporting against section 3 on the presumption that matters related to sections 1 and 2 will already have been included in a still current Public Report and this Report can be referenced. If this is not the case then these sections are also relevant and should be included in the Public Report.

The technical summary based against Table 1 criteria should be presented as an appendix to the Public Report.

Where there are as yet unresolved issues potentially impacting the reliability of, or confidence in, a statement of Mineral Resources (for example, poor sample recovery, poor repeatability of assay or laboratory results, limited information on bulk densities, etc) those unresolved issues should also be reported.

If there is doubt about what should be reported, it is better to err on the side of providing too much information rather than too little.

Uncertainties in any of the criteria listed in Table 1 that could lead to under- or over-statement of Mineral Resources should be disclosed.

Mineral Resource estimates are sometimes reported after adjustment from reconciliation with production data. Such adjustments should be clearly stated in a Public Report of Mineral Resources and the nature of the adjustment or modification described.

28. The words 'ore' and 'reserves' must not be used in describing Mineral Resource estimates as the terms imply technical feasibility and economic viability and are only appropriate when all relevant Modifying Factors have been considered. Reports and statements should continue to refer to the appropriate category or categories of Mineral Resources until technical feasibility and economic viability have been established. If re-evaluation indicates that the Ore Reserves are no longer viable, the Ore Reserves must be reclassified as Mineral Resources or removed from Mineral Resource/Ore Reserve statements.

It is not intended that re-classification from Ore Reserves to Mineral Resources or vice versa should be applied as a result of changes expected to be of a short term or temporary nature, or where company management has made a deliberate decision to operate on a non-economic basis. Examples of such situations might be commodity price fluctuations expected to be of short duration, mine emergency of a non-permanent nature, transport strike, etc.

Reporting of Ore Reserves

29. **An 'Ore Reserve' is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.**

The reference point at which Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

The key underlying assumptions and outcomes of the Pre-Feasibility Study or Feasibility Study must be disclosed at the time of reporting of a new or materially changed Ore Reserve.

Pre-Feasibility and Feasibility Studies are defined in Clauses 39 and 40 below.

Ore Reserves are sub-divided in order of increasing confidence into Probable Ore Reserves and Proved Ore Reserves.

In reporting Ore Reserves, information on estimated mineral processing recovery factors is very important, and should always be included in Public Reports.

Ore Reserves are those portions of Mineral Resources that, after the application of all Modifying Factors, result in an estimated tonnage and grade which, in the opinion of the Competent Person making the estimates, can be the basis of a technically and economically viable project, after taking account of material relevant Modifying Factors. Deriving an Ore Reserve without a mine design or mine plan through a process of factoring of the Mineral Resource is unacceptable.

Ore Reserves are reported as inclusive of marginally economic material and diluting material delivered for treatment or dispatched from the mine without treatment.

The term 'economically mineable' implies that extraction of the Ore Reserves has been demonstrated to be viable under reasonable financial assumptions. This will vary with the type of deposit, the level of study that has been carried out and the financial criteria of the individual company. For this reason, there can be no fixed definition for the term 'economically mineable'.

In order to achieve the required level of confidence in the Modifying Factors, appropriate Feasibility or Pre-Feasibility level studies will have been carried out prior to determination of the Ore Reserves. The studies will have determined a mine plan and production schedule that is technically achievable and economically viable and from which the Ore Reserves can be derived.

The term 'Ore Reserves' need not necessarily signify that extraction facilities are in place or operative, or that all necessary approvals or sales contracts have been received. It does signify that there are reasonable grounds to expect that such approvals or contracts will eventuate within the anticipated time frame required by the mine plans. There must be reasonable grounds to expect that all necessary Government approvals will be received. The Competent Person should highlight and discuss any material unresolved matter that is dependent on a third party on which extraction is contingent.

If there is doubt about what should be reported, it is better to err on the side of providing too much information rather than too little.

Any adjustment made to the data for the purpose of making the Ore Reserve estimate, for example by cutting or factoring grades, should be clearly stated and described in the Public Report.

Where companies prefer to use the term 'Mineral Reserves' in their Public Reports, eg for reporting industrial minerals or for reporting outside Australasia, they should state clearly that this is being used with the same meaning as 'Ore Reserves', defined in this Code. If preferred by the reporting company,

'Ore Reserve' and 'Mineral Resource' estimates for coal may be reported as 'Coal Reserve' and 'Coal Resource' estimates.

JORC prefers the term 'Ore Reserve' because it assists in maintaining a clear distinction between a 'Mineral Resource' and an 'Ore Reserve', whereas other codes feel it is better to reference Mineral Exploration Results, Mineral Resources and Mineral Reserves.

30. **A 'Probable Ore Reserve' is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource. The confidence in the Modifying Factors applying to a Probable Ore Reserve is lower than that applying to a Proved Ore Reserve.**

    Consideration of the confidence level of the Modifying Factors is important in conversion of Mineral Resources to Ore Reserves.

    A Probable Ore Reserve has a lower level of confidence than a Proved Ore Reserve but is of sufficient quality to serve as the basis for a decision on the development of the deposit.

31. **A 'Proved Ore Reserve' is the economically mineable part of a Measured Mineral Resource. A Proved Ore Reserve implies a high degree of confidence in the Modifying Factors.**

    A Proved Ore Reserve represents the highest confidence category of reserve estimate and implies a high degree of confidence in geological and grade continuity, and the consideration of the Modifying Factors. The style of mineralisation or other factors could mean that Proved Ore Reserves are not achievable in some deposits.

32. The choice of the appropriate category of Ore Reserve is determined primarily by the relevant level of confidence in the Mineral Resource and after considering any uncertainties in the consideration of the Modifying Factors. Allocation of the appropriate category must be made by a Competent Person.

    The Code provides for a direct two-way relationship between Indicated Mineral Resources and Probable Ore Reserves and between Measured Mineral Resources and Proved Ore Reserves. In other words, the level of geological confidence for Probable Ore Reserves is similar to that required for the determination of Indicated Mineral Resources, and the level of geological confidence for Proved Ore Reserves is similar to that required for the determination of Measured Mineral Resources.

    The Code also provides for a two-way relationship between Measured Mineral Resources and Probable Ore Reserves. This is to cover a situation where uncertainties associated with any of the Modifying Factors considered when converting Mineral Resources to Ore Reserves may result in there being a lower degree of confidence in the Ore Reserves than in the corresponding Mineral Resources. Such a conversion would not imply a reduction in the level of geological knowledge or confidence.

    A Probable Ore Reserve derived from a Measured Mineral Resource may be converted to a Proved Ore Reserve if the uncertainties in the Modifying Factors are removed. No amount of confidence in the Modifying Factors for conversion of a Mineral Resource to an Ore Reserve can override the upper level of confidence that exists in the Mineral Resource. Under no circumstances can an Indicated Mineral Resource be converted directly to a Proved Ore Reserve (see Figure 1).

    Application of the category of Proved Ore Reserve implies the highest degree of geological, technical and economic confidence in the estimate at the level of production increments used to support mine planning and production scheduling, with consequent expectations in the minds of the readers of the report. These expectations should be considered when categorising a Mineral Resource as Measured.

    Refer also to the guidelines in Clause 24 regarding classification of Mineral Resources.

33. Ore Reserve estimates are not precise calculations. Reporting of tonnage and grade estimates should reflect the relative uncertainty of the estimate by rounding off to appropriately significant figures. Refer also to Clause 25.

    To emphasise the imprecise nature of an Ore Reserve, the final result should always be referred to as an estimate and not a calculation.

Competent Persons are encouraged, where appropriate, to discuss the relative accuracy and confidence level of the Ore Reserve estimates with consideration of both underlying estimation and Modifying Factor uncertainties. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnage. Where a statement of the relative accuracy and confidence level is not possible, a qualitative discussion of the uncertainties should be provided in its place (refer to Table 1).

34. Public Reports of Ore Reserves must specify one or other or both of the categories of 'Proved' and 'Probable'. Reports must not contain combined Proved and Probable Ore Reserve figures unless the relevant figures for each of the categories are also provided. Reports must not present metal or mineral content figures unless corresponding tonnage and grade figures are also given.

    Public Reporting of tonnage and grade outside the categories covered by the Code is not permitted unless the situation is covered by Clause 17, and then only in strict accordance with the requirements of that Clause.

    Estimates of tonnage and grade outside of the categories covered by the Code may be useful for a company in its internal calculations and evaluation processes, but their inclusion in Public Reports could cause confusion, and is not permitted.

    Ore Reserves may incorporate material (dilution) that is not part of the original Mineral Resource. It is essential that this fundamental difference between Mineral Resources and Ore Reserves is considered and caution exercised if attempting to draw conclusions from a comparison of the two.

    When revised Ore Reserve and Mineral Resource statements are publicly reported, the Company must discuss any material changes from the previous estimate, and supply sufficient comment to enable the basis for significant changes to be understood by the reader.

35. In a Public Report of an Ore Reserve estimate for a significant project for the first time, or when those estimates have materially changed from when they were last reported, a brief summary of the information in relevant sections of Table 1 must be provided or, if a particular criterion is not relevant or material, a disclosure that it is not relevant or material and a brief explanation of why this is the case must be provided.

    For a significant project, when Ore Reserve estimates are first Publicly Reported or when a material change occurs (including classification changes), there is an increased need for transparent discussion of the basis for the new Ore Reserve estimate in order that investors are appropriately informed of the basis for the changes. As noted in Clauses 4 and 5 the benchmark of Materiality is that which an investor or their advisers would reasonably expect to see explicit comment on from the Competent Person, thus the reporting of all criteria in Table 1 on an 'if not, why not' basis is required.

    The Code specifies reporting against relevant sections of Table 1 in this Clause. This may be satisfied by reporting against section 4 on the presumption that matters related to sections 1, 2 and 3 will already have been included in a still current Public Report and this Report can be referenced. If this is not the case then these sections are also relevant and should be included in the Public Report.

    The Technical summary based against Table 1 criteria should be presented as an appendix to the Public Report.

    Where there are as yet unresolved issues potentially impacting the reliability of, or confidence in, a statement of Ore Reserves (for example, limited geotechnical information, complex orebody metallurgy, uncertainty in the permitting process, etc) those unresolved issues should also be reported.

    If there is doubt about what should be reported, it is better to err on the side of providing too much information rather than too little.

    Uncertainties in any of the criteria listed in Table 1 that could lead to under- or over- statement of Ore Reserves should be disclosed.

Ore Reserve estimates are sometimes reported after adjustment from reconciliation with production data. Such adjustments should be clearly stated in a Public Report of Ore Reserves and the nature of the adjustment or modification described.

36. In situations where figures for both Mineral Resources and Ore Reserves are reported, a statement must be included in the report which clearly indicates whether the Mineral Resources are inclusive of, or additional to the Ore Reserves.

    Ore Reserve estimates must not be aggregated with Mineral Resource estimates to report a single combined figure.

    In some situations there are reasons for reporting Mineral Resources inclusive of Ore Reserves and in other situations for reporting Mineral Resources additional to Ore Reserves. It must be made clear which form of reporting has been adopted. Appropriate forms of clarifying statements may be:

    - *'The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce the Ore Reserves.' or*
    - *'The Measured and Indicated Mineral Resources are additional to the Ore Reserves.'*

    In the former case, if any Measured and Indicated Mineral Resources have not been modified to produce Ore Reserves for economic or other reasons, the relevant details of these unmodified Mineral Resources should be included in the report. This is to assist the reader of the report in making a judgement of the likelihood of the unmodified Measured and Indicated Mineral Resources eventually being converted to Ore Reserves.

    Inferred Mineral Resources are by definition generally additional to Ore Reserves except where included as dilution in the Ore Reserves.

    For reasons stated in the guidelines to Clause 34 and in this paragraph, the reported Ore Reserve estimates must not be aggregated with the reported Mineral Resource estimates (eg in graphs, figures or tables). The resulting total is misleading and is capable of being misunderstood or of being misused to give a false impression of a company's prospects.

Technical Studies

37. These definitions are included in the Code to provide clarity on what is expected when reporting using these terms. The definition of a Scoping Study has been included because of the common usage of the term in Public Reports. However attention is drawn to the requirement for a Pre-Feasibility Study or a Feasibility study to have been completed for the Public Reporting of an Ore Reserve in Clause 29. An Ore Reserve must not be reported based on the completion of a Scoping Study.

38. **A Scoping Study is an order of magnitude technical and economic study of the potential viability of Mineral Resources. It includes appropriate assessments of realistically assumed Modifying Factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that progress to a Pre-Feasibility Study can be reasonably justified.**

    A Scoping Study must not be used as the basis for estimation of Ore Reserves.

    If the outcome of a Scoping Study is partially supported by Inferred Mineral Resources and/or an Exploration Target, the Public Report must state both the proportion and relative sequencing of the Inferred Mineral Resources and/or an Exploration Target within the Scoping Study.

    For all Scoping Studies, the entity must include a cautionary statement in the same paragraph as, or immediately following, the disclosure of the Scoping Study.

    An example cautionary statement follows:

    'The Scoping Study referred to in this report is based on low-level technical and economic assessments, and is insufficient to support estimation of Ore Reserves or to provide assurance of an economic development case at this stage, or to provide certainty that the conclusions of the Scoping Study will be realised.'

In discussing 'reasonable prospects for eventual economic extraction' in Clause 20, the Code requires an assessment (albeit preliminary) in respect of all matters likely to influence the prospect of economic extraction including the approximate mining parameters by the Competent Person. While a Scoping Study may provide the basis for that assessment, the Code does not require a Scoping Study to have been completed to report a Mineral Resource.

Scoping Studies are commonly the first economic evaluation of a project undertaken and may be based on a combination of directly gathered project data together with assumptions borrowed from similar deposits or operations to the case envisaged. They are also commonly used internally by companies for comparative and planning purposes. Reporting the general results of a Scoping Study needs to be undertaken with care to ensure there is no implication that Ore Reserves have been established or that economic development is assured. In this regard it may be appropriate to indicate the Mineral Resource inputs to the Scoping Study and the processes applied, but it is not appropriate to report the diluted tonnes and grade as if they were Ore Reserves.

While initial mining and processing cases may have been developed during a Scoping Study, it must not be used to allow an Ore Reserve to be developed.

39. **A Preliminary Feasibility Study (Pre-Feasibility Study) is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resources may be converted to an Ore Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study.**

As noted in Clause 29, formal assessment of all Modifying Factors is required in order to determine how much available Measured and Indicated Mineral Resources can be converted to Ore Reserves.

A Pre-Feasibility Study will consider the application and description of all Modifying factors (as outlined in Table 1, section 4) to demonstrate economic viability and to support an Ore Reserve Public Report. The Pre-Feasibility Study will identify the preferred mining, processing, and infrastructure requirements and capacities, but will not yet have finalised these matters. Detailed assessments of environmental and socio-economic impacts and requirements will also be well advanced. The Pre-Feasibility Study will highlight areas that require further refinement within the final study stage.

40. **A Feasibility Study is a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a Pre-Feasibility Study.**

The Code does not require that a full Feasibility Study has been undertaken to convert Mineral Resources to Ore Reserves, but it does require that at least a Pre-Feasibility Study will have been carried out that will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.

Terms such as "Bankable Feasibility Study" and "Definitive Feasibility Study" are noted as being equivalent to a Feasibility Study as defined in this Clause.

A Feasibility Study is of a higher level of confidence than a Pre-Feasibility Study and would normally contain mining, infrastructure and process designs completed with sufficient rigour to serve as the basis for an investment decision or to support project financing. Social, environmental and governmental

approvals, permits and agreements will be in place, or will be approaching finalisation within the expected development timeframe. The Feasibility Study will contain the application and description of all Modifying factors (as outlined in Table 1, section 4) in a more detailed form than in the Pre-Feasibility Study, and may address implementation issues such as detailed mining schedules, construction ramp up, and project execution plans.

Reporting of Mineralised Fill, Remnants, Pillars, Low Grade Mineralisation, Stockpiles, Dumps and Tailings

41. The Code applies to the reporting of all potentially economic mineralised material. This can include mineralised fill, remnants, pillars, low grade mineralisation, stockpiles, dumps and tailings (remnant materials) where there are reasonable prospects for eventual economic extraction in the case of Mineral Resources, and where extraction is reasonably justifiable in the case of Ore Reserves. Unless otherwise stated, all other Clauses of the Code (including Figure 1) apply.

Any mineralised material as described in this Clause can be considered to be similar to in situ mineralisation for the purposes of reporting Mineral Resources and Ore Reserves. Judgements about the mineability of such mineralised material should be made by professionals with relevant experience.

If there are no reasonable prospects for the eventual economic extraction of all or part of the mineralised material as described in this Clause, then this material cannot be classified as either Mineral Resources or Ore Reserves. If some portion of the mineralised material is currently sub-economic, but there is a reasonable expectation that it will become economic, then this material may be classified as a Mineral Resource. If technical and economic studies have demonstrated that economic extraction could reasonably be justified under realistically assumed conditions, then the material may be classified as an Ore Reserve.

The above guidelines apply equally to low-grade in situ mineralisation, sometimes referred to as 'mineralised waste' or 'marginal grade material', and often intended for stockpiling and treatment towards the end of mine life. For clarity of understanding, it is recommended that tonnage and grade estimates of such material be itemised separately in Public Reports, although they may be aggregated with total Mineral Resource and Ore Reserve figures.

Stockpiles are defined to include both surface and underground stockpiles, including broken ore in stopes, and can include ore currently in the ore storage system. Mineralised material in the course of being processed (including leaching), if reported, should be reported separately.

Reporting of Coal Resources and Reserves

42. Clauses 42 to 44 of the Code address matters that relate specifically to the Public Reporting of Coal Resources and Coal Reserves. Unless otherwise stated, Clauses 1 to 41 and Clause 51 of this Code (including Figure 1) apply. Table 1 should be considered when reporting on Coal Resources and Reserves.

For purposes of Public Reporting, the requirements for coal are those for other commodities with the replacement of terms such as 'mineral' by 'coal' and 'grade' by 'quality'.

For guidance on the estimation of Coal Resources and Reserves and on statutory reporting not primarily intended for providing information to the investing public, readers are referred to the 'Australian Guidelines for Estimating and Reporting of Inventory Coal, Coal Resources and Coal Reserves' or its successor document as published from time to time by the Coalfields Geology Council of New South Wales and the Queensland Resources Council. These guidelines do not override the provisions and intentions of the JORC Code for Public Reporting. Competent Persons should as always exercise their judgement in the application of these guidelines to ensure they are appropriate to the circumstances being reported. They may not be appropriate for use in all situations in Australia or overseas.

Because of its impact on planning and land use, governments may require estimates of inventory coal that are not constrained by short- to medium-term economic considerations. The JORC Code does not cover such estimates. Refer also to the guidelines to Clauses 6 and 20.

43. The terms 'Mineral Resource(s)' and 'Ore Reserve(s)', and the subdivisions of these as defined above, apply also to coal reporting, but if preferred by the reporting company, the terms 'Coal Resource(s)' and 'Coal Reserve(s)' and the appropriate subdivisions may be substituted.

44. 'Marketable Coal Reserves', representing beneficiated or otherwise enhanced coal product where modifications due to mining, dilution and processing have been considered, must be publicly reported in conjunction with, but not instead of, reports of Coal Reserves. The basis of the predicted yield to achieve Marketable Coal Reserves must be stated.

Since investors need to be informed on the products intended to be sold, reporting of Marketable Coal Reserves is required.

Reference to the terms 'coking coal' or 'metallurgical coal', or any reference to coking properties, should not be made until specific coking properties are demonstrated by analytical results for samples from a deposit.

Reporting of Diamond Exploration Results, Mineral Resources and Ore Reserves

45. Clauses 45 to 48 of the Code address matters that relate specifically to the Public Reporting of Exploration Results, Mineral Resources and Ore Reserves for diamonds and other gemstones. Unless otherwise stated, Clauses 1 to 41 and Clause 51 of this Code (including Figure 1) apply. Table 1 should be considered when reporting Exploration Results, Mineral Resources and Ore Reserves for diamonds and other gemstones.

For the purposes of Public Reporting, the requirements for diamonds and other gemstones are generally similar to those for other commodities with the replacement of terms such as 'mineral' by 'diamond' and 'grade' by 'grade and average diamond value'. The term 'quality' should not be substituted for 'grade,' since in diamond deposits these have distinctly separate meanings. Other industry guidelines on the estimation and reporting of diamond resources and reserves may be useful but will not under any circumstances override the provisions and intentions of the JORC Code.

A number of characteristics of diamond deposits are different from those of, for example, typical metalliferous and coal deposits and therefore require special consideration. These include the generally low mineral content and variability of primary and placer deposits, the particulate nature of diamonds, the specialised requirement for diamond valuation and the inherent difficulties and uncertainties in the estimation of diamond resources and reserves.

46. Reports of diamonds recovered from sampling programmes must provide material information relating to the basis on which the sample is taken, the method of recovery and the recovery of the diamonds. The weight of diamonds recovered may only be omitted from the report when the diamonds are considered to be too small to be of commercial significance. This lower cut-off size should be stated.

The stone size distribution and price of diamonds and other gemstones are critical components of the resource and reserve estimates. At an early exploration stage, sampling and delineation drilling will not usually provide this information, which relies on large diameter drilling and, in particular, bulk sampling.

In order to demonstrate that a resource has reasonable prospects for economic extraction, some description of the likely stone size distribution and price is necessary, however preliminary the analysis of these may be. To determine an Inferred Mineral Resource in simple, single-facies or single-phase deposits, such information may be obtainable by representative large diameter drilling. More often, some form of bulk sampling, such as pitting and trenching, would be employed to provide larger sample parcels.

In order to progress to an Indicated Mineral Resource, and from there to a Probable Ore Reserve, it is likely that much more extensive bulk sampling would be needed to fully determine the stone size distribution and value. Commonly such bulk samples would be obtained by underground development designed to obtain sufficient diamonds to enable a confident estimate of price.

In complex deposits, it may be very difficult to ensure that the bulk samples taken are truly representative of the whole deposit. The lack of direct bulk sampling, and the uncertainty in demonstrating spatial continuity of size and price relationships should be persuasive in determining the appropriate resource category.

47. Where diamond Mineral Resource or Ore Reserve grades (carats per tonne) are based on correlations between the frequency of occurrence of micro-diamonds and of commercial size stones, this must be stated, the reliability of the procedure must be explained and the cut-off sieve size for micro-diamonds reported.

48. For Public Reports dealing with diamond or other gemstone mineralisation, it is a requirement that any reported valuation of a parcel of diamonds or gemstones be accompanied by a statement verifying the independence of the valuation. The valuation must be based on a report from a demonstrably reputable and qualified expert.

    If a valuation of a parcel of diamonds is reported, the weight in carats and the lower cut-off size of the contained diamonds must be stated and the value of the diamonds must be given in US dollars per carat. Where the valuation is used in the estimation of diamond Mineral Resources or Ore Reserves, the valuation must be based on a parcel representative of the size, shape and colour distributions of the diamond population in the deposit.

    Diamond valuations should not be reported for samples of diamonds processed using total liberation methods.

Reporting of Industrial Minerals Exploration Results, Mineral Resources and Ore Reserves

49. Industrial minerals are covered by the JORC Code if they meet the criteria set out in Clauses 6 and 7 of the Code. For the purpose of the JORC Code, industrial minerals can be considered to cover commodities such as kaolin, phosphate, limestone, talc, etc.

    For minerals that are defined by a specification, the Mineral Resource or Ore Reserve estimation must be reported in terms of the mineral or minerals on which the project is to be based and must include the specification of those minerals.

    When reporting information and estimates for industrial minerals, the key principles and purpose of the JORC Code apply and should be borne in mind. Assays may not always be relevant, and other quality criteria may be more applicable. If criteria such as deleterious minerals or physical properties are of more relevance than the composition of the bulk mineral itself, then they should be reported accordingly.

    The factors underpinning the estimation of Mineral Resources and Ore Reserves for industrial minerals are the same as those for other deposit types covered by the JORC Code. It may be necessary, prior to the reporting of a Mineral Resource or Ore Reserve, to take particular account of certain key characteristics or qualities such as likely product specifications, proximity to markets and general product marketability.

    For some industrial minerals, it is common practice to report the saleable product rather than the 'as-mined' product, which is traditionally regarded as the Ore Reserve. JORC's preference is that, if the saleable product is reported, it should be in conjunction with, not instead of, reporting of the Ore Reserve. However, it is recognised that commercial sensitivities may not always permit this preferred style of reporting. It is important that, in all situations where the saleable product is reported, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.

Some industrial mineral deposits may be capable of yielding products suitable for more than one application and/or specification. If considered material by the reporting company, such multiple products should be quantified either separately or as a percentage of the bulk deposit.

Reporting of Metal Equivalents

50. The reporting of Exploration Results, Mineral Resources or Ore Reserves for polymetallic deposits in terms of metal equivalents (a single equivalent grade of one major metal) must show details of all material factors contributing to the net value derived from each constituent.

The following minimum information must accompany any Public Report that includes reference to metal equivalents, in order to conform to the principles of Transparency, Materiality and Competence, as set out in Clause 4:

- individual grades for all metals included in the metal equivalent calculation,
- assumed commodity prices for all metals (Companies should disclose the actual assumed prices. It is not sufficient to refer to a spot price without disclosing the price used in calculating the metal equivalent. However where the actual prices used are commercially sensitive, the company must disclose sufficient information, perhaps in narrative rather than numerical form, for investors to understand the methodology it has used to determine these prices),
- assumed metallurgical recoveries for all metals and discussion of the basis on which the assumed recoveries are derived (metallurgical test work, detailed mineralogy, similar deposits, etc),
- a clear statement that it is the company's opinion that all the elements included in the metal equivalents calculation have a reasonable potential to be recovered and sold, and
- the calculation formula used.

In most circumstances, the metal chosen for reporting on an equivalent basis should be the one that contributes most to the metal equivalent calculation. If this is not the case, a clear explanation of the logic of choosing another metal must be included in the report.

Estimates of metallurgical recoveries for each metal must be used to calculate meaningful metal equivalents.

Reporting on the basis of metal equivalents is not appropriate if metallurgical recovery information is not available or able to be estimated with reasonable confidence.

For many projects at the Exploration Results stage, metallurgical recovery information may not be available or able to be estimated with reasonable confidence. In such cases reporting of metal equivalents may be misleading.

Reporting of *In Situ* or In Ground Valuations

51. The publication of *in situ* or 'in ground' financial valuations breaches the principles of the Code (as set out in Clause 4) as the use of these terms is not transparent and lacks material information. It is also contrary to the intent of Clause 28 of the Code. Such *in situ* or in ground financial valuations must not be reported by companies in relation to Exploration Results, Mineral Resources or deposit size.

The use of such financial valuations (usually quoted in dollars) has little or no relationship to economic viability, value or potential returns to investors.

These financial valuations can imply economic viability without the apparent consideration of the application of the Modifying Factors, (Clause 12 and Clauses 29 to 36), in particular, the mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social, and governmental factors.

In determining project viability it is necessary to include all reasonable Modifying Factors (Clauses 29 to 36) to determine the economic value that can be extracted from the mineralisation.

Many deposits with large in ground values are never developed because they have a negative Net Present Value when all reasonable Modifying Factors are considered.

By reporting such financial valuations as a component of Exploration Results or when evaluating deposits that commonly include large portions of Inferred Mineral Resources, companies are not necessarily representing the economic viability of the project, or the net economic value that can be extracted from the mineralisation.

Table 1 Checklist of Assessment and Reporting Criteria

Table 1 is a checklist or reference for use by those preparing Public Reports on Exploration Results, Mineral Resources and Ore Reserves.

In the context of complying with the Principles of the Code, comment on the relevant sections of Table 1 should be provided on an 'if not, why not' basis within the Competent Person's documentation and must be provided where required according to the specific requirements of Clauses 19, 27 and 35 for significant projects in the Public Report. This is to ensure that it is clear to the investor whether items have been considered and deemed of low consequence or have yet to be addressed or resolved.

As always, relevance and Materiality are overriding principles that determine what information should be publicly reported and the Competent Person must provide sufficient comment on all matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported. This is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results or an estimate of Mineral Resources or Ore Reserves.

The order and grouping of criteria in Table 1 reflects the normal systematic approach to exploration and evaluation. Criteria in section 1 'Sampling Techniques and Data' apply to all succeeding sections. In the remainder of the table, criteria listed in preceding sections would often also apply and should be considered when estimating and reporting.

It is the responsibility of the Competent Person to consider all the criteria listed below and any additional criteria that should apply to the study of a particular project or operation. The relative importance of the criteria will vary with the particular project and the legal and economic conditions pertaining at the time of determination.

In some cases it will be appropriate for a Public Report to exclude some commercially sensitive information. A decision to exclude commercially sensitive information would be a decision for the company issuing the Public Report, and such a decision should be made in accordance with any relevant corporations regulations in that jurisdiction. For example, in Australia decisions to exclude commercially sensitive information need to be made in accordance with the Corporations Act 2001 and the ASX listing rules and guidance notes.

In cases where commercially sensitive information is excluded from a Public Report, the report should provide summary information (for example the methodology used to determine economic assumptions where the numerical value of those assumptions are commercially sensitive) and context for the purpose of informing investors or potential investors and their advisers.

JORC TABLE 1

Section 1 Sampling Techniques and Data

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

Criteria	Explanation
Sampling techniques	• *Nature and quality of sampling (eg 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 (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.*

Criteria	Explanation
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).*
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.*
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.*
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.*
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 (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*
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.*
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.*
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.*

Criteria	Explanation
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.*
Sample security	• *The measures taken to ensure sample security.*
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*

Section 2 Reporting of Exploration Results

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

Criteria	Explanation
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.*
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*
Geology	• *Deposit type, geological setting and style of mineralisation.*

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*
	  • *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 (eg 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.*
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 (eg 'down hole length, true width not known').*
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.*

Criteria	Explanation
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.*
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.*
Further work	• *The nature and scale of planned further work (eg 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.*

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	Explanation
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used.*
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.*

Criteria	Explanation
Estimation and modelling techniques (continued)	• *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.* • *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*
Audits or reviews.	• *The results of any audits or reviews of Mineral Resource estimates.*

Criteria	Explanation
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*

Section 4 Estimation and Reporting of Ore Reserves

(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section.)

Criteria	Explanation
Mineral Resource estimate for conversion to Ore Reserves	• *Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve.* • *Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.*
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*
Study status	• *The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves.* • *The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.*
Cut-off parameters	• *The basis of the cut-off grade(s) or quality parameters applied.*
Mining factors or assumptions	• *The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).* • *The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.* • *The assumptions made regarding geotechnical parameters (eg pit slopes, stope sizes, etc), grade control and pre-production drilling.* • *The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).* • *The mining dilution factors used.* • *The mining recovery factors used.* • *Any minimum mining widths used.* • *The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.* • *The infrastructure requirements of the selected mining methods.*

Criteria	Explanation
Metallurgical factors or assumptions	• *The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.* • *Whether the metallurgical process is well-tested technology or novel in nature.* • *The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied.* • *Any assumptions or allowances made for deleterious elements.* • *The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole.* • *For minerals that are defined by a specification, has the ore reserve estimation been based on the appropriate mineralogy to meet the specifications?*
Environmental	• *The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.*
Infrastructure	• *The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.*
Costs	• *The derivation of, or assumptions made, regarding projected capital costs in the study.* • *The methodology used to estimate operating costs.* • *Allowances made for the content of deleterious elements.* • *The source of exchange rates used in the study.* • *Derivation of transportation charges.* • *The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.* • *The allowances made for royalties payable, both Government and private.*
Revenue factors	• *The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.* • *The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.*
Market assessment	• *The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.* • *A customer and competitor analysis along with the identification of likely market windows for the product.* • *Price and volume forecasts and the basis for these forecasts.* • *For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.*
Economic	• *The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.* • *NPV ranges and sensitivity to variations in the significant assumptions and inputs.*
Social	• *The status of agreements with key stakeholders and matters leading to social licence to operate.*

Criteria	Explanation
Other	• *To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves:* • *Any identified material naturally occurring risks.* • *The status of material legal agreements and marketing arrangements.* • *The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.*
Classification	• *The basis for the classification of the Ore Reserves into varying confidence categories.* • *Whether the result appropriately reflects the Competent Person's view of the deposit.* • *The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).*
Audits or reviews	• *The results of any audits or reviews of Ore Reserve estimates.*
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.* • *It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*

Section 5 Estimation and Reporting of Diamonds and Other Gemstones

(Criteria listed in other relevant sections also apply to this section. Additional guidelines are available in the 'Guidelines for the Reporting of Diamond Exploration Results' issued by the Diamond Exploration Best Practices Committee established by the Canadian Institute of Mining, Metallurgy and Petroleum.)

Criteria	Explanation
Indicator minerals	• *Reports of indicator minerals, such as chemically/physically distinctive garnet, ilmenite, chrome spinel and chrome diopside, should be prepared by a suitably qualified laboratory.*
Source of diamonds	• *Details of the form, shape, size and colour of the diamonds and the nature of the source of diamonds (primary or secondary) including the rock type and geological environment.*
Sample collection	• *Type of sample, whether outcrop, boulders, drill core, reverse circulation drill cuttings, gravel, stream sediment or soil, and purpose (eg large diameter drilling to establish stones per unit of volume or bulk samples to establish stone size distribution).* • *Sample size, distribution and representivity.*

Criteria	Explanation
Sample treatment	• *Type of facility, treatment rate, and accreditation.* • *Sample size reduction. Bottom screen size, top screen size and re-crush.* • *Processes (dense media separation, grease, X-ray, hand-sorting, etc).* • *Process efficiency, tailings auditing and granulometry.* • *Laboratory used, type of process for micro diamonds and accreditation.*
Carat	• *One fifth (0.2) of a gram (often defined as a metric carat or MC).*
Sample grade	• *Sample grade in this section of Table 1 is used in the context of carats per units of mass, area or volume.* • *The sample grade above the specified lower cut-off sieve size should be reported as carats per dry metric tonne and/or carats per 100 dry metric tonnes. For alluvial deposits, sample grades quoted in carats per square metre or carats per cubic metre are acceptable if accompanied by a volume to weight basis for calculation.* • *In addition to general requirements to assess volume and density there is a need to relate stone frequency (stones per cubic metre or tonne) to stone size (carats per stone) to derive sample grade (carats per tonne).*
Reporting of Exploration Results	• *Complete set of sieve data using a standard progression of sieve sizes per facies. Bulk sampling results, global sample grade per facies. Spatial structure analysis and grade distribution. Stone size and number distribution. Sample head feed and tailings particle granulometry.* • *Sample density determination.* • *Per cent concentrate and undersize per sample.* • *Sample grade with change in bottom cut-off screen size.* • *Adjustments made to size distribution for sample plant performance and performance on a commercial scale.* • *If appropriate or employed, geostatistical techniques applied to model stone size, distribution or frequency from size distribution of exploration diamond samples.* • *The weight of diamonds may only be omitted from the report when the diamonds are considered too small to be of commercial significance. This lower cut-off size should be stated.*
Grade estimation for reporting Mineral Resources and Ore Reserves	• *Description of the sample type and the spatial arrangement of drilling or sampling designed for grade estimation.* • *The sample crush size and its relationship to that achievable in a commercial treatment plant.* • *Total number of diamonds greater than the specified and reported lower cut-off sieve size.* • *Total weight of diamonds greater than the specified and reported lower cut-off sieve size.* • *The sample grade above the specified lower cut-off sieve size.*

Value estimation	• *Valuations should not be reported for samples of diamonds processed using total liberation method, which is commonly used for processing exploration samples.*
	• *To the extent that such information is not deemed commercially sensitive, Public Reports should include:*
	  • *diamonds quantities by appropriate screen size per facies or depth.*
	  • *details of parcel valued.*
	  • *number of stones, carats, lower size cut-off per facies or depth.*
	• *The average $/carat and $/tonne value at the selected bottom cut-off should be reported in US Dollars. The value per carat is of critical importance in demonstrating project value.*
	• *The basis for the price (eg dealer buying price, dealer selling price, etc).*
	• *An assessment of diamond breakage.*

Criteria	Explanation
Security and integrity	• *Accredited process audit.* • *Whether samples were sealed after excavation.* • *Valuer location, escort, delivery, cleaning losses, reconciliation with recorded sample carats and number of stones.* • *Core samples washed prior to treatment for micro diamonds.* • *Audit samples treated at alternative facility.* • *Results of tailings checks.* • *Recovery of tracer monitors used in sampling and treatment.* • *Geophysical (logged) density and particle density.* • *Cross validation of sample weights, wet and dry, with hole volume and density, moisture factor.*
Classification	• *In addition to general requirements to assess volume and density there is a need to relate stone frequency (stones per cubic metre or tonne) to stone size (carats per stone) to derive grade (carats per tonne). The elements of uncertainty in these estimates should be considered, and classification developed accordingly.*

Appendix 1 Generic Terms and Equivalents

Throughout the Code, certain words are used in a general sense when a more specific meaning might be attached to them by particular commodity groups within the industry. In order to avoid unnecessary duplication, a non-exclusive list of generic terms is tabulated below together with other terms that may be regarded as synonymous for the purposes of this document.

Generic Term	Synonyms and similar terms	Intended generalised meaning
assumption	*value judgements*	*The Competent Person in general makes value judgements when making assumptions regarding information not fully supported by test work.*
Competent Person	*Qualified Person (Canada), Qualified Competent Person (Chile)*	*Refer to the Clause 11 of the Code for the definition of a Competent Person. Any reference in the Code to the singular (a Competent Person) includes a reference to the plural (Competent Persons). It is noted that reporting in accordance with the Code is commonly a team effort.*
cut-off grade	*product specifications*	*The lowest grade, or quality, of mineralised material that qualifies as economically mineable and available in a given deposit. May be defined on the basis of economic evaluation, or on physical or chemical attributes that define an acceptable product specification.*
grade	*quality, assay, analysis (that is value returned by the analysis)*	*Any physical or chemical measurement of the characteristics of the material of interest in samples or product. Note that the term quality has special meaning for diamonds and other gemstones. The units of measurement should be stated when figures are reported.*
metallurgy	*processing, beneficiation, preparation, concentration*	*Physical and/or chemical separation of constituents of interest from a larger mass of material. Methods employed to prepare a final marketable product from material as mined. Examples include screening, flotation, magnetic separation, leaching, washing, roasting, etc.* *Processing is generally regarded as broader than metallurgy and may apply to non-metallic materials where the term metallurgy would be inappropriate.*
mineralisation	*type of deposit, orebody, style of mineralisation.*	*Any single mineral or combination of minerals occurring in a mass, or deposit, of economic interest. The term is intended to cover all forms in which mineralisation might occur, whether by class of deposit, mode of occurrence, genesis or composition.*
mining	*quarrying*	*All activities related to extraction of metals, minerals and gemstones from the earth whether surface or underground, and by any method (eg quarries, open cast, open cut, solution mining, dredging, etc)*
Ore Reserves	*Mineral Reserves*	*'Ore Reserves' is preferred under the JORC Code but 'Mineral Reserves' is in common use in other countries and is generally accepted. Other descriptors can be used to clarify the meaning (eg Coal Reserves, Diamond Reserves, etc).*
recovery	*yield*	*The percentage of material of interest that is extracted during mining and/or processing. A measure of mining or processing efficiency.*
significant project	*material project*	*An exploration or mineral development project that has or could have a significant influence on the market value or operations of the listed company, and/or has specific prominence in Public Reports and announcements.*
tonnage	*quantity, volume*	*An expression of the amount of material of interest irrespective of the units of measurement (which should be stated when figures are reported).*

Appendix 2 Competent Person's Consent Form

Companies reporting Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves are reminded that while a public report is the responsibility of the company acting through its Board of Directors, Clause 9 requires that any such report 'must be based on, and fairly reflect the information and supporting documentation prepared by a Competent Person or Persons'. Clause 9 also requires that the 'report shall be issued with the prior written consent of the Competent Person or Persons as to the form and context in which it appears'.

In order to assist Competent Persons and companies to comply with these requirements, and to emphasise the need for companies to obtain the prior written consent of each Competent Person for their material to be included in the form and context in which it appears in the public report, ASX, together with JORC, have developed a Competent Person's Consent Form that incorporates the requirements of the JORC Code.

The completion of a consent form, whether in the format provided or in an equivalent form, is recommended as good practice and provides readily available evidence that the required prior written consent has been obtained.

Having the consent form witnessed by a peer professional society member is considered leading practice and is strongly encouraged.

The Competent Person's Consent Form(s), or other evidence of the Competent Person's written consent, should be retained by the company and the Competent Person to ensure that the written consent can be promptly provided if required.

[Letterhead of Competent Person or Competent Person's employer]

Competent Person's Consent Form

Pursuant to the requirements of ASX Listing Rules 5.6, 5.22 and 5.24 and Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

Report name

_____

(Insert name or heading of Report to be publicly released) ('Report')

_____

(Insert name of company releasing the Report)

_____

(Insert name of the deposit to which the Report refers)

If there is insufficient space, complete the following sheet and sign it in the same manner as this original sheet.

_____

(Date of Report)

Statement

I/We,

_____

(Insert full name(s))

confirm that I am the Competent Person for the Report and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code 2012 Edition, having five years experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list promulgated by ASX from time to time.
- I have reviewed the Report to which this Consent Statement applies.

I/We am a full time employee of

_____

(Insert company name)

Or

I am a consultant working for

_____

(Insert company name)

and have been engaged by

_____

(Insert company name)

to prepare the documentation for

_____

(Insert deposit name)

on which the Report is based, for the period ended

_____

(Insert date of Resource/Reserve statement)

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Exploration Targets, Exploration Results, Mineral Resources and/or Ore Reserves (*select as appropriate*).

Consent

I consent to the release of the Report and this Consent Statement by the directors of:

_____

(Insert reporting company name)

_____ _____

Signature of Competent Person Date:

_____ _____

Professional Membership:
(insert organisation name)

Membership Number:

_____ _____

Signature of Witness:

Print Witness Name and Residence:
(eg town/suburb)

Additional deposits covered by the Report for which the Competent Person signing this form is accepting responsibility:

Additional Reports related to the deposit for which the Competent Person signing this form is accepting responsibility:

Signature of Competent Person

Date:

Professional Membership:
(insert organisation name)

Membership Number:

Signature of Witness:

Print Witness Name and Residence:
(eg town/suburb)

Appendix 3 Compliance Statements

Appropriate forms of compliance statements should be as follows (delete bullet points which do not apply).

For Public Reports of Exploration Targets, initial or materially changed reports of Exploration Results, Mineral Resources or Ore Reserves or company annual reports:

- *If the required information is in the report:*

  'The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by (insert name of Competent Person), a Competent Person who is a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list that is posted on the ASX website from time to time (select as appropriate and insert the name of the professional organisation of which the Competent Person is a member and the Competent Person's grade of membership).'

- *If the required information is included in an attached statement:*

  'The information in the report to which this statement is attached that relates to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by (insert name of Competent Person), a Competent Person who is a Member or Fellow of The Australasian Institute of Mining and Metallurgy or the Australian Institute of Geoscientists or a 'Recognised Professional Organisation' (RPO) included in a list posted on the ASX website from time to time (select as appropriate and insert the name of the professional organisation of which the Competent Person is a member and the Competent Person's grade of membership).'

- *If the Competent Person is a full-time employee of the company:*

  '(Insert name of Competent Person) is a full-time employee of the company.'

- *If the Competent Person is not a full-time employee of the company:*

  '(Insert name of Competent Person) is employed by (insert name of Competent Person's employer).'

- *The full nature of the relationship between the Competent Person and the reporting Company must be declared together with the Competent Person's details. This declaration must outline and clarify any issue that could be perceived by investors as a conflict of interest.*

- For all reports:

  '(Insert name of Competent Person) 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 Exploration Results, Mineral Resources and Ore Reserves'. (Insert name of Competent Person) consents to the inclusion in the report of the matters based on his (or her) information in the form and context in which it appears.'

For any subsequent Public Report based on a previously issued Public Report that refers to those Exploration Results or estimates of Mineral Resources or Ore Reserves:

Where a Competent Person has previously issued the written consent to the inclusion of their findings in a report, a company re-issuing that information to the Public whether in the form of a presentation or a subsequent announcement must, state the report name, date and reference the location of the original source Public Report for public access.

- *'The information is extracted from the report entitled (name report) created on (date) and is available to view on (website name). The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of*

estimates of Mineral Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.'

Companies should be aware this exemption does not apply to subsequent reporting of information in the company annual report.

Appendix 4 List of Acronyms

AIG	Australian Institute of Geoscientists
ASX	Australian Securities Exchange
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CMMI	Council of Mining and Metallurgical Institutions
CRIRSCO	Committee for Mineral Reserves International Reporting Standards
ICMM	International Council on Mining and Metals
JORC	Joint Ore Reserves Committee
JORC Code	Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves
NAEN	The Russian Society of Subsoil Use Experts
NPV	Net Present Value
NROs	National Reporting Organisations
NZX	New Zealand Stock Exchange
UN-ECE	United Nations Economic Commission for Europe
UNFC	United Nations Framework Classification
PERC	Pan-European Reserves & Resources Reporting Committee
RPO	Recognised Professional Organisation
SAMCODES	South African Mineral Codes
SME	Society for Mining, Metallurgy & Exploration (USA)
The AusIMM	The Australasian Institute of Mining and Metallurgy
VALMIN Code	Code and Guidelines for Technical Assessment and/or Valuation of Mineral and Petroleum Assets and Mineral and Petroleum Securities for Independent Expert Reports

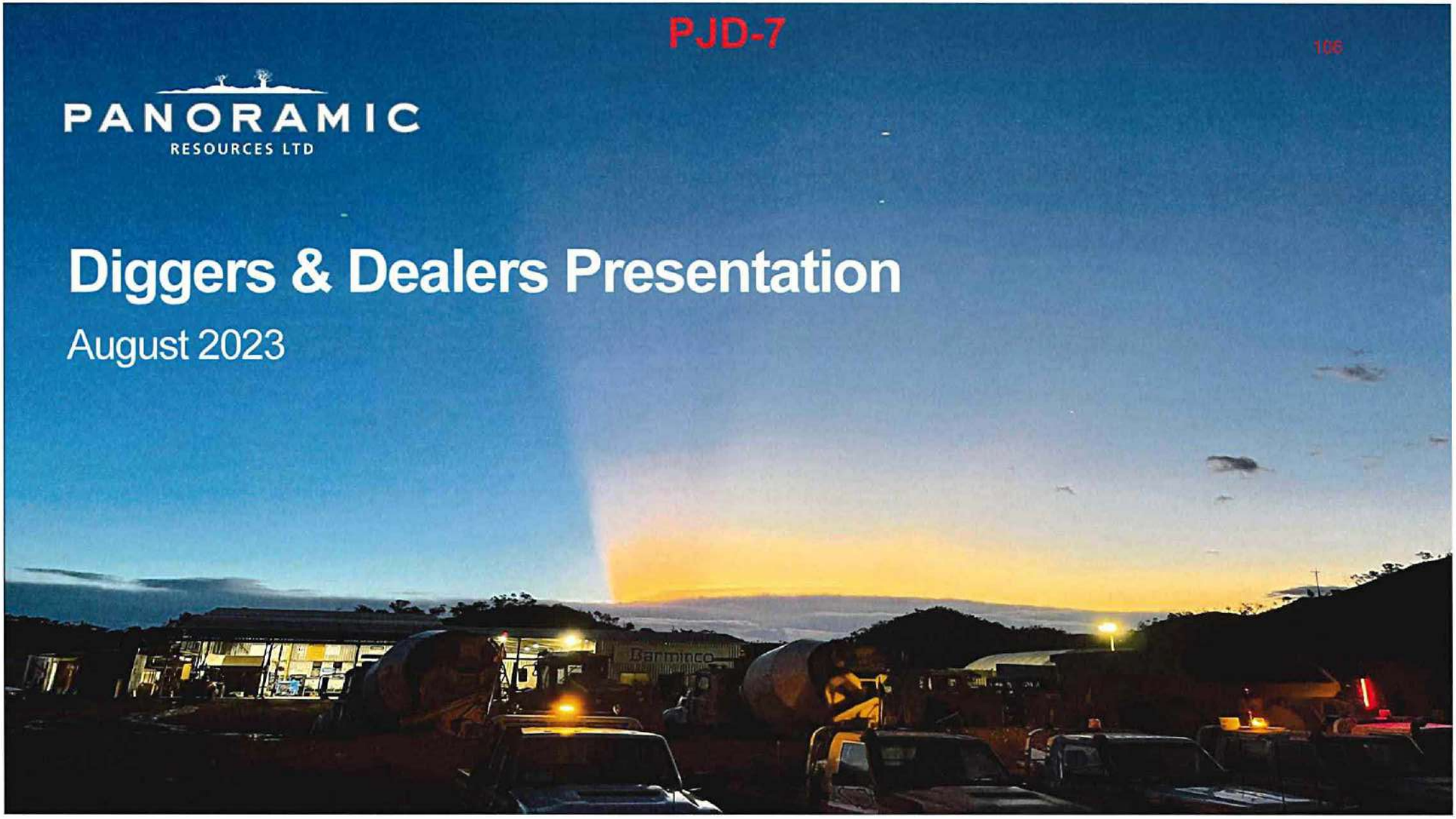
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106

PANORAMIC
RESOURCES LTD

Diggers & Dealers Presentation

August 2023



Important Notices and Disclaimer

PANORAMIC RESOURCES LTD

Forward-looking statements

This Presentation contains forward looking statements about the Company. Often, but not always, forward looking statements can be identified by the use of forward looking words such as "may", "will", "expect", "propose", "believe", "intend", "plan", "estimate", "anticipate", "target", "continue", and "guidance", or other similar words and may include, without limitation, statements regarding the Company's intent, belief or expectations, plans, strategies and objectives of management, future anticipated exploration and project development, production, processing or expected costs, the outcome and effects of the Equity Raising and the future operations of the Company. To the extent that these materials contain forward looking information, the forward looking information is subject to a number of risk factors, including those generally associated with the nickel industry and as set out Key Risks section of this Presentation.

Any such forward looking statement also inherently involves known and unknown risks, uncertainties and other factors that may cause actual results, performance and achievements to be materially greater or less than estimated. These factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic factors, increased capital costs and operating costs, the speculative nature of exploration and project development (including estimations of resources and reserves, mining and processing, general mining and development operation risks, changes to the regulatory framework within which the Company operates or may in the future operate, environmental conditions including extreme weather conditions, geological and geotechnical events, the recruitment and retention of key personnel, industrial relations issues and litigation).

Any such forward looking statements are also based on assumptions and contingencies which are subject to change and which may ultimately prove to be materially incorrect, as are statements about market and industry trends, which are based on interpretations of current market conditions. Investors should consider the forward looking statements contained in this Presentation in light of those disclosures and not place undue reliance on such statements. The forward looking statements in this Presentation are not guarantees or predictions of future performance and may involve significant elements of subjective judgment, assumptions as to future events that may not be correct, known and unknown risks, uncertainties and other factors, many of which are outside the control of the Company. The forward looking statements are based on information available to the Company as at the date of this Presentation. Except as required by law or regulation (including the ASX Listing Rules), the Company undertakes no obligation to provide any additional or updated information whether as a result of new information, future events or results or otherwise.

No liability

The information contained in this Presentation has been prepared in good faith by the Company. Neither the Underwriters, nor any of their or the Company's respective affiliates, related bodies corporate, directors, officers, partners, advisers, employees and agents (each a Party and together the Parties) have authorised, permitted or caused the issue, lodgement, submission, dispatch or provision of this Presentation in a final form and none of them makes or purports to make any binding statement in this Presentation and there is no statement in this Presentation which is based on any statement by them.

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The Parties take no responsibility for any part of this Presentation, and there is no statement in this Presentation which is based on any statement by any of these persons (except for references to an Underwriters' name), or the Equity Raising and make no recommendations as to whether you or your related parties should participate in the Equity Raising nor do they make any representations or warranties to you concerning the Equity Raising, and you represent, warrant and agree that you have not relied on any statements by the Parties in relation to the Equity Raising.

You undertake that you will not seek to sue or hold the Parties liable in any respect in connection with this Presentation or the Equity Raising (to the maximum extent permitted by law.

Nickel Landscape

Limited opportunities for ASX investors – currently only three ASX-listed nickel producers with Australian assets:

Panoramic Savannah operation[1]	FY24 nickel production guidance: 6,800 to 7,600t Market capitalisation: $120M

The only ASX-listed Australian operating pure-play nickel exposure

IGO (ASX:IGO) Nova and Forrestania operations[2]	FY23 nickel production guidance: 29,000 to 32,500t Market capitalisation: A$10.4B
BHP Nickel West (ASX:BHP) Mount Keith and Leinster[3]	FY23 nickel production guidance: 77,000 to 87,000t Market capitalisation: A$231B

Diversified producers with Australian nickel assets

1. PAN Quarterly Activities Report 26 July 2023
2. IGO June Quarterly Activities Report 31 July 2023
3. BHP Operational Review for the Year ended 30 June 2023

Increasing consolidation and corporate interest

WYLOO METALS → MINCOR RESOURCES NL

WYLOO METALS → NORONT RESOURCES LTD.

BHP → OZ MINERALS

igo → WESTERN AREAS LTD

End users moving quickly to secure long-term supply

VALE + TESLA

BHP + Ford

BHP + TESLA

Savannah Nickel-Copper-Cobalt Project

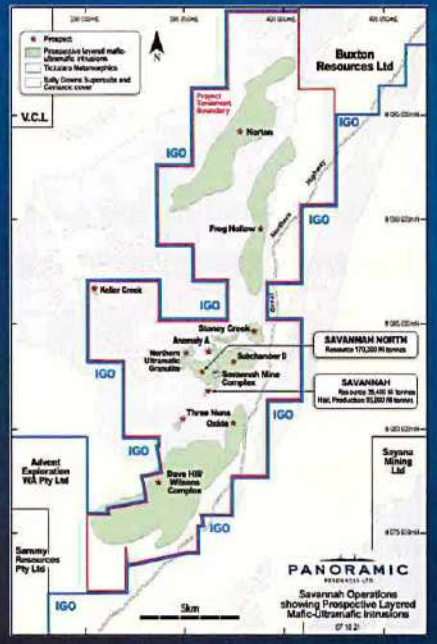
PANORAMIC RESOURCES LTD

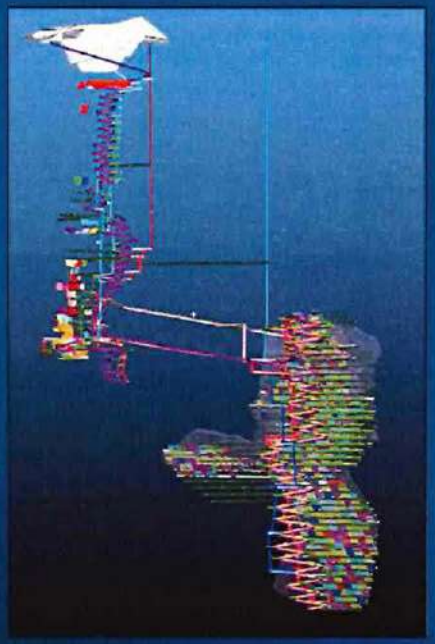
Sulphide rich nickel, copper and cobalt orebody in the Kimberley region of northern Western Australia

Operating Summary

Mineral Resource[1]	13.9Mt @ 1.52% Ni, 0.69% Cu and 0.10% Co
Ore Reserve[1]	8.5Mt @ 1.21% Ni, 0.58% Cu and 0.09% Co
Process Plant Capacity	1mt p.a.
Mine Life	12+ years
Ni production[2]	9,383t p.a.
Cu production[2]	5,056t p.a.
Co production[2]	710t p.a.
All-in cost[2, 3]	A$9.07/lb payable Ni (US$6.35/lb payable Ni)[4]







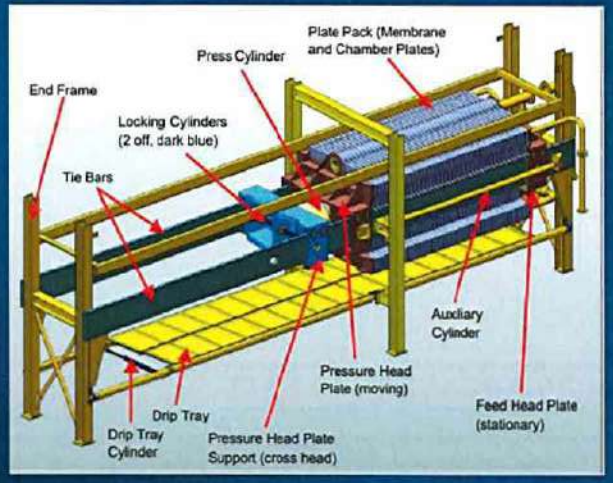
- Mining is largely focused on the Savannah North deposit
- Underground mining undertaken by leading underground mining contractor Barminco
- Conventional processing flowsheet (crushing, grinding, flotation)
- Produces a bulk nickel-copper-cobalt concentrate

[1] Refer to ASX announcement dated 29 September 2022 covering the Savannah Project Mineral Resource and Ore Reserve Statement for detailed assumptions and estimation methodologies.
[2] Mine Plan based from 1 July 2023 and reflects current costs. All other material assumptions and technical parameters underpinning the estimates continue to apply and have not materially changed, including mining method, geotechnical parameters and ore processing.
[3] Includes all mining, processing, general & administrative, freight, concentrate handling, capital expenditure, royalties and by-product credits net of treatment charges.
[4] By-product based on exchange rate of AUD:USD 0.70 and commodity prices of US$8,000/t Cu and US$40,000/t Co.

Short-Term Setbacks Resolved

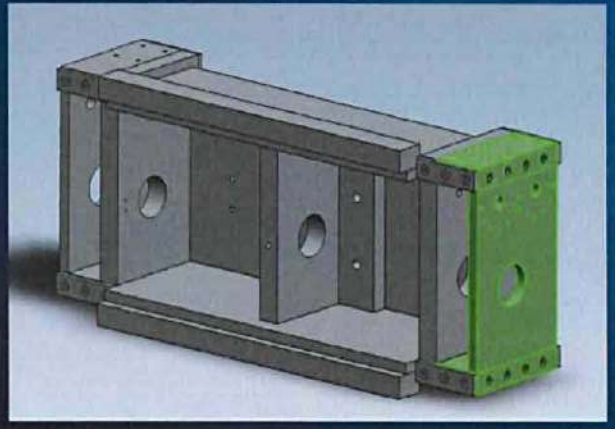
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- Significantly above average rainfall in Q2 / Q3 FY23 caused major damage to transport infrastructure in the East Kimberley (e.g. Fitzroy Crossing bridge irreparably damaged)
  - This severely impacted logistics to Savannah, particularly the ability to transport people and consumables to site
  - **Full access to site has now been restored**
- A failure of the pressure head plate of the concentrate filter press resulted in downtime for the plant from mid-June 2023:
  - Approximately four weeks to rectify and a ~A$20 million revenue impact
  - **A new head plate has been fabricated, installed and was fully operational by 9 July 2023**





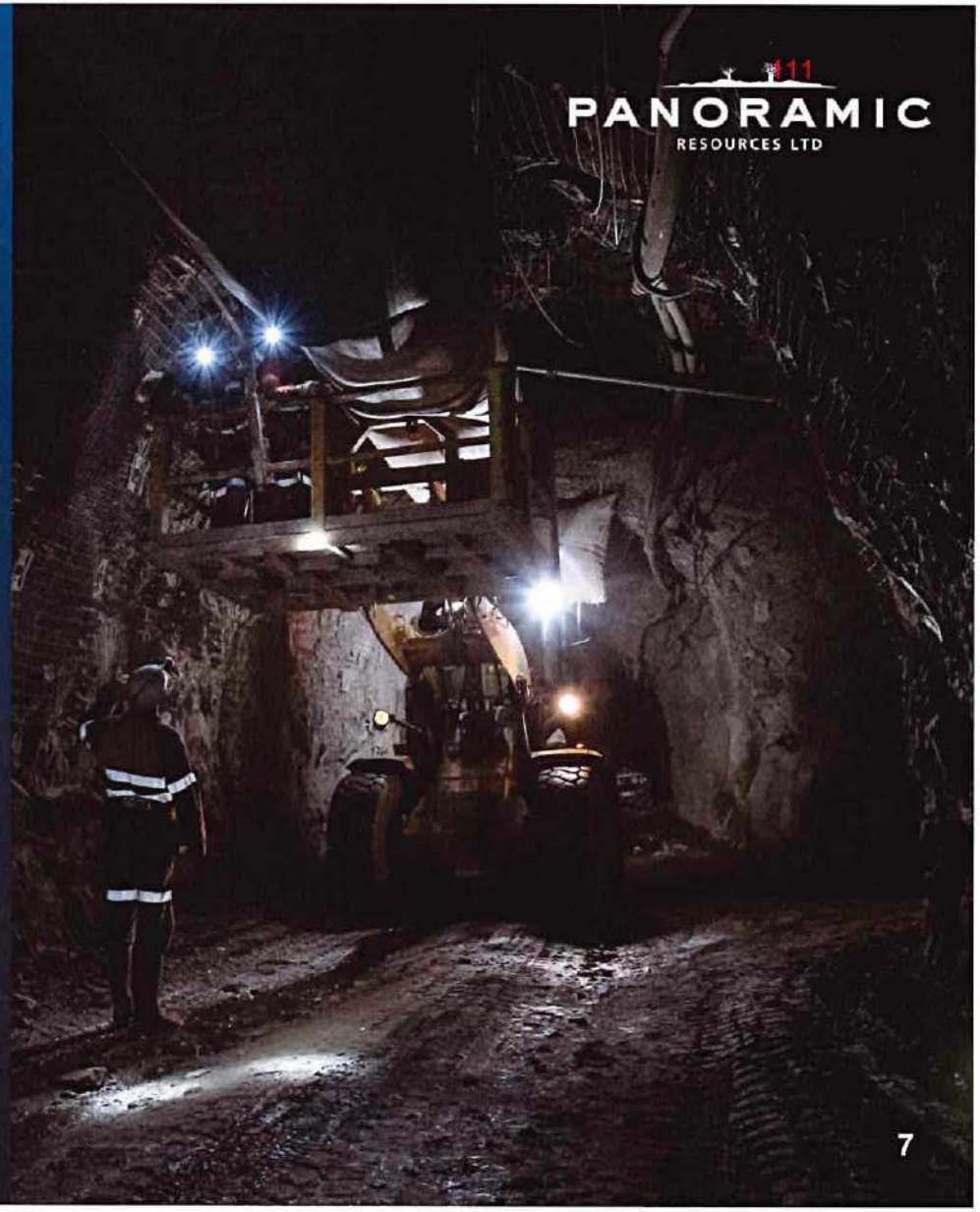




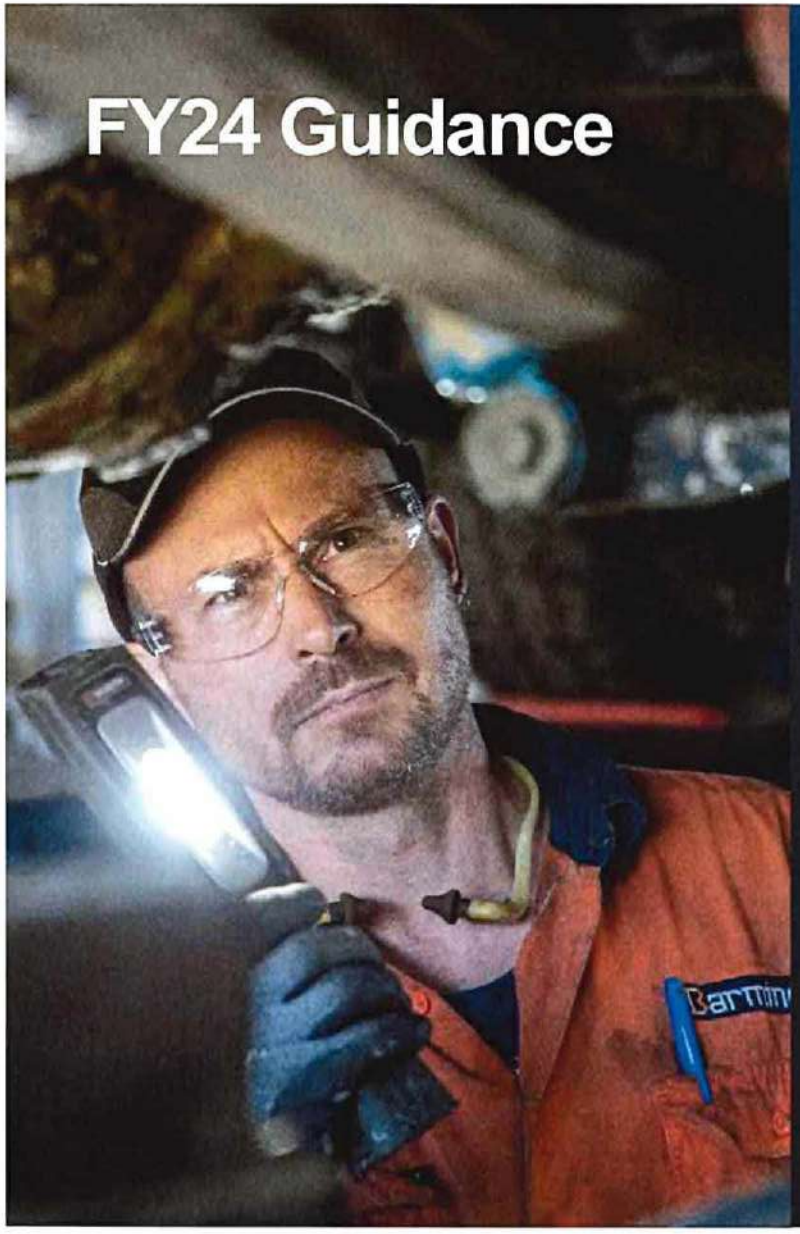
Enhanced Financial Flexibility

Equity capital raising and debt refinancing agreed

- Successful completion of bookbuild for underwritten two-tranche Placement to raise $40 million (before costs) in July[1]
- Share Purchase Plan currently open to raise an additional $5 million[2] on the same terms of the Placement (with an ability to take oversubscriptions)
- Proceeds strengthen the Company's balance sheet, removing the short-term working capital pressure caused by the one-off weather event and the delay of revenue resulting from the filter press head plate failure (since replaced and fully operational), and provide a platform for growth
- Maturity date of the Revolving Credit Facility with Trafigura extended by 12 months to 31 December 2024[3]
- Facility limit of US$15 million remains unchanged, subject to reduction by debt repayments
- Trafigura granted an option to extend its concentrate offtake agreement by two years to February 2030 on the current terms



1. Refer to ASX announcement on 27 July 2023 "Successful Completion of Bookbuild for A$40M Placement"
2. Refer to ASX announcement on 26 July 2023 "Fully Underwritten A$40M Placement and Non-Underwritten SPP"
3. Refer to ASX announcement on 27 July 2023 "Revolving Credit Facility Term Extension and Offtake Option"



FY24 Guidance

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Metric	FY24 Guidance[3]	FY23 Actual
Nickel in concentrate production	6,800 – 7,600t	5,402t
Copper in concentrate production	4,250 – 4,750t	3,129t
Cobalt in concentrate production	400 – 500t	368t
C1[1] cost per pound of payable Ni	A$10.05 – 11.25/lb[2]	A$13.25/lb
Sustaining Capital & Mine Development	A$22 – 26M	A$15.5M
Growth Expenditure	A$10 – 12M	A$25.6M

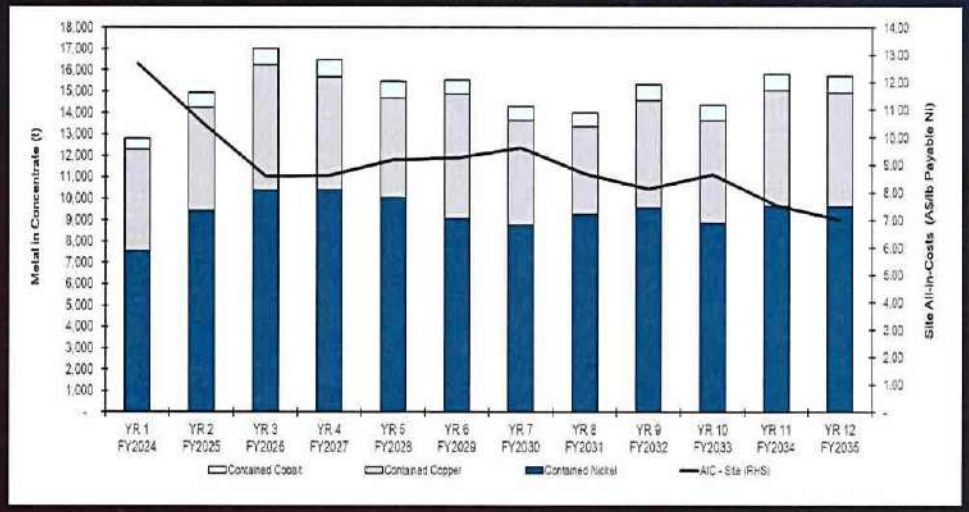
- FY24 production and cost guidance shows continued progress of the ramp-up and operational improvement expected as part of the 12-year mine plan
- Mining and processing targeting ~880,000t (73,350t/month) @ 1.08% Ni with recovery of 80% Ni
  (FY23A: ~680,000t (56,667t/month) @ 1.02% Ni with recovery of 80% Ni)
- Increased tonnes in FY24 are due to:
  - Savannah North production areas expanding from 2 levels in FY23 to 5 levels in FY24
  - New Savannah extension (below historical workings) coming into production in early FY24 for the first time
  - First 30 days of run rate (from 9th July, after filter head plate replacement) has been ~70,059t/month[4] @ 1.18%[4] Ni with recovery of 80%[4] Ni - A good start for the financial year
- First full year of concentrate sales to Trafigura in FY24 which includes higher payabilities

1. C1 costs includes operating cash costs that are directly incurred in producing concentrate and includes grade control drilling, road haulage, port, shipping, royalties and by-product credits net of treatment charges.
2. By-product based on exchange rate of AUD:USD 0.70 and commodity prices of US$8,000/t Cu and US$40,000/t Co.
3. Refer to the Company's ASX announcement 'Quarterly Activities Report for the period ending 30 June 2023' dated 26 July 2023 for further details, including the material assumptions contained in the FY24 guidance. 4. Unreconciled tonnes, grade and recovery

An Improving 12+ Year Mine Life

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- Mine plan[1] updated in 2023
- Mine plan consists of 11.4Mt @ 1.19% Ni, 0.54% Cu and 0.08% Co
- FY24 and FY25 includes one-off capital projects and a higher capital development intensity, before turning into a production mine
- Key outcomes of the mine plan include a longer mine life, higher average annual metal production and improved financial outcomes using Base Case[2] and Consensus Case[3] macroeconomic assumptions



Key highlights (average from FY24 onwards)

Ni production	**9,383t p.a.**
Cu production	**5,056t p.a.**
Co production	**710t p.a.**
All-in cost[4]	**A$9.07/lb payable Ni** (US$6.35/lb payable Ni)[5]

Site Costs	**Base Case[2] A$M**	**Consensus Case[3] A$M**
Life of Mine Capital Costs	234	234
Life of Mine Operating Costs[6]	1,771	1,771
Total Life of Mine Site Costs[6]	**2,005**	**2,005**
Site Unit Costs (Life of Mine Average)	**A$/lb payable Ni**	**A$/lb Payable Ni**
Capital Costs	$1.18	$1.19
Operating Costs[7]	$9.95	$10.02
By Product Credits	($2.90)	($3.52)
Site All-in Costs[4]	**$9.07**	**$8.50**
Financial Summary	**A$M**	**A$M**
Gross Revenue (Ni + Cu + Co)	$3,659	$3,364
Cashflow (pre-financing)	$1,259	$974
Pre-tax NPV_8 (pre-financing)	$761	$576
Post-tax NPV_8 (pre-financing)	$667	$531

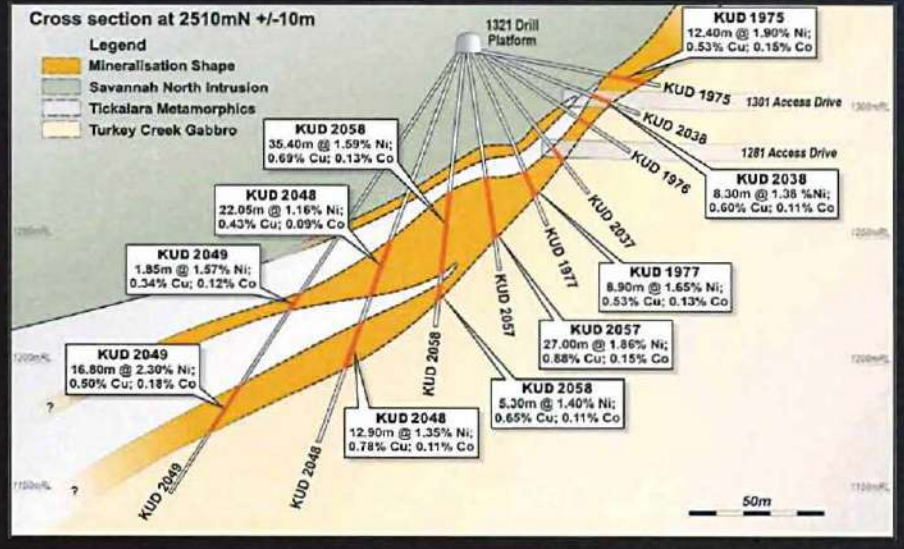
1 The updated Mine Plan contains 72.7% Ore Reserve and 27.3% Inferred Mineral Resource.
2 Base Case financials of the Mine Plan based on exchange rate of AUD:USD 0.70 and commodity prices of US$24,000/t Ni, US$8,000/t Cu and US$40,000/t Co.
3 Consensus Case financials of the Mine Plan based on exchange rate of AUD:USD 0.70 and commodity prices provided by Consensus Economics, February 2023 (ASX announcement 16 March 2023).
4 Includes all mining, processing, general & administrative, freight, concentrate handling, capital expenditure, royalties and by-product credits net of treatment charges.
5 Assuming Base Case commodity prices and exchange rate. 6 Excludes royalties and freight. 7 Excludes royalties.

Savannah North Exploration Upside

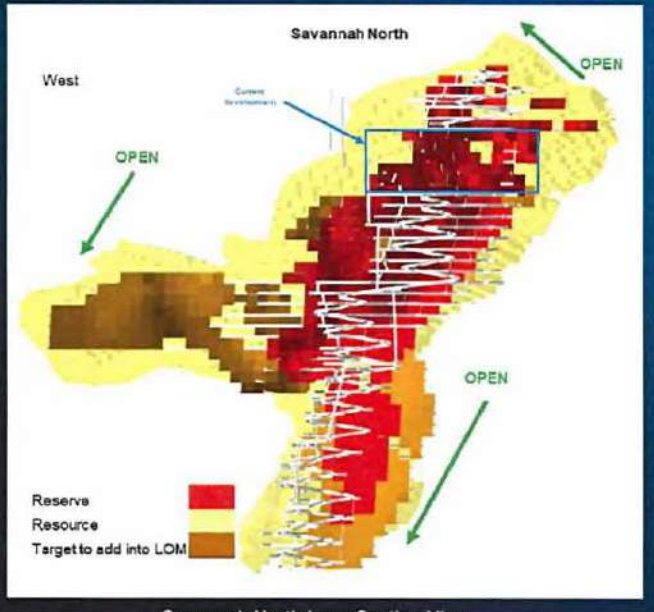
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- In FY22 a $3M drill program added +5,000t of nickel and +4,000t of copper in Resources and +3,500t nickel and +2,800t copper in Reserves after depletion
- FY23 drilling budget was similar and has targeted Resources just below the 1321 level (upper part of the mine plan) with very positive grades and thicknesses
- Resource update expected to be completed in October 2023





Savannah North cross section 2510mN showing recent drill intercepts[1] below the 1321 level



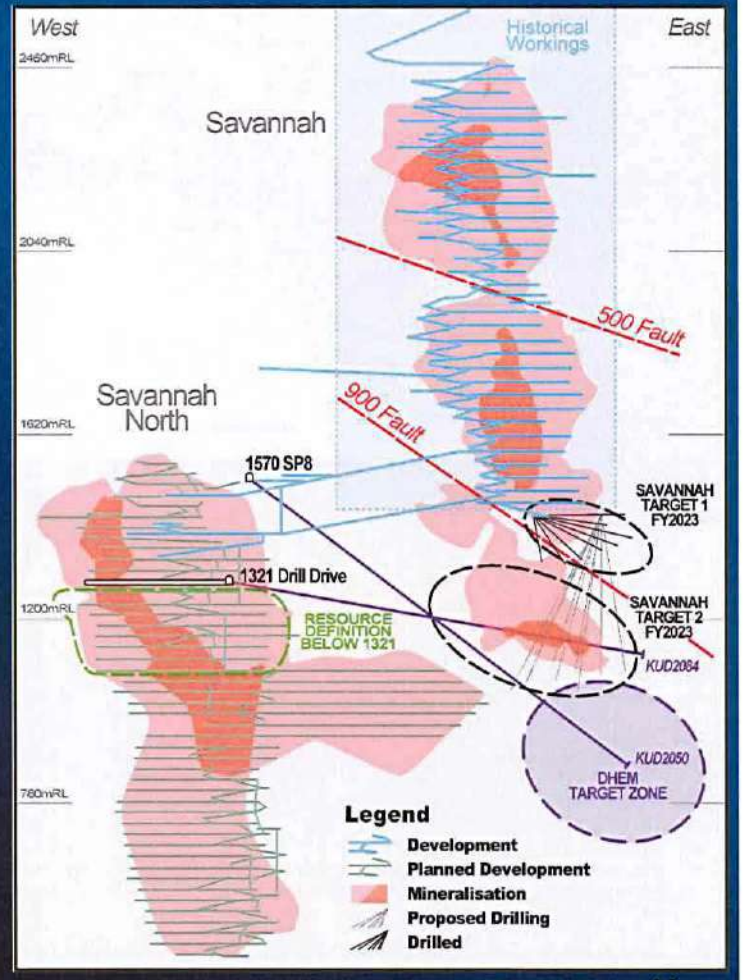
Savannah North Long Section View

* Refer to the Company's ASX announcement 'Savannah 2022 Mineral Resource & Ore Reserve Statement' dated 29 September 2022.

1 Refer to the Company's ASX announcement "Positive Savannah North Drill Results Below 1321 Level" dated 07 March 2023.

Savannah … Just Keeps Going!

- An Inferred Resource (above the 900 fault) sits below the historical workings of Savannah
- Recent drilling* of Target 1 (Savannah Extension) has confirmed confidence to mine this area
  - KUD1931: 28.90m @ 1.16% Ni; 0.74% Cu; 0.06% Co
  - KUD1917: 19.75m @ 1.49% Ni; 0.49% Cu; 0.07% Co
  - KUD1944: 15.15m @ 2.10% Ni; 1.35% Cu; 0.11% Co
  - KUD1919: 10.25m @ 1.50% Ni; 0.18% Cu; 0.07% Co
  - KUD1923: 9.10m @ 2.52% Ni; 1.10% Cu; 0.12% Co
  - KUD1943: 9.00m @ 2.95% Ni; 0.62% Cu; 0.15% Co
- First level below historical workings developed and stope production imminent



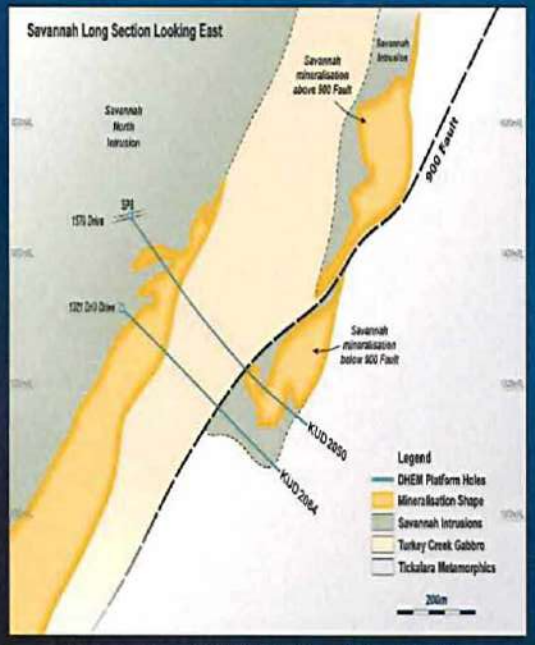
Savannah (RHS) and Savannah North (LHS)

1. Refer to the Company's ASX announcement "First Phase of Savannah Orebody Drill Program Completed" dated 03 October 2022

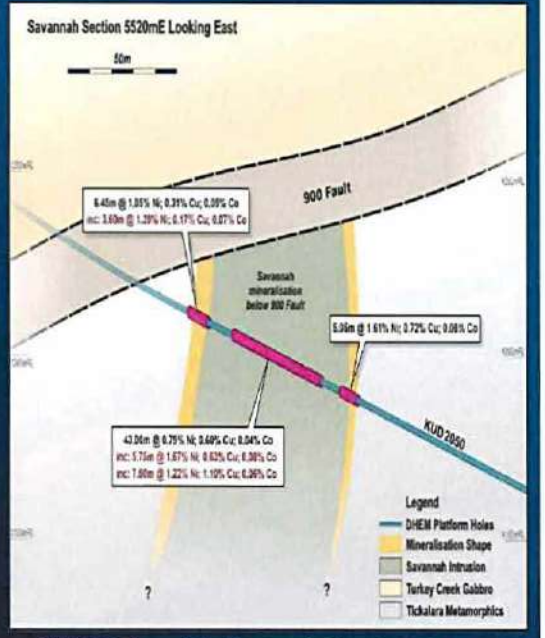
Below 900 Fault – A Further Growth Opportunity

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- Targeting mineralisation below 900 fault[1]
- Two platform holes (KUD2050 and KUD2084) drilled targeting an area below and west of the Savannah intrusion
- KUD2050 intersected massive sulphides:
  - 6.45m @ 1.05% Ni, 0.31% Cu and 0.05% Co from 628m on the Northern Contact, including:
    - 3.6m @ 1.39% Ni, 0.17% Cu and 0.07% Co from 628.95m and
  - 43m @ 0.79% Ni, 0.60% Cu and 0.04% Co from 652m within the Savannah orebody, including:
    - 5.75m @ 1.67% Ni, 0.63% Cu and 0.08% Co from 652m
    - 7.5m @ 1.22% Ni, 1.10% Cu and 0.06% Co from 678.5m
  - 5.05m @ 1.61% Ni, 1.10% Cu and 0.06% Co from 708.65 on the Southern Contact
- DHEM survey completed and modelling of plates underway
- First hole targeting the DHEM plate to the west of Savannah is underway and results expected in September 2023



Long section of DHEM platform holes targeting Savannah above and below the 900 Fault



KUD2050 through the Savannah intrusion and mineralisation below the 900 Fault

1 Refer to the Company's ASX announcement "Savannah Drilling and DHEM Program Update" dated 08 May 2023.

Building a business focussed on sustainability

Supporting our people and community

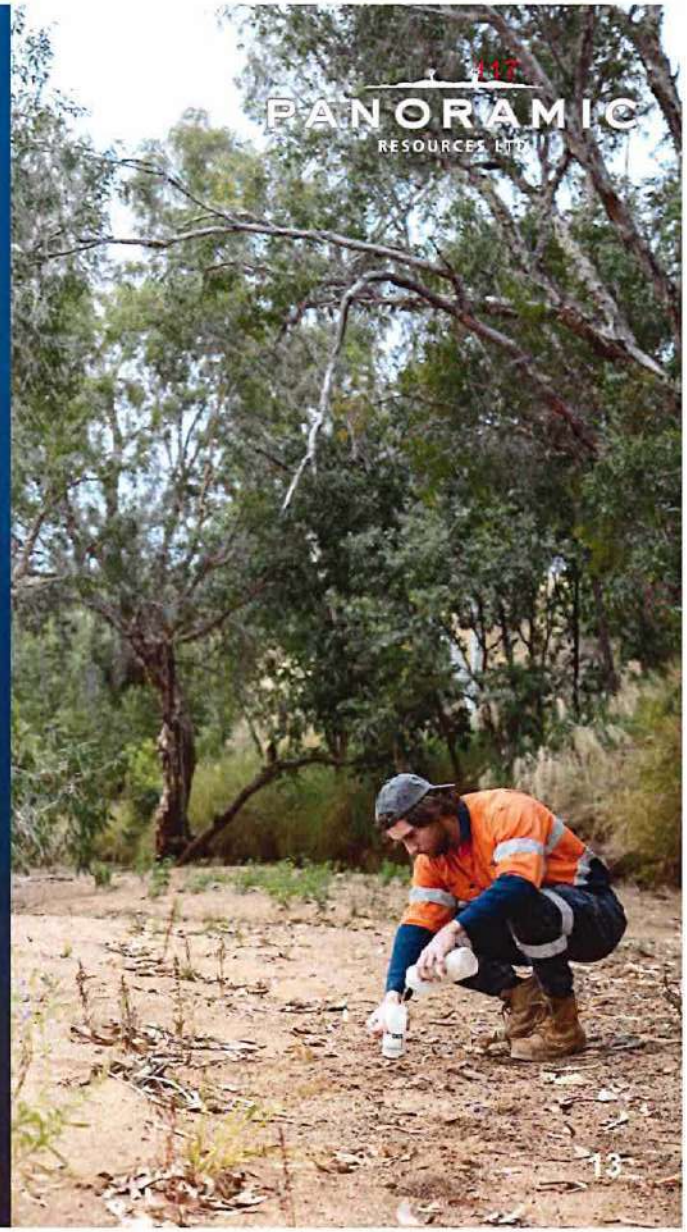
- "Bridge the Gap" rural education partnership with Teach Learn Grow (a WA not-for-profit)
- Focusing on local employment within the community
- "Spread Your Wings Fund" sponsoring local Aboriginal community members on business and sporting aspirations
- Royalties paid to Traditional Owners of A$17M+ since mining commenced

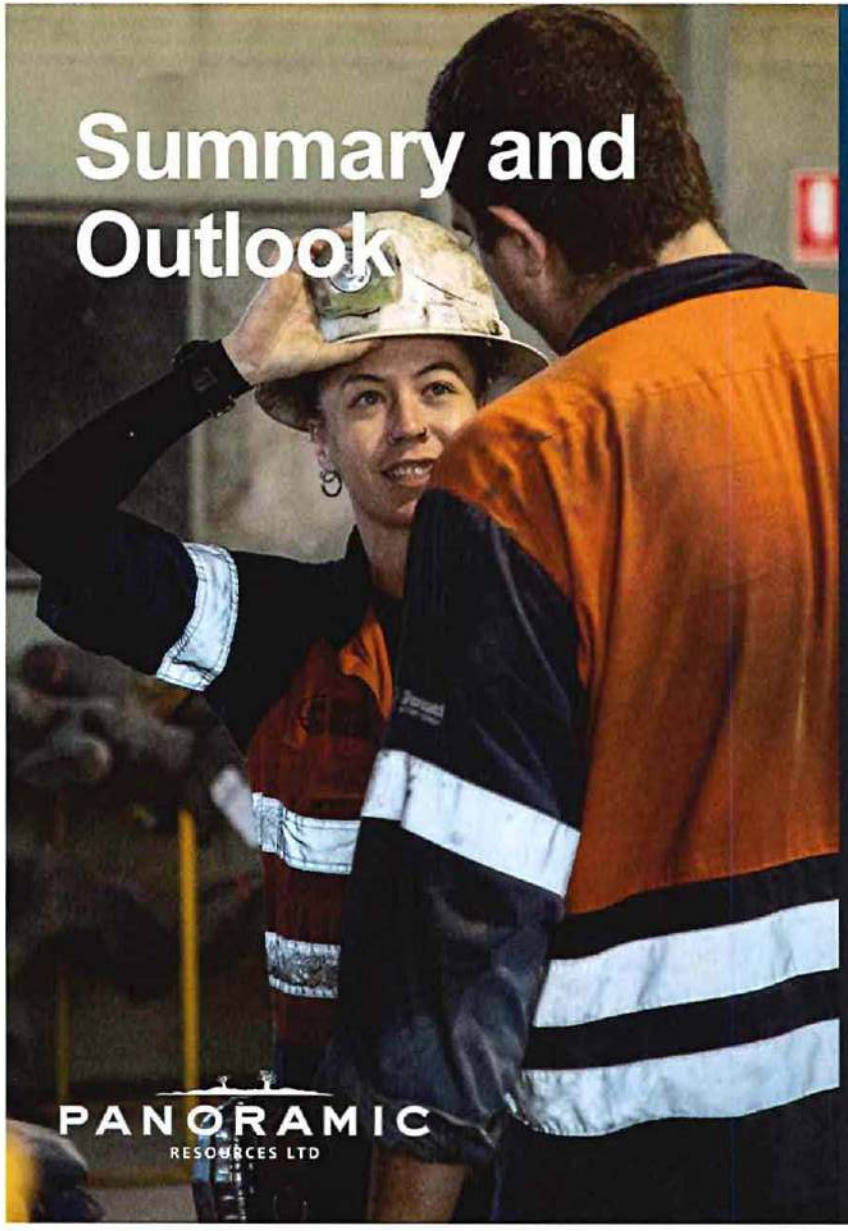


Teach Learn Grow at East Kimberley College



Traditional smoking ceremony at site





Summary and Outlook

Safe ramp-up of Savannah operations continuing, with personnel and equipment now on-site to deliver on the asset's potential

Strong improvement in production and unit operating costs forecast in FY24

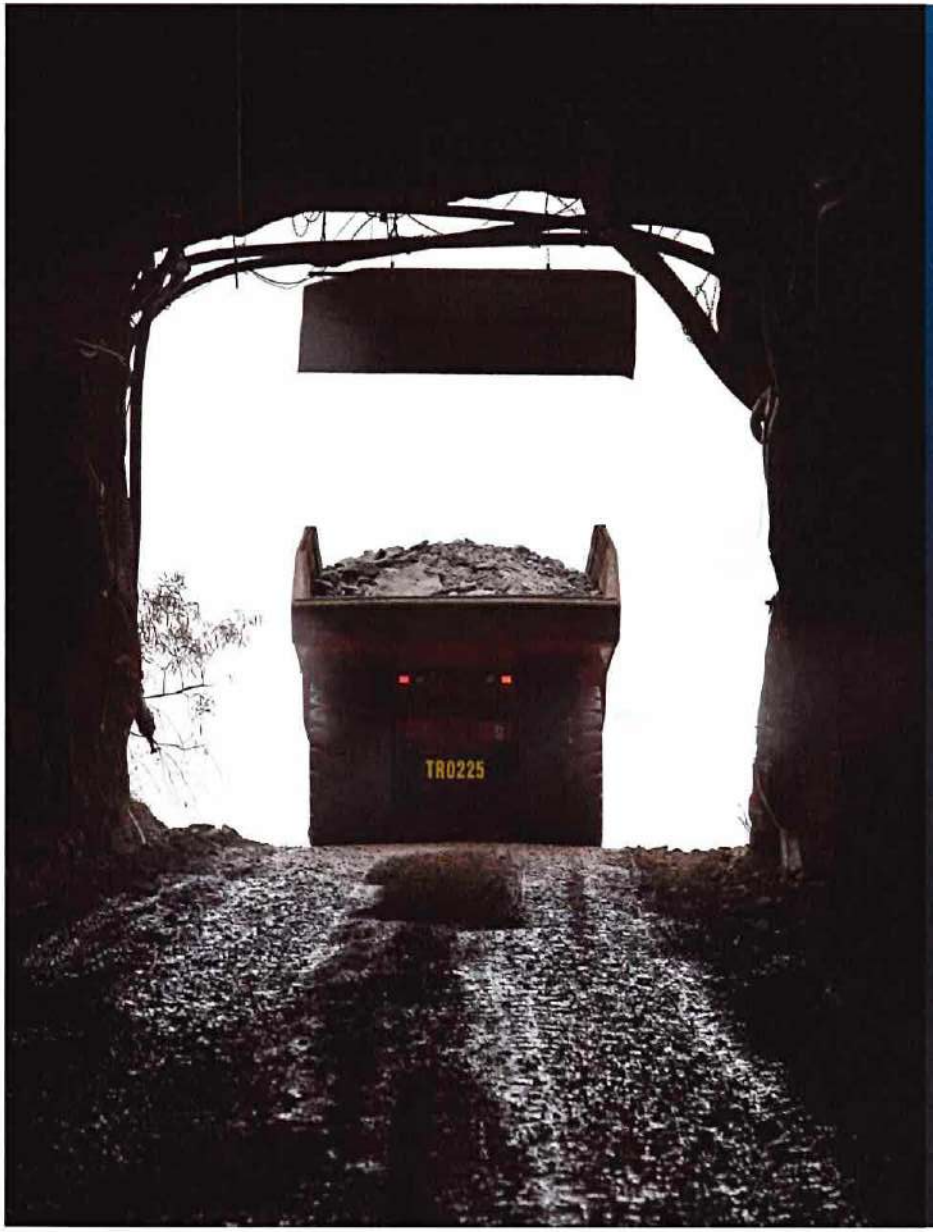
Offtake agreement with Trafigura in place until 2028 (+ a 2-year option), with improved payabilities versus previous offtake

Attractive financial outcomes, including cashflow of $1.26 billion and post-tax NPV_8 of $667 million[1]

High quality nickel sulphide asset with 12+ year mine life, near-mine Resource extension potential and an enhanced balance sheet at completion of the Equity Raising

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[1] Assumes Base Case financials of the Mine Plan based on exchange rate of AUD:USD 0.70 and commodity prices of US$24,000/t Ni, US$8,000/t Cu and US$40,000/t Co.
[2] Includes all mining, processing, general & administrative, freight, concentrate handling, capital expenditure, royalties and by-product credits net of treatment charges.



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Appendices

Appendix 1 - Mineral Resource Estimate

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Resource	Resource Date	Metal	Measured		Indicated		Inferred		Total		Metal
			Tonnes	(%)	Tonnes	(%)	Tonnes	(%)	Tonnes	(%)	Tonnes
Savannah Above 900F	Apr-20	Nickel	900,000	1.37	498,000	1.73	-	-	1,399,000	1.50	21,000
		Copper		0.77		1.46		-		1.02	14,200
		Cobalt		0.07		0.08		-		0.07	1,000
Savannah Below 900F	Jun-15	Nickel	-	-	780,000	1.64	125,000	1.72	905,000	1.65	14,900
		Copper		-		0.76		0.75		0.76	6,900
		Cobalt		-		0.09		0.09		0.09	900
Savannah North	Jun-22	Nickel	1,998,000	1.41	5,540,000	1.67	4,034,000	1.36	11,573,000	1.52	175,300
		Copper		0.59		0.75		0.52		0.64	74,200
		Cobalt		0.10		0.12		0.08		0.10	12,000
Total		Nickel	2,898,000	1.40	6,818,000	1.67	4,159,000	1.37	13,876,000	1.52	211,200
		Copper		0.65		0.80		0.53		0.69	95,300
		Cobalt		0.09		0.12		0.08		0.10	13,900

Qualifying Statements and Notes:

Refer to ASX announcement dated 29 September 2022 covering the Savannah Project Mineral Resource update for detailed assumptions and estimation methodologies.
Figures have been rounded and therefore may not add up exactly to the reported totals.
All Mineral Resources are inclusive of Ore Reserves.
Mineral Resource cut-off grade is 0.50% Ni.

Cross references to previous Company ASX announcements:

Savannah (above 900F) – refer to ASX announcement of 30 September 2019, titled "Mineral Resources and Ore Reserves at 30 June 2019"
Savannah (below 900F) – refer to ASX announcement of 30 September 2015, titled "Mineral Resources and Ore Reserves at 30 June 2015"
Savannah North – refer to ASX announcement of 24 August 2016, titled "Major Resource Upgrade for Savannah North"

No New Information or Data

The Mineral Resource estimate tabled above for Savannah (below 900F), have been previously reported and the relevant market announcements cross referenced. Except where stated otherwise, the Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements and, in the case of estimate of Mineral Resources, that all material assumptions and technical parameters underpinning the estimate in the relevant market announcement continue to apply and have not materially changed.

Ni Equivalent References

References to Ni equivalent contained metal in Mineral Resources and Ore Reserves is based on assumed metal prices as noted in footnotes and calculated using the formula Ni Eq kt = (Ni kt * Ni price + Cu kt * Cu price + Co kt * Co price) / Ni price. Ni equivalent grade % in Mineral Resources are calculated using the formula Ni Eq % = Ni Eq kt / Total Mineral Resource tonnes. It is the Company's opinion that all elements included in the metal equivalent calculation have a reasonable potential of being recovered and sold. Metallurgical recoveries for all metals are assumed to be equal.

Appendix 2 - Ore Reserve Estimate

PANORAMIC RESOURCES LTD

Ore Reserve	Metal	Proved		Probable		Total		Metal Tonnes
		Tonnes	(%)	Tonnes	(%)	Tonnes	(%)	
Savannah	Nickel	970,000	0.94			970,000	0.94	9,100
	Copper		0.63				0.63	6,100
	Cobalt		0.05				0.05	400
Savannah North	Nickel	1,805,000	1.24	5,683,000	1.25	7,489,000	1.25	93,600
	Copper		0.54		0.59		0.58	43,300
	Cobalt		0.09		0.09		0.09	6,800
Total	Nickel	2,775,000	1.13	5,683,000	1.25	8,458,000	1.21	102,700
	Copper		0.57		0.59		0.58	49,400
	Cobalt		0.07		0.09		0.09	7,200

Qualifying Statements and Notes:

Calculations have been rounded to the nearest 1,000t of ore, 0.01% Metal grade and 100t of metal.

Savannah & Savannah North Ore Reserve average cut-off (NSR) of $135/t.

No New Information or Data

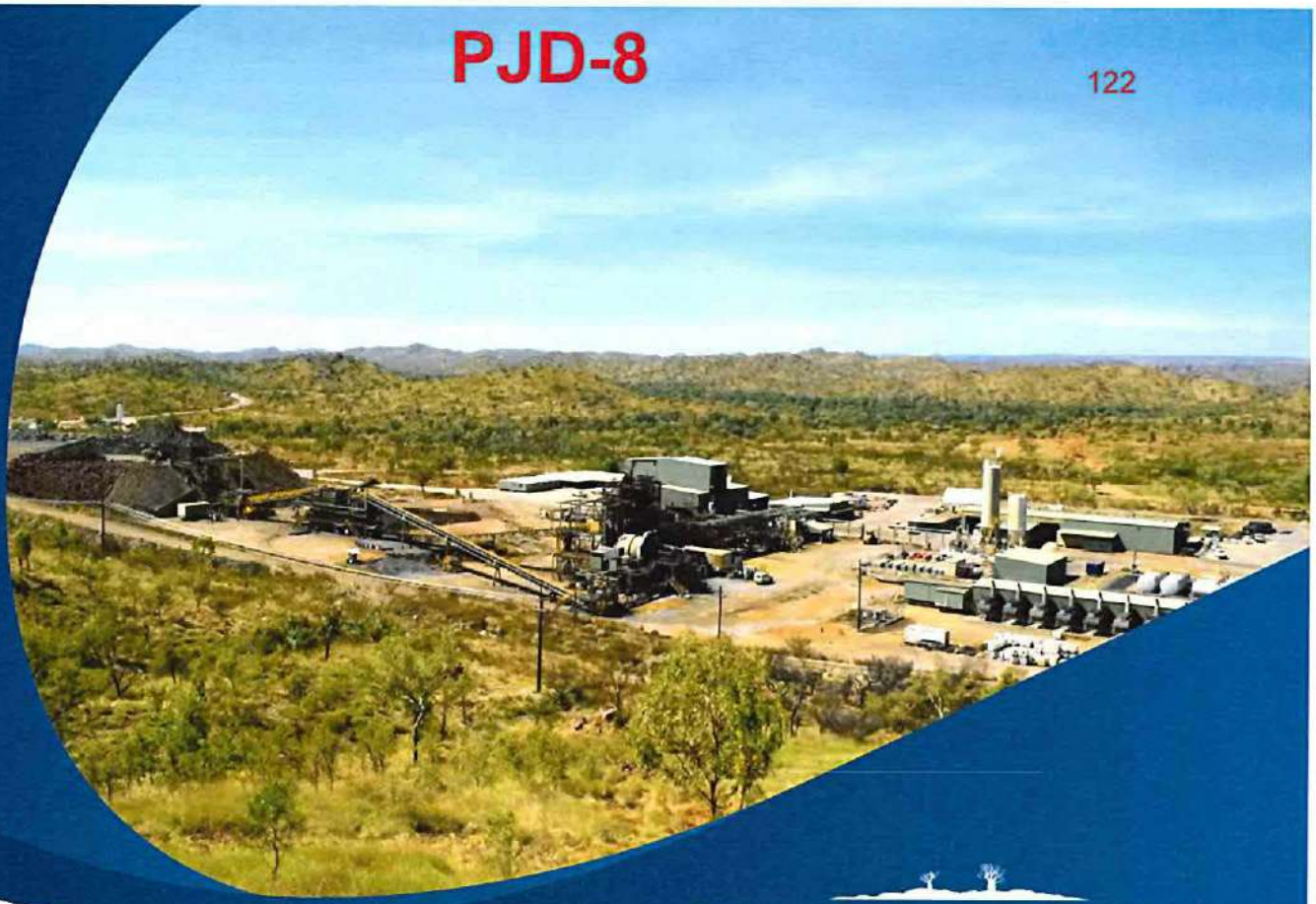
The Mineral Reserve estimate tabled above for Savannah has been previously reported on 29 September 2022. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcement and, in the case of estimate of Mineral Reserves, that all material assumptions and technical parameters underpinning the estimate in the relevant market announcement continue to apply and have not materially changed.

Ni Equivalent References

References to Ni equivalent contained metal in Mineral Resources and Ore Reserves is based on assumed metal prices as noted in footnotes and calculated using the formula Ni Eq kt = (Ni kt * Ni price + Cu kt * Cu price + Co kt * Co price) / Ni price. Ni equivalent grade % in Mineral Resources are calculated using the formula Ni Eq % = Ni Eq kt / Total Mineral Resource tonnes. It is the Company's opinion that all elements included in the metal equivalent calculation have a reasonable potential of being recovered and sold. Metallurgical recoveries for all metals are assumed to be equal.

Competent Person Statement

The information in this presentation that relates to Ore Reserves for Savannah and Savannah North is based on information compiled by or reviewed by Shane McLeay. Mr McLeay is a fellow of the Australasian Institute of Mining and Metallurgy (AusIMM) and is a Principal Mining Engineer and full-time employee of Entech Consulting based in Perth, Western Australia.

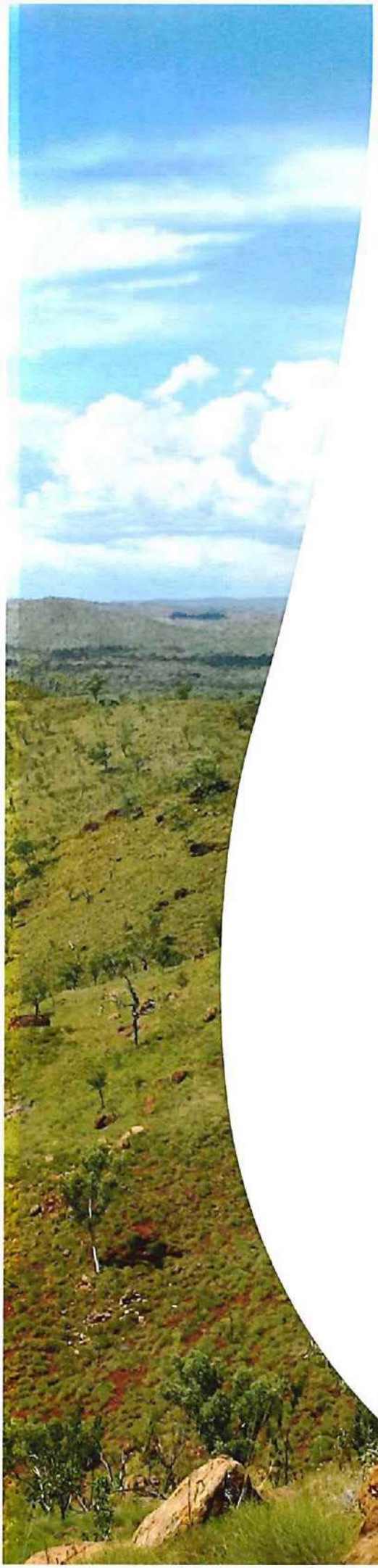


PANORAMIC
RESOURCES LTD

2023 SUSTAINABILITY REPORT

ASX: PAN





CONTENTS

01	EXECUTIVE SUMMARY	6
02	MESSAGE FROM THE MANAGING DIRECTOR AND CEO	14
03	GOVERNANCE	18
04	DETERMINING MATERIALITY	24
05	OUR BUSINESS	26
06	OUR PEOPLE	34
07	OUR APPROACH TO SAFETY AND WELLBEING	40
08	OUR LOCAL AND GLOBAL COMMUNITY	49
09	CARING FOR OUR ENVIRONMENT	57
10	GRI CONTENT INDEX	76

LIST OF TABLES

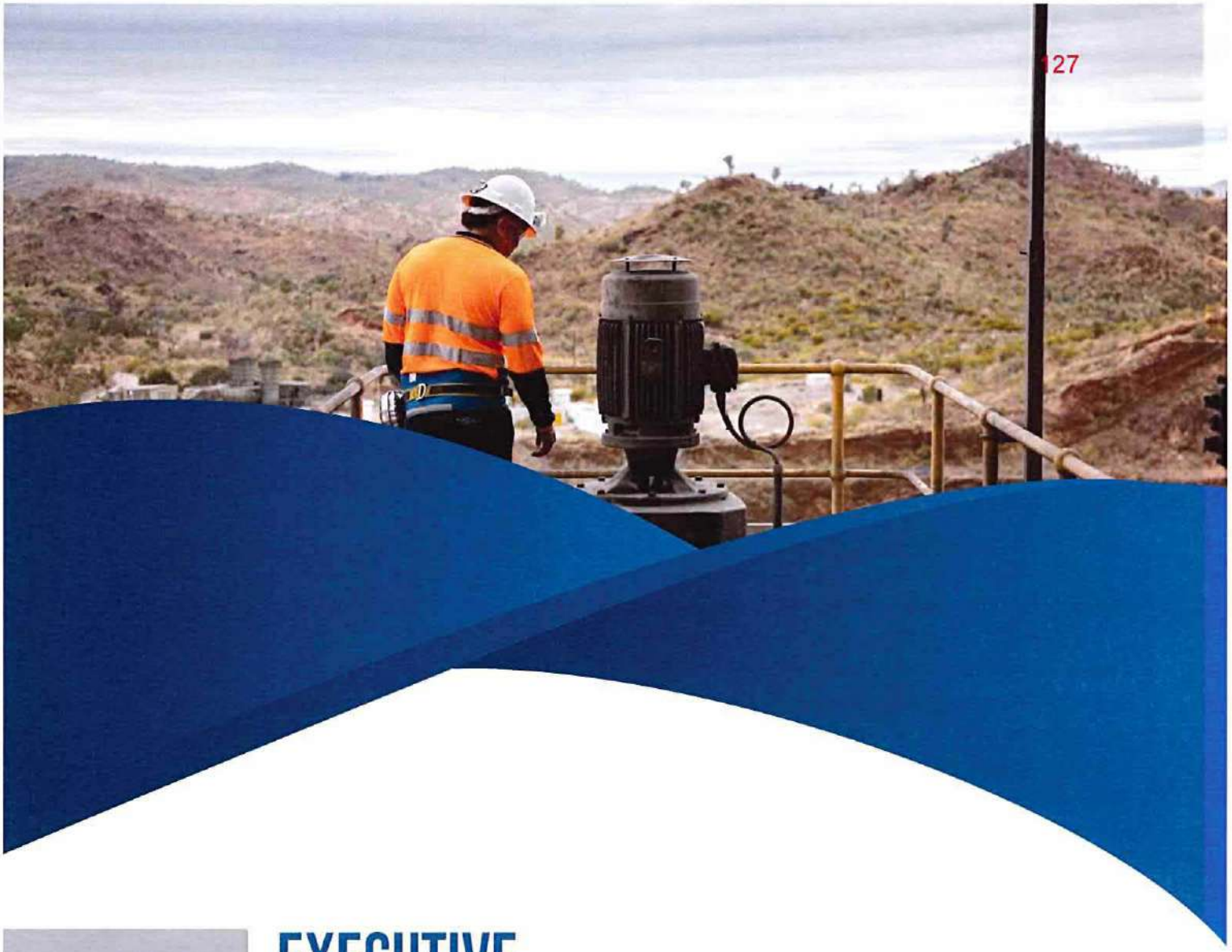
Table 3-1 Stakeholder Engagement 21
Table 5-1 Supply Chain 33
Table 6-1 2023 Employee Numbers 37
Table 7-1 Work Related Injuries and Illnesses 45
Table 9-1 Materials mined during FY23 59
Table 9-2 Materials processed during FY23 59
Table 9-3 Total volume of reagents used for processing during FY23 59
Table 9-4 Energy Consumed and Produced 60
Table 9-5 Energy Intensity 61
Table 9-6 FY23 Emissions Intensity 62
Table 9-7 NOx and SOx Emissions 63
Table 9-8 Groundwater Abstraction 63
Table 9-9 Water Consumption 65
Table 9-10 Mine waste current footprints and volumes 68
Table 9-11 Waste generated and recovered or recycled 69
Table 9-12 Endangered or vulnerable species found in the areas surrounding Savannah operations 70
Table 9-13 Land Disturbance and Rehabilitation 72
Table 9-14 MRF Contribution 73



LIST OF FIGURES

Figure 1-1 Project Location 7
Figure 1-2 Sustainability Development Goals 10
Figure 1-3 Savannah Operations 11
Figure 1-4 Shareholder Composition 12
Figure 4-1 Material categories, themes and standards included in this report 25
Figure 5-1 East Kimberly Region, Western Australia 31
Figure 6-1 Smoking Ceremony 36
Figure 7-1 Blue Tree Project 44
Figure 7-2 Restricted Work Injury Frequency Rate (12 month rolling average) 46
Figure 7-3 Lost Time Injury Frequency Rate (12 month rolling average) 46
Figure 7-4 Total Recordable Injury Frequency Rate (12 month rolling average) 47
Figure 7-5 Members of the Savannah Mine Emergency Response Team 48
Figure 7-6 Emergency Response Training at Savannah Mine 48
Figure 8-1 Cultural Heritage Survey 52
Figure 8-2 Panoramic fosters strong relationships with the local Aboriginal Community 52
Figure 8-3 Native Title 54
Figure 8-4 Aboriginal Employment Opportunities 55
Figure 8-5 Fremantle Dockers Curtain Raiser Game in Perth 55
Figure 9-1 Water Monitoring Locations 65
Figure 9-2 Mine Water Infrastructure 66
Figure 9-3 Significant Flora and Vegetation 70
Figure 9-4 Disturbance Mapping 75





01. EXECUTIVE SUMMARY

Panoramic Resources Ltd ("Panoramic" or "Company") has prepared a 2023 Sustainability Disclosure Global Reporting Initiative (GRI) Report (the "Report") for the Savannah Nickel Project ("the Project" "Savannah" or the "Operation"). Panoramic is proud to disclose information against the Global Reporting Initiative (GRI) topics and United Nations Sustainable Development Goals (SDGs) relevant to its operations. A GRI content index concludes this Report with information on where material topics are disclosed or why some are not included.

Panoramic (ASX: PAN) is a company headquartered in Perth, Western Australia (WA), which owns the Savannah Nickel Project and a rehabilitated satellite open pit project (Copernicus), in the East Kimberley (Figure 1-1). The nickel-copper-cobalt concentrate currently produced at Savannah predominately supplies smelters in China; however, it has strong potential to leverage the nickel, copper and cobalt markets linked to global decarbonisation and vehicle electrification.

The Report covers Panoramic's sustainability-related activities at all operational locations during financial year 1 July 2022 to 30 June 2023 (FY23). It's part of Panoramic's annual reporting suite which includes the FY23 Annual Report, and available on Panoramic's website from mid-September 2023.

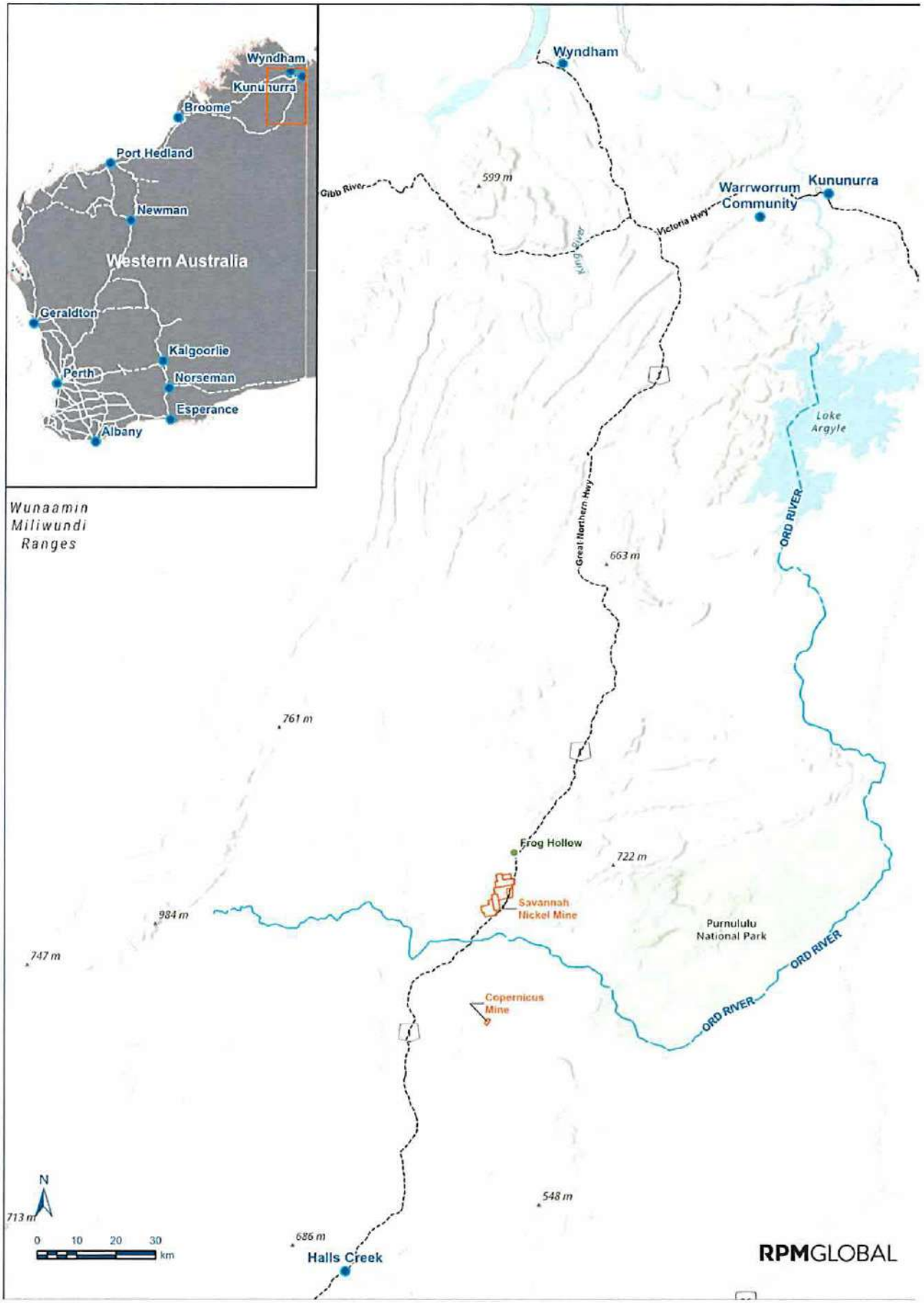
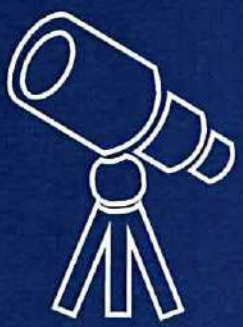


FIGURE 1-1 - **REGIONAL PROJECT LOCATION**

1.1 VISIONS, VALUES & SUSTAINABILITY

VISION



DISCOVER

We aim to grow our in-ground resources to ensure a sustainable business.

DEVELOP

We will de-risk and develop our operations to maximise value for shareholders.

DELIVER

We will produce high-quality nickel, copper and cobalt products safely, economically and efficiently from our operations.

VALUES



PEOPLE

We always work safely.

We lead and act with fairness, integrity, trust and respect.

We respect our people and support their growth.

PERFORMANCE

We are focused on creating sustainable shareholder growth, efficient operations and to be a reliable supplier.

PROGRESS

We collaborate and invest in our future through innovation to help sustain a profitable and efficient mining operation.

We look for continuous improvement opportunities to be a better business tomorrow.

PROUD

We take pride in the way we work, embrace our responsibilities and are accountable for our actions.

We support the culture and heritage of the environment and communities in which we operate.

We seek to be an organisation that our people and stakeholders are proud to be a part of.



KEY ELEMENTS OF OUR SUSTAINABILITY STRATEGY

DIRECTLY CONTRIBUTING TO THE LOW CARBON TRANSITION

We recognise the important role that business must play to reduce global greenhouse emissions

SUPPORTING OUR COMMUNITIES

We understand the challenges faced by the East Kimberly communities and strive to make a difference that will outlast our operations in the region.

PRESERVING OUR CULTURAL AND ECOLOGICAL HERITAGE

We acknowledge the Purnululu and Malarngowem peoples as the traditional custodians of the lands at Savannah and Copernicus.

PROTECTING OUR PEOPLE FROM HARM

We appreciate the hazards associated with mining operations and our obligations to protect our people from harm.

SAFELY STORING OUR PROCESS TAILINGS

We understand the potential risk to habitats, water resources, people and reputation due to tailings waste storage.

PREPARING FOR CLOSURE

We recognise our obligation to ensure that our sites are appropriately reinstated at the end of mine life to remain safe, stable and non-polluting.



FIGURE 1-2 - **SUSTAINABILITY DEVELOPMENT GOALS**

1.2 ORGANISATIONAL DETAILS

Panoramic is a base metal exploration and mining company operating in Australia with a 20-year history of mining expertise in nickel, copper, and cobalt sulphide projects. Panoramic owns Savannah and Copernicus, both located in the East Kimberley, WA. Savannah is an underground operation that produces a nickel-copper-cobalt concentrate from nickel sulphide ore that is exported via the Port of Wyndham (the Port) to markets in Asia for use in metal refining with increasing potential for use in the green energy industry.

OUR OPERATIONS

Savannah resumed operations in 2021 after a care and maintenance period and has an anticipated 12-year mine life. Savannah consists of the following infrastructure and is shown in Figure 1-3:

- Decommissioned Open pit
- Underground mine and portal
- Processing plant
- Paste fill plant
- Waste rock landforms
- Tailings Storage Facility (TSF)
- Water storage facilities
- Diesel power supply
- Concentrate storage facilities
- 180-room accommodation village
- Workshops
- Office buildings
- Other supporting infrastructure such as roads, borefields, pipelines, ventilations shafts and power lines.
- Port shed and berth access; and
- Rehabilitated open pit.

Copernicus was developed as an open pit greenfield operation by the previous owner in 2007. Following the commission of mining in 2007 and the commencement of production in July 2008, Copernicus was subsequently placed on care and maintenance in December 2008 due to poor market conditions. Mining recommenced in October 2014. In 2015, Panoramic Resources obtained 100% share of Copernicus Nickel Mines Pty Ltd from Thundelarra Resources Pty Ltd and continued to operate until early 2016, where it went back into care and maintenance after another fall in commodity price. The site was rehabilitated by Panoramic in June 2016 and is now subject to ongoing closure monitoring as per obligations under its Mine Closure Plan (MCP).

The Port is owned by the Kimberley Ports Authority (KPA) and managed by Cambridge Gulf Ltd (CGL), a regional business that also provides haulage and fuel services to Savannah . Panoramic lease Port land that has a purpose built shed managed by two full time employees where product from the Savannah can be stored and prepared for export. Berth access is made available to Panoramic through a typical port booking system.

A list of entities included in the consolidated financial statements is given in the annual company report, available on the Panoramic website. Savannah Nickel Mine Pty Ltd is a wholly owned subsidiary of Panoramic Resources Limited, which is included in this Report.

Panoramic has disclosed the same Greenhouse Gas (GHG) emissions estimate as those reported under the mandatory National Greenhouse and Energy Reporting Act 2007 (NGER Act) in this FY23 Sustainability Report. GHG emission estimates provided in the FY22 Report were developed separate to the national reporting process using the same source of the emission factors. There are no other restatements of information to disclose in the FY23 Sustainability Report.

Panoramic has not sought external assurance of this Report; however, it may consider periodic external assurance of future reports.



FIGURE 1-3 - **SAVANNAH OPERATIONS**

OUR SHAREHOLDERS

Shareholder composition includes both corporate and private stakeholders, with most shares owned by Australian investors. Panoramic is an Australian public company limited by shares and is domiciled and incorporated in Australia. Panoramic is listed on the Australian Stock Exchange (ASX:PAN) and registered with the Australian Securities & Investments Commission as Panoramic Resources Limited, ACN 095 792 288.

The controlling shareholders of the Company as of 30 June 2023 are as follows:

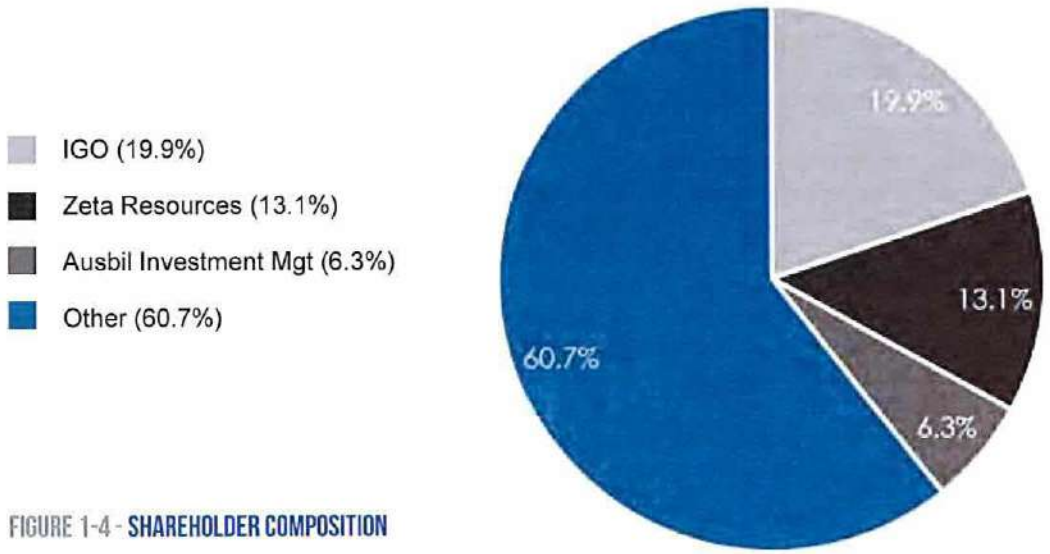
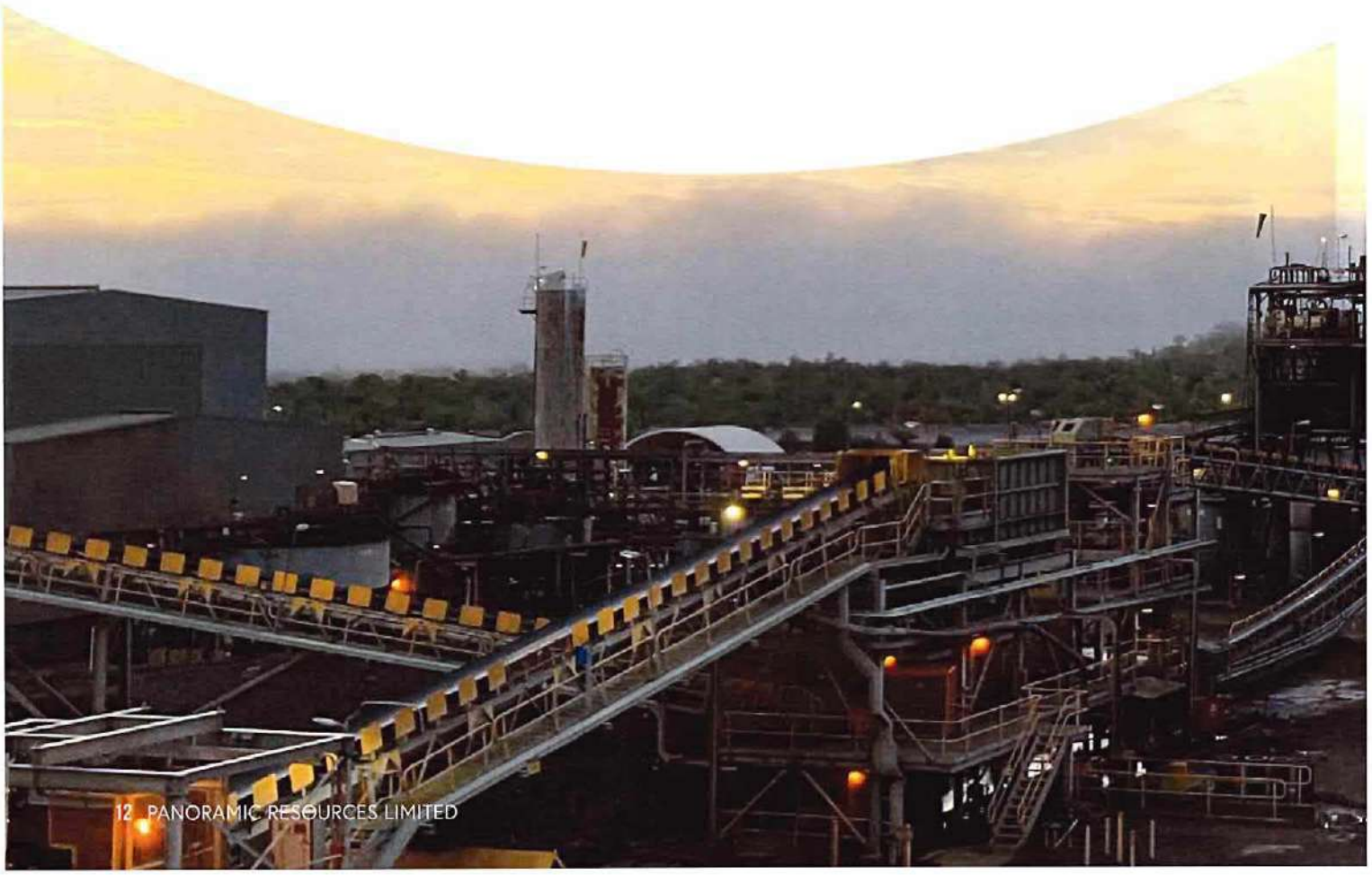


FIGURE 1-4 - **SHAREHOLDER COMPOSITION**

Panoramic received US $45M in debt financing from Trafigura Pte Ltd (Trafigura), which currently has an outstanding balance of US $39.78M, as at 30 June 2023.

Further information on Panoramic, its activities in FY23, and intentions for FY24 and beyond is provided in the Company's FY23 Annual Report, available on the Panoramic website.



CONTACT US

The Panoramic headquarters are located at:

Level 9, 553 Hay Street, Perth WA 6000, Australia

Email: info@panres.com

Post: PO Box Z5487, Perth, WA 6831

Telephone: +61 8 6374 1700

Questions will be directed internally to the most appropriate person depending on the nature of the enquiry. Panoramic intends to respond to all enquiries as soon as possible.

Further contact details are available on the Panoramic website.



02. MESSAGE FROM MANAGING DIRECTOR AND CEO

I am pleased to present Panoramic Resources' 2023 Sustainability Report. This is the second report developed by Panoramic since we resumed steady state operations at Savanah in FY 2022, and I am excited to share with you the progress we have made. This Report reflects our unwavering commitment to responsible mining practices, environmental stewardship, the welfare of our people, and community engagement.

At Panoramic, we understand the critical role that sustainable mining plays in preserving our planet's natural resources for future generations. Our focus on environmental conservation, employee well-being, and community development has been pivotal in shaping our operations. This year's Report encapsulates our accomplishments, challenges, and future aspirations in the realm of sustainability.

Highlights from this year's Report include:

HEALTH AND SAFETY

The safety of all people involved Panoramic operations continues to be our principal priority. While our onsite team of staff and contractors increased during the reporting period, and I am pleased to inform our stakeholders that no serious occupational injuries or illnesses occurred, with rates of minor injury remaining below industry averages. Overall, we have seen a slight upward trend however, this is directly related to the exponential increase of personnel onsite.

The Emergency Response Team continues to improve with several members achieving their Certificate III in Mine Emergency Response and the employment of an additional full-time Emergency Response Advisor provides consistent safety and emergency response coverage onsite.

EMPLOYEE WELL-BEING

Our approach to health and safety extends to mental well-being and creating a positive workplace culture that supports our workforce's mental health and well-being has been at the forefront of our sustainability efforts this year. Our workforce is our most important resource and throughout FY2023 we implemented several initiatives to improve mental well-being of our staff and contractors.



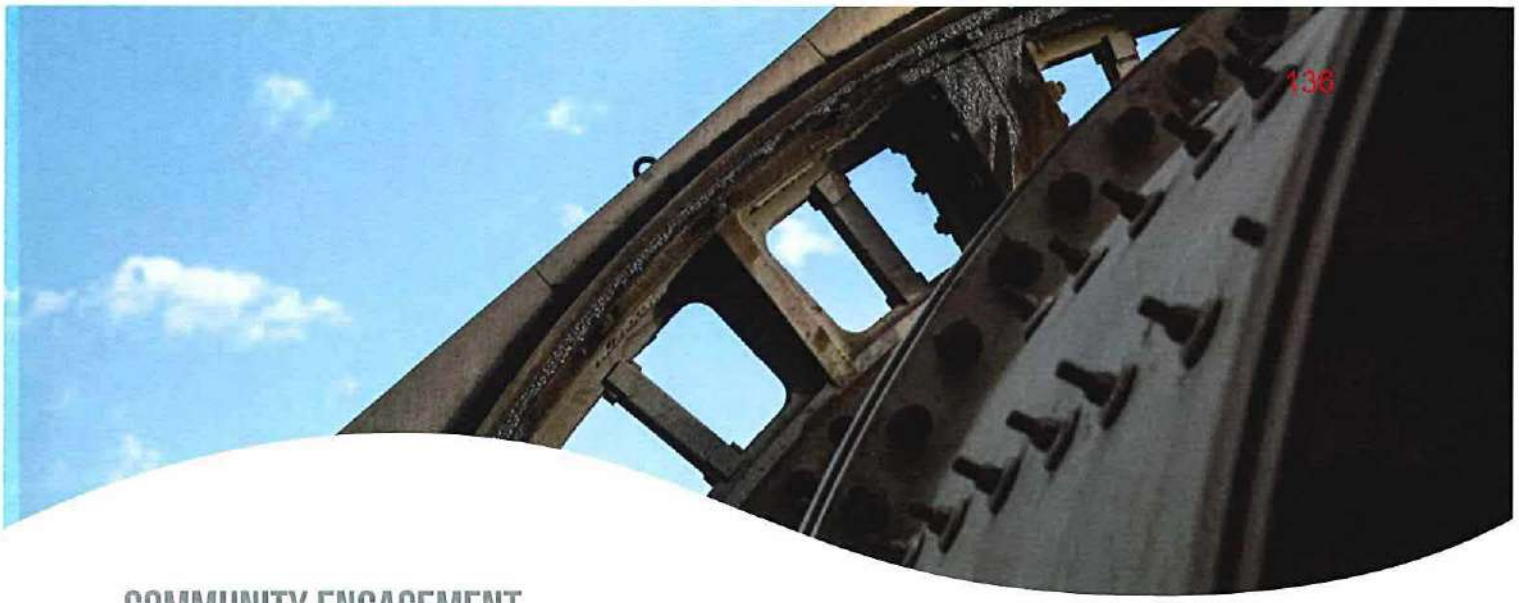
VICTOR RAJASOORIAR

These initiatives included mental health first aid training to Panoramic staff and contractors, both at a corporate and site level, to foster an environment where personnel feel comfortable to speak up about their mental health issues and provide tools needed to support those conversations and numerous visits from a Health Practitioner specialising in sleep and mental health who undertook seminars and medical consultations with our workforce.

In addition, an exercise physiologist visited Savanah on several occasions to discuss lifestyle and wellness choices, and the potential impacts the FIFO lifestyle can have on personal health with our Emergency Response Volunteers and FIFO workforce. These discussions are further supported through site based "toolbox" talks and the availability of educational material, healthy menu items, and a well-equipped gym.

The positive messaging and commitment from Panoramic was further reinforced with the painting of a blue-tree at the Savanah Mine and the hosting of an R U OK Day morning tea.

We are immensely proud of the culture these initiatives have created and are committed to continuing to positively impact the mental health and well-being of our remote working personnel and contractors.



COMMUNITY ENGAGEMENT

Our commitment to community this year was two-fold with a focus on both a local and global scale.

Locally, we continued to foster strong relationships with the communities of the East Kimberly region and the traditional custodians of the land that Savanah operates on; the Purnululu, Malarngowem, and Balanggarra. We contributed over $56,000,000 to local East Kimberly businesses through our supply chain, over $15,000 in community benefits, sponsorships and charitable donations, $150,000 in Aboriginal advancement opportunities, and $30,000 in regional educational support.

In FY23, Panoramic supported Purnululu, Malarngowem, and Balanggarra communities through the provision of sporting sponsorship opportunities, financial contributions to the Kija Rangers' program and direct contracting opportunities onsite. There was also a renewed focus on employment opportunities with the engagement of a Traditional Liaison Officer to assist with Aboriginal employment within Panoramic, and the engagement of two subcontractors who have robust Aboriginal employment strategies, including Ventia who undertook a targeted recruitment campaign in Halls Creek.

As in years past, we continued to provide funds to the non-profit organisation Teach Learn Grow (TLG) Program; these funds provide much-needed educational support to the rural and remote schools surrounding Savannah and the Port. As a direct result of our support more than 1,500 primary school students benefited from the one-on-one mentorship and tutoring.

Globally, Panoramic strengthened our focus on the social and environmental impacts of our value chain both within Australia and Internationally. In our 2022 Sustainability Report, we committed to developing a Human Rights Policy and lodging our first Modern Slavery Statement. I am pleased to announce that both these targets were achieved.

To support the implementation of our Human Rights Policy, all staff underwent Human Rights and Modern Slavery training, ensuring that the human rights of all the people we engage with across our business are respected and considered throughout the value chain.

OUR ENVIRONMENT

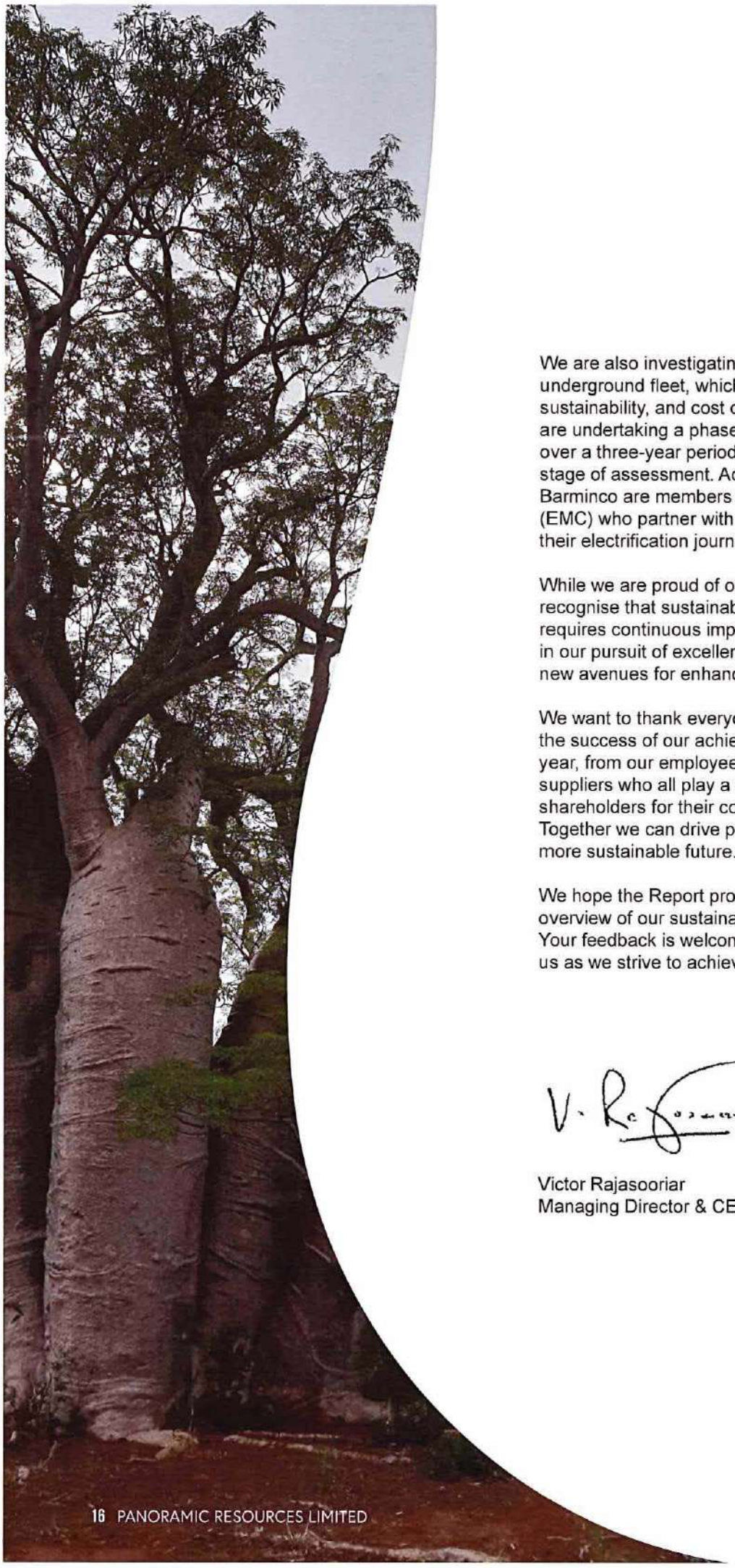
We reached a major milestone this year with the completion of the closure and rehabilitation cover trial for the Tailings Storage Facility (TSF). Consultants will progressively monitor the cover trial with results used to support management decisions regarding the full-scale cover system construction, to progressively close the TSF in an economically and environmentally responsible way.

With planning underway for future rehabilitation activities, we are currently exploring arrangements with Traditional Owners for the ongoing collection and storage of native seeds to maximise the benefit to country.

During the continued ramp-up of operations onsite I am pleased to report that there were no reportable environmental incidents. We understand that an increase in operations will have an impact on onsite waste production; the reduction of this remains a focus of Panoramic and was one of the driving forces for the appointment of our Village Management contractor who maintains a proactive approach to recycling.

ENERGY TRANSITION

Panoramic is investigating commercially feasible technology to reduce emissions produced from its mining and processing activities. The reduction of our carbon footprint is a key opportunity for us to improve our sustainability outcomes and we are currently exploring options to reduce our diesel consumption and implement renewable energy options such as a solar farm with battery back-up. We have received proposals from various power providers and are expecting the initial study to be completed FY24.

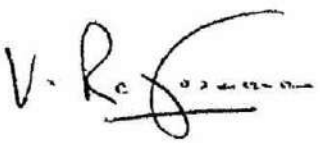


We are also investigating the use of low emission underground fleet, which can improve health, safety, sustainability, and cost outcomes for our operations. We are undertaking a phased approach to electrification over a three-year period and this approach is in its early stage of assessment. Additionally, our subcontract partner Barminco are members of the Electric Mine Consortium (EMC) who partner with and support mining companies in their electrification journey.

While we are proud of our accomplishments, we recognise that sustainability is an ongoing journey that requires continuous improvement. We remain steadfast in our pursuit of excellence and are determined to explore new avenues for enhancing our sustainable practices.

We want to thank everyone who has contributed to the success of our achievements in sustainability this year, from our employees to our subcontractors and suppliers who all play a key role. I also want to thank our shareholders for their continued partnership and trust. Together we can drive positive change and contribute to a more sustainable future.

We hope the Report provides you with a comprehensive overview of our sustainability efforts and achievements. Your feedback is welcomed as any insight is invaluable to us as we strive to achieve our sustainability goals.



Victor Rajasooriar
Managing Director & CEO



03. GOVERNANCE











PANORAMIC BOARD GOVERNANCE ORGANISATION

Panoramic's business and operations are overseen by a Board of Directors (the Board) that adhere to a Board Charter (2020) and Constitution (adopted in 2008 and last amended in 2020). The Panoramic Board is responsible for Panoramic's overall governance, including setting its strategic direction, establishing corresponding goals for executive management and assessing progress against these goals. The Board receives regular updates on sustainability performance though the Risk Management and Sustainability Committee.



NICHOLAS CERNOTTA

Independant Non-Executive Chairman



VICTOR RAJASOORIAR

Managing Director & CEO



PETER SULLIVAN

Non-Executive Director



GILLIAN SWABY

Non-Executive Director



REBECCA HAYWARD

Non-Executive Director

The Board is comprised of an independent Non-Executive Chair, a Managing Director (MD) and Chief Executive Officer (CEO), two independent Non-Executive Directors, and one Non-Executive Director. The diverse composition of the group includes two females, various age groups, multiple ethnic origins, and experience working across a variety of global jurisdictions and industries. The directors and management team all have vast experience working in the resources sector and serving on the boards of ASX-listed companies. The independent members additionally bring valuable knowledge from the legal and accounting industries. There have been no changes to the Board composition and membership in FY23.

Operationally, sustainability is managed by the Panoramic senior management team including the Chief Financial Officer (CFO), General Manager Operations, Manager Exploration and Geology, and Company Secretary, supported by various discipline heads, coordinators, and administrators, including the Commercial Manager, People and Culture, Savannah Superintendents for Environment and Community, and Health and Safety. Panoramic believes the Board, management team, and supporting staff have the experience and qualifications appropriate to managing its material environmental, social, and governance risks.

Board performance, including remuneration packages of senior executives, is evaluated annually in the Corporate Governance Statement based on ASX Corporate Governance Principles and Recommendations and reported in the Directors' Report within the Interim Financial Report - 31 December 2022. The report is prepared in accordance with the Corporations Act 2001 (Cth) requirements and Australian Accounting Standards. As well as financial performance, the Board is responsible for considering conflicts of interest, environmental, social, and governance performance as they relate to shareholder and other stakeholder values.

CHARTERS AND PRACTICES

The Board's functions incorporate forming and operating several committees supported by publicly available applicable charters. The policies and charters are based on the ASX Corporate Governance Council's Corporate Governance Principles and Recommendations 4th Edition (2019), where relevant and applicable. The Board has four committees and associated charters that cover aspects of financial auditing, governance, nomination, remuneration, risk and sustainability. The annual remuneration of the executive and non-executive directors is made publicly available every year in the annual financial statements. The Company's financial information is managed and evaluated by the Audit and Governance Committee, which includes external audits conducted by independent parties.

The Risk and Sustainability Committee periodically reviews and make recommendations to the Board on the effectiveness of Panoramic's processes for managing risks and the environment and social and governance sustainability practices as per the Risk and Sustainability Committee Charter. The material risk register is managed by relevant Panoramic management and provided to the Risk and Sustainability Committee for review as required. The Risk and Sustainability Committee evaluates the most significant risks to determine whether management strategies are appropriate for emerging trends and other factors related to Panoramic's risk profile.

The Sustainability Report is informed, reviewed and approved by the Managing Director, CEO and Board representatives from the Risk and Sustainability Committee before its publication. The material topics presented in this Report have been determined in communication with Panoramic's highest governing body and staff from multiple business units.



POLICIES AND PRACTICES

Panoramic's publicly available Code of Conduct (2020) (Code) was formulated to display its values and those set out in its Statement of Values. The Code outlines expectations of the workforce, contractors and suppliers who work with Panoramic. In addition, Panoramic's key corporate governance policies, which complement the Code, provide an important framework for sustainability matters. These include:

- Shareholder Communication Policy (2020)
- Anti-Bribery and Anti-Corruption Policy (2020)
- Continuous Disclosure Policy (2020
- Diversity Policy (2020)
- Privacy Policy (2020)
- Risk Management Policy (2021)
- Securities Trading Policy (2020)
- Whistleblower Policy (2020); and
- Human Rights Policy (2023)

These policies and procedures are available on the website.

To complement reporting and declarations made under the Modern Slavery Act 2018 (Cth), Panoramic is pleased to have added the Human Rights Policy to its governance framework during the reporting period. The new policy observes the Universal Declaration of Human Rights as it applies to all aspects of the Panoramic value chain at home and abroad. As Panoramic is committed to respecting the human rights of all people we engage with in our business and all staff have undergone human rights and Modern Slavery training in FY23.

Panoramic continues to be a member of the Association of Mining and Exploration Companies (AMEC), which represents over 500 companies from around Australia. This political advocacy group is comprised of standing committees and working groups that ensure mining-related policies and initiatives are a high priority for governments and supported by the community.

Compliance with relevant State and Commonwealth legislative and permitting requirements, including those relevant to Savannah operations, is the minimum standard by which Panoramic operates. In FY23, there was no substantive non-compliance with applicable environmental, social, or economic regulations and Panoramic has not received any regulatory fine, notice of non-compliance, or instruction to cease or modify activities.

ENGAGING STAKEHOLDERS

Panoramic takes a transparent, proactive, and systematic approach to external and internal stakeholder engagement via multiple communication channels. Some of these existing legal, commercial, community and government channels include:

- **Shareholders:** ASX and relevant corporate governance laws, as evidenced by the public information on the Panoramic website.
- **All stakeholders:** Provision of operational data related to Environment, Social, and Governance (ESG) topics to participants in its value chain upon request.
- **Contractors and suppliers:** Informal and formal processes in the relevant contractual documents.
- **Customers:** Sale agreements, tenders, product information sheets and public reporting.
- **Community:** Legal arrangements, grievance mechanisms, formal and informal meetings and sponsorship.
- **Government:** permits, approvals, reports and inspections.
- **Workforce:** formal and informal processes dictated by law and internal policies.

How Panoramic engaged with its external and internal stakeholders is represented in Table 3-1.

TABLE 3-1- STAKEHOLDER ENGAGEMENT

STAKEHOLDER	PRINCIPAL TOPICS & CONCERNS	PRINCIPAL MEANS OF ENGAGEMENT
Investors	• Financial, environmental & social return on investment • Compliance with legal obligations	• Reporting • ASX announcements & investor briefings
Customers	• Impacts of supply chains • Protection of vendor & customer reputations	• Reporting • Tenders & sale agreement negotiations • Product quality & safety data sheets
Suppliers & Contractors	• Reliability & continuity of business • Protection of principal & supplier reputation	• Reporting • Engagement in heritage assessments • Consultation on project approvals
Workforce	• Reliability & continuity of business • Fair remuneration and safe conditions of work	• Reporting • Training and meetings • Grievance mechanism
Other Mines & Mineral Explorers	• Access to infrastructure & resources • Mutual assistance • Political advocacy	• Tenure applications & access agreement negotiations • Meetings & correspondence
Local Communities	• Local employment & opportunities • Community development • Mine use of public infrastructure	• Reporting • Community feedback & complaints procedures
Native Title Group	• Protection of cultural heritage & management of country • Indigenous employment & opportunities	• Reporting • Engagement in heritage assessments • Consultation on project approvals
Pastoral Leaseholders	• Protection of land, water & other natural resources • Pastoral use of land & mine infrastructure	• Meetings & correspondence • Tenure applications & negotiation of access & mining agreements
Interest Groups / NGOs	• Protection of cultural heritage, biodiversity & natural resources • Support for community development	• Reporting • Community feedback & complaints procedures
Local Government Authority	• Compliance with planning & health regulations • Public infrastructure use • Community development	• Reporting • Meetings & correspondence • Consultation on project approvals
Mining & Environmental Regulators	• Compliance with all regulations • Protection of biodiversity, water & other natural resources • Administration	• Reporting • Consultation on project approvals • Submission of approval applications • Annual site inspections
Employment Regulators	• Operational safety & health at mining & related operations • Compliance with labour & safety laws	• Reporting • Workplace inspections & follow-up correspondence
Corporate, Tax & Financial Regulators	• Payment of tax & other duties • Corporate governance	• Reporting • Governance & financial statement • Tax returns

GRIEVANCE PROCESS

Panoramic has a Speak-Up Policy that allows anyone connected with Panoramic to confidentially raise concerns about Company policy and procedure breaches or other misconduct or malpractice. Panoramic's Whistleblower Hotline provides an independent and confidential method to raise grievances, including regarding a breach of Code.

External grievances are handled as per regulatory requirements of the relevant Western Australian legislation and operational permit conditions at the mine site and port. Panoramic remains open to requests for engagement from any interested parties that have a material stake in the outcomes of its operations. Panoramic notes that unless otherwise specified under contracts, agreements, or approvals, much of the engagement is ad hoc or as requested by the stakeholder. Two external grievances were brought to Panoramic's attention in FY23 and are discussed in later sections of this Report. Grievances made by any stakeholder are addressed as a matter of priority.

Panoramic maintains registers of key stakeholder contacts, details and outcomes of discussions and consultations, and community or other complaints records. The planned update to the Environment and Community Management System in FY24 will formalise the process for addressing and resolving any external grievances.





04. DETERMINING MATERIALITY



PROCESS

In the lead-up to the release of information related to sustainability under the GRI and SDG frameworks, relevant members of the Panoramic Board collaborate with appropriately qualified third-party consultants to evaluate how the operation is tracking its impacts on sustainability matters in each reporting year. The consultants utilise this guidance to inform the interview process with internal stakeholders to identify trends and materiality. This is workshopped with the Panoramic executive team and reported on accordingly. Anything that is not reported is identified and justified in the GRI content index found at the conclusion of this Report.



A systematic assessment of all previously reported GRI standards and SDGs against current reporting year operations and Panoramic sustainability key elements.

Identify the positive or negative impacts to sustainability matters through interviews with internal Panoramic stakeholders and leadership led by third party sustainability consultants.

Gather data for identified impact areas and analyse trends in achieving better sustainability outcomes. Understand these trends to set future goals and targets as the operation matures.

Organise data per GRI topics and SDG targets identified as material to the organisational and reporting year. Disclosure information publicly to all stakeholders.

FY23 MATERIAL TOPICS

Panoramic corporate-level activities, Savannah Mine and port operations that have occurred in FY23, as understood through interviews with relevant Panoramic personnel, data analysis and the materiality parameters in GRI 3, have not led to significant changes in the GRI topics and SDGs relevant to Panoramic. Therefore, no new material topics have been added or subtracted in this Report, as shown in Figure 4 1. GRI topics included in this year's Report have been categorised and incorporate the key elements of the Panoramic sustainability strategy to streamline the information presented.

The FY23 Report includes disclosure against G4 Sector Disclosure for Metals and Mining (2010) as it is publicly released ahead of the anticipated GRI Mining Sector Standard. Panoramic will reevaluate impacts and disclosures upon release of the Mining Sector Standard currently being finalised by GRI in FY24.



SUSTAINABILITY MISSION

Our vision is to play an important role in the global transition to a low carbon economy by providing the nickel needed to store and dispatch renewable energy.

OUR BUSINESS	Directly contributing to the low-carbon transition Preserving our cultural & ecological heritage Supporting our communities		GRI 201, 203, 204, 306, 308, 414
OUR PEOPLE	Supporting our communities Labour rights & the abolition of forced or child labour Gender & racial equity in employment & economic participation		GRI 401, 404, 405, 406
OUR APPROACH TO SAFETY AND WELL-BEING	Protecting our people from harm Occupational health & safety		GRI 403
OUR LOCAL AND GLOBAL COMMUNITY	Directly contributing to low-carbon transition Preserving our cultural & ecological heritage Safely storing our process tailings Preparing for closure		GRI 408, 409,411, 413, 414
CARING FOR OUR ENVIRONMENT	Supporting our communities Preserving our cultural & ecological heritage Enduring benefits to the local economy & community		GRI 301, 302, 303, 304, 305, 306, 308

FIGURE 4-1- **MATERIAL CATAGORIES, THEMES AND STANDARDS INCLUDED IN THIS REPORT**

MANAGEMENT OF MATERIAL TOPICS

Panoramic recognises the possible risks and their associated social, environmental and economic impacts from all operational activities. Measures to identify and address these are primarily achieved through active management of the operational risk register, which the Board Risk & Sustainability Committee considers when required. Otherwise, Panoramic manages impacts through regulatory compliance, policies and procedures. The effectiveness of impact management is understood through audits, investigations and benchmarking. Panoramic discloses the management of its impacts through GRI reporting, regulatory mechanisms, the Company website and conferences.

Detail on Panoramic's impact management is provided in the following sections and is reported in accordance with the relevant GRI standards for the selected material topics.

05. OUR BUSINESS





















FY23 HIGHLIGHTS

In FY23, Panoramic concluded its offtake arrangements with Jinchuan Group Co. Ltd and Sino Nickel Pty Ltd (together "Jinchuan") in February 2023 after 20 years of cooperation. Jinchuan has been a valued, long-term offtake partner of Panoramic and received its first concentrate shipment from Savannah in 2004.

To support the restart of the Savannah operations in April 2021, the Company entered into a new five-year nickel and copper concentrate offtake agreement for the period February 2023 to February 2028 with Trafigura Pty Ltd (Trafigura), which commenced in mid-March 2023. The Trafigura offtake agreement was executed following a competitive tender process and reflected commercial terms that were more favourable than the Jinchuan offtake agreement. As part of the offtake arrangement, Trafigura also agreed to provide a US$45M secured financing facility which substantially funded the restart of the Savannah operations. The facility comprises two tranches. The first tranche is a five-year US$30.0 million Prepayment Loan Facility (PLF) that was drawn down in September 2021. Principal repayments commenced in August 2022 in accordance with an agreed minimum monthly repayment schedule. The second tranche is a US$15.0 million Revolving Credit Facility (RCF). The facility was drawn down in full on 24 August 2022.

Trafigura is an international company with hubs for metals, minerals, shippers, power and renewable energies in Switzerland, Singapore, the USA, South Africa and more. Notably, Trafigura conducts its own annual human rights reporting.

There have been no divestments or substantive changes in the organisation's capital structure during the reporting period.

POLICIES

- Securities Trading Policy
- Privacy Policy
- Continuous Disclosure Policy
- Anti-Bribery and Anti-Corruption Policy
- Audit and Governance Committee Charter
- Risk and Sustainability Committee Charter
- Shareholder Communication Policy
- Human Rights Policy

FINANCIAL REPORTS

- ASX announcements
- Quarterly Activities Report - Q1 2022
- Quarterly Activities Report - Q2 2022
- Interim Financial Report - Half year 2022
- Quarterly Activities Report - Q3 2023
- Quarterly Activities Report - Q3 2023

FY23 PRIORITIES

- Ensuring human rights are secured across the entire value chain.
- Maintaining steady state production.
- Promoting economic opportunities in the regions we operate.

FY23 DASHBOARD

148

"Panoramic will directly or indirectly deliver enduring economic (and other) benefits to its shareholders and the regions in which we operate"



Local suppliers based within the East Kimberley region



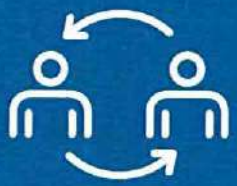
More material mined



More ore processed



Increase in bulk concentrate shipped



81 New businesses engaged



11 Export shipments



4 Electric light vehicles mobilised to Savannah Mine in conjunction with the Electric Mine Consortium

$55,543

In financial contributions to either community programs or donations

$2,244,337

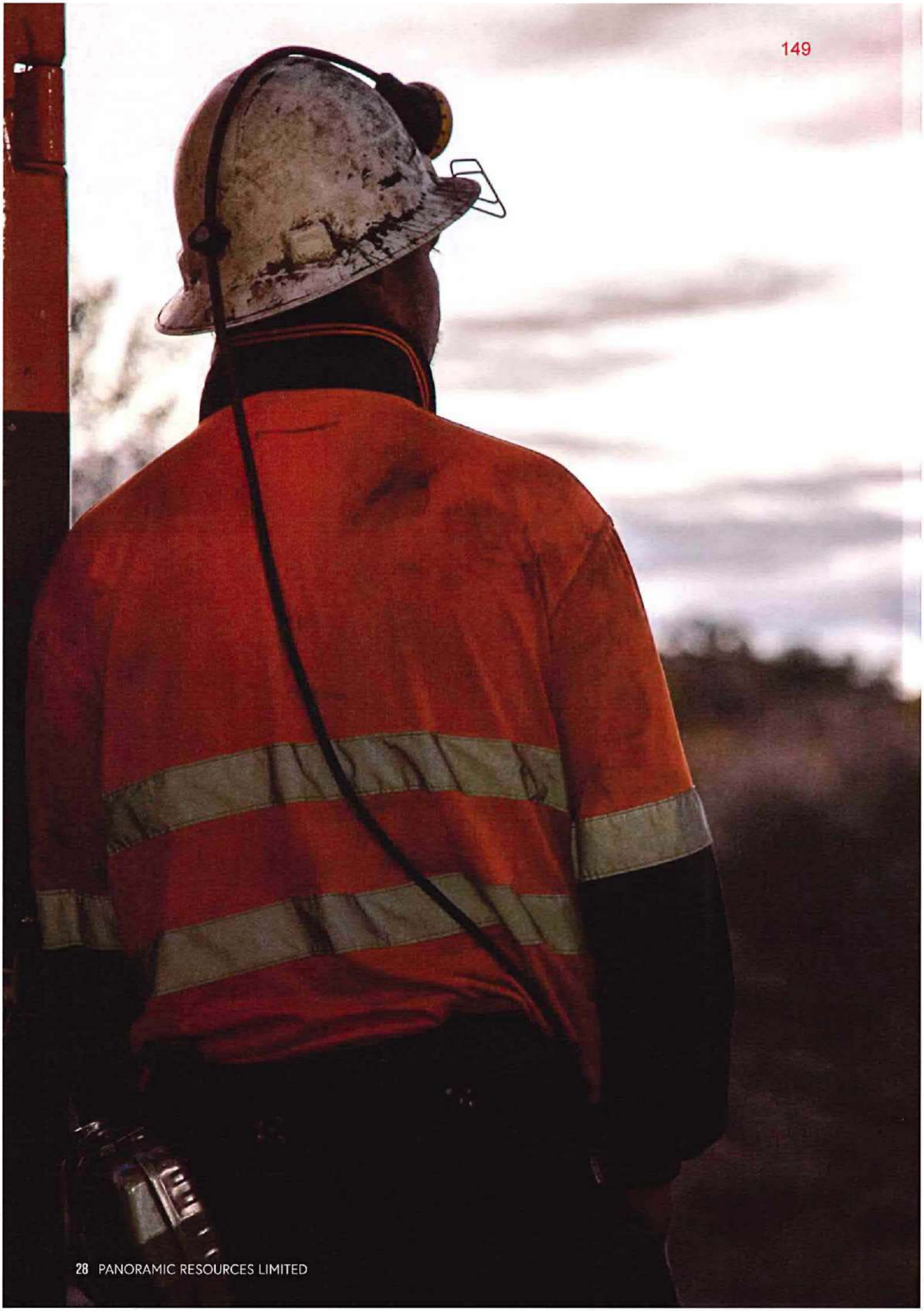
To Traditional Owner Groups as part of Coexistence Agreement

$56,550,851

To local businesses

$7,299,152.53

In royalty payments



5.1 ECONOMIC PERFORMANCE

Panoramic has been active in the Mineral Mining Sector for 20 years, with expertise in nickel, copper and cobalt sulphide projects. As set out in the Corporate Governance Statement and Board Charter, Panoramic's primary business objective is to create and continue building sustainable value for shareholders while considering the legitimate interests of other parties that may be affected.

VALUE CHAIN

Panoramic presently has only one operation, the Savannah Nickel Project. Panoramic sells a raw material (nickel-copper-cobalt concentrate) into an open commodities market to be blended and refined with similar materials from other sources; consequently, its customers are primary metal refining and smelting companies. The Savannah concentrate is a standard raw material sold into open commodity markets with no particular customer branding.

As with most organisations worldwide, Panoramic operations have been affected by the inflationary economic environment in FY23. Costs were predominately impacted by the ongoing effects of elevated pricing for diesel, freight (land and sea) and labour. The price escalation has also impacted the cost of some major consumable items in the processing area of the operation.

Downstream applications of Panoramic's products include the manufacture stainless steel. Panoramic notes high current and projected demand for nickel for cathode plating in batteries to store renewable energy for automotive and domestic use and looks forward to supporting the global transition to a low-carbon economy.

SHIPMENTS

In FY23, Savannah mined 680,438 tonnes (t) of ore and processed (milled) 648,324 t to produce 73,088 dry metric tonnes (dmt) of concentrate that contained 5,402 t of nickel, 3,129 t of copper and 368 t of cobalt. Eleven shipments totalling 84.402 wet metric tonnes of bulk nickel-copper-cobalt concentrate have departed Wyndham Port to the offtake partner over the reporting period.

During FY23, the volume of bulk nickel-copper-cobalt concentrate shipped increased from 41,110 to 84,402 wet metric tonnes, and as expected, increased the number of shipments from four (in FY22) to eleven.

ECONOMIC VALUE GENERATION AND DISTRIBUTION

Information on direct economic value generated and distributed, including operating costs, employee wages and benefits, financing costs, royalties, and voluntary donations, is publicly available via ASX announcements.

During FY23, Panoramic made financial contributions beyond taxation and share value that includes:

- $56,550,851 in payments made to regional businesses located within East Kimberley.
- $1,989,326 in payments to Traditional Owner groups with a claim over the land in which Panoramic operate.
- $255,011 in other payments made under a Co-existence Agreement.
- $7,299,152.53 in royalty payments to the WA Department of Mines, Industry, Regulation and Safety (DMIRS).
- $42,723 to the WA Mining Rehabilitation Fund (MRF)
- $40,000 to Teach Learn Grow (TLG) and other regional community programs.
- $8,023 paid in community benefits.
- $5,000 donation to the Primero Cancer campaign.
- $2,520 donation to the National Breast Cancer Foundation in support of an employee's Shave for a Cure fundraising event.

CLIMATE-RELATED RISKS AND OPPORTUNITIES

Climate change and carbon management is identified within the Risk and Sustainability Committee Charter as a potential risk to Panoramic operations. The Risk and Sustainability Committee convene at least once a year. The Committee provides advice and guidance to the Board on Panoramic's emissions targets, related metrics and climate change and emissions reporting and related disclosures. Although climate risk has not been formally assessed or emissions metrics and reduction targets set, the Panoramic Board identifies the need to holistically address emerging regulatory requirements and stakeholder interests.

Notwithstanding, in FY23, the following climate-related initiatives were achieved:

- The mobilisation of four electric light vehicles to Savannah.
- The integration of Sandvik haul trucks at Savannah, which is developing a reputation in fuel efficiency that may surpass their earthmoving counterparts.
- Review of electrification of mining contractor Barminco's primary fleet at Savannah in connection with Barminco's work as a member of the Electric Mine Consortium.
- Conducted a cost benefit analysis on the construction of a 14.3 Megawatt (MW) photoelectric power source with a battery backup to augment energy available for the Savannah processing plant.

Opportunities:

- Construction of a 14.3 MW 10-ha solar farm to reduce the processing plants' reliance on fossil fuels (diesel consumption) and subsequent emissions. An application for a Miscellaneous Licence for a solar farm has been submitted to the WA Department of Mines, Industry Regulation and Safety. The area adjacent to the processing plant has been identified as the most preferential location, and land access discussions are underway with the Malarngowem Aboriginal Corporation for approval. Once approval has been received from the Traditional Owners, a baseline impact assessment study will be carried out. Alternative areas on the Savannah Mining Lease have also been identified, and the Company plans to evaluate all locations to determine the optimal costs, timing and efficiencies.
- Projected demand for nickel and other materials for use in batteries presents an opportunity for Panoramic, who are one of the few producers of this product in Australia. Product from Savannah could be considered an ethically produced, low energy intensive product if appropriately benchmarked against its global peers.
- Recent changes to Australia's Safeguard Mechanism, designed to monitor and track GHG emissions, may now identify Savannah as a lower emissions' producer even ahead of its potential solar farm installation and any other operational efficiencies.
- As more governments, investors, and customers penalise products with high greenhouse intensity (risk) or seek low carbon alternatives, Panoramic may be able to place a premium on its products with low greenhouse intensity (opportunity) in future with minimal adjustment. Panoramic's current offtake parties insulate its product from such penalties; however, Panoramic does not discount the longer-term risk.

Risks:

- Climate change may become a physical threat to Panoramic staff and assets within the presently expected life of operations through extreme heat, drought, and flooding that may lead to an increase in liabilities. These risks have also been realised through the disruption to haulage and road damage resulting from Tropic Cyclone Ellie during the reporting period. Relief funds were obtained from the Western Australian government to alleviate the financial pressure this placed on operations. To manage risks to staff, safety training on dehydration and heat management at Savannah is delivered to all site personnel in the lead up to summer.
- Long-term challenges to the success of mine rehabilitation due to climate change impacts may lead to increased social and economic liabilities. To date, these impacts have not been observed in rehabilitated areas. However, the risks associated with rehabilitation and closure may be experienced during the post-closure monitoring phase for Savannah in the next decade as impacts from climate change are predicted to increase. In the near future, Panoramic are considering the development of a long-term climate change risk assessment that includes closure considerations to inform closure planning.

5.2 INDIRECT ECONOMIC IMPACTS

Panoramic has become a well-known member of the East Kimberley region through its genuine willingness to engage with regional business, contribute to improvement initiatives and participate in community activities. During FY23, Panoramic has continued to engage with its stakeholders through activities such as:

- Presenting Project details at industry and investor conferences
- Continual information updates on the Company website and social media sites
- Ongoing financial, environmental and social compliance reporting as per regulatory requirements
- Provision of requested ESG data to investors and participants of the Company value chain
- Answering individual queries on any matters presented in this and past Sustainability Reports
- Preference for commercial engagement with regional businesses and suppliers, such as Cambridge Gulf Limited (CGL), through the tendering process
- Development works in the neighbouring Aboriginal community of Frog Hollow
- Funding and participation in the Teach Learn Grow program in Wyndham and
- Financial contributions to Aboriginal advancement funds; and
- Multiple contributions to worthy causes, some of which were promoted by Panoramic employees.

To prepare members of the local community for available employment opportunities, Panoramic continues to support education programs that target students living in rural and remote areas within the Kimberley region. In FY23, Panoramic maintained its partnership with Teach Learn Grow (TLG) - an initiative aimed at bridging the educational gap between rural and remote students. In FY24, the TLG Rural Program will provide 15,000 or more hours of in-person tutoring and mentoring across rural areas in WA, particularly Wyndham and Kununurra schools. Any sponsorship funds remaining after each budgeted program will remain with TLG and be utilised at their discretion for charitable purposes.

In FY23 394 suppliers were engaged by Panoramic including 33 local suppliers (local being based in the East Kimberley Region, Figure 5-1). Although local suppliers represent only 8% of the Panoramic supplier base, total payments to local businesses amounted to AUD 56,550,851, demonstrating Panoramic's commitment to supporting local businesses whenever practicable.

Tropical Cyclone Ellie occurred mid FY23 and was responsible for enormous rainfall and flooding impacts - including critical public infrastructure across the Northern Territory and Kimberley Region. The associated disaster proclamation area included the Shires of Broome, Halls Creek, Derby-West Kimberley, and Wyndham-East Kimberley. As such, Commonwealth and State Governments jointly provided financial support to assist with the exceptional freight requirements for businesses impacted by Tropical Cyclone Ellie (i.e., highway transportation relief). In FY23, separate claim applications were made for $9,599.49 and another $149,420. Only the claim of $9,599.49 was received in the FY23 reporting period, whilst the $149,420 was received early FY24. There is an estimated $30,000 remaining to be claimed in FY24.

5.3 PROCUREMENT PRACTICES

Whenever possible, Panoramic will procure services from regional suppliers in preference to suppliers from outside the local area, however due to its remote location within a sparsely populated region (Figure 5-1), this preference can be challenging to achieve. A selection matrix used in the tender evaluation process enables Panoramic to give a weighting to the locality of potential suppliers.

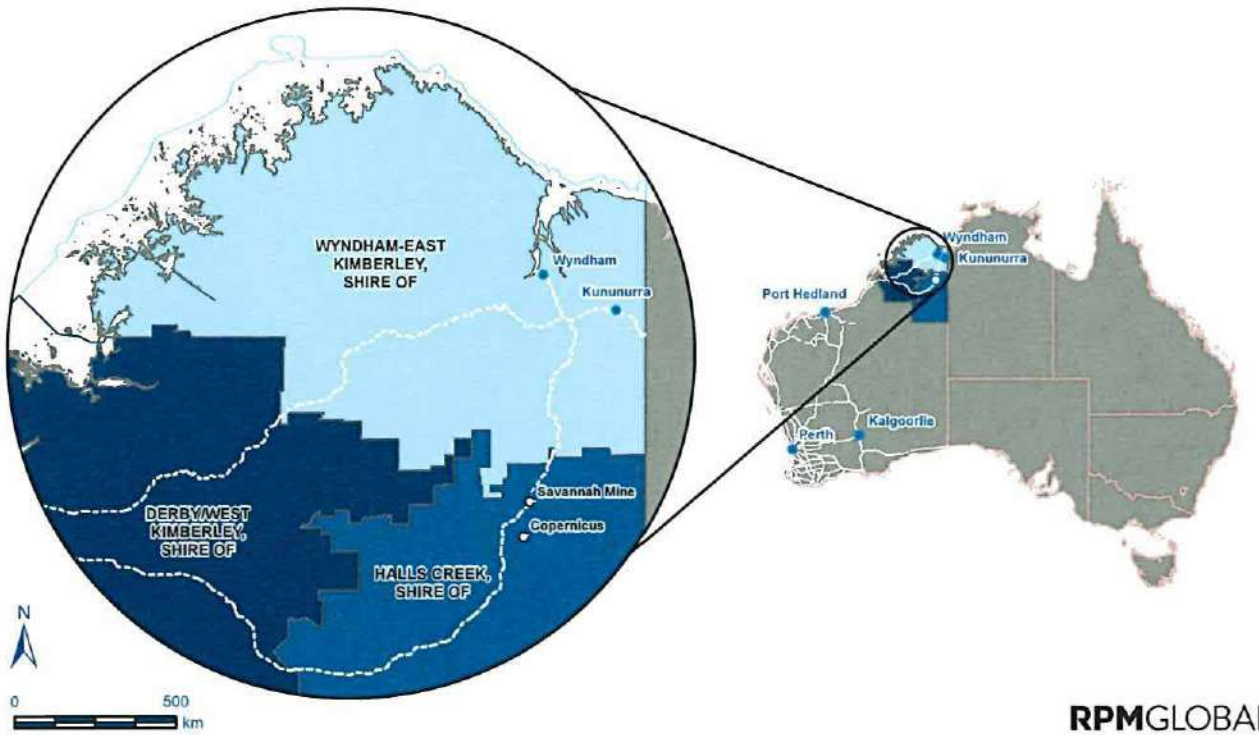


FIGURE 5-1- EAST KIMBERLY REGION, WESTERN AUSTRALIA

Panoramic's general approach to awarding contracts involves the assessment of a provider's ability to manage environmental, social and other risks. Although Panoramic does not currently possess specific criteria by which to conduct these tender assessments, they are carried out by experienced commercial and operational staff to a level relative to the provider's maturity. Panoramic undertakes periodic audits and inspections to ensure engaged contractors have implemented controls above basic compliance obligations relating to all material environmental, OHS, or other risks. Based on audits conducted over FY23, Panoramic considers its major contractors to have well-developed management systems and strong track records in managing environmental, social, and other risks. Further improvements to the tender evaluation process at Panoramic will be explored in FY24.

The Project is based on a largely contractor-operated model. Mining, processing, accommodation services and haulage are the largest functions of the Project, all supported by contracting companies with a strong economic presence in the Western Australian mining industry. Throughout FY23, Panoramic largely maintained its major suppliers and contractors.

Mining activities continue to be undertaken by leading underground mining contractor Barminco, a subsidiary of Perenti Global Limited (ASX:PRN).

Operation and maintenance of the existing ore processing plant and non-processing infrastructure at Savannah is being undertaken by mineral processing and engineering specialists Primero Group Pty Ltd (Primero), a subsidiary of NRW Holdings Limited (ASX:NWH).

Panoramic prefers to engage with regional providers for goods and services whenever possible. Cambridge Gulf Limited (CGL) was awarded the road haulage contract to cart concentrate from Savannah to the Port, where the Company maintains a purpose-built storage shed and loading facility and manages the stevedoring process at the Port. CGL has strong economic ties to the East Kimberley region and consciously engages Aboriginal community members for employment when possible.

In March 2023, Ventia was awarded a three-year contract to replace Northern Rise Village as the provider for the operation and maintenance of the Savannah worker's village. Ventia is established as one of Australia's largest essential infrastructure services providers to the mining sector. Ventia is committed to engage Aboriginal and Torres Strait Island people and ran a targeted recruitment drive in Halls Creek before commencing at Savannah in April 2023.

Panoramic selects reputable suppliers with a sound track-record in managing environmental and social risks to serve its operations. The principal suppliers of goods and services to the operations are summarised in Table 5-1.



TABLE 5-1- SUPPLY CHAIN

Supplier	Type of supplier	Supplier's activities with organisations product	Business relationship	Sector specific characteristics of supply chain	Geographic location of its suppliers
Barminco - a subsidiary of Perenti Global Limited	Contractor	Mining fleet and operators	Long-term	Labour and equipment	Australia
Primero Group Pty Ltd (Primero)	Contractor	Plant and infrastructure personnel	Long-term	Labour	Australia
Contract Power Australia	Contractor	Power plant operation and maintenance	Long-term	Energy	Australia
Ventia	Contractor	Village operation and maintenance	Long-term	Labour	Australia and New Zealand
Orbit Chemicals	Wholesaler	Bulk process reagents	Long-term	Product	China
CGL Fuel	Wholesaler	Bulk diesel fuel supply	Long-term	Product	Australia
Bruce Avery Transport	Contractor	Consumables and other road freight to site	Long-term	Transport	Australia
Virgin Australia	Wholesale	FIFO flight services	Medium-term	Transport	Australia
CGL Logistics	Contractor	Product road haulage to port	Long-term	Transport	Australia
CGL Wyndham Port	Contractor	Product storage and ship loading	Long-term	Labour and equipment	Australia
Spliethoff	Supplier	Sea transport of product to market	Long-term	Transport	Global[2]
Energy Power Systems Australia	Contractor	Underground Cooling	Long-term	Equipment	Australia
Northern Cement	Wholesale	Cement	Long-term	Product	Australia
Bureau Veritas	Contractor	On-site laboratory service	Long-term	Labour and equipment	Australia[3]

[2]Headquartered in Amsterdam, Netherlands [3] Headquartered in Neuilly-sur-Seine, France

ENVIRONMENTAL AND SOCIAL IMPACTS IN THE SUPPLY CHAIN AND ACTIONS TAKEN

In FY23, Panoramic lodged its first Modern Slavery Statement to address social considerations related to Panoramic's broader value chain. The statement details where goods and services are sourced and measures adopted to avoid Modern Slavery within the various Panoramic supply chains. All major contractors to Panoramic have Modern Slavery Statements, and new major contractors are asked to do the same. Personnel making decisions on the supply chain communicate the Human Rights Policy to contractors.



06. OUR PEOPLE

FY23 HIGHLIGHTS

Panoramic continues to put people first by supporting both formal and organic opportunities to encourage professional and personal growth, as well as promote health and wellness.

In FY23, Panoramic provided financial support to two employees to upgrade their skills or qualifications. Panoramic supported and encouraged several fundraising events for worthy causes, such as breast cancer awareness initiated by Savannah personnel, through fun fundraising events that may or may not have involved shaving some heads. A total of AUD15,000 was raised by staff and contractors to Panoramic.

To promote increased diversity, Panoramic placed a focus on hiring qualified female candidates wherever possible. When hired, Panoramic ensured remuneration was appropriated balanced per industry standards in line with our values and Diversity Policy.

This year, Panoramic placed a strong focus on the mental health and well-being of all personnel and contractors working in remote locations through several initiatives such as:

- Promoting mental health first aiders training to help spark difficult conversations and encourage people to speak up when battling mental health concerns.
- Painted a tree blue at Savannah as a part of mental health first aiders to help spread the message of support to speak up.
- A sleep and mental health specialist has been to Savanah numerous times to work with all personnel wherever required, with positive feedback received.
- 'R U OK' morning tea events to further encourage people to reach out for help or speak up when help is needed.
- Provide access to exercise physiotherapy to all emergency response volunteers.

POLICIES

- Diversity Policy
- Code of Conduct
- Panoramic Values
- Board Charter
- Nomination Committee Charter

FY23 PRIORITIES

- Personnel health and well being
- Assisting personnel in meeting their professional and personal goals
- Increase Diversity of Female and Aboriginal personnel
- Commence implementation of Peopletray to accurately track movements and safety of all site personnel.

FY23 DASHBOARD

"Panoramic values the contributions of its employees. We provide resources to promote positive advancement for employees and strive to address diversity inequities".



Female board members



Female management



Female supervisors



Female Panoramic employees



Increase of female personnel across all operations



Total personnel across all operations identify as Aboriginal, First Nation or ethnic origin

100% Of performance and career reviews conducted

0 Parental leave taken



Increased standard of incident investigations to ensure quality actions from investigations to prevent re-occurrence of similar incidents.

2 Employees recieved finanical support to upgrade skills or qualifications



New personnel management system implemented (Peopletray) to allow better diversity tracking



Mental Health First Aid training

6.1 EMPLOYMENT

Panoramic employee numbers have increased from 57 to 64 this reporting period due to the continued ramp-up at Savannah. Panoramic maintains a relatively small management and technical team to oversee Project development. Mining, processing, maintenance, and operation of Panoramic assets are primarily outsourced to contractors. Data on Panoramic's employees has been compiled from Company records kept in accordance with Australian employment laws.

NEW EMPLOYEE HIRES AND EMPLOYEE TURNOVER

During the reporting period, 26 new Panoramic employees were hired between the Port, Savannah and the Perth operations. Of those one was female and 25 were male. Turnover across the Perth, Savannah and Port operations was almost a like-for like ratio with 22 employees leaving and, of that, two were female and 20 were male. Female turnover is well below male turnover this year, which speaks to the improvements in inclusion and respectful behaviour training at Savannah.

The 22 new hires working at Savannah spanned multiple age brackets (with five under 30 years of age, ten between 30 – 50 years old and seven over 50 years of age). Every three months a traditional smoking ceremony is held to welcome new hires at Savannah by the neighbouring Traditional Owners (Figure 6-1).

Benefits provided to full time employees of Panoramic include, health care, stock ownership (key leadership roles only), parental leave, retention bonus for select staff (monetary), short term incentive plan (monetary) and site allowance (monetary).



FIGURE 6-1- **SMOKING CEREMONY**

The number of Panoramic employees is provided by gender below in Table 6 1. Due to the nature of the mining industry, most personnel are employed on a full-time basis. Three Panoramic employees identify as Aboriginal, First Nations or of other ethnic origin, whilst fifteen identify as female. All employees are distributed across three locations in Western Australia: the head office in Perth, the Savannah Mine and Wyndham Port. Most employees based at Savannah are Fly-in-Fly-Out (FIFO) from Perth. Head office staff based in Perth are also expected to spend a portion of their time working at Savannah, depending on the nature of their oversight duties.

WORKERS WHO ARE NOT EMPLOYEES

Two major reputable Australian contractors, Barminco (part of the global Perenti group) and Primero (part of the Australian NRW group), have been engaged at Panoramic since the transition from care and maintenance in 2021. Barminco is engaged to supply mining fleet and operators and Primero for the operation of the processing plant and other project infrastructure.

In FY23, Ventia were engaged for the operation and maintenance of the Savannah worker's village. Ventia is one of the largest infrastructure essential service providers in Australia and New Zealand, working across a broad range of industries. It was created in 2015 following the merger of Leighton Contractors Services division, Thiess Services and Visionstream and later the acquisition of Broadspectrum in 2020.

All contractor employees reside in Australia and are predominately FIFO from Perth to Savannah, with several Drive-in Drive Out (DIDO) from nearby regional locations. Due to Savannah operations' return to steady-state production, the amount of personnel working at Savannah on a regular or as needed basis have increased from 296 in FY22 to 997 in FY23. A total of 17 contractors employed full time at Savannah identify as Aboriginal, First Nations or of other ethnic origin amongst the three major contracting companies.

The employment statistics for these primary contractors to Savannah are detailed in Table 6 1. Data on contractor staff has been compiled from Company records kept in accordance with Australian employment laws.

TABLE 6-1- EMPLOYEE NUMBERS

Female	Female %	Male	Male %	Other*	Not Disclosed	Total
Panoramic						
15	24%	49	76%	0	0	64
Barminco						
31	12%	233	88%	0	0	264
Primero						
10	8%	117	92%	0	0	127
Ventia						
29	51%	28	49%	0	0	57
Other Contractors						
39	9%	398	91%	0	0	437

*Gender as specified by the employees themselves.

Cumulatively, female employment at Savannah is 28% which is above the published averages for the Australian mining industry at 21%. Panoramic is proud of this achievement and will continue to advocate for its operations to be an inclusive workplace.

The Australian Fair Work Act 2009 (Cth) protects employees' workplace rights to be free from unlawful discrimination and the right to engage in industrial activities, including collective bargaining agreements (known as enterprise bargaining agreements or EBAs). Under this framework, EBAs can be arranged by a selected representative body with the employer; however, no Panoramic employees have elected to develop such an agreement. Panoramic understands that its major contractors may have EBAs in place for employees deployed to Savannah and continues to support their right to negotiate for such arrangements should they choose as per relevant Australian legislation.

PARENTAL LEAVE

All Panoramic employees are offered parental leave per the Australian government's National Employment Standards (NES), which applies to all employees in the national workplace regardless of their contractual arrangement with the employer. It covers birth and adoption-related leave, return to work guarantee and job transfer options, among other entitlements. Parental leave entitlements are available to those employed with the Company for 12 months or longer. Parental leave entitlements are provided to Panoramic employees irrespective of their gender identity.

Panoramic commenced tracking the total number of employees that took parental leave and the associated return rates; however, no employees took parental leave over the reporting period.

6.2 TRAINING AND EDUCATION

AVERAGE HOURS OF TRAINING PER YEAR PER EMPLOYEE

New Panoramic staff receive mentorship during onboarding to assist with their daily tasks and set career goals. Over the course of an employee's probation period, three formal reviews are conducted that are supplemented with ongoing informal onboarding and mentorship. All new employees are given a tour of the Company intranet, where policies and procedures are kept (e.g., Code of Conduct). Company-wide corporate training programs are otherwise delivered as required.

Since April 2023, mental health first aid training has been made available monthly to all staff (including Board members) and contractors at the Savannah Mine workforce. To support this training, a Sleep and Mental Health Specialist (Doctor) visited the site numerous times to present sleep seminars, conduct medical consultations with workforce members, and provide follow-up care planning where required. The program is expected to continue for six months, at which time Panoramic will evaluate the program's success. Feedback thus far indicates that the workforce highly appreciates the training program and is a central conversation piece amongst the workforce.

A 15-minute online training program on human rights was conducted by the entire workforce to provide guidance on the identification of possible human rights abuses in the value chain.

At Savannah, most training is related to OHS and environmental topics. Relevant staff undergo daily toolbox sessions, weekly maintenance training, and quarterly role-specific safety training. The 22-person volunteer Emergency Response Team (ERT) receives specialist training offsite to obtain certifications for critical safety aspects such as underground search and rescue or mine management response. Panoramic is continually seeking new ERT members to upskill.

PROGRAMS FOR UPGRADING EMPLOYEE SKILLS AND TRANSITION ASSISTANCE PROGRAMS

Panoramic provides opportunities for employees to receive financial support for completing post-graduate qualifications as well as offering flexible study arrangements. Study assistance is provided to eligible employees to support their development when undertaking approved courses of study relevant to their role and Panoramic objectives. An employee undertaking an approved course of study may be eligible for reimbursement of course fees or material costs upon the successful completion of units or semesters. The employee's direct manager may also approve up to two days per unit of paid study leave for a maximum of eight days per year. In FY23, two employees received financial support for upgrading their skills or qualifications.

PERCENTAGE OF EMPLOYEES RECEIVING REGULAR PERFORMANCE AND CAREER DEVELOPMENT REVIEWS

Understanding staff performance and developing their skills is an integral part of Panoramic's approach to employee management. The employee performance review process is based on a cycle of performance planning (key performance indicators), ongoing discussions (two-way feedback), final performance review (performance rating and career aspirations) and reward and recognition.

Employee behaviours are assessed against Panoramic Values (people, proud, performance and progress) and competencies related to communication, teamwork, planning, performing, solving problems, decision making, innovation, and developing self and others.

All Panoramic employees consulted with their direct leader to review performance and individual development plans in FY23.

6.3 DIVERSITY AND EQUAL OPPORTUNITY

DIVERSITY OF GOVERNANCE BODIES AND EMPLOYEES

This section provides commentary on Panoramic's own management team and workforce. Direct suppliers, contractors, and third-party suppliers and contractors have not been included in this Report.

In FY23, the Panoramic Board retained its diverse composition consisting of two females, various age groups, multiple ethnic origins, and experience working across a variety of global jurisdictions. The eight-person Panoramic management team has two females. A profile of the Board members and Management Team can be found on Panoramic's website and a breakdown of staff by gender is provided above in Table 6 1.

A new Personnel Management System was implemented in FY23 to enable Panoramic to better track workplace diversity (including female and Aboriginal representations). This system referred to as Peopletray, is covered in more detail in Section 7. Panoramic may consider adding diversity targets in the future.

Panoramic aims to meet objectives for Aboriginal employment in line with the Kimberley Nickel Co-existence Agreement and holds its major contractors to the same standards by requiring them to demonstrate efforts to meet Aboriginal employment objectives.

Panoramic recognises it remains aligned with the Australian mining industry trends in regard to female and minority group representation for the reporting period. Aside from continuing to review and update relevant corporate policies, Panoramic will continue to work with advocacy groups such as AMEC to address this issue on a holistic industry level.

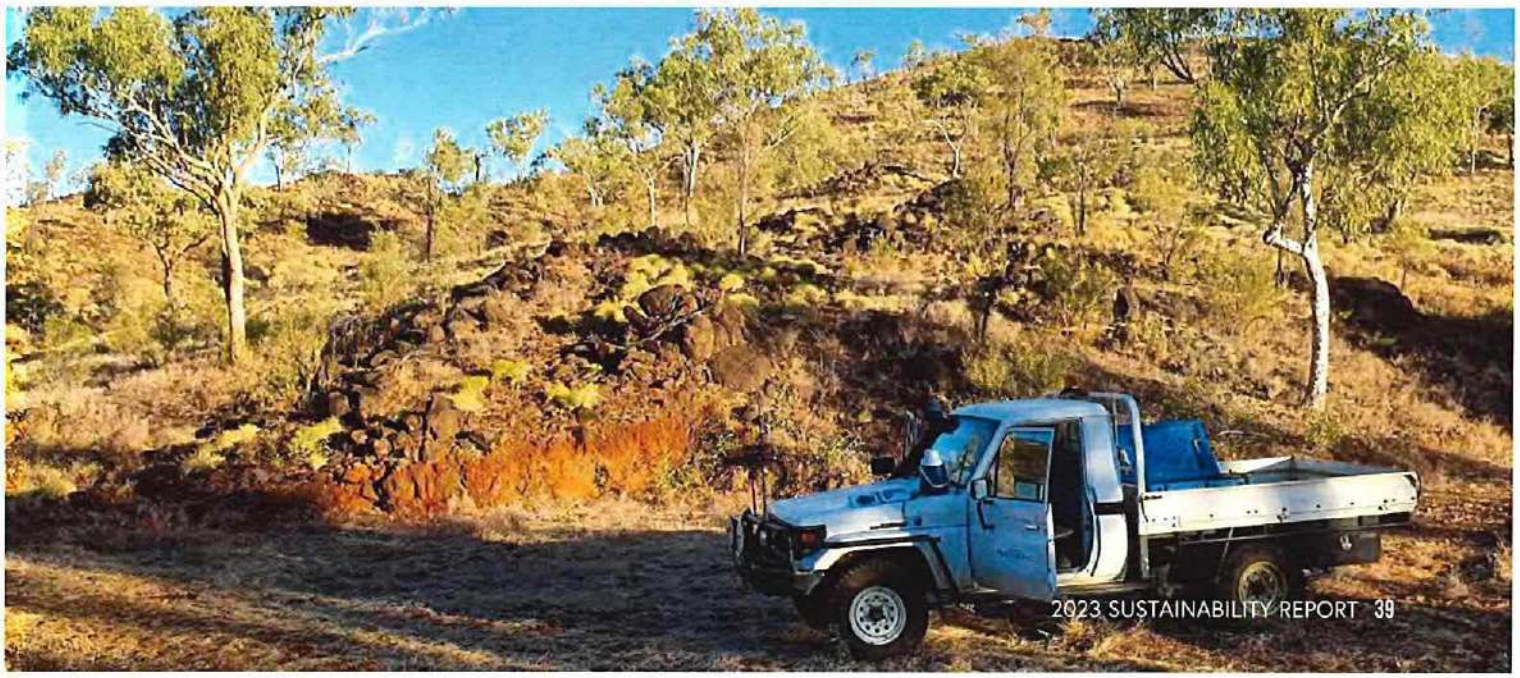
Panoramic notes that Workplace Gender Equality Agency (WGEA) reports on workforce participation, women in leadership, the gender pay gap and employer action on workplace gender equality for its larger contractors will be publicly available in the interim.

6.4 NON-DISCRIMINATION

INCIDENTS OF DISCRIMINATION AND CORRECTIVE ACTIONS TAKEN

Panoramic did not identify any occurrence of discrimination in FY23 within the Panoramic workforce, nor is it aware of any substantive incidents in previous years of operation.

Panoramic is committed to providing a workplace free from discrimination and its expectation and the requirements of the Code were explained at workshops held at Savannah and in the Perth corporate office on bullying and workplace harassment.





07. OUR APPROACH TO SAFETY AND WELLBEING

FY23 HIGHLIGHTS

The new Mine Safety Management Systems (MSMS) is nearly complete in accordance with updated regulatory requirements and will be rolled out to all operations in early FY24. Throughout the FY23 reporting period, Panoramic introduced a new cloud-based safety management software, Peopletray, which also manages FIFO timesheets, rosters, and flights.

The Emergency Response Team (ERT) continues to improve, with several of the members attaining their Certificate III in Mine Emergency Response and new members joining the team regularly. Training of current members and recruitment of new members was ongoing throughout the reporting period. Savannah has had to seek an alternative to the mutual aid mines emergency response arrangement with the Halls Creek Project as it went into care and maintenance over the reporting period.

Ahead of the 2022/2023 wet season that also brings higher temperatures, there was a significant focus on dehydration and managing heat in the workplace. Additional hydration testing of crews and regular education sessions in safety meetings were introduced.

The employment of an additional full-time Safety and Emergency Response Advisor within the Safety team was achieved during the reporting period. The appointment provides consistent safety and emergency response coverage onsite. This role also assists with implementing a new Safety Management System that will be rolled out in early FY24 in line with updated legislative requirements.

In FY23, the impact of COVID-19 on the workforce significantly decreased, with only a handful of cases presenting at the start of the reporting period.

POLICIES

- Whistleblower Policy
- Risk Management Policy
- Mine Safety Management Systems

FY23 PRIORITIES

- Personnel health and well being
- Assisting personnel in meeting their professional and personal goals
- Increase Diversity of Female and Aboriginal personnel
- Commence implementation of Peopletray to accurately track movements and safety of all site personnel.

FY23 DASHBOARD

"The wellbeing and safety of all personnel onsite is our number one priority. Health and safety risks associated with our operations are as low as reasonably practicable and we maintain a comprehensive mine safety management system".

Peopletray (new cloud-based safety management software) commenced implementation.

Continuation of MSMS implementation

Injury Frequency Rates up (due to exponential increase of personnel onsite)

- RWIFR 2.5
- LTIFR 3.8
- TRIFR 6.3

22 Emergency Services personnel

17 People conducted Blue Tree Project and mental health first aid training

Replacement fire truck with site-specific capabilities ordered



7.1 OCCUPATIONAL HEALTH AND SAFETY

OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEM

In June 2022, under the newly implemented Work Health and Safety Act 2020 (WHS Act) and, more specifically, the Work Health and Safety (Mines) Regulations 2022 (WHS Regulation) a new Code of Practice was released for the development of Mine Safety Management Systems (MSMS). The MSMS replaces the previous Project Management Plan (PMP) requirement under the Mines Safety and Inspection Act 1994.

In response to this new Code of Practice, Panoramic is finalising the changes to its management systems that will ensure alignment with the new WHS Act and regulations. This involves the development and implementation of a new MSMS across its operations. The draft MSMS includes much of the information from the previously required PMP, which identified potential risks at various stages of the operational life cycle from construction to closure and formed the basis for the development of an appropriate site-specific OHS management system for the operations. In August 2022, DMIRS conducted a site inspection at Savannah in line with the new WHS Regulation, which was focused on underground ventilation and hygiene matters.

Policies, systems, procedures and plans have been developed or reviewed for consistency with the new MSMS (for example, the Savannah Nickel Emergency Response Plan in April 2023). It is expected that implementation of the MSMS will be completed by the end of 2023.

It is envisaged the new system will assist Panoramic in managing OHS matters across its workforce as well as smaller short-term contractors. The longer-term, established contractor Barminco has developed their own OHS systems specific to their work tasks and are periodically audited by their corporate branch. Primero now has in place a full-time (back-to-back) safety advisor role whose responsibility is to manage and audit their OHS system, whilst Ventia, a relatively new contractor to Panoramic, is currently implementing their OHS systems.

To ensure major contractors are compliant with relevant regulations and maintain best practices, Panoramic conduct internal (annual) inspections, audits and document reviews of those larger contractors working under their own OHS system.

Panoramic notes that the new WHS Act is modelled from national legislation adopted by most states and territories with the intention to be consistent across all workplaces in WA. The consistency in relevant OHS regulations helps to ensure that most national suppliers to Savannah operations are held to the same standards. As Panoramic continues to increase its reporting obligations under the Modern Slavery Act 2019 (Cth) and as guided by the recent release of the Human Rights Policy, OHS standard reviews of overseas participants in its value chain may also be explored further in future.

HAZARD IDENTIFICATION, RISK ASSESSMENT, AND INCIDENT INVESTIGATION

Panoramic employs an experienced health and safety manager and supporting advisors at the Savannah operations to assist the management team and the workforce in identifying and controlling hazards, as well as the implementation of the new MSMS. Several methods are used to identify hazards, assess risks, and develop controls at Panoramic, including workforce consultation, workplace inspections, lessons learned at other sites, industry standards, regulatory bulletins and hazard and incident reports.

During FY23, Panoramic introduced a new safety management software called Peopletray. Peopletray, a cloud-based software system, provides several plug-in "modules" to manage hazard observations and identifications, near misses, safety incidents (injuries and equipment damage), as well as environmental and community-related risks. It is envisaged Peopletray will be rolled out across all Panoramic operations by early FY24.

New or modified tasks across Panoramic operations that are not covered by safe work procedures (SWP) will require a workplace job hazard analysis (JHA) to be completed to incorporate additional controls into the JHA where necessary. Hazards and incidents are entered into Peopletray and reviewed regularly to identify root causes and trends and close out corrective actions to prevent a recurrence.

Investigations required for hazards or incidents involving either Panoramic or contractor workforce are undertaken using the Incident Cause Analysis Method (ICAM) and engage independent subject area experts when required. Incidents are investigated to identify causes. Additionally, corrective actions to address each cause are developed, assigned to suitable persons for action, and entered into a corrective action register to assure timely completion.

As most high-risk activities at Panoramic are conducted by a contractor operator, major incident investigations are undertaken by the contractor companies as per their established OHS system. Relevant Panoramic staff are involved in these investigations when needed and are provided with investigation documentation for review and tracking in the Panoramic reporting system.

As per the internal risk management guideline, Savannah maintains a live site register stored within Peopletray. In June 2023, Panoramic undertook a review of the site risk register, which identified a total of 45 risks across the operations. The risk assessment indicates that implementing current controls reduced the number of inherent risks from 31 moderate and 14 high risks to one low and 44 moderate residual risks.

The relevant committees from the Panoramic Board and Management Team will remain involved in the regular review of risks across Panoramic operations to ensure that operational risks are communicated and understood to the highest governing level of the Company.

ENSURING WORKERS' SAFETY

All workers are encouraged and expected to report hazards in their workplace and are reminded of their rights under the health and safety regulations to cease or refuse work until hazards with the potential for serious harm are adequately controlled. If necessary, workers have recourse to their health and safety representative, the health and safety committee, and the Panoramic Whistleblower Policy. Workers and their health and safety representatives are also entitled under the law to report unreasonable, unresolved hazards directly to health and safety regulators. These rights are communicated to all on-site workers and visitors through the induction material received before working on-site.

During FY23, one OHS-related complaint was filed against Barminco at Savannah operations. The complaint involved a person from a contracting company and was resolved through the relevant contractors' grievance processes. The complaint was reported to DMIRS, and the accused was removed from Savannah, although no charges were laid. No Panoramic personnel were involved in any OHS-related grievances.

WORKER PARTICIPATION, CONSULTATION AND COMMUNICATION ON OHS MATTERS

In accordance with relevant WA safety regulations, Panoramic provides for the election of health and safety at its operations, whose powers include workplace inspections, participation in significant incident investigations, review of proposed changes to operations, and notification of OHS hazards or workforce concerns to the principal employer.

Panoramic maintain a health and safety committee with both management and workforce representatives, from both Panoramic and contractors, whose purpose is to represent the interests of the entire workforce regarding the improvement of OHS controls, dissemination of information on OHS hazards and management, and review of changes to operations that may introduce new OHS risks.

Panoramic encourages all personnel at its projects to report all OHS concerns as soon as they arise through the hazard and incident reporting process and properly investigated. All personnel are required to participate in JHAs for tasks affecting their area of work and are encouraged to contribute to the development of controls.

The individual contractor companies manage the communication of OHS information to the larger workforce; however, it is generally done in person at shift start and quarterly meetings. Each contracting company holds meetings at the beginning of each shift to discuss work plans, handover items from the previous shift and any safety issues that are immediate or long-term. More detailed meetings are held quarterly with the individual contractor companies' work groups as another way to relay OHS information.

OHS TRAINING

In accordance with relevant WA safety regulations, Panoramic requires that all personnel working on its sites have the necessary competencies (i.e., training) to carry out their work safely (such as working underground, electrical, safe work at heights, and heavy equipment). Personnel new to Panoramic operations must attend a site induction before entering the site unescorted or carrying out work. The induction covers essential health and safety controls and procedures, including emergency response.

The newly implemented OHS management system Peopletray will be used to manage the competency matrix for each role on-site and be periodically assessed for compliance against training standards and required competencies and certifications.

Barminco and Primero provide their own site inductions for all staff before they commence work on-site, whilst Panoramic holds the inductions for all its staff and any smaller contractors and visitors. The Panoramic OHS manager regularly reviews contractor OHS systems and competencies to ensure they adequately address the relevant WA safety regulations.

WORKER HEALTH

Australia is recognised as providing universal healthcare coverage, and residents can access high-quality healthcare services. At an operational level, Panoramic encourages workforce well-being. To support this, several health and well-being related programs were rolled out over the reporting period, mainly targeting psychosocial hazards and mental health.

In April 2023, seventeen (17) members of the Panoramic workforce attended Blue Tree Project (which tackles mental health and suicide in regional Australia, shown in Figure 7-1) as well as mental health first aid training. Subsequently, a morning tea and information session was held at Savannah to support the R U OK initiative that encourages people to notice signs of mental health struggles in friends and colleagues, start meaningful conversations, listen, encourage action and check-in.

In FY23, ERT members and FIFO personnel were visited by an exercise physiologist to discuss lifestyle and wellness choices and the potential impacts of FIFO lifestyle on personnel health.
More broadly, Panoramic provides educational material on healthy lifestyles, diet, exercise and mental health via noticeboards and pre-shift "toolbox" talks. Healthy food options are available at the camp mess and a well-equipped gym is provided onsite.

Additionally, support programs are available for those members of the workforce who seek appropriate smoking or drug and alcohol abuse. Personnel are encouraged to seek support or treatment for concerns regarding their health if necessary. Access to on-site healthcare is available to personnel during rostered breaks; if required, alterations to rosters may be available for healthcare purposes.



FIGURE 7-1- **BLUE TREE PROJECT**

WORK-RELATED INJURIES AND ILLNESSES

There have been no recorded work-related fatalities over the life of Panoramic's operations.

The number of personnel onsite increased from 200 to 885; however, no serious occupational injuries or illnesses occurred, with rates of minor injury remaining below industry averages over the reporting period. In FY23, there was one medical treated injury (MTI), two injuries resulting in restricted work duties (RWI) and another three recorded incidents resulting in loss of work (LTI).

Statistics for work-related injuries and illness for the reporting period are summarised in Table 7-1. The Company's 12-month Total Recordable Injury Frequency Rate (TRIFR) peaked at 6.3 during the reporting period following three hand injuries, two of which required offsite medical attention. RWIFR, LTIFR and TRIFR rolling averages are shown in Figure 7-2 to Figure 7-4.

TABLE 7-1- WORK RELATED INJURIES AND ILLNESS

Statistic	Jul 2022	Aug 2022	Sept 2022	Oct 2022	Nov 2022	Dec 2023	Jan 2023	Feb 2023	Mar 2023	Apr 2023	May 2023	Jun 2023
Total Incidents (Monthly)												
MTI[1]	0	0	0	0	0	0	0	0	1	0	0	0
LTI[2]	0	1	0	0	1	0	0	0	0	1	0	0
RWI[3]	0	0	0	0	0	0	0	0	0	0	2	0
TRI[4]	0	1	0	0	1	0	0	0	1	1	1	0
Frequency Rates (FR) per million hours worked (12 month rolling average)												
LTI(FR)	1.4	2.8	2.7	2.7	2.7	2.6	2.6	2.4	2.4	3.8	3.8	3.8
RWI(FR)	1.4	1.4	1.3	0	0	0	0	0	0	1.3	2.5	2.5
TRI(FR)	4.3	4.1	4.1	4	4	2.6	2.6	2.4	3.8	5	6.3	6.3

1 Medical treated injury or illness (MTI): cases where an employee requires treatment by a physician, or other medical personnel, under the standing orders of a physician.
2 Lost time injury or illness (LTI): cases where an employee has no capacity to work on their next scheduled shift.
3 Restricted work injury (RWI) or illness: cases that prevent a worker from performing one or more of their routine job functions or working the full workday they would otherwise have been scheduled to work.
4 Total recordable injuries (TRI): all fatalities, LTIs, RWIs, and other medically treated injuries or illness.



FIGURE 7-2- RESTRICTED WORK INJURY FREQUENCY RATE
(12 MONTH ROLLING AVERAGE)

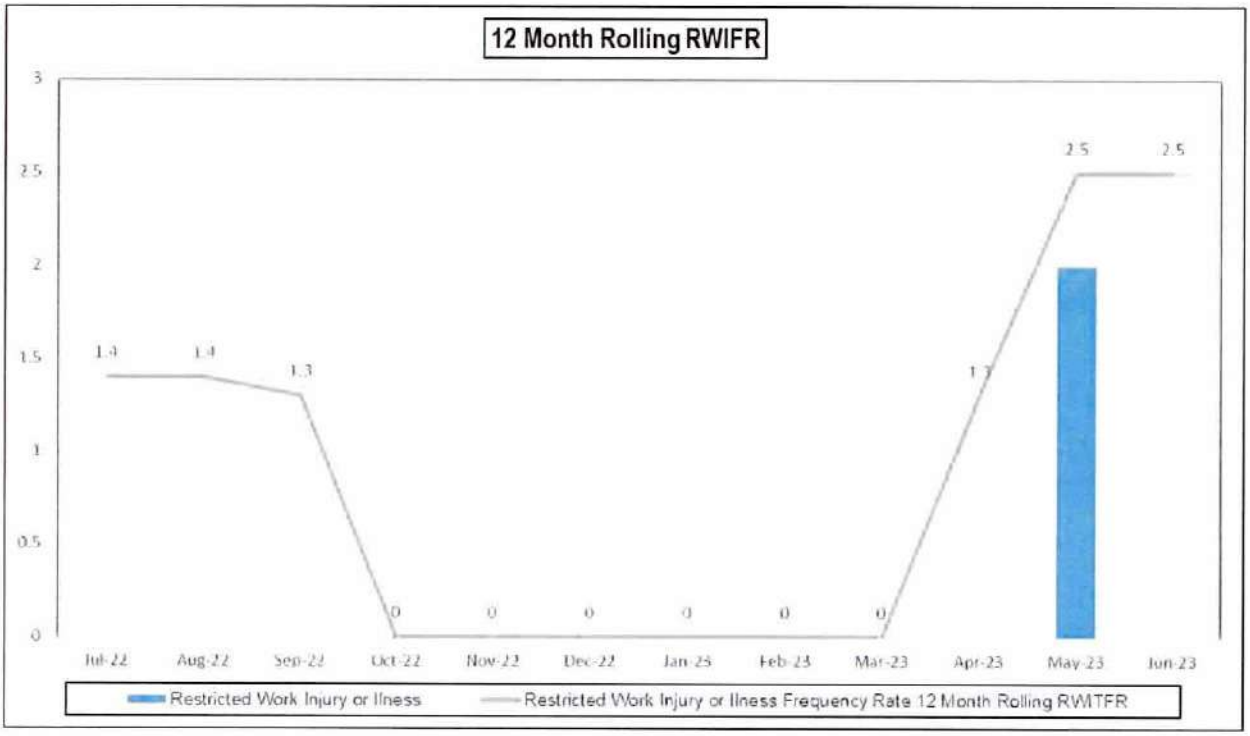


FIGURE 7-3- LOST TIME INJURY FREQUENCY RATE
(12 MONTH ROLLING AVERAGE)

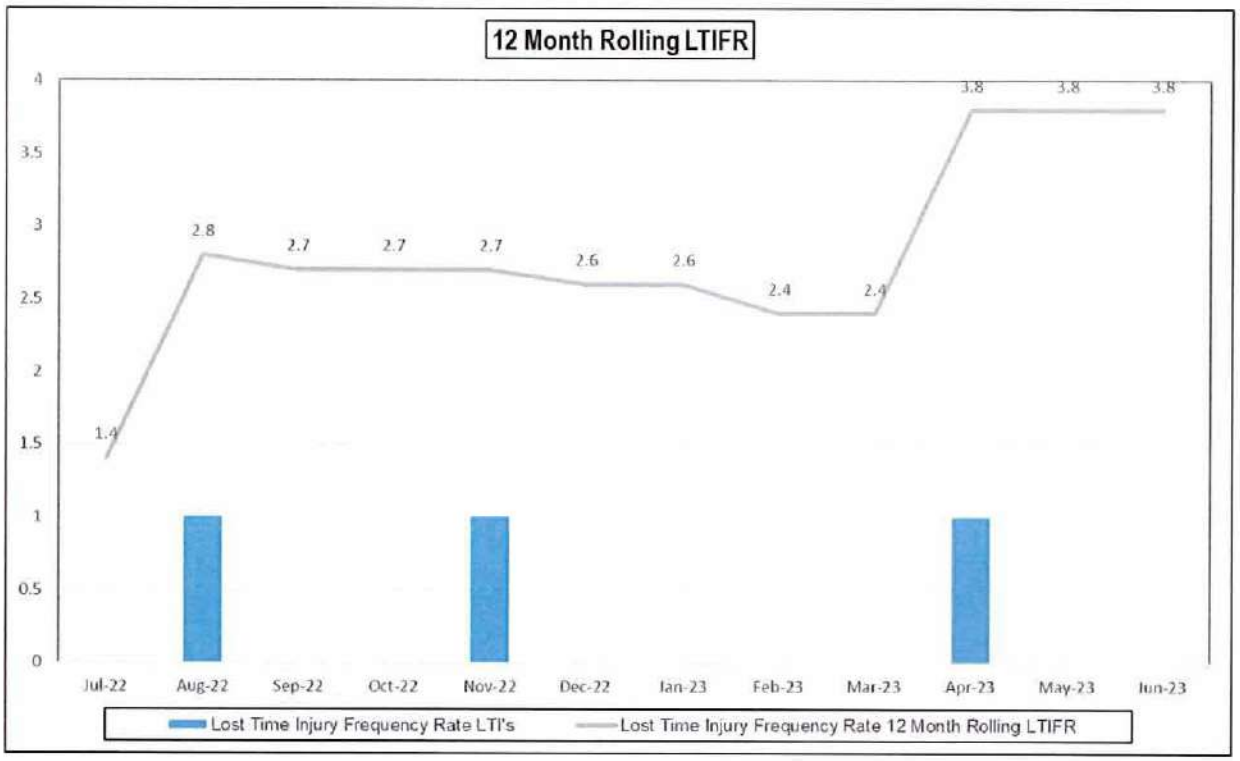
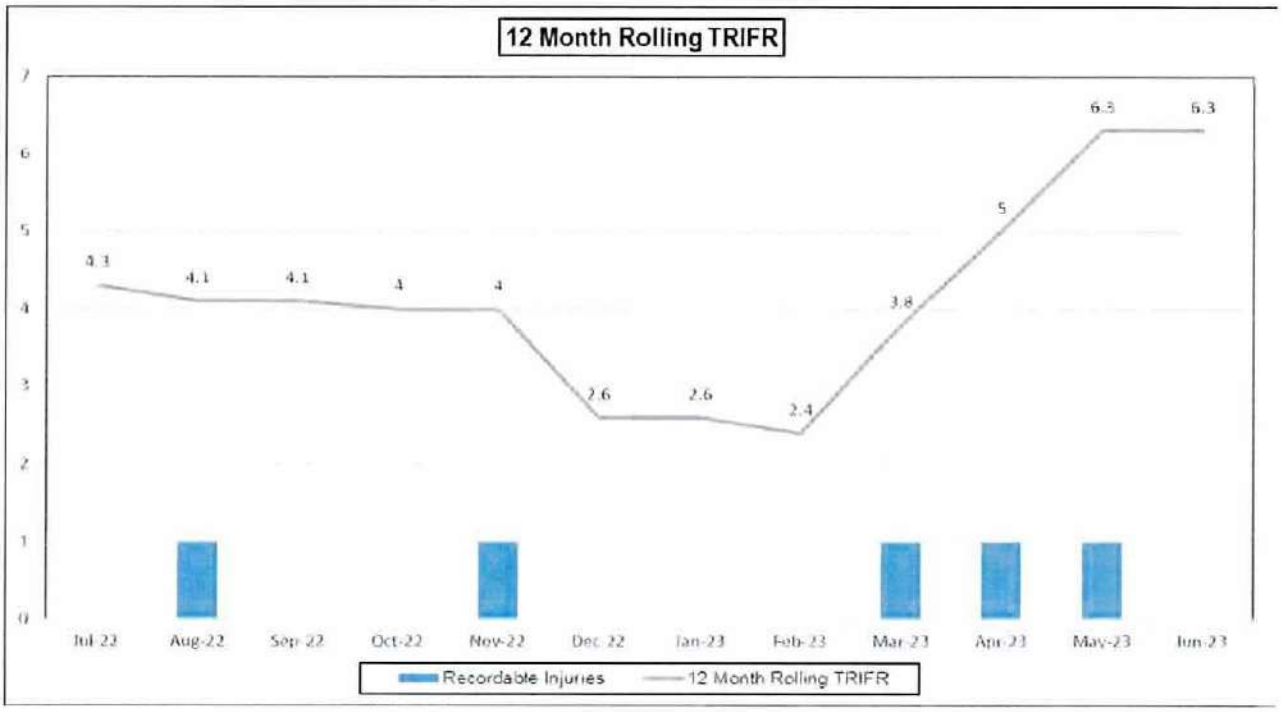


FIGURE 7-4- TOTAL RECORDABLE INJURY FREQUENCY RATE (12 MONTH ROLLING AVERAGE)



OCCUPATIONAL HEALTH SERVICES

Savannah is remote from public health and medical services. Consequently, and in line with WA mines safety regulations and industry norms for the region, it maintains an emergency response team, qualified site medical officer, and medical treatment room, with provision for medical evacuation to public services if necessary.
Medical records are kept secure and confidential by the site medical officer and not shared with third parties other than to facilitate specialist treatment off-site if required. Medical records are not used to discriminate against personnel beyond assuring that they can undertake their assigned tasks safely.

Panoramic has a volunteer ERT comprising two full-time emergency resource coordinators with back-to-back coverage and 22 volunteer members from both Panoramic and the major contractors (per the contractual requirements that ensure their participation). Most members of the ERT have attained a Certificate III in Emergency Response (Figure 7-5).

Additional maintenance training (Figure 7-6) is provided to ERT members weekly, which occasionally involves offsite nationally recognised training through a third-party provider (such as Certificate 4 in Mine Management Response). Although the ERT received a significant upgrade of emergency response equipment, including an ambulance and rescue equipment in the previous reporting period, a replacement fire truck with site-specific capabilities was ordered and should arrive in September 2023.

Given the volunteer nature of Panoramic ERT members (i.e., not available full-time), additional emergency response coverage is required. Previously, a mutual aid agreement was in place between Halls Creek Mining and Panoramic, however; as Halls Creek Mining has entered care and maintenance, Panoramic is investigating the mobilisation of a secondary emergency response team from Perth.



FIGURE 7-5- **MEMBERS OF THE SAVANNAH MINE EMERGENCY RESPONSE TEAM**





FIGURE 7-6- **EMERGENCY RESPONSE TRAINING AT SAVANNAH MINE**

08. OUR LOCAL AND GLOBAL COMMUNITY













FY23 HIGHLIGHTS

This year, Panoramic has strengthened its focus on impacts on the global community by taking the necessary steps to ensure human rights are considered in every part of the value chain at home and abroad. As discussed in previous sustainability reporting, Panoramic was working towards submitting its first Modern Slavery Statement, which was completed in the first quarter of FY23. Following this, Panoramic drafted and brought into force its first Human Rights Policy in February 2023. This Policy reinforces the Company's commitment to respecting the human rights of all people, including employees, the communities in which we operate and personnel in our supply chains, to complement our Code of Conduct. Suppliers and employees will be expected to comply with our Human Rights Policy.

At home, Panoramic continues to foster a strong relationship with the local and regional Aboriginal communities, which has historically been guided by a co-existence agreement between Savannah and some 'close up families' living in communities near the mine.

The focus on protection of Aboriginal cultural heritage, in combination with recent amendment to the Western Australia Aboriginal Heritage Act 1972 (AH Act) and Native Title determination over part of the Savannah project area, has shifted the usual communication channels between Savannah and the 'close up families' with more changes likely in FY24. Despite this, Panoramic maintains a positive relationship with local Aboriginal groups and continues offering individuals funding and support through established advancement programs.

Panoramic continues to support the Teach Learn Grow (TLG) Program with annual funds distributions to ensure rural and remote schools in the region of the mine and Port receive educational support. Panoramic has consistently been funding this program over the last few years. The current arrangement commits funding to the end of 2024, with strong potential for extension beyond that date. As a result, 1500 or more primary school students will benefit from this program's one-on-one mentorship and tutoring each year. During the delivery of the June program in Kununurra, the program experienced an issue with volunteer transportation to the school. The Program Director contacted Panoramic to seek any ride-sharing assistance that might be available. Instead, Panoramic chartered a bus for the volunteers to ensure their comfort and security when delivering the program as an ad hoc gesture of good faith.

POLICIES

- Humans Rights Policy

FY23 PRIORITIES

- Local engagement
- Continuation of support for local communities

FY23 DASHBOARD

"Panoramic recognises the value in contributing to our local and global community. We foster strong relationships with local and regional Aboriginal communities and continue to support value adding initiatives".

Karntewarranginy Kurramuluny Close Up Family – Purnululu Malargowem AGM held – August 2022.

Human Rights Policy developed.

Panoramic lodged its first Modern Slavery Statement.

$2,244,337

To Traditional Owner Groups as part of Coexistence Agreement.

$1,989,326

In payments to Traditional Owner groups with claim over the land in which Panoramic operate.

$30,000

provided to Teach Learn Grow (TLG).

$8,023

Paid in community benefits.



8.1 CHILD, FORCED OR COMPULSORY LABOUR

In FY23, Panoramic lodged its first Modern Slavery Statement. The statement provides a procurement overview of where goods and services are sourced, including measures adopted to avoid Modern Slavery within the various supply chains within Panoramic.

As part of Panoramic's commitment to invest in human rights training, a Human Rights Policy was developed during the FY23 reporting period. To support the Policy release and increase awareness of Modern Slavery issues, a short 15-minute online training program was provided to the workforce.

In May 2023, Konwave Transition Metals Fund (Konwave AG), an investor in Panoramic, was classified under Article 8 of the European Union's Sustainable Finance Disclosure Regulation (SFDR), which focuses on sustainable investment and consideration of ESG criteria. To enhance their understanding of Panoramic's commitment to sustainability and responsible business practices, Konwave AG requested that Panoramic complete an ESG Questionnaire, which included human rights metrics. This demonstrates that Panoramic stakeholders are mutually aligned in their commitment to human rights.

Similarly, Panoramic notes that its major operations contractors (Barminco, Primero and Ventia) are already subject to reporting under Australian Modern Slavery regulation and have recently produced their inaugural Modern Slavery assurance reports for FY22.

Panoramic presently identifies no operations or direct suppliers at significant risk for child, forced, or compulsory labour incidents but has yet to conduct any formal risk assessment or audit.

8.2 RIGHTS OF INDIGENOUS PEOPLES

The Commonwealth Native Title Act 1993 (NT Act) recognises the traditional uses of the land, provides traditional custodians with the right to negotiate terms for access, and benefits claimant groups. During the reporting year, some areas of the Savannah Project were formally claimed by the Malarngowem & Purnululu People for the first time under the NT Act. In time, this may lead to some changes to the terms of the long-standing co-existence agreement with 'close-up families' of the same Aboriginal groups due to the formation of a formal body corporate group that will manage the new legal right over the land. Throughout these changes, Panoramic continued to provide support to the regional Aboriginal community through the established funding channels such as the Spread Your Wings Fund and Sustainable Development Trust.

At the same time, the Aboriginal heritage legislation in Western Australia has been in review over the last three years with the aim to better protect all heritage values. New legislation was briefly introduced in 2021, however implementation of the new obligations under this legislation remained in flux over FY23 across Western Australia. Panoramic now awaits the outcomes of proposed amendments to the Aboriginal Heritage Act that may lead to further changes to its legal obligations in FY24.

Several surveys have been previously undertaken for cultural heritage across Panoramic operations and surrounding areas before any new disturbance (Figure 8-1). Although no sites of significance have been identified in the operational footprint, some exist in the wider area.

OPERATIONS IN OR ADJACENT TO INDIGENOUS PEOPLES' TERRITORIES AND FORMAL AGREEMENTS WITH INDIGENOUS COMMUNITIES

Panoramic maintains strong communication channels with the traditional custodians of the land in which it operates and considers both principal and contractor activities to be included in the management boundary of this topic. Savannah personnel regularly communicate with representatives in nearby remote Aboriginal communities as per the co-existence agreement and with the wider regional community through the established grievance mechanisms that have been in place and continually refined since the Project has been in operation. Open communication with the nearby remote Aboriginal communities occurs through quarterly meetings and ad hoc communication. A Native Title Determination now overlays the Panoramic operations' land, namely the Purnululu and Malarngowem (Figure 8-3).



FIGURE 8-1- **CULTURAL HERITAGE SURVEY**

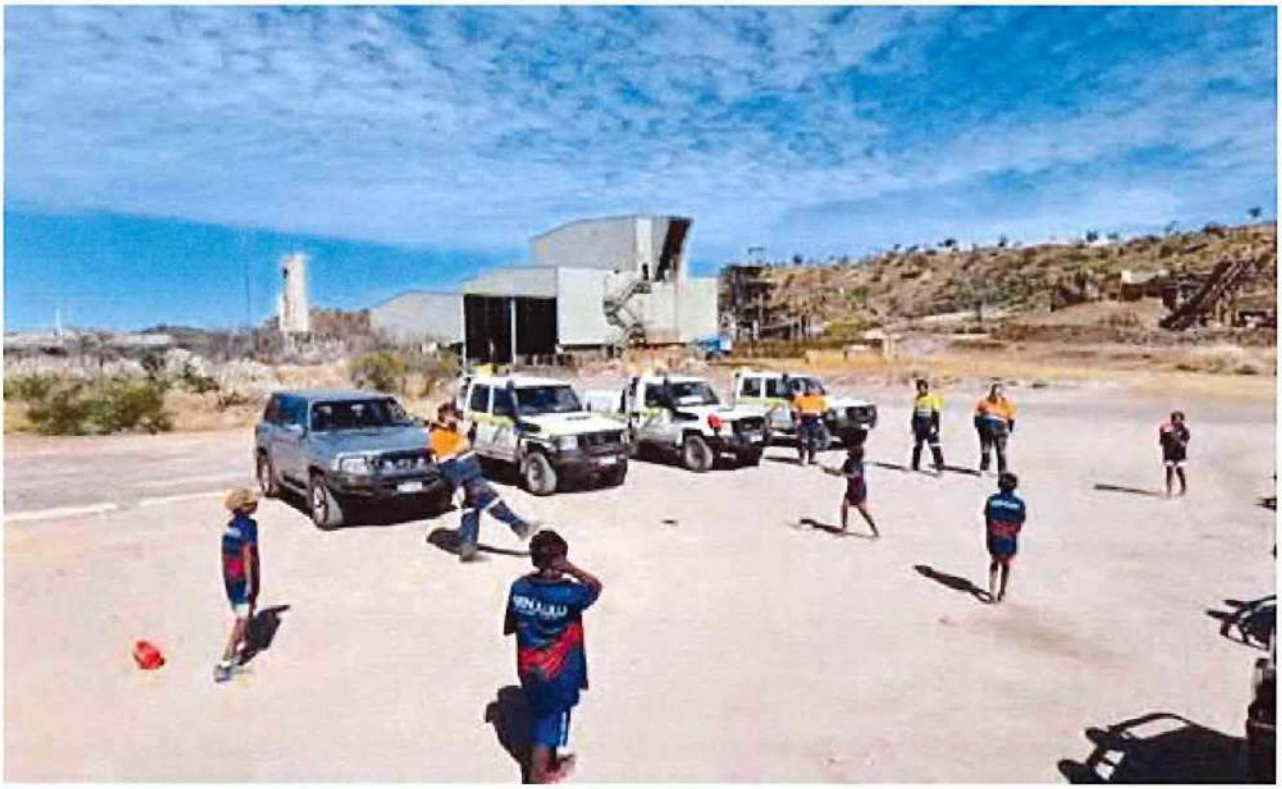


FIGURE 8-2- **PANORAMIC FOSTERS STRONG RELATIONSHIPS WITH THE LOCAL ABORIGINAL COMMUNITY**

The border of the two determinations runs through the middle of the mine and ore bodies themselves. Both determination groups are the same as those with which the Kimberley Nickel Co-existence Agreement is made. In FY23, the Malarngowem head of body corporate was appointed in West Perth. Subsequently, Panoramic is now required to correspond at a distance with the body corporate instead of directly with elders on country. Through new engagement mechanisms, Savannah is just beginning to understand the implications of these significant changes to the previous open relationship with the 'close-up' families named in the co-existence agreement. Panoramics' ability to engage with local community will likely be in a state of flux until these new systems and processes are properly embedded.

The completed Copernicus satellite mine is within the same determination area and subject to the Copernicus Co-existence Agreement.

As more legislative changes are anticipated, specifically in relation to the AH Act, it is expected these Co-existence Agreements will need to be reviewed in FY24.

An Implementation Review Committee (IRC) is in place and comprises four local community members and three Savannah representatives. The IRC is responsible for the ongoing review of the Co-existence Agreement and review/approval of Spread Your Wings funding applications. The IRC meets quarterly to discuss any concerns with the Co-existence Agreements or any other terms. Discussions are documented in a register that is maintained by the nominated Traditional Owner liaison for Panoramic. A total of 20 people with Aboriginal heritage are employed at Savannah Project by Panoramic or major contractors.

The terms of the Co-existence Agreements include royalties to the claimant group based on sales, preferential consideration in employment and contracting opportunities, consultation and engagement on heritage management, and targets for Aboriginal employment at Panoramic operations (Figure 8-4). During FY23, Panoramic contributed AUD 1,989,326 in royalty payments (and an additional AUD 255,011 in other payments made under a Co-existence Agreement) to Traditional Owner groups with a claim over the land in which Panoramic operates. The Sustainable Development Trust is a not-for-profit group that has been established to manage and distribute the royalties to eligible families through an application system. Of particular interest is an application for a water cart to service the mine that is currently being considered.

If required, claimants have recourse through Panoramic's formal community complaints procedures, legal action under the Co-existence Agreements, and procedures under the NT Act.

CONTRIBUTION TO LOCAL ABORIGINAL COMMUNITIES

Over the reporting year, Panoramic's contribution to the local Aboriginal communities included:

- $30,000 provided to Teach Learn Grow (TLG).
- Bus hire for TLG personnel to be able to travel and deliver the Rural Program to students in Wyndham and Kununurra.
- $150,000 annually for the Spread Your Wings fund through the co-existence agreement to sponsor activities such as:
    - Purchase of equipment for the Halls Creek Hawks football club (including shorts, bags, bottles jerseys etc.).
    - Sponsorship for a young Aboriginal person's attendance at a Fremantle Dockers Australian Rules Football (AFL) training camp and opportunity to play in Perth Optus Stadium curtain raiser game (Figure 8-5).
    - The Kija Rangers program which includes a female ranger program, weed spraying and other works around site.
- Aboriginal group engaged for seed collecting for rehabilitation activities at Copernicus.
- Funding towards a water cart for Aboriginal community member to be contracted on site for use in dust suppression under the Sustainable Development Trust.
- Provision of a wage for a Traditional Liaison Officer to assist with Aboriginal employment within Panoramic and funding applications under the Sustainable Development Trust.

INCIDENTS OF VIOLATIONS INVOLVING RIGHTS OF INDIGENOUS PEOPLES

Panoramic confirms that no violations of the rights of Aboriginal peoples at any of its former or current operations have occurred to date.

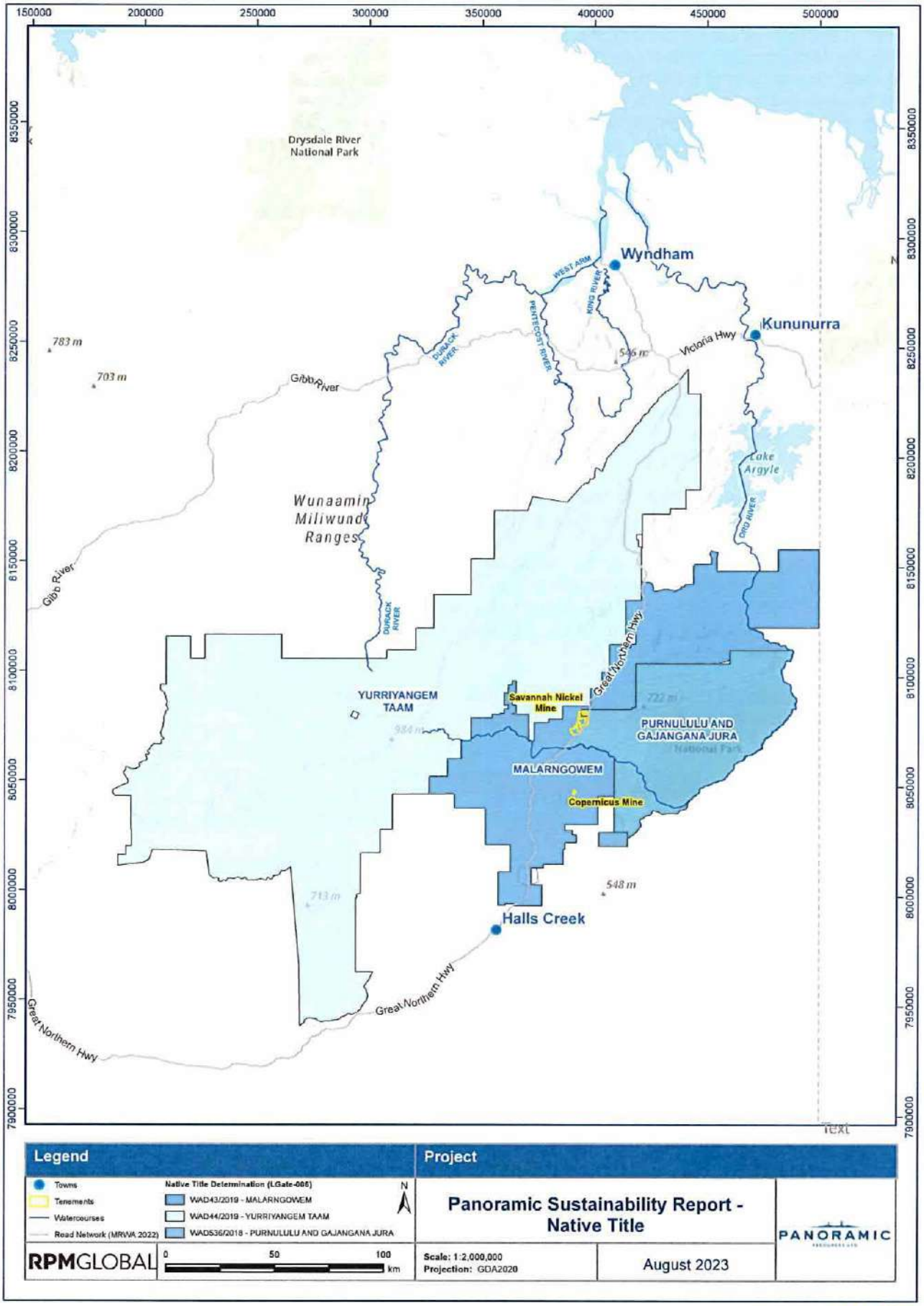
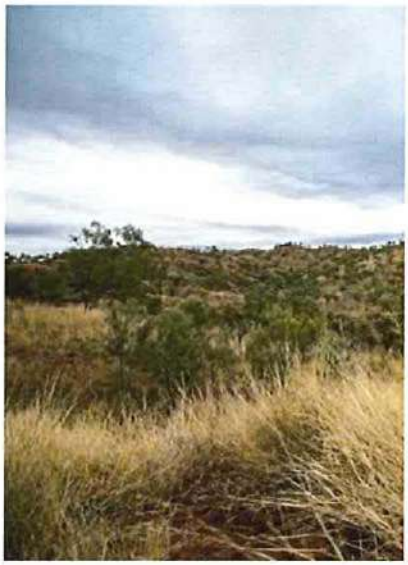


FIGURE 8-3- **NATIVE TITLE**



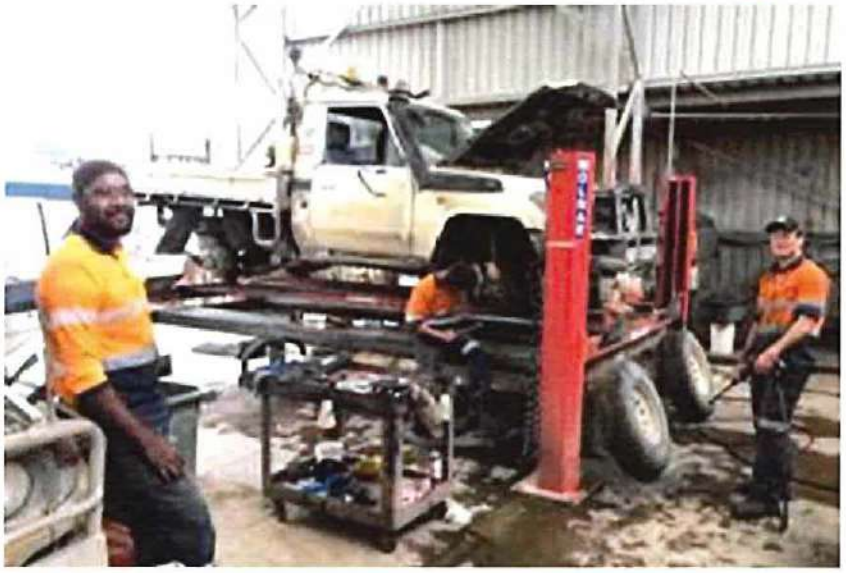


FIGURE 8-4- **ABORIGINAL EMPLOYMENT OPPORTUNITIES**



FIGURE 8-5- **FREMANTLE DOCKERS CURTAIN RAISER GAME IN PERTH**

8.3 LOCAL COMMUNITIES

In line with Panoramic Vision and Values, a core objective of the business is to deliver enduring benefits to the communities surrounding its operations.

COMMUNITY ENGAGEMENT

Panoramic continues to support the TLG Program, a non-profit organisation with a vision to improve the educational outcomes and aspirations of rural and remote students experiencing disadvantages to reach their full potential. This is primarily achieved through deploying education volunteers to remote and rural schools throughout Western Australia to deliver one-on-one tutoring and mentorship programs to students.

Panoramic has funded one program near the Mine (Kununurra) and one near the Port during FY23. This funding delivers 15,000 or more hours of tutoring and mentoring in WA, 500 volunteers, and 1,500 primary school students participating each year. With the support provided by this sponsorship, TLG will offer delivery of its Rural Program to at least two schools in the region twice per year.

Engagement with the regional community that are not student participants in TLG, local suppliers, workforce or Traditional Owners is on an as-needed basis.

IMPACT ASSESSMENTS

As part of the initial approvals process over two decades ago, Panoramic operations (including the satellite Copernicus mine) underwent an Environmental Impact Assessment and are subject to monitoring conditions under relevant WA legislation, with submissions and approvals publicly accessible through regulator websites. Given the remote nature of Panoramic's operations, it has not been subject to formal social impact assessment under WA planning or environmental legislationsince the commencement of operations.

ACTUAL AND POTENTIAL NEGATIVE IMPACTS ON LOCAL COMMUNITIES

During FY23, Savannah transitioned to steady-state operations. Despite this, Panoramic are pleased to report there were no:

- Disputes with nearby remote Aboriginal community Frog Hollow (located 7km as the crow flies) or any other nearby communities;
- Release of uncontrolled contaminants to the receiving environment (noise, air, water, hazardous substances);
- New land disturbance;
- Exceedence of groundwater abstraction above allocation limit that would result in supply issues for third-party users; or
- Major safety or security incidents that required support from local health or police services.

LAND DISPUTES

During the FY23 reporting period, no significant disputes related to land use, customary rights of local communities or Aboriginal peoples were identified.

GRIEVANCE MECHANISMS

During FY23, a verbal agreement for a cultural heritage survey of a Miscellaneous Licence next to the Savannah Mine was discussed, however; the Kimberley Land Council (KLC) launched an objection to the Licence. The KLC was formed in 1978 by Kimberley Aboriginal people as a political land rights organisation. Today, they are the peak Aboriginal body in the Kimberley region, working with Aboriginal people to secure native title recognition, conduct conservation and land management activities and develop cultural business enterprises. Panoramic is currently renegotiating terms with Traditional Owners.

Although there is currently no formal external mechanism to handle grievances, Panoramic will endeavour to progress this in FY24.

09. CARING FOR OUR ENVIRONMENT





















FY23 HIGHLIGHTS

During the FY23 reporting period, there were no major or reportable environmental incidents as operations continued to ramp up to steady-state production. Savannah continues to operate under the existing Environment and Social Management System (ESMS) with plans to conduct a major review and update of this system in FY24.

The reinstatement of settling ponds (Water Storage Facility (WSF3)) to recycle underground water has created significant efficiencies to the operations' water balance. In addition to an improved site water balance, the recovery of underground water has generated other improvements across Panoramic operations, including a "dry mine', reduced borefield extraction and less water sent to the tailings storage facility (TSF) and Mill (resulting in a noticeable reduction in TSF seepage). The seepage management plan was reviewed throughout the FY23 reporting period in response to the revised water balance, with some positive outcomes observed across the system.

On-site, inert and putrescible waste is disposed of in a licenced, site-based landfill, whilst recyclables are segregated in a designated laydown yard for recovery. Darwin-based Sell and Parker Metal Recycling Services currently recover and process all scrap metal and white goods. Improvements to waste management remained a focus for Panoramic in FY23. This is demonstrated through the newly appointed contracting company responsible for camp and village management (Ventia), which maintains a proactive approach to recycling. Savannah is currently considering a funding application from an Aboriginal community member to purchase a shredding machine that will generate recycling options for discarded HDPE pipe stockpiles.

The Savannah Mine Closure Plan was submitted to DMIRS for approval in October 2022, although no feedback has been received by the end of FY23. A fundamental aspect of mine infrastructure requiring rehabilitation in preparation for mine closure will be the projects' TSF.

The final (4 m) lift for the operations' TSF is scheduled to commence in Q3/4 of 2023 (FY24), which will provide additional storage until 2030. The need for tailing storage after 20230 is currently in consideration. In May 2023, a closure and rehabilitation cover trial (50% cover) was undertaken by reputable mine closure specialists Okane Consultants Pty Ltd (Okane). Recommendations from this trial will be implemented in one area of the TSF once the lift has been completed. Over the coming years, Okane will periodically assess the cover trial, with recommendations from the trial used to support management decisions regarding future full-scale cover system construction. Additionally, in preparation for future rehabilitation activities, an arrangement with the Traditional Owners is being explored for the ongoing collection and storage of native seeds to maximise the benefit to country.

POLICIES

- Environmental Management System

FY23 PRIORITIES

- Monitoring and Reporting as required by environmental permits
- Improve Waste Management - Recycling
- Revise the Savannah Mine Closure Plan
- Reduce water consumption
- Future Approvals for major projects:
- Indent solar panels

FY23 DASHBOARD

"Panoramic continue to explore new opportunities to optimise operations and create efficiencies. We aim to minimize our environmental impact so that come end of mine life - our operations remain safe, stable, and non-polluting".



Increase in Energy Use in FY23



Increase in combined Scope 1 & 2 Emissions



Increase in total water consumption, however reliance on raw water decreased



Increase in waste sent to landfill

0 Major or reportable environmental incidents during the continued ramp up to steady state production.

1 Approved new environmental professional budgeted for FY24.

0HA New land disturbance

0HA Rehabilitation complete



Integration into Peopletray planned for FY24.



Tender documents prepared for TSF wall lift in FY24.



Application for a Miscellaneous Lease for a solar farm submitted to DMIRS

MATERIALS

As expected, given the return to steady-state operations in FY23, the volume of materials mined and processed (as well as reagents used for processing) increased. As per ASX requirements, Panoramic reports the materials mined and processed in publicly available quarterly and annual reports.

Table 9-1 displays the total weight of ore materials mined and the grade of nickel, copper and cobalt.

TABLE 9-1- MATERIALS MINED DURING FY23

Mining							
Total FY23	Ore Mined (tonnes)	Ni Grade (%)	Cu Grade (%)	Co Grade (%)	Contained Ni Metal (tonnes)	Contained Cu Metal (tonnes)	Contained Co Metal (tonnes)
Year to Date	680,438	1.02	0.51	0.07	6973	3476	444

Table 9-2 displays the total weight of ore that was milled to produce the saleable concentrate.

TABLE 9-2- MATERIALS PROCESSED DURING FY23

Processing											
Total FY23	Milled Ore – Total (Tonnes)	Ni Grade (%)	Cu Grade (%)	Co Grade (%)	Concentrate Produced (dmt)	Ni Grade	Cu Grade	Co Grade	Contained Ni (Tonnes)	Contained Cu (Tonnes)	Contained Co (Tonnes)
Year to Date	648,324	1.04	0.52	0.06	73,088	7.39	4.28	0.5	5402	3129	368

Table 9-3 displays the process materials (reagents) required in the processing circuit to extract the final product.

TABLE 9-3- TOTAL VOLUME OF REAGENTS USED FOR PROCESSING DURING FY23

Reagent	Amount (tonnes)	Use
Praestol	8.15	Flocculant
Quicklime	1,365	pH modifier
Sodium Iso Butyl Xanthate (SIBX)	62.72	Collector
Polyfroth H27	9.6	Frother

Reagents are often produced overseas but distributed by local Australian companies.

9.1 ENERGY

Power generation and consumption at contractor and supplier sites, including the Wyndham port facility, is considered out of scope given the limited input Panoramic can reasonably exert on the port authorities and the difficulty in assigning power use to different customers.

A 14 MW generating capacity diesel power station supported by backup generators is required to provide energy to operate the Savannah Mine, including mineral processing and underground cooling. Diesel is used to fuel the power station, processing plant and other equipment at Savannah Mine. Power is only generated for use by Panoramic, and none is sold. Energy to the Port shed is supplied from the grid.

To minimise energy demand and promote efficient operation of plant and equipment, planned maintenance or replacements are carried out in accordance with manufacturers' specifications, when necessary. Panoramic actively evaluates the potential for energy efficiencies and engages with major contractors to implement more efficient operations. Of particular interest is Panoramic's mining contractor Barminco, who is currently exploring the feasibility of using battery-powered ancillary equipment on-site, with the potential to implement this at Savannah in the next few years if it is economically, commercially, and environmentally feasible. In future feasibility assessments, Panoramic will ensure the implementation of battery-powered ancillary equipment on-site does not lead to any negative impacts to the environment across the associated value chain.

Throughout FY23, Panoramic continued to investigate economically viable options to reduce its reliance on fossil fuels and subsequent emissions. Panoramic is currently working through approvals involving land access and capital expenditure for the installation of a 14 MW 10-ha solar farm. A baseline impact assessment study was carried out in June 2023 as part of the approval process. Alternative areas on the Savannah Mining Lease have also been identified, and the Company plans to pursue all locations to minimise costs, timing and efficiencies.

CONSUMPTION

Litres of energy (i.e., diesel) consumed in FY23 at Savannah operations Table 9-4.

TABLE 9-4- TOTAL ENERGY CONSUMED AND PRODUCED

	FY22	FY23	% Change
Energy Consumed (kL)	15,994.14	21,265.62	33%
Energy Produced – Diesel Use (GJ)	176,040	241,337	37%
NET Energy (GJ)	617,730	821,711	33%
Product / Material (wet metric tonnes)	41,110	84,402	105%

Under the Commonwealth National Greenhouse and Energy Reporting Act 2007 (NGER Act), Panoramic is responsible for measuring and reporting the production or consumption of 100 terajoules (TJ) or more of energy to the Australian Clean Energy Regulator. To do this, the Commonwealth National Greenhouse and Energy Reporting (Measurement) Determination 2008 threshold calculator was adopted, using generic emission factors.

ENERGY INTENSITY

Savannah and the Port's energy intensity for the reporting period is shown in Table 9-5. Benchmarking Savannah's energy efficiency against similar producers was not undertaken in FY23, nor were internal targets for energy intensity set. Panoramic will continue exploring potential mine plan and processing optimisations to determine a reasonable baseline in future.

TABLE 9-5- ENERGY INTENSITY

Material used for emission intensity	Fuel Intensity ($kgCO_2$-e/$t_{material}$)			Energy Intensity (GJ/$t_{material}$)			Emissions Intensity ($kgCO_2$-e/$t_{material}$)		
	FY22	FY23	% Change	FY22	FY23	% Change	FY22	FY23	% Change
Ore and Waste Rock Moved	4.13	5.65	37%	0.16	0.22	38%	11.19	15.15	35%
Ore Processed	32.26	26.87	-17%	1.25	1.04	-17%	87.41	72.82	-17%
Wet Concentrate shipped	385.88	517.29	34%	14.90	19.97	34%	1,045.66	1,399.15	34%

9.2 EMISSIONS

We are committed to looking at ways to reduce energy use and promoting other efficiencies across our operations that lead to emissions reduction.

While Panoramic has continued to explore economically feasible solutions to reduce emissions produced from its mining and processing activities, no changes to the operation have been implemented during FY23. Panoramic looks forward to reporting advancements on this aspect in future reports.

DIRECT (SCOPE 1) GHG EMISSIONS

Under the NGER Act, Savannah is responsible for measuring and reporting emissions (Scope 1 and 2) that together exceed 25,000 tonnes (t) of carbon equivalent (CO2-e) to the Australian Clean Energy Regulator and reporting under the National Pollutant Inventory (NPI) National Environment Protection Measure 1998 (NPI NEPM). The NGER and NPI reporting period aligns with the Australian Financial Year, as does this Report period.

The estimated total Scope 1 GHG emissions for Savannah and the Port from diesel as per activities identified in, is shown in Table 9 6. GHG emissions were above the NGER threshold during this reporting period, from 42,987 tCO2-e to 57,523 tCO2-e, due to the return to steady-state production. As the total amount is above both the NGER reporting threshold of 25,000 tCO2-e and the NPI reporting threshold for the total amount of fuel burned, detailed calculations will be submitted to the respective administering authorities for the current reporting period.

The periodically updated Commonwealth National Greenhouse and Energy Reporting (Measurement) Determination 2008 threshold calculator was used to establish the amount of emissions generated through diesel combustion at Savannah and the Port. These values are based on early collected data using generic emissions factors. All emissions produced by Panoramic operations will be reported as per the requirements under the NGER and NPI Acts during this reporting period and will be publicly available after 30 October each year.

INDIRECT (SCOPE 2) GHG EMISSIONS

During FY23, Savannah operations emitted 102 tCO2-e from consuming 200,300 kWh at its Port operations. Scope 2 emissions are not applicable to operations at Savannah.

GHG EMISSIONS INTENSITY

As operations continue to mature Panoramic has been able to reduce its emissions intensity per tonne of Run-Of-Mine (ROM), wet metric tonne of concentrate and per tonne of metal produced when compared to FY22 (Table 9-6).

TABLE 9-6- FY23 EMISSIONS INTENSITY

Emissions Intensity	UOM	FY22	FY23
Scope 1 Per tonne of ROM	tCO^2-e/tROM	0.110	0.089
Scope 1&2 Per tonne of wet concentrate produced	tCO^2-e/WMT	1.067	0.683
Scope 1&2 Per tonne of metal produced*	tCO^2-e/DMT	8.503	6.480

*

** Metal produced consists of approximately 60% nickel,36% copper and 4% cobalt.*

REDUCTION OF GHG EMISSIONS

While using 20 mega-litres of diesel per year to run the entire mine may be relatively small, Panoramic recognises that reducing our carbon footprint is a key opportunity for the business to improve its sustainability performance. Panoramic has considered several options to partially replace diesel generation, such as gas, wind, solar and hydroelectric power.

Given Savannah's remote location and limited access to existing regional infrastructure, installing a 14.3 MW of photoelectric power source with a battery backup to augment energy consumption at the processing plant is currently considered the most economical option. In FY23, Panoramic has initiated:

- Proposals from various power providers
- Ecological baseline of the proposed location
- Engagement with the regulator and Native Title claimants
- Considering EPC (PAN owned) or 3rd party power provider owned; and
- Feasibility study (expected in the next reporting period).

Panoramic, with its mining partner Barminco, is evaluating the eventual replacement of some or all of the mining fleet with electric vehicles through work being conducted by the Electric Mine Consortium. In addition to improving sustainability outcomes and the health and safety of Savannah's underground crews, this could reduce the demand for underground mine cooling and ventilation.

A phased approach to implementing mine electrification is currently underway. Panoramic notes these options are presently at an early assessment stage but intends to report on progress in subsequent sustainability reports and interim market and media releases.

Phase 1 (Year 1)

10 Light Vehicles and 2 ITs or Ancillary

Charging Infrastructure (Fast Charging and Opportunistic Charging)

Electrical Infrastructure - KV Backbone

Phase 2 (Year 2-3)

20 Light Vehicles, Drills, charge up, shotcrete and Agitator

Charging Infrastructure (Fast Charging and Opportunistic Charging)

Electrical Infrastructure - KV Backbone review

Phase 3 (Year 3+)

Additional Light Vehicles and Ancillary Equipment

Integration of Heavy BEV - Truck and Loaders

Charging Infrastructure (Fast Charging and Opportunistic Charging)

Electrical Infrastructure review and upgrade

NITROGEN OXIDES (NOx), SULPHUR OXIDES (SOx), AND OTHER SIGNIFICANT AIR EMISSIONS

NOx and SOx are produced from diesel combustion required for electrical and automotive power and ore blasting at the Savannah operations. NOx and SOx measurements are estimated for annual NPI reporting as per the NPI NEPM legislative framework. As Savannah exceeds the NPI reporting threshold for fuel combustion, all emissions from that substance must be reported annually to the Australian government.

Given the continued ramp-up to steady-state operations at Savannah over the reporting period, emissions for these GHGs have again increased. This is attributed to the Company's transition from care and maintenance to the gradual ramp-up to steady-state operations over the last three reporting periods. The sources of the reporting period's NOx and SOx emissions include:

- Mineralised dust from rock blasting, handling, and crushing, tailings disposal, and concentrate product handling (at the mine and port).
- Gases and vapours such as carbon disulfide from process reagent mixing and ore processing at the Savannah plant.

Comprehensive historical emissions data is publicly available on the NPI website for the Savannah and all other relevant reporting industries in Australia. NOx and SOx are not released at the Port.

Calculations of NOx and SOx emissions were done using emission estimation techniques outlined within the Emission Estimation Technique Manual for Combustion Engines (Version 3.0 June 2008) provided by the Australian Department of the Environment, Water, Heritage and the Arts (now the Department of Climate Change, Energy, Environment and Water). These tools allow for more comprehensive and consistent data calculation that enables year-by-year comparisons of emissions resulting from Savannah that can also be used for benchmarking against similar operations. The reporting period NOx and SOx values for Savannah are shown in Table 9-7.

TABLE 9-7- NOx AND SOx EMISSIONS

Parameter	FY22 (kg)	FY23 (kg)
NOx	745,700	964,800
SOx	294.9	323.6

9.3 WATER AND EFFLUENTS

GROUNDWATER

Savannah sits on the Mabel Downs pastoral lease, an active pastoral property that abstracts groundwater to sustain livestock. Abstraction from the Savannah borefield occurs across eight bores that are screened in a fractured rock aquifer at locations along Fletcher Creek, Stoney Creek, Rademy Creek and Mine Creek (Figure 9-1). The borefield has a 1,446,000 kilolitres (kl) per financial year limit on abstraction rates (Groundwater licence 153527 expired on 31/10/2022) and is classified as being fresh, having less than or equal to 1,000 milligrams per litre (mg/L) Total Dissolved Solids (TDS). It is managed according to a Water Operating Strategy approved by the water regulator (Department of Water and Environmental Regulation (DWER)). Groundwater drawdown is monitored, assessed and reported to the regulator annually to ensure sustainable abstraction. The application to renew groundwater licence 153527 is currently under review. DWER is behind in processing applications, but Savannah has received confirmation that the licence remains valid whilst the renewal is being processed.

Net total groundwater abstraction as recorded by site-wide flow meters (including mine dewatering and seepage recovery) is provided in Table 9-8 and shows a decrease in dependence on raw water in FY23 compared to FY22 despite the increase in production. No indications of unstainable abstraction or impacts on the Mabel Down resource or ecosystem values are apparent to date.

TABLE 9-8- GROUNDWATER ABSTRACTION

FY22 Abstraction (kL)	FY22 % of Allocation Used	FY23 Abstraction (kL)	FY23 % of Allocation Used
573,237	40	457,576	32

SURFACE WATER

The Savannah TSF sits near the top of the Ord River catchment, a system that supplies water to tropical agriculture schemes, albeit a long way from Savannah. Panoramic monitors potential impacts on the regional catchment (groundwater and surface water) via six surface water monitoring locations and a network of monitoring bores that target the potential sources of contamination, groundwater drawdown and the relevant downstream impact areas, as shown in Figure 9-1. The monitoring, reporting and management measures are designed to assure that any impacts to the catchment are localised, with no material risk to downstream land uses.

Monitoring is reported annually to the relevant regulators, including discussion of any limits exceeded and investigative or corrective action taken, although Panoramic acts internally on any exceedances as soon as they are identified. Savannah has complied with the relevant licence limits and values over the reporting period.

MINE WATER INFRASTRUCTURE

Critical mine water infrastructure is in place across Panoramic operations and is designed to contain mine-affected waters, minimise interruptions of natural water flows, reduce the risk of flooding and manage seepage-related impacts to operations. The water balance model is regularly updated to reflect improvements to the system. Critical mine water infrastructure is shown in Figure 9-2 and includes:

- Three mine water storage facilities (WSF1-3);
  - WSF1 - an unlined structure immediately downstream of the TSF toe, and is designed to capture tailings seepage for process reclaim. A series of additional downstream sumps and a recovery bore are in place to capture secondary seepage from WSF1.
  - WSF2 - a lined structure used to contain recovered seepage from WSF1, tailings "decant" water reclaimed directly from the TSF and make-up water from the borefield for use in processing.
  - WSF3 - a lined structure used to settle sediments out of the water from mine dewatering and a paste fill plant before recycling.
- Seepage recovery bores;
- Sumps to capture vehicle wash down water for recycling in accordance with the environmental licences;
- A lined pond at the processing plant, used to capture potentially contaminated rainfall runoff for recycling in processing; and
- Drains, bunds and culverts to divert "clean" runoff around operational areas (including the processing plant and Wyndham Port).

WATER DISCHARGE-RELATED IMPACTS

The primary water discharge source at Panoramic operations is the TSF. Although the TSF is an unlined structure designed to allow some seepage (as approved by environmental regulators), seepage from tailings water has occurred. Historically, elevated sulphate levels have been observed, in local downstream groundwater and surface waters, relative to those of background. However, with less water going to the TSF in FY23, a noticeable seepage reduction has been observed in monitoring data due to the recycling of underground water initiative.

When mill shutdowns occur, an excess of process water and associated blockages are experienced. As a result, Panoramic has identified this as an area for improvement in FY24. This will involve overhauling the mill water containment system (i.e., improved bunding) so that sump capacities accurately reflect the volumes experienced during shutdowns.

SEWAGE

Sewage effluent from the office and accommodation facilities is treated at an onsite facility and used for irrigation in approved areas as per the site environmental licence. Treatment facility maintenance and irrigation water quality sampling are conducted regularly by Ventia and its subcontractors.

Under the prescribed environmental licence, 38,929 kL of treated sewage effluent was discharged to an irrigation field in FY23. Treated sewage is generally greater than 1,000 mg/L TDS.

CONSUMPTION

Dust suppression and processing are Savannah's main sources of water consumption, with a relatively small amount required for office and camp use. In FY23, due to the recycling of underground water and a reduction in borefield extraction, there was a decrease in water consumption, as shown in Table 9-9

TABLE 9-9- WATER CONSUMPTION

	FY22	FY23
Groundwater Used (kL)	573,237	457,576
Water Recycled (kL)	420,604	578,467
Total (kL)	**993,841**	**1,036,043**

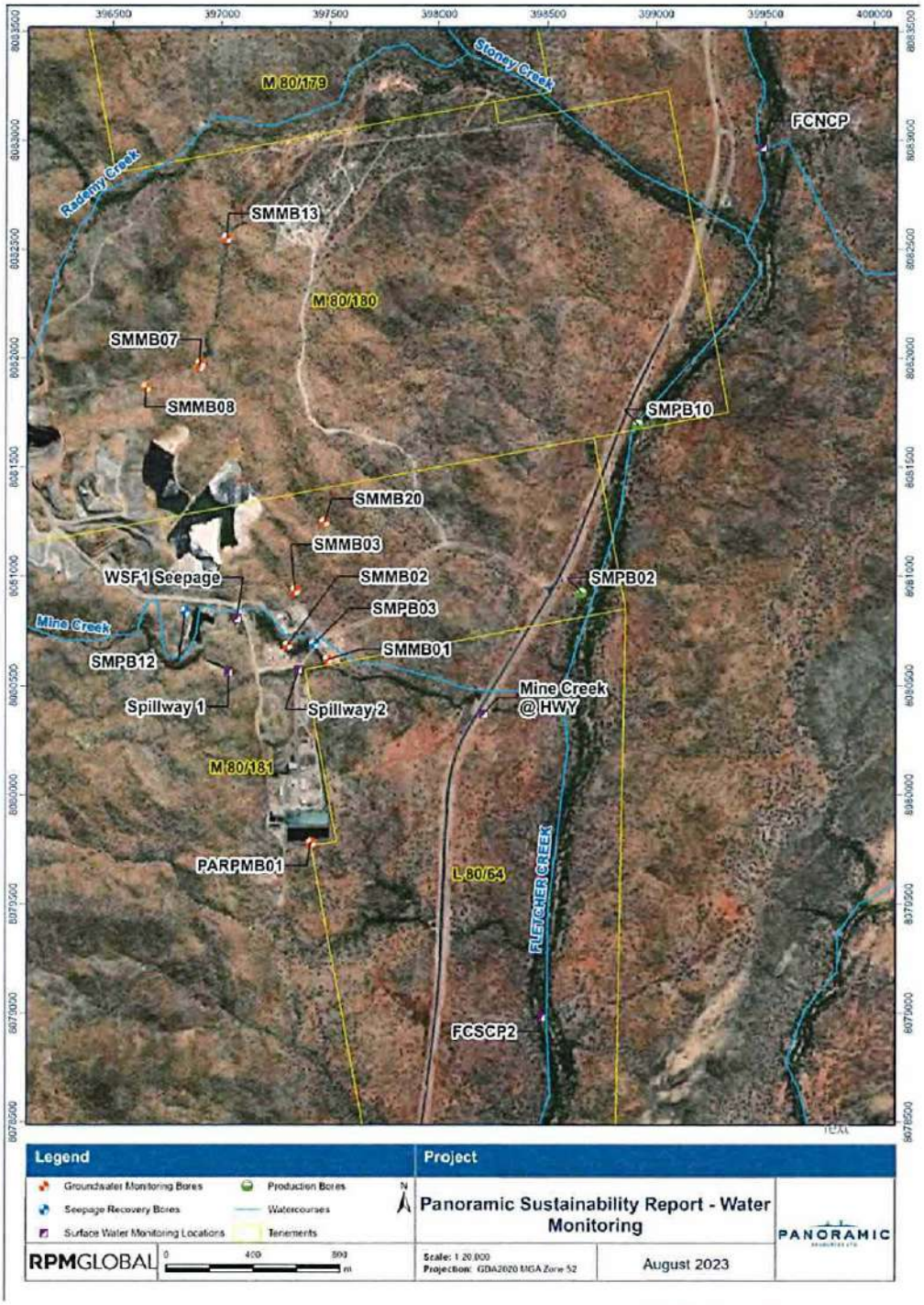


FIGURE 9-1- WATER MONITORING LOCATIONS

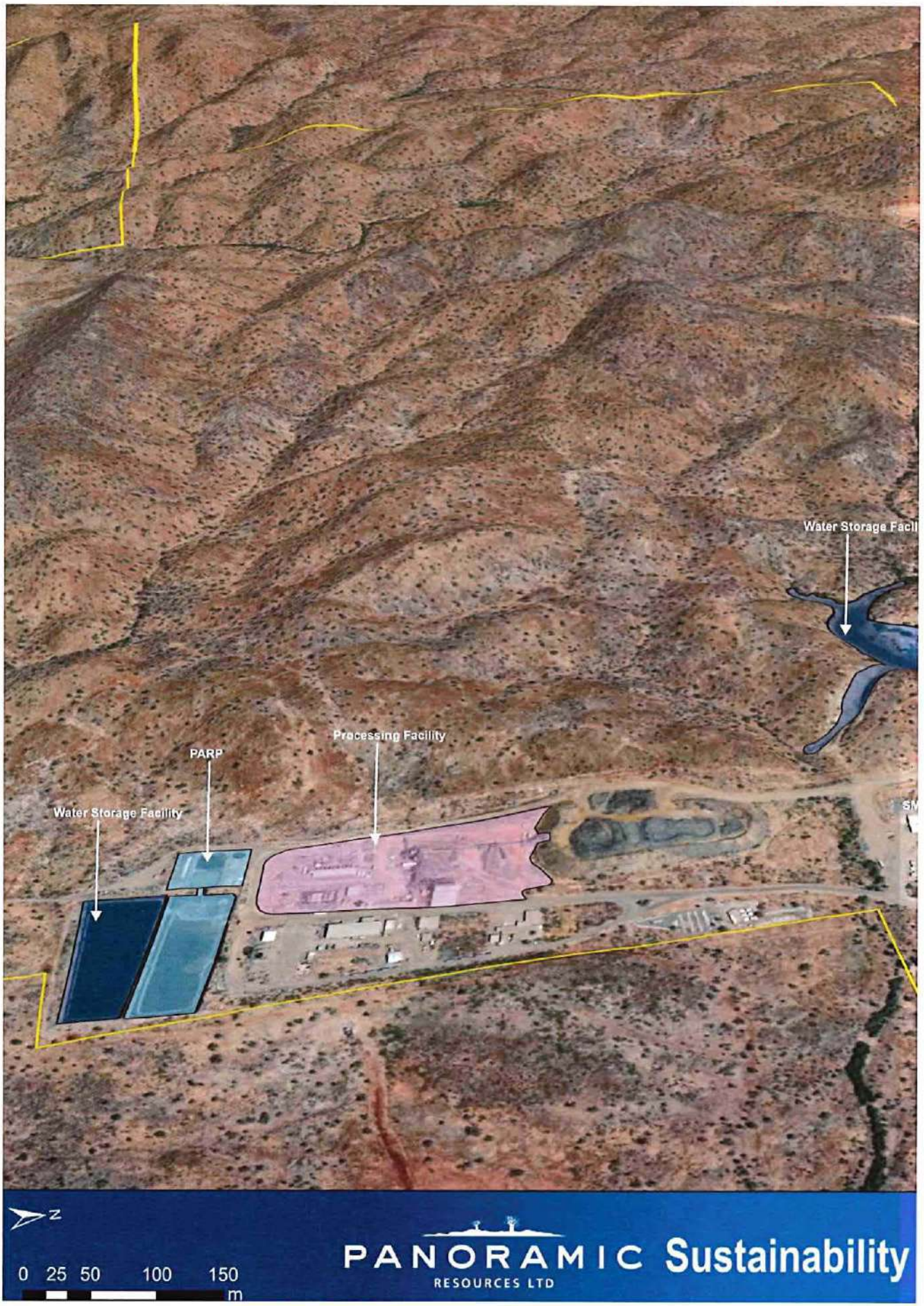

Water Storage Facil
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PANORAMIC
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Sustainability



FIGURE 9-2- **MINE WATER INFRASTRUCTURE**

9.4 WASTE

The main types of waste generated at Panoramic (in terms of volume) include mining, processing, and general (inert and putrescible) waste.

Historically, mining waste at Savannah was mostly generated from the removal of overburden and waste rock extracted from open cut pits in order to access target ores and was typically placed in surface dumps, leaving permanent artificial landforms for closure. As Panoramic has transitioned from an open-cut mine to a predominately underground mining operation, less mining waste is being placed on waste rock dumps (WRDs), and more was disposed with cement stabilised tailings paste in underground stopes. During FY23, 146,600 m3 of mine waste was added to the top of the Savannah South WRD with no increase in actual footprint (Table 9-10).

Regular inspections and audits concluded that there were no substantive issues with Savannah's mine waste landforms during the reporting period. The major mine waste landforms for which Panoramic is responsible, approximate current dimensions, volumes of material stored, material characteristics, and associated risks are summarised in Table 9-10.

TABLE 9-10- MINE WASTE CURRENT FOOTPRINTS AND VOLUMES

Landform	Footprint (Ha)	Height (mRL AHD)	Volume (m3)	Mass (Mt)	Key material characteristics and risks
Savannah TSF1	32.89	382	1.7 million	2.90	Potentially acid-forming material, however, under anoxic conditions, the bulk tailing materials stored in TSF 1 are likely to generate pH neutral leachate containing excess alkalinity Seepage from the TSF results in elevated sulphate in groundwater and surface water, however at levels not deemed to be a risk to ecological receptors.
Savannah Waste Dump Nth	15.4	430	3.7 million	8.1	Competent fresh rock. Predominately non-acid forming, with one encapsulated potentially acid-forming cell.
Savannah Waste Dump Sth	13.38	NA	879,600	1.5	
Copernicus Waste Dump	13	368	864,000	2.29	Primarily fresh, competent, non-acid forming waste rock. A small percentage of potentially acid-forming material has been encapsulated.

Due to the inherently low concentrations of nickel-cobalt-copper contained within the ore, the process of extracting the metals requires a significant volume of tailings to be produced. These tailings are either sent to the TSF or reclaimed via a paste plant for backfilling the underground mine workings. The structural conformance of the TSF is certified through as-built surveys, annual reviews and audits of construction and operations by qualified geotechnical engineers, with the last independent TSF audit completed at the start of the reporting period in August 2022.

The final lift for the TSF is planned for construction in Q3/4 of 2023 (FY24 reporting period), with an options study and associated planning baseline studies for a second TSF (TSF2) currently underway.

General waste relates to inert and putrescible waste generated through domestic and or industrial activities. Panoramic operates an on-site landfill for the disposal of this waste, whilst recyclable material is set aside in a laydown yard for recovery and recycling. In FY23, an enclosed cage was constructed at the landfill location and is currently in the process of being installed to facilitate the segregation of aluminium, glass, plastic and cardboard.

To further demonstrate Panoramics' commitment to waste management, Panoramic awarded Ventia the contract for village (including waste) management. As part of the tender process, Ventia exhibited exceptional performance in waste management and Panoramic look forward to overcoming waste-related challenges and reporting on them in FY24Regular inspections and audits concluded no substantive issues with Savannah's mine site landfill during the reporting period.

Table 9-11 provides a comparison of waste was generated and recycled/recovered in FY22 and FY23.

TABLE 9-11- WASTE GENERATED AND RECOVERED OR RECYCLED

WASTE GENERATED		
Waste Stream	**FY22**	**FY23**
Waste rock - including overburden, rock tailings and sludges (tonnes)	273,999	245,691
Cement stabilised tailings paste - discharged to underground stopes (dmt)	63,302	229,032
Thickened tailings - discharged to the TSF (dmt)	292,387	357,732
Waste - sent to on-site landfill (m^3)	1,185	1,200
Sewage – irrigated to land (kL)	32,980	38,929
WASTE RECYCLED / RECOVERED		
Waste Oil (L)	34,500	24,000
Batteries (m^3)	3	0
Scrap Metal	0	796

SIGNIFICANT SPILLS

During FY23, there were no significant spills of substances with the potential to harm the environment, or human health occurred over the reporting period.

The onsite spill response and management process is adhered to for all minor hydrocarbon-related spills - whereby contaminated soil is relocated to bio-remediation cells situated on top of Savannah's North WRD. Every month the cells are watered and gently turned with an excavator to aid in the remediation process. Groundwater bores and the soil are periodically tested for contaminates to ensure that the receiving environment has not been impacted and is contaminant free prior to relocation.

9.5 BIODIVERSITY

Savannah is located within the east Kimberley region of Western Australia, comprising hilly country and low plains covered with spinifex (native grass), savanna woodland and semi-desert spinifex steppe. Regional pressures on native biodiversity include invasive weeds and feral animals, pastoral grazing, altered fire patterns, and in the longer term, climate change.

Panoramic maintains an environmental management system with management plans and procedures, incorporating the measures for biodiversity conservation addressed above that fully cover the Savannah operations, the completed Copernicus satellite mine, and associated infrastructure.

To support approvals and permit requirements, as part of their licence to operate, Panoramic has conducted extensive surveys and subsequent mapping of biodiversity (including vegetation, habitats, flora, and fauna) within and surrounding the Savannah mining lease. Biodiversity surveys were conducted by Outback Ecology in October 2001, August 2002 and again in 2011. Three species protected under Federal and/or State legislation, have been recorded in the Project area. These are the Gouldian Finch (Erythrura gouldiae), Rainbow Bee-eater (Merops ornatus) and the Great Egret (Ardea alba).

More recently, in October 2022, Oberonia Botanical Services conducted a Groundwater Dependant Ecosystem Annual Survey Report and in November 2022, an Aquatic Ecosystem Health Monitoring Late Wet Season report was prepared by Lateral Environmental.
Biodiversity surveys conducted across Panoramic operations to date indicate the Project:

- Is not within or near protected areas such as conservation reserves or threatened ecological communities;
- Has no "priority" ecological communities or other habitats of particular conservation concern;
- Does not contain Flora listed under the WA Biodiversity Conservation Act 2016 (BC Act), or Commonwealth Environment Protection Biodiversity and Conservation Act 1999 (EPBC Act);
- Has identified several species of flora and fauna of conservation concern as either present or potentially present as per the International Union for Conservation of Nature (IUCN) Red List species and national conservation list species with habitats in areas affected by the operation ;
- Has negligible impact on surface water quality and the health of aquatic biota in the downstream receiving environment of the Fletcher Creek (due to seepage affected groundwater); and
- Has not impacted Groundwater Dependent Ecosystems (GDE) vegetation (all monitoring sites assessed were classed as being in 'good', 'very good' or 'excellent' condition).

TABLE 9-12- ENDANGERED OR VULNERABLE SPECIES FOUND IN THE AREAS SURROUNDING SAVANNAH OPERATIONS

Species	IUCN Red List Category	EPBC Classification
Kimberley Death Adder – *Acanthophis cryptamydros*	Vulnerable	Not in EPBC Species Profile and Threats Database (SPRAT)
Sharp-tailed Sandpiper – *Calidris acuminata*	Vulnerable	Migratory (under threatened listing assessment)
Grey Falcon – *Falco hypoleucos*	Vulnerable	Vulnerable
Ghost Bat – *Macroderma gigas*	Vulnerable	Vulnerable
Night Parrot – *Pezoporus occidentalis*	Critcal	Endangered
Mertens's Water Monitor – *Varanus mertensi*	Endangered	Under threatened listing assessment
Gouldian Finch – *Erythrura gouldiae*	Least Concern	Endangered
Rainbow Bee-eater – *Merops ornatus*	Least Concern	Marine / Migratory
Great Egret – *Ardea alba*	Least Concern	Marine / Migratory

Panoramic's Annual Environmental Report (AER) was submitted to DMIRS in January 2023, which provided details on the extent of disturbance on its tenements and progress on progressive rehabilitation and closure planning.

Additionally, a new site-wide Mine Closure Plan (MCP) was submitted to DMIRS in October 2022. The MCP provided details on the availability of rehabilitation areas (i.e., timing), final landform specifications and intended outcomes for the rehabilitated land. Panoramic is confident in its ability to rehabilitate the site due to its success in rehabilitating Copernicus in 2019, as shown by ongoing monitoring.

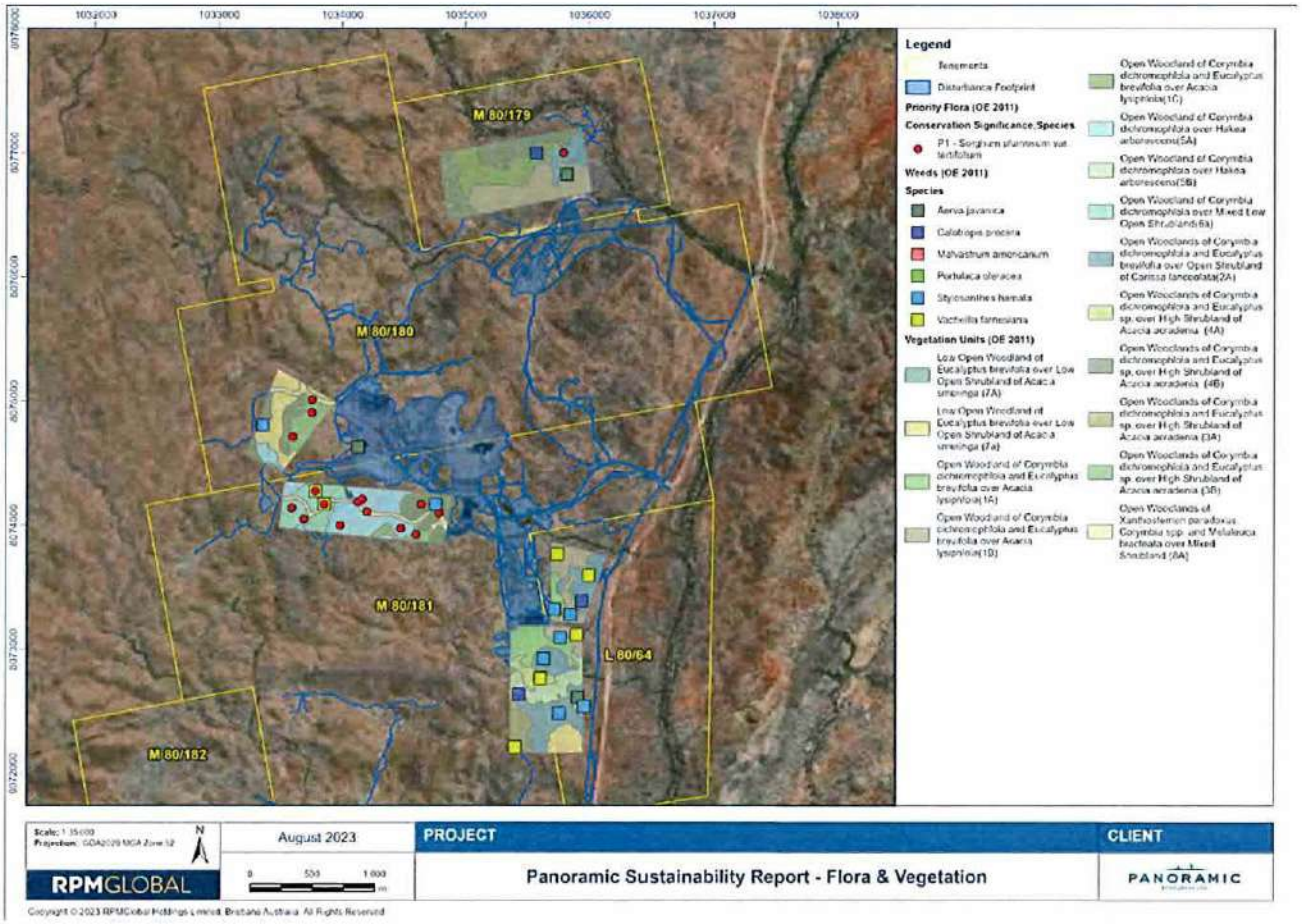


FIGURE 9-3- SIGNIFICANT FLORA AND VEGETATION

DISTURBANCE AND REHABILITATION

Reconciliation of disturbance and rehabilitation areas from aerial imagery is undertaken periodically across Panoramic operations. As no new disturbance was undertaken during FY23, Panoramic continued to conform to their approved footprints, with no substantive impacts on biodiversity.

Whenever available and practicable, the rehabilitation of disturbed areas will be done. In FY23, all disturbed land was actively used for operational activities. As such, Panoramic's ability to undertake progressive rehabilitation was prevented, and none was undertaken in the reporting period.

Panoramic is confident in its ability to restore biodiversity once operations have ceased, based on the success of rehabilitation completed to date at the Copernicus mine and benchmarking against similar operations – which, along with periodic monitoring of landform parameters, continues to inform closure planning for the Savannah Mine.

A summary of disturbance and rehabilitation (per tenement) during FY23 is shown in Table 9-13, whilst Figure 9-4 illustrates the FY23 disturbance footprint of Panoramic operations.

TABLE 9-13- LAND DISTURBANCE AND REHABILITATION

Tenement	Land Disturbed		Land Rehabilitated	
	During the reporting period (Ha)	Total (Ha)	During the reporting period (Ha)	Total (Ha)
L 80/64	0	4.19	0	0
L 80/52	0	0	0	0
L 80/86	0	0	0	0
M 80/540	0	0	0	0
M 80/179	0	4.34	0	0
M 80/180	0	78.35	0	1.31
M 80/181	0	73.91	0	2.42
M 80/182	0	3.0	0	0.11
M 80/183	0	2.20	0	0
Total	**0**	**165.99**	**0**	**0**

Panoramic's Annual Environmental Report (AER) was submitted to DMIRS in January 2023, which provided details on the extent of disturbance on its tenements and progress on progressive rehabilitation and closure planning.

Additionally, a new site-wide Mine Closure Plan (MCP) was submitted to DMIRS in October 2022. The MCP provided details on the availability of rehabilitation areas (i.e., timing), final landform specifications and intended outcomes for the rehabilitated land. Panoramic is confident in its ability to rehabilitate the site due to its success in rehabilitating Copernicus in 2019, as shown by ongoing monitoring.

9.6 CLOSURE PLANNING

All activities associated with the recovery and/or retainment of infrastructure and assets, and the remediation of land at the cessation of mining operations at Savannah and Copernicus, are covered by the two separate MCPs.

In late August 2022, an annual general meeting (AGM) was held between Panoramic representatives and the Traditional Owner families from around the Savannah. Discussions involved conversations around post closure at Copernicus mine, updates of Savannah life of mine (LOM), including the TSF, the intention of Panoramic to do some stratified sampling at the bottom of the water column in the pit, and the planned end land use to be grazing (of which Tattarang has purchased a few properties surrounding). Panoramic raised the desire to install a solar farm, which received a warm reception from the local community.

In October 2022, an updated MCP for the Project was submitted to DMIRS. This version of the MCP (Version 5) represents a significant update and brings the proposed closure strategy in line with industry best practices and the latest guidelines, notably the DMIRS 2020 Statutory Guidelines for Mine Closure Plans, with reference to the DMIRS guidance documentation *How to Prepare in Accordance with Part 1 of the Statutory Guidelines for Mine Closure Plans*.

The MCP considers the whole Project and uses a risk-based approach to develop long-term management and rehabilitation strategies, as well as the post-closure monitoring requirements needed to demonstrate that those strategies are effective. Other detail included in the updated Savannah MCP is:

- Monitoring and inspection results and any recommendations for maintenance or improvement
- Inclusion of desired outcomes identified by Aboriginal stakeholders for the rehabilitated operational land where possible; and
- Identification of culturally appropriate economic opportunities and improved spiritual and environmental values.

Panoramic has yet to receive feedback from DMIRS on the updated Savannah MCP.

The current MCP for Copernicus was approved by DMIRS in May 2016, with a triennial revision submitted in June 2019. Panoramic has not received feedback or correspondence from DMIRS on this submission.

FINANCIAL PROVISIONING

Provision for outstanding rehabilitation obligations is documented in Company financial reports; information on present closure and other liabilities is provided in the annual Company Annual Report (Reports - Panoramic Resources).

MINING REHABILITATION FUND (MRF)

Panoramic is required to provide disturbance data by 30 June each year to DMIRS. The department then assesses disturbance data to establish the levy payable for each tenement - which is then issued to Panoramic via an assessment notice. The levy ensures sufficient funds are available to rehabilitate abandoned mines over the medium and long term.

Tenements with a Rehabilitation Liability Estimate (RLE) below the $50,000 threshold are not required to make a levy payment. For Panoramic, this applies to M 80/182 and M 80/183. The MRF levy is based on the average expected cost of rehabilitation for different types of land disturbance and is multiplied by the "fund contribution rate", which is set at one percent of the RLE.

Panoramic's contribution to the MRF during the FY23 reporting period is shown in Table 9-14.

TABLE 9-14- MRF CONTRIBUTION

MRF Summary by Tenement FY23		
Tenement ID	**RLE (AUD)**	**Contribution (AUD)**
L 80/64	75,443	754.43
M 80/179	78,120	781.20
M 80/180	2,419,605	24,196.50
M 80/181	2,290,926	22,909.26
M 80/182	49,972	0
M 80/183	39,625	0
Total	**-**	**AUD $48,641.39**

The MRF value for FY23 is the same as reported in FY22 due to there being no changes to the Savannah footprint during the reporting period.

A closure cost estimation was not undertaken during the FY23 reporting period as it remains valid. Based on the 2023 work schedule and earthmoving, rehabilitation and decommissioning rates, Savannah's total provisional closure cost estimate remains at AUD 20,524,127, of which AUD 1,602,761 is contingency. Panoramic intends to review this estimate in FY24.

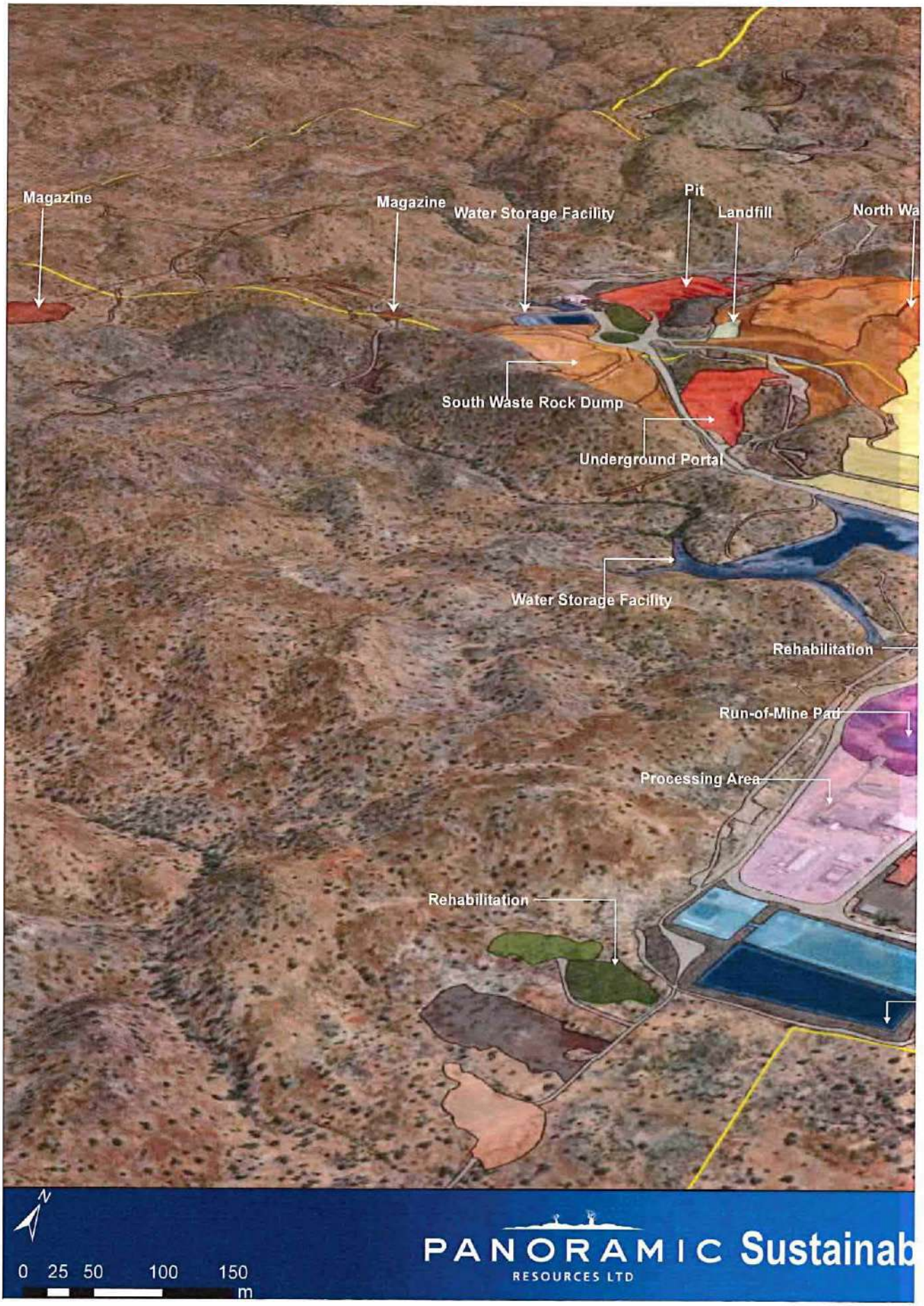

Magazine
Magazine
Water Storage Facility
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South Waste Rock Dump
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Run-of-Mine Pad
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FIGURE 9-4- **DISTURBANCE MAPPING**

10. GRI CONTENT INDEX

Statement of use	Panoramic Resources Limited reporting from July 1 2022 - June 30 2023
GRI 1 used	GRI 1: Foundation 2021
Applicable GRI Sector Standard(s)	G4 Sector Disclosures - Mining and Metals (MM)

GRI Stand/Other Source	Indicator Number	Description	Location	Requirement (s) Omitt
GRI 2:Disclosure General Disclosures 2021	GRI 2-1	Organisation Details	1 - Organisational details	
	GRI 2-2	Entities included in the organisation's sustainability reporting	1 - Organisational details	
	GRI 2-3	Reporting period, frequency, and contact point	1 - Organisational details	
	GRI 2-4	Restatements of information	1 - Organisational details	
	GRI 2-5	External Assurance	1 - Organisational details	
	GRI 2-6	Activities, value chain and other business relationships	5 - Our Business	
	GRI 2-7	Employees	6 - Our People	
	GRI 2-8	Workers who are not employees	6 - Our People	
	GRI 2-9	Governance Structure and composition	3 - Governance	
	GRI 2-10	Nomination and selection of the highest governance body	3 - Governance	
	GRI 2-11	Chair of the highest governance body	3 - Governance	
	GRI 2-12	Role of the highest governance body in overseeing the management of impact	3 - Governance	
	GRI 2-13	Delegation of responsibility for managing impacts	3 - Governance	
	GRI 2-14	Role of the highest governance body in the sustainability reporting	3 - Governance	
	GRI 2-15	Conflicts of Interest	3 - Governance	
	GRI 2-16	Communication of critical concerns	3 - Governance	
	GRI 2-17	Collective Knowledge of the highest governance body	3 - Governance	
	GRI 2-18	Evaluation of the performance of the highest governance body	3 - Governance	
	GRI 2-19	Renumeration policies	3 - Governance	
	GRI 2-20	Process to determine remuneration	3 - Governance	
	GRI 2-21	Annual Compensation ratio		All
	GRI 2-22	Statement on sustainable development strategy	1 - Vision, Vlaues and Sustainibility 2 Message from the MD & CEO	

Omission			UNSDG
ed	Reason	Explanation	
			12- Responsible Consumption and Production
			8- Decent Work and Economic Growth 10- Reduced Inequalities
			8- Decent Work and Economic Growth 10- Reduced Inequalities
			16-Peace, Justice and Strong Institutions
			5- Gender Equality 16 Peace, Justice and Strong Institutions
			16-Peace, Justice and Strong Institutions
			16-Peace, Justice and Strong Institutions
			16-Peace, Justice and Strong Institutions
			12- Responsible Consumption and Production
			16-Peace, Justice and Strong Institutions
			16-Peace, Justice and Strong Institutions
			12- Responsible Consumption and Production
			12- Responsible Consumption and Production
	Executive and non-executive compensation is publicly reported in the annual financial report.	While not paid at the same level as full time executive management, Panoramic staff are paid well above minimum wage and award rates in line with expectations working within the Australian mining industry.	
			11- Sustainable Cities and Communities

	GRI 2-23	Policy commitments	3 - Governance	
	GRI 2-24	Embedding Policy commitments	3 - Governance	
	GRI 2-25	Processes to remediate negative impacts	3 - Governance	
	GRI 2-26	Mechanisms for seeking advice and raising concerns	3 - Governance	
	GRI 2-27	Compliance with laws and regulations	3 - Governance	
	GRI 2-28	Membership associations	3 - Governance	
	GRI 2-29	Approach to stakeholder engagement	3 - Governance	
	GRI 2-30	Collective bargaining agreements	6 - Our People	
Material Topics				
GRI 3: Material Topics 2021	GRI 3-1	Process to determine material topics	4 - Determining Materiality	
	GRI 3-2	List of Material Topics	4 - Determining Materiality	
	GRI 3-3	Management of Material Topics	4 - Determining Materiality	
GRI 201: Economic Performance 2016	GRI 201-1	Direct economic value generated and distributed	5 - Our Business	
	GRI 201-2	Financial implications and other risks and opportunities due to climate change	5 - Our Business	
	GRI 201-3	Defined benefit plan obligations and other retirement plans		All
	Gri 201-4	Financial assistance received from government	5 - Our Business	
GRI 202 Market Presence 2016	GRI 202-1	Ratios of standard entry level wage by gender compared to local minimum wage		All
	GRI 202-2	Proportion of senior management hired from the local community		All
GRI 203 Indirect Economic Impacts 2016	GRI 203-1	Infrastructure Investments and services supported	5 - Our Business	
	GRI 203-2	Significant indirect economic impacts	5 - Our Business	

		12- Responsible Consumption and Production
		16- Peace, Justice and Strong Institutions
		16- Peace, Justice and Strong Institutions
		17- Partnerships for the Goals
		17- Partnerships for the Goals
		8- Decent Work and Economic Growth
		12- Responsible Consumption and Production
		8- Decent Work and Economic Growth 9- Industry, Innovation and Infrastructure
		13-Climate Action
As with most Australian companies Panoramic pays the required pension liabilities into an external fund in line with applicable Australian regulation.	Panoramic are still in process of establishing external reporting mechanisms and may consider reporting on this topic in future years.	8- Decent Work and Economic Growth
Most employees and other workers are compensated significantly above the minimum wage due to the nature of the Australian mining industry.	This reporting aspect has not been tracked.	1- No Poverty 5- Gender Equality 8-Decent Work and Economic Growth
No senior management are hired from the local community at the Savannah mine. Senior Management at the Perth office are all local.	As the Savannah mine site extremely remote, it is difficult to hire and retain appropriately qualified persons for senior management positions. However most staff on site and in the office live in Western Australia.	8- Decent Work and Economic Growth
		5- Gender Equality 9- Industry, Innovation and Infrastructure 11- Sustainable Cities and Communities
		1- No Poverty 3- Good Health and Well-Being 8-Decent Work and Economic Growth

GRI 204 Procurement Practices 2016	GRI 204-1	Proportion of spending on local suppliers	5 - Our Business	
GRI 205 Anti-Corruption 2016	GRI 205-1	Operations assessed for risks related to corruption		All
	GRI 205-2	Communication and training about anti-corruption policies and procedures		All
	GRI 205-3	Confirmed incidents of corruption and actions taken		All
GRI 206 Anti-competitive Behaviour 2016	GRI 206-1	Legal actions for anti-competitive behaviour, anti-trust and monopoly practices		All
GRI 207 Tax 2019	GRI 207-1	Approach to Tax		All
	GRI 207-2	Tax governance and control framework		All
	GRI 207-3	Stakeholder engagement and concerns related to tax		All
	GRI 207-4	Country-by Country reporting		All
GRI 301 Materials 2016	GRI 301-1	Materials used by weight or volume	9 - Caring for our Environment	
	GRI 301-2	Recycled input materials used		
	GRI 301-3	Reclaimed products and their packaging materials		
GRI 302 Energy 2016	GRI 302-1	Energy consumption within the organization	9 - Caring for our Environment	
	GRI 302-2	Energy consumption outside the organisation		All
	GRI 302-3	Energy intensity	9 - Caring for our Environment	
	GRI 302-4	Reduction of energy consumption	9 - Caring for our Environment	
	GRI 302-5	Reductions in energy requirements of products and services		All
GRI 303 Water and Effluents 2018	GRI 303-1	Interactions with Water as a shared Resource	9 - Caring for our Environment	
	GRI 303-2	Management of Water Discharge Related Impacts	9 - Caring for our Environment	

			1- No Poverty 8-Decent Work and Economic Growth 11- Sustainable Cities and Communities
	Panoramic operations are all within Australia, recognised as a well-regulated jurisdiction at low risk of corruption. Panoramic has an Anti-Bribery and Anti-Corruption Policy.	Panoramic does not discount this hazard entirely and intends that its governance framework, including its Anti-bribery and Anti-corruption Policy, will mitigate any residual risk.	16- Peace, Justice and Strong Institutions
	Company policies related to corruption are included in relevant employee training packages discussed further in employment training sections.	Information on the governance framework, including anti-corruption, is provided under GRI 201 - Economic Performance 2016 and is available on the Panoramic website.	16- Peace, Justice and Strong Institutions
	Panoramic is not aware of any concerns related to corruption or related incidents in its history.	There is no information to report under this category.	16- Peace, Justice and Strong Institutions
	There are no legal actions pending that are related to anti-competitive behaviour, anti-trust, and monopoly practices	There is no information to report under this category.	16- Peace, Justice and Strong Institutions
	The Company does not have a tax strategy	Panoramic pays its share of taxes within Australia in full, on time and in compliance with relevant tax laws.	1- No Poverty 10- Reduced Inequalities 17- Partnerships for the Goals
	The Company does not have a tax strategy, however taxation matters may be discussed at the Board level if considered material.	The corporate governance structure has mechanisms in place to discuss aspects such as tax risks when relevant via its Risk Committee and Chatter.	1- No Poverty 10- Reduced Inequalities 17- Partnerships for the Goals
	Shareholders are encouraged to participate at all general meetings and Annual General Meetings (AGM) of the Company. Shareholder meeting materials include a statement encouraging all shareholders to participate in the meeting.	The Shareholder Communications Policy provides that security holders can register with the Company to receive email notifications when an announcement is made by the Company to the Australian Stock Exchange (ASX), including the release of the Annual Report and half-yearly reports.	1- No Poverty 10- Reduced Inequalities 17- Partnerships for the Goals
	The Company pays taxes in Australia only.	All tax information is publicly available at the end of each FY in the Annual Financial Report	1- No Poverty 10- Reduced Inequalities 17- Partnerships for the Goals
			8-Decent Work and Economic Growth 12- Responsible Consumption and Production
	Recycling of process materials is not measured.	This is due to the nature of the process circuit recording mechanisms. It may be considered in future reporting.	8-Decent Work and Economic Growth 12- Responsible Consumption and Production
	The final product (concentrate) does not require packaging materials.	The final product is transported domestically and internationally in bulk transport containers.	8-Decent Work and Economic Growth 12- Responsible Consumption and Production
			7- Affordable and Clean Energy 8- Decent Work and Economic Growth 12- Responsible Consumption and Production 13- Climate Action
	The Company does not current measure energy consumption outside of its organisation.	The boundary limits for reporting are the Savannah mining and processing operations only.	7- Affordable and Clean Energy 8- Decent Work and Economic Growth 12- Responsible Consumption and Production 13- Climate Action
			7- Affordable and Clean Energy 8- Decent Work and Economic Growth 12- Responsible Consumption and Production 13- Climate Action
			7- Affordable and Clean Energy 8- Decent Work and Economic Growth 12- Responsible Consumption and Production 13- Climate Action
	Panoramic does not measure the energy requirements and associated reductions in its value chain.	This measurement may be considered in future reporting, once substantial energy reductions at Savannah are achieved.	7- Affordable and Clean Energy 8- Decent Work and Economic Growth 12- Responsible Consumption and Production 13- Climate Action
			6- Clean Water and Sanitation 12- Responsible Consumption and Production
			6- Clean Water and Sanitation

	GRI 303-3	Water withdrawal	9 - Caring for our Environment	
	GRI 303-4	Water discharge	9 - Caring for our Environment	
	GRI 303-5	Water consumption	9 - Caring for our Environment	
GRI 304 Biodiversity 2018	GRI 304-1	Operational Sites in or Adjacent to Areas that are Protected or of High Biodiversity Value	9 - Caring for our Environment	
	GRI 304-2	Significant impacts of activities, products and services on biodiversity	9 - Caring for our Environment	
	GRI 304-3	Habitats protected or restored	9 - Caring for our Environment	
	GRI 304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	9 - Caring for our Environment	
GRI 305 Emissions 2016	GRI 305-1	Direct (Scope 1) GHG emissions	9 - Caring for our Environment	
	GRI 305-2	Energy indirect (Scope 2) GHG emissions	9 - Caring for our Environment	
	GRI 305-3	Other indirect (Scope 3) GHG emissions		All
	GRI 305-4	GHG emissions intensity	9 - Caring for our Environment	
	GRI 305-5	Reduction of GHG emissions	9 - Caring for our Environment	
	GRI 305-6	Emissions of ozone-depleting substances (ODS)		All
	GRI 305-7	Nitrogen oxides (NOx), sulphur oxides (SOx), and other significant air emissions	9 - Caring for our Environment	
GRI 306 Effluent & Waste 2016	GRI 306-3	Significant Spills	9 - Caring for our Environment	
GRI 306 Waste 2020	GRI 306-1	Waste generation and significant waste-related impacts	9 - Caring for our Environment	
	GRI 306-2	Management of significant waste-related impacts	9 - Caring for our Environment	
	GRI 306-3	Waste generated	9 - Caring for our Environment	

		6- Clean Water and Sanitation
		6- Clean Water and Sanitation
		6- Clean Water and Sanitation
		6- Clean Water and Sanitation 14- Life Below Water 15- Life on Land
		6- Clean Water and Sanitation 14- Life Below Water 15- Life on Land
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		6- Clean Water and Sanitation 14- Life Below Water 15- Life on Land
		3- Good Health and Well-being 12-Responsible Consumption and Production 13- Climate Action 14- Life Below Water 15- Life on Land
		3- Good Health and Well-being 12-Responsible Consumption and Production 13- Climate Action 14- Life Below Water 15- Life on Land
Panoramic does not current measure Scope 3 emissions.	Panoramic has been focused on the resumption of mining in this reporting year, however may consider reviewing Scope 3 emissions in future reporting.	3- Good Health and Well-being 12-Responsible Consumption and Production 13- Climate Action 14- Life Below Water 15- Life on Land
		13- Climate Action 14- Life Below Water 15- Life on Land
		13- Climate Action 14- Life Below Water 15- Life on Land
No ODS are produced at Savannah.	Not relevant to this Report.	3- Good Health and Well-being 12-Responsible Consumption and Production
		3- Good Health and Well-being 12-Responsible Consumption and Production 14- Life Below Water 15- Life on Land
		3- Good Health and Well-Being 11-Sustainable Cities and Communities 12- Responsible Consumption and Production
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		3- Good Health and Well-Being 6- Clean Water and Sanitation 11-Sustainable Cities and Communities 12- Responsible Consumption and Production
		3- Good Health and Well-Being 11-Sustainable Cities and Communities 12- Responsible Consumption and Production

	GRI 306-4	Waste diverted from disposal	9 - Caring for our Environment	
	GRI 308-5	Waste directed to disposal	9 - Caring for our Environment	
GRI 308 Supplier Environmental Assessment 2016	GRI 308-1	New Suppliers that were screened using environmental criteria	5 - Our Business	
	GRI 308-2	Negative environmental impacts in the supply chain and actions taken	5 - Our Business	
GRI 401 Employment 2016	GRI 401-1	New employee hires and employee turnover	6 - Our People	
	GRI 401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	6 - Our People	
	GRI 401-3	Parental Leave	6 - Our People	
GRI 402 Labour/ Management Relations	GRI 402-1	Minimum notice periods regarding operational changes		All
GRI 403 Occupational Health and Safety	GRI 403-1	Occupational Health and Safety Management System	7 - Our approach to safety and well being	
	GRI 403-2	Hazard Identification, Risk Assessment, and Incident Investigation	7 - Our approach to safety and well being	
	GRI 403-3	Occupational Health Services	7 - Our approach to safety and well being	
	GRI 403-4	Worker Participation, Consultation and Communication on Occupational Health and Safety	7 - Our approach to safety and well being	
	GRI 403-5	Worker Training on Occupational Health and Safety	7 - Our approach to safety and well being	
	GRI 403-6	Promotion of Worker Health	7 - Our approach to safety and well being	
	GRI 403-7	Prevention and Mitigation of Occupational Health and Safety Impacts Directly Linked by Business Relationships	7 - Our approach to safety and well being	
	GRI 403-8	Workers Covered by an Occupational Health and Safety Management System	7 - Our approach to safety and well being	
	GRI 403-9	Work Related Injuries	7 - Our approach to safety and well being	
	GRI 403-10	Work Related Ill-Health	7 - Our approach to safety and well being	

		11-Sustainable Cities and Communities 12- Responsible Consumption and Production
		11-Sustainable Cities and Communities 12- Responsible Consumption and Production
		12- Responsible Consumption and Production
		12- Responsible Consumption and Production
		5- Gender Equality 8-Decent Work Economic Growth 10- Reduced Inequalities
		3- Good Health and Well-being 5- Gender Equality 8-Decent Work Economic Growth
		5- Gender Equality 8-Decent Work Economic Growth
This aspect covered in Company redunancy policies. There are no collective bargaining agreements in place for Panoramic staff.	The amount of notice period will be dependant on the type of change. Should significant changes result in loss of employment, four weeks notice and/or the appropriate compensation will also be provided.	8- Decent work and economic growth
		8- Decent work and economic growth
		8- Decent work and economic growth
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		8- Decent work and economic growth 16- Peace, Justice and Strong Institutions
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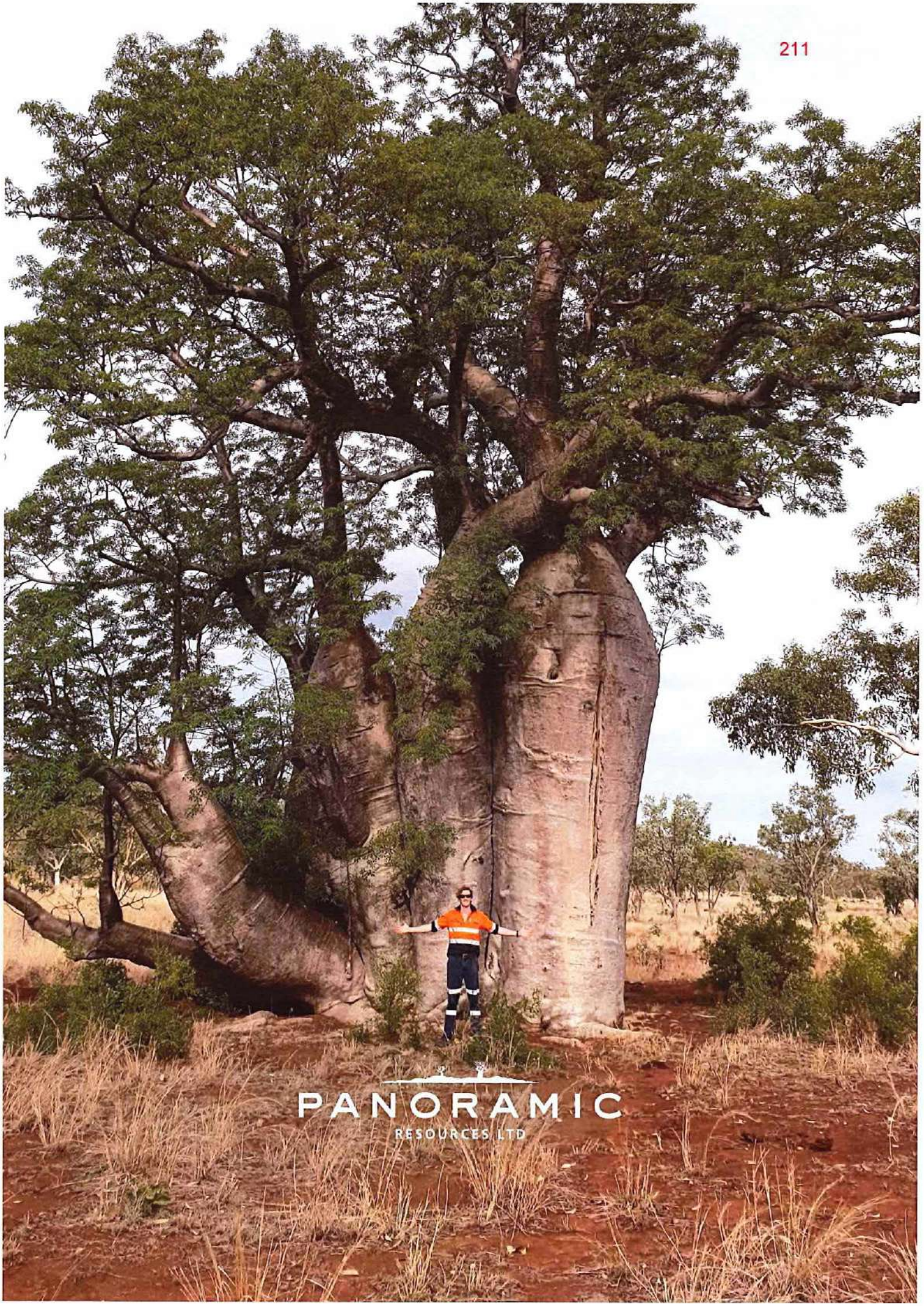
GRI 404 Training and Education	GRI 404-1	Average hours of training per year per employee	6 - Our People	
	GRI 404-2	Programs for upgrading employee skills and transition assistance programs	6 - Our People	
	GRI 404-3	Percentage of employees receiving regular performance and career development reviews	6 - Our People	
GRI 405 Diversity and Equal Opportunity 2016	GRI 405-1	Diversity of governance bodies and employees	6 - Our People	
	GRI 405-2	Ratio of basic salary and remuneration of women to men		All
GRI 406 Non-discrimination 2016	GRI 406-1	Incidents of Discrimination and Corrective Actions Taken	6 - Our People	
GRI 407 Freedom of Association and Collective Bargaining 2016	GRI 407 -1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at a risk		All
GRI 408 Child Labour 2016	GRI 408-1	Operations and suppliers at significant risk for incidents of child labour	8 - Our Local and Global Community	
GRI 409 Forced or Compulsory Labour 2016	GRI 409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labour	8 - Our Local and Global Community	
GRI 410 Security Practices 2016	GRI 410-1	Security personnel trained in human rights policies or procedures		All
GRI 411 Rights of Indigenous Peoples 2016	GRI 411-1	Incidents of violations involving rights of indigenous peoples	8 - Our Local and Global Community	
GRI 413 Local Communities 2016	GRI 413-1	Operations with local community engagement, impact assessments, and development programs	8 - Our Local and Global Community	
	GRI 413-2	Operations with significant actual and potential negative impacts on local communities	8 - Our Local and Global Community	
GRI 414 Supplier Social Assessment 2016	GRI 414-1	New Suppliers that were screened using social criteria	5 - Our Business	
	GRI 414-2	Negative social impacts in the supply chain and actions taken	5 - Our Business	
GRI 415 Public Policy 2016	GRI 415-1	Political contributions		All
GRI 416 Customer Health and Safety 2016	GRI 416-1	Assessment of the health and safety of products and service categories		All

		4- Quality Education 5- Gender Equality 8- Decent Work and Economic Growth 10- Reduced Inequalities
		8- Decent work and economic growth
		5- Gender Equality 8-Decent Work Economic Growth 10- Reduced Inequalities
		5- Gender Equality 8-Decent Work Economic Growth
Information on remuneration for all employees is considered confidential for the purposes of this report.	As stated elsewhere, Panoramic notes that salaries in the Australian mining industry are well above minimum wage. Panoramic will consider reporting this information in future reports.	5- Gender Equality 8-Decent Work Economic Growth 10- Reduced Inequalities
		5- Gender Equality 8-Decent Work Economic Growth
Workers rights for the Savannah workforce and employees of local suppliers and contractors are considered well protected in Australia under State and Commonwealth regulation.	Such risks for the wider supply chain in other jurisdictions is not discounted and will be assessed in future reporting as the Company advances its obligations under the *Modern Slavery Act 2019*.	8-Decent Work Economic Growth
		8-Decent Work Economic Growth 16- Peace, Justice and Strong Institutions
		8-Decent Work Economic Growth
Savannah and the Perth head office do not have security personnel.	The operational locations of Panoramic's operational activities are all within Australia which is not impacted by security issues. Panoramic may consider including this aspect in future value chain human rights assessments.	16- Peace, Justice and Strong Institutions
		2- Zero Hunger
		8-Decent Work Economic Growth
		1- No Poverty 2- Zero Hunger
		5- Gender Equality 8- Decent Work and Economic Growth 16- Peace, Justice and Strong Institutions
		5- Gender Equality 8- Decent Work and Economic Growth 16- Peace, Justice and Strong Institutions
Panoramic has not financially contributed to the any political parties in this reporting period.	Panoramic remains apolitical.	16- Peace, Justice and Strong Institutions
Panoramic does no currently track heath and safety impacts in its value chain.	Products and services obtained in Australia are beholden to the same OHS laws as the Panoramic operations. OHS is widely upheld in the Australian mining industry across all services. Contractor OHS compliance is audited by Panoramic staff. Panoramic may consider including this aspect in future value chain human rights assessment	12- Responsible Consumption and Production

	GRI 416-2	Incidents of non-compliance concerning the health and safety impacts of products and services		All
GRI 417 Marketing and Labelling 2016	GRI 417-1	Requirements for product and service information and labelling		All
	GRI 417-2	Incidents of non-compliance concerning product and service information and labelling		All
	GRI 417-3	Incidents of non-compliance concerning marketing communications		All
GRI 418 Customer Privacy 2016	GRI 418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data		All
G4 Sector Specific Topics	MM1	Amount of land (owned or leased, and managed for production activities or extractive use) disturbed or rehabilitated	9 - Caring for our Environment	
	MM2	The number and percentage of total sites identified as requiring biodiversity management plans according to stated criteria, and the number (percentage) of those sites with plans in place	9 - Caring for our Environment	
	MM3	Total amount of overburden, rock, tailings, and sludges and their associated risks	9 - Caring for our Environment	
	MM4	Number of strikes and lock-outs exceeding one week's duration, by country		All
	MM5	Total number of operations taking place in or adjacent to Indigenous People's territories, and number and percentage of operations or sites where there are formal agreements with Indigenous Peoples' communities	8 - Our Local and Global Community	
	MM6	Number and description of significant disputes relating to land use, customary rights of local communities and Indigenous Peoples	8 - Our Local and Global Community	
	MM7	Use of Grievance Mechanisms to Resolve Disputes Related to Land Use, Customary Rights of Local Communities and Indigenous Peoples	8 - Our Local and Global Community	
	MM8	Number (and percentage) of company operating sites where artisanal and small-scale mining (ASM) take place on, or adjacent to, the site; the associated risks and the actions taken to manage and mitigate these risks		All
	MM9	Sites where resettlements took place, the number of households resettled in each, and how their livelihoods were affected in the process		All
	MM10	Environment - mine closure	9 - Caring for our Environment	

Mining Sector Standard

	Panoramic does not currently track heath and safety impacts in its value chain.	Products and services obtained in Australia are beholden to the same OHS laws as the Panoramic operations. OHS is widely upheld in the Australian mining industry across all services. Contractor OHS compliance is audited by Panoramic staff. Panoramic may consider including this aspect in future value chain human rights assessment	12- Responsible Consumption and Production
	The Company's final product is sold in bulk to the open market.	This topic is not material to the activities included in this Report.	12- Responsible Consumption and Production
	The Company's final product is sold in bulk to the open market.	This topic is not material to the activities included in this Report.	16- Peace, justice and strong institutions
	The Company's final product is sold in bulk to the open market.	The final procuct is not marketed.	16- Peace, justice and strong institutions
	Panoramic publicly reports its major shareholders, while individual investors are maintained in secure databases.	This topic is not material to the activities included in this Report.	16- Peace, justice and strong institutions
	There were no strikes or lock outs in the reporting period.	Strikes in the Australian mining industry are rare. Workers most likely to strike are covered by collective bargaining agreements.	
	There are no artisanal mines, active or inactive, present within or near the Savannah area of operations. Some historic small mine workings are scattered throughout the wider region but are long abandoned.	This topic is not material to the activities included in this Report.	
	Savannah is remote from any community, and no households have had to be moved for the development of Savannah or any other projects in which Panoramic has had an interest.	This topic is not material to the activities included in this Report.	
Topics in the applicable GRI Sector Standards determined as not material			
Topics		**Explanation**	
Title of GRI Sector Standard			
All		Still in development by the GRI Mining Working group and not yet available for use.	


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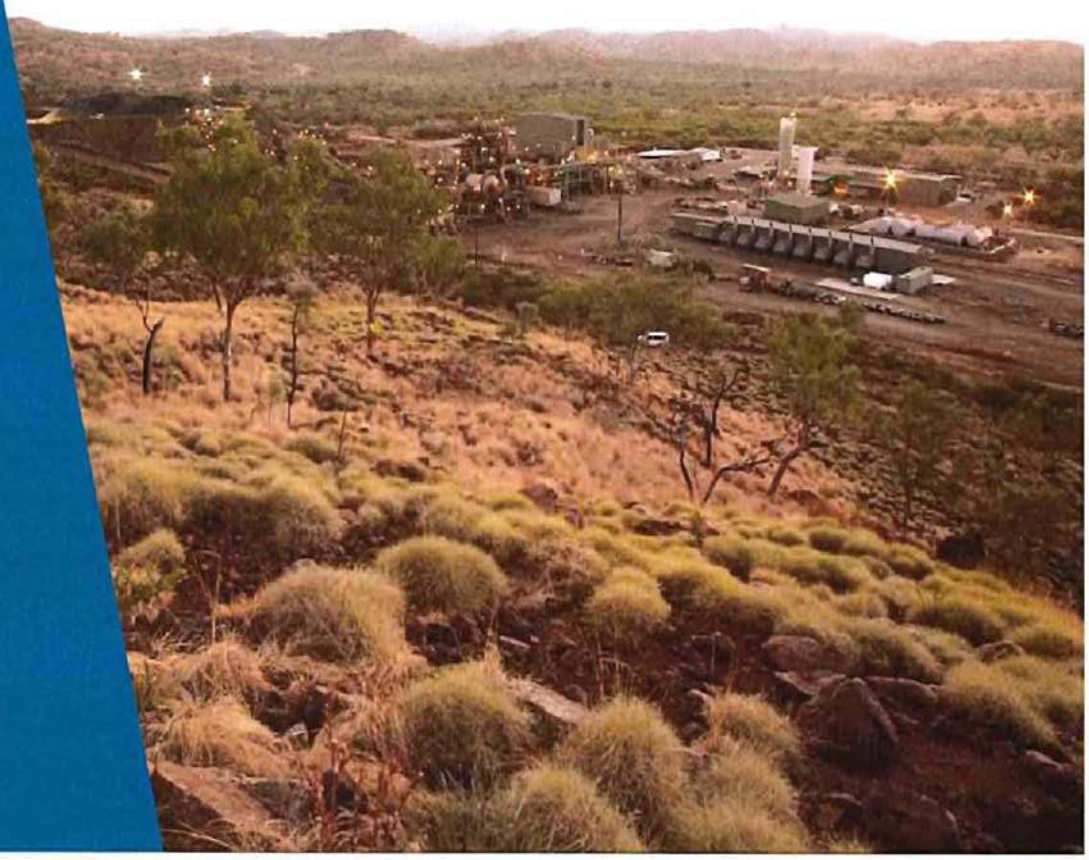
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Savannah Restart

6 April 2021



Important Notice and Disclaimer

This Presentation contains summary information about the Company and its activities which is current as at the date of this Presentation. The information in this Presentation is of a general nature and does not purport to be complete nor does it contain all the information which a prospective investor may require in evaluating a possible investment in the Company or that would be required in a prospectus or product disclosure statement prepared in accordance with the requirements of the Corporations Act.

The historical information in this Presentation is, or is based upon, information that has been released to the Australian Securities Exchange (**ASX**). This Presentation should be read in conjunction with the Company's other periodic and continuous disclosure announcements lodged with the ASX, which are available at www.asx.com.au.

Forward-looking statements and forecasts

This Presentation contains certain "forward-looking statements" and comments about future matters. Forward-looking statements can generally be identified by the use of forward-looking words such as, "expect", "anticipate", "likely", "intend", "should", "could", "may", "predict", "plan", "propose", "will", "believe", "forecast", "estimate", "target" "outlook", "guidance" and other similar expressions within the meaning of securities laws of applicable. Indications of, and guidance or outlook on, future earnings or financial position or performance are also forward-looking statements. You are cautioned not to place undue reliance on forward-looking statements. Any such statements, opinions and estimates in this Presentation speak only as of the date hereof and are based on assumptions and contingencies subject to change without notice, as are statements about market and industry trends, projections, guidance and estimates. Forward-looking statements are provided as a general guide only. The forward-looking statements contained in this Presentation are not indications, guarantees or predictions of future performance and involve known and unknown risks and uncertainties and other factors, many of which are beyond the control of the Company, and may involve significant elements of subjective judgement and assumptions as to future events which may or may not be correct.

There can be no assurance that actual outcomes will not differ materially from these forward-looking statements. A number of important factors could cause actual results or performance to differ materially from the forward-looking statements. The forward-looking statements are based on information available to the Company as at the date of this Presentation.

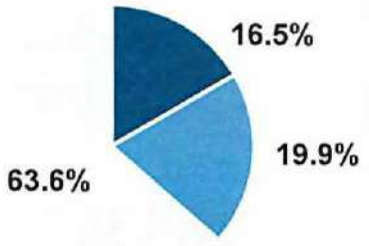
Except as required by law or regulation (including the ASX Listing Rules), the Company undertakes no obligation to supplement, revise or update forward-looking statements or to publish prospective financial information in the future, regardless of whether new information, future events or results or other factors affect the information contained in this Presentation.

Corporate overview

Share price and volumes



Shareholder composition



Zeta Resources Limited	Investor since 2013
Western Areas Limited	Investor since June 2020
Other	Institutional, high net worth and retail

Capital structure	Current
Shares on Issue	2,051m
Options on Issue	28.5m
Share Price (1 Apr 2021)	A$0.135/share
Market Capitalisation	**A$276.9m**
Cash (31 Dec 2020)	A$29.8m
Debt (31 Dec 2020)	Nil
Enterprise Value	**A$247.1m**

Board and Management



Nicholas Cernotta, Non-Executive Chair

- Appointed: May 2018 as Non-Executive Director, May 2020 as Chairman
- 30+ years in mining industry with senior operational and executive roles in Australia and overseas
- Previously Director of Operations at Fortescue Metals Group, COO (Underground, International and Engineering) at Macmahon and Director of Operations for Barrick Australia Pacific
- Currently a Non-Executive Director of Pilbara Minerals, Northern Star Resources and New Century Zinc



Victor Rajasooriar, Managing Director & CEO

- Appointed: November 2019
- 25+ years in mining industry with operational and technical experience across both underground and open pit operations
- Previously Managing Director of Echo Resources, CEO of Eastern Goldfields and COO of Barminco
- Holds a Bachelors of Mining Engineering from the WA School of Mines and a WA First Class Mine Managers Certificate



Grant Dyker, Chief Financial Officer

- Appointed: September 2020
- 15 years of experience in CFO roles at ASX-listed resources companies with extensive project finance, feasibility studies, tendering, hedging and operational optimisation
- Previously CFO of Dacian Gold, Sirius Resources, Doray Minerals, Avoca Resources and Aztec Resources
- Chartered Accountant and Registered Tax Agent



Rebecca Hayward, Non-Executive Director

- Appointed: June 2018
- Experienced infrastructure and resources lawyer with a background in mining, energy and large scale infrastructure transactions
- Currently manages the legal, contracts and procurement function for the Projects division of Fortescue Metals Group
- Previously a Senior Associate at Clayton Utz in the Melbourne Construction and Major Projects team



Gillian Swaby, Non-Executive Director

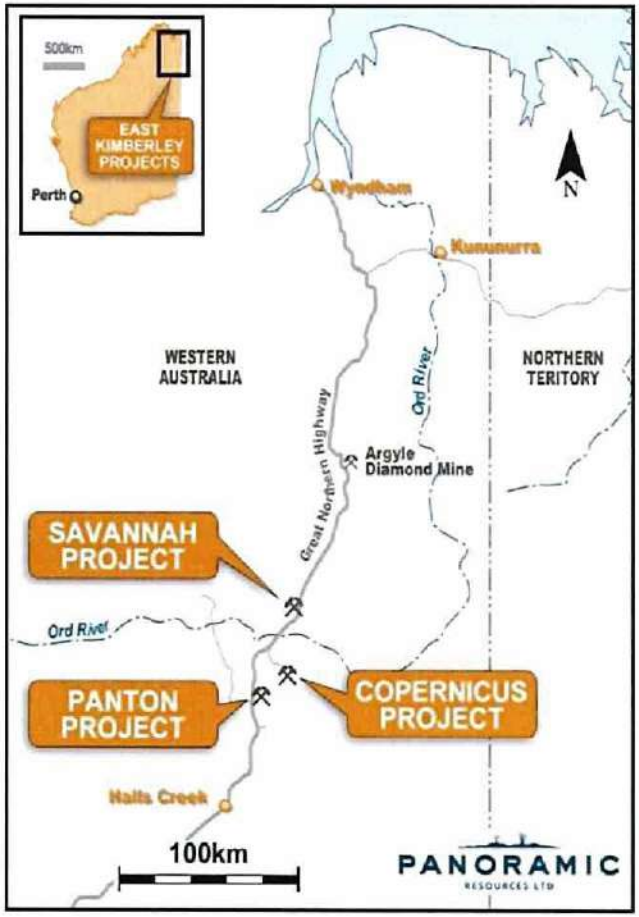
- Appointed: October 2019
- Experienced mining executive with a broad skill set across a range of corporate, finance and governance areas
- Previously an Executive Director for uranium company Paladin Energy for 10 years
- Currently an Executive Director of Deep Yellow and a Non-Executive Director of Comet Ridge

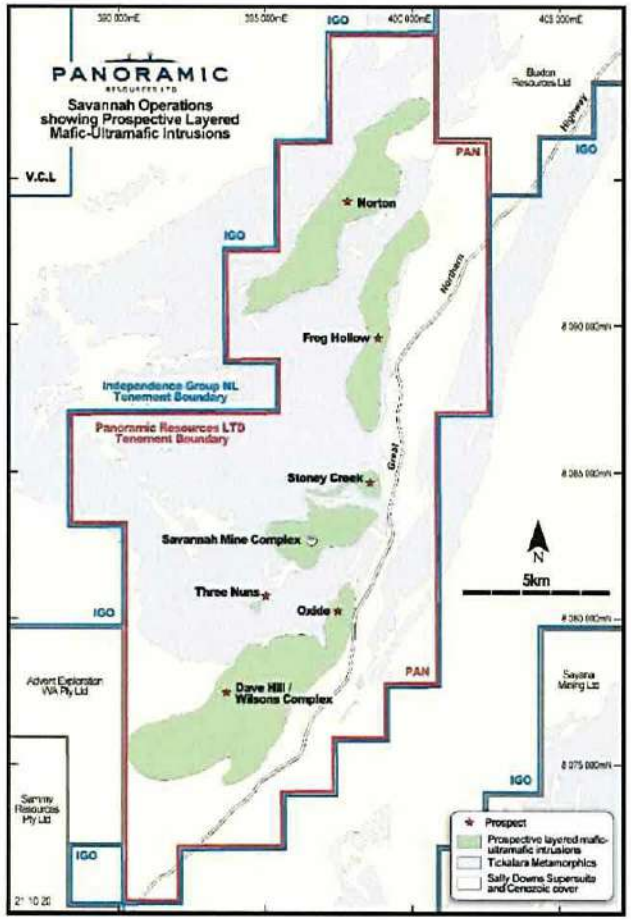


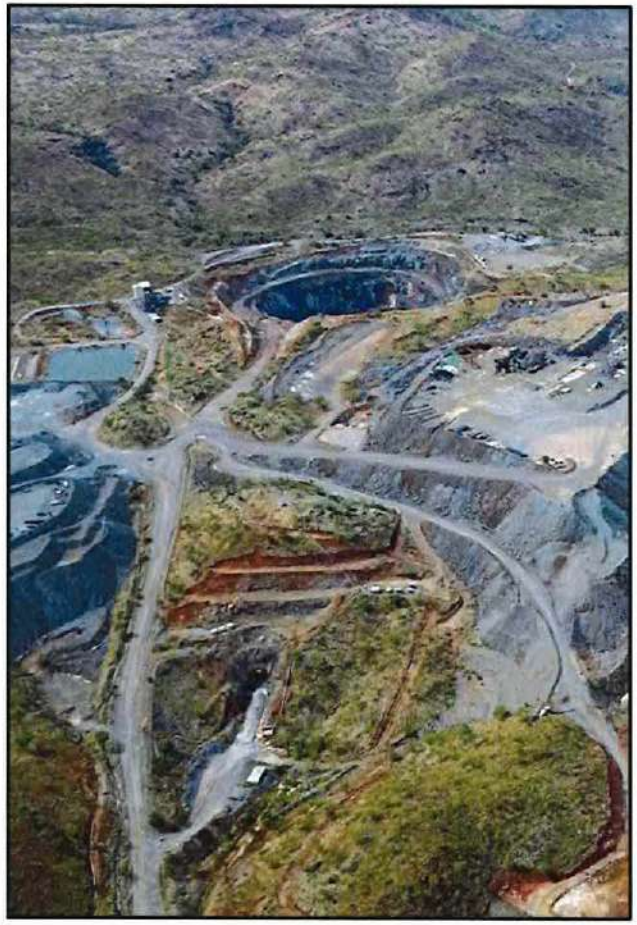
Peter Sullivan, Non-Executive Director

- Appointed: October 2015
- 20+ years in mining industry with roles in engineering, corporate finance, investment banking, management and public company directorships
- Currently Non-Executive Chairman of Zeta Resources, a resources focused holding and development company
- Previously Managing Director of Resolute Mining for 14 years

Savannah Nickel Project







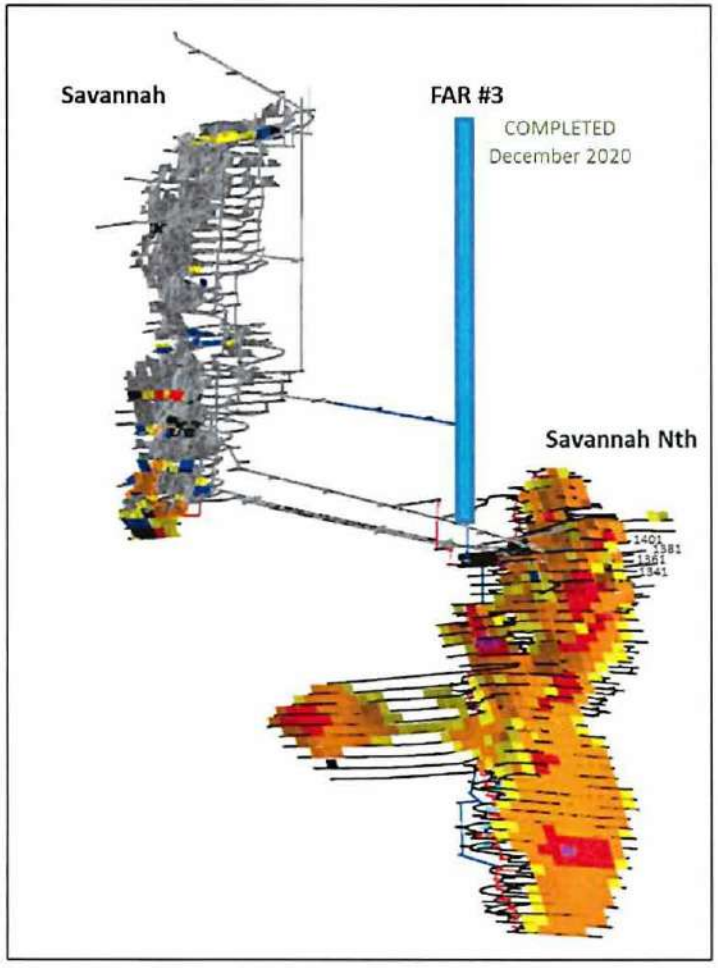
The restart decision

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- ✓ Strongly supportive technical and financial studies
- ✓ Savannah North ventilation works, and advance underground development completed
- ✓ Lower risk contract mining and processing strategy with high quality partners on attractive terms
- ✓ New US$45M debt financing facility
- ✓ Offtake agreement secured until February 2028
- ✓ Industry procedures for the effective management of COVID-19 now well established
- ✓ Meaningful improvement in nickel price outlook

Key Highlights	
Ni production	9,072t p.a.
Cu production	4,683t p.a.
Co production	676t p.a.
Life of Mine	12 years
All-in Cost	A$6.36/lb Ni
Pre-tax cashflow	A$610M
Pre-tax NPV_8	A$353M

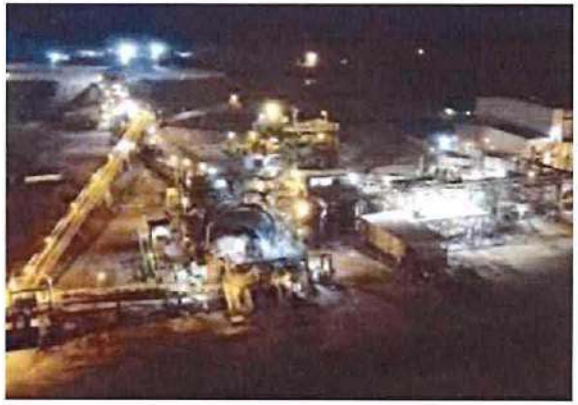
An improved asset and strategy



Programs to build operational readiness since mid-2020:

- Completion of the FAR#3 ventilation raise to facilitate full-scale mining operations at Savannah North
- Advance underground development to open four new mining levels at Savannah North
- New staged mining and processing plan to build three months of ore stockpiles at surface supported by updated metallurgical testwork
- Completion of owner-operate and contractor-operated mining and processing models
- Completion of additional ancillary surface and underground capital works (ongoing)

Infrastructure – all in a 'ready to go' state



1Mtpa Processing Plant



Paste Plant



Concentrate shed



Tailings Storage Facility



14 MW Power Station



Access to Wyndham port & storage

Contract mining and processing

Appointment of leading contractor partners reduces human resourcing and ramp up risks while maintaining future flexibility for ongoing use of contractors or adopting an owner-operator model

Barminco

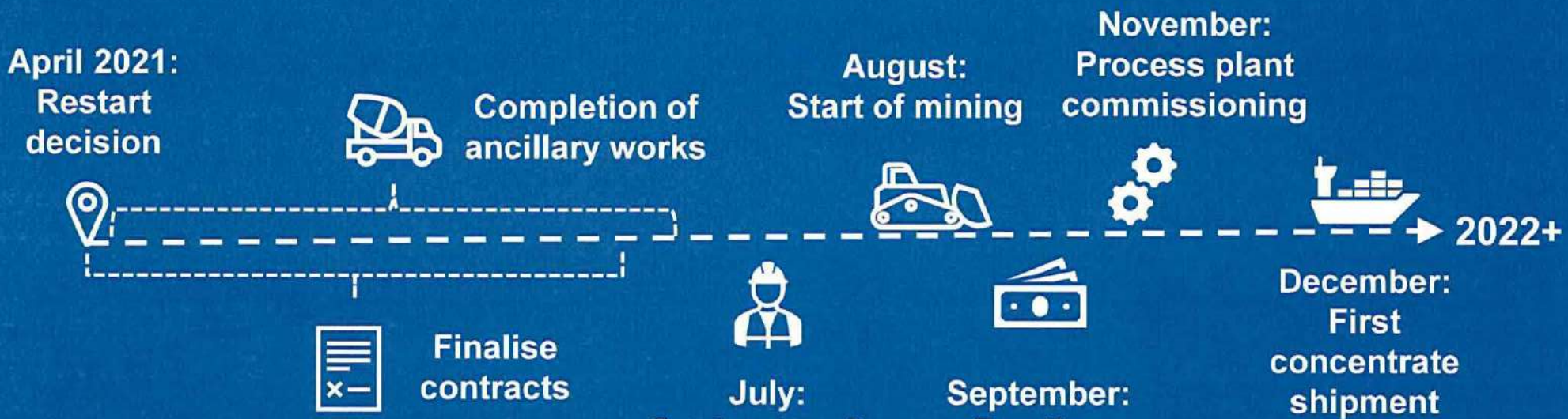
- Binding four-year Letter of Intent (LOI) for underground mining with mobilisation to site in July
- Contract structured to incentivise productivity with margin dependent on achieving schedule
- Provision of new underground mining equipment including the use of teleremote mining equipment
- With Barminco's previous working knowledge at Savannah, opportunities to increase ore production and reduce dilution have been identified

PRIMERO

- Non-binding three-year LOI for all processing and maintenance at the Savannah processing plant
- Identification of multiple opportunities for improved recoveries through enhanced operating practices and minor capital projects
- The LOI has been structured to incentivise achieving above-budget outcomes
- Work underway to complete a binding contract in the coming months

Pathway to first shipment

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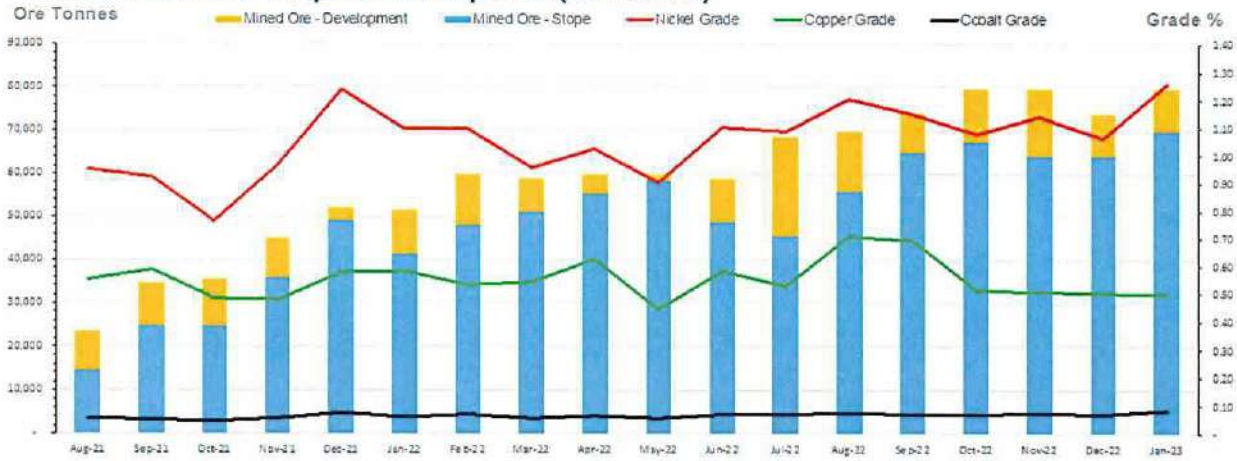


Mining schedule

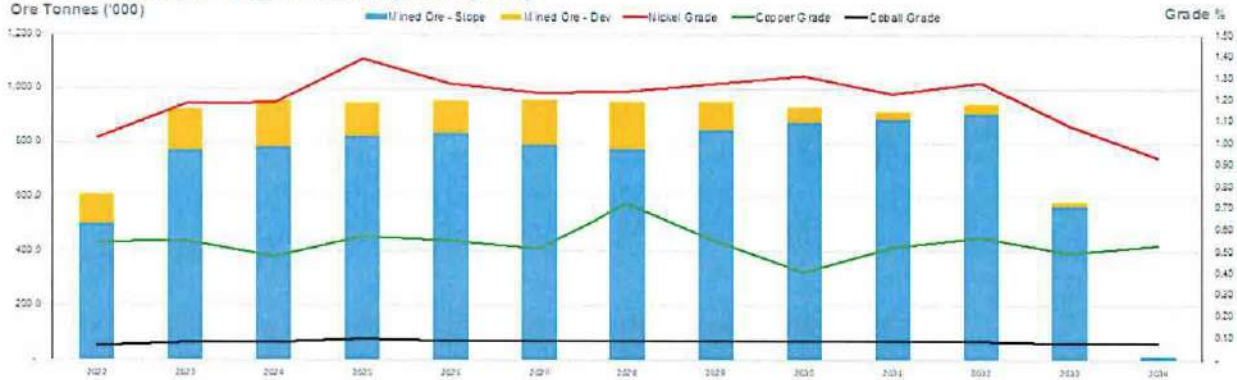


Savannah North ore drive – December 2020

Ore Tonnes Mined - Stope & Development (18 months)[1]



Ore Tonnes Mined - Stope & Development (LOM)[1]

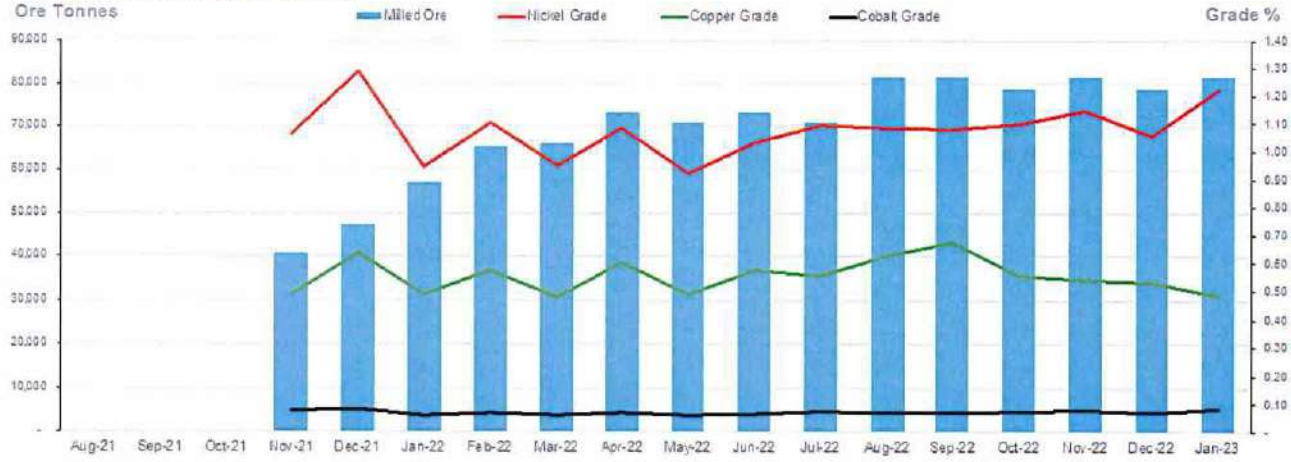


[1] Refer to the announcement "*Updated Savannah Ore Reserve and Mine Plan*" dated 31 July 2020. All material assumptions underpinning the production targets, which are referred to in the original announcement, continue to apply and have not materially changed.

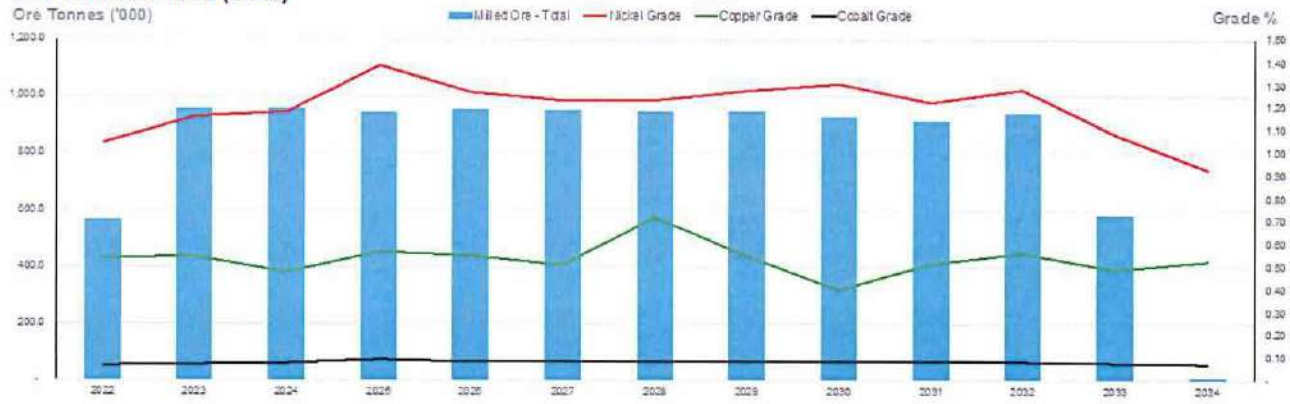
Processing schedule

- Revised schedule with processing starting three months after mining
- Allows stockpile of ~100kt to build, reducing pressure on mining rates in the initial months
- Conservative mill rate of 50% in month one ramping up to full production over nine months
- Nickel recovery of 83%

Ore Tonnes Milled (18 months)[1]



Ore Tonnes Milled (LOM) [1]



[1] Refer to the announcement "*Updated Savannah Ore Reserve and Mine Plan*" dated 31 July 2020. All material assumptions underpinning the production targets, which are referred to in the original announcement, continue to apply and have not materially changed.

Attractive financial metrics

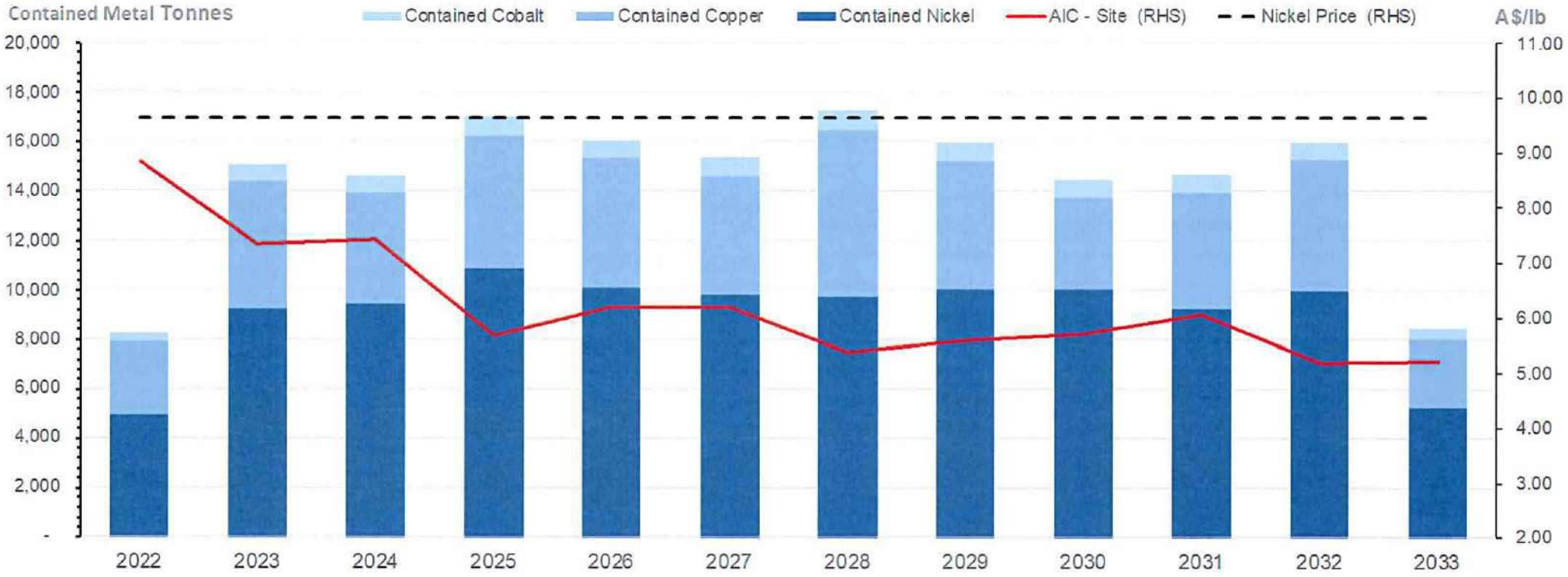
- Updated financial model based on April 2021 commodity price and exchange rate outlook
- Includes provision for contractor strategy
- Average AIC are inclusive of all site and transport operating costs, capital costs, royalties, and net of by-product credits, but exclusive of corporate, funding and exploration costs
- Strong leverage to any future nickel price upside

Key Metrics		April 2021 (Consensus Case)	April 2021 (Base Case)	April 2021 (Base Case + 20 % Ni Price)
Ore mined & treated[1]	kt	10,628	10,628	10,628
Ni grade[1]	%	1.23	1.23	1.23
Cu grade[1]	%	0.54	0.54	0.54
Co grade[1]	%	0.08	0.08	0.08
Mine Revenue (Ni + Cu + Co)	A$M	2,386	2,369	2,753
Mine Costs (total capital and operating)	A$M	1,717	1,718	1,735
Upfront capital costs	A$M	41	41	41
Average AIC (payable Ni, net of byproduct credits)	A$/lb	6.73	6.36	6.37
Pre-tax mine cashflow	A$M	628	610	977
Life of Mine (LOM)	years	12	12	12
Average nickel production (in concentrate) [1]	t	9,072	9,072	9,072
Average copper production (in concentrate) [1]	t	4,683	4,683	4,683
Average cobalt production (in concentrate) [1]	t	676	676	676
Pre-tax NPV_8	A$M	355	353	585
Nickel price	USD/t	16,976	16,055	19,266
Copper price	USD/t	7,629	8,750	8,750
Cobalt price	USD/t	45,947	50,692	50,692
Exchange rate	AUD:USD	0.76	0.76	0.76

[1] Refer to the announcement "*Updated Savannah Ore Reserve and Mine Plan*" dated 31 July 2020. All material assumptions underpinning the production targets, which are referred to in the original announcement, continue to apply and have not materially changed.

LOM – contained metal produced and costs

Contained metal[1] and unit costs [2]



[1] Refer to the announcement "*Updated Savannah Ore Reserve and Mine Plan*" dated 31 July 2020. All material assumptions underpinning the production targets, which are referred to in the original announcement, continue to apply and have not materially changed.

[2] All-in costs (AIC) are inclusive of all site and transport operating costs, capital costs, royalties, and net of by-product credits, but exclusive of corporate, funding and exploration costs. Calculated using Base Case pricing of (US$16,055/t Ni, US$8,750/t Cu, US$50,692/t Co) and AUD:USD rate of 0.76

New funding facilities and offtake

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Prepayment Loan Facility (PLF)

- Facility limit of US$30m
- Five-year repayment term
- Interest only payments required in the first 12 months
- Interest rate is 3-month USD Libor plus favorable interest margin
- Additional voluntary repayments are allowed without penalty, including full early repayment
- No mandatory hedging
- Secured with mortgages over the Savannah tenements

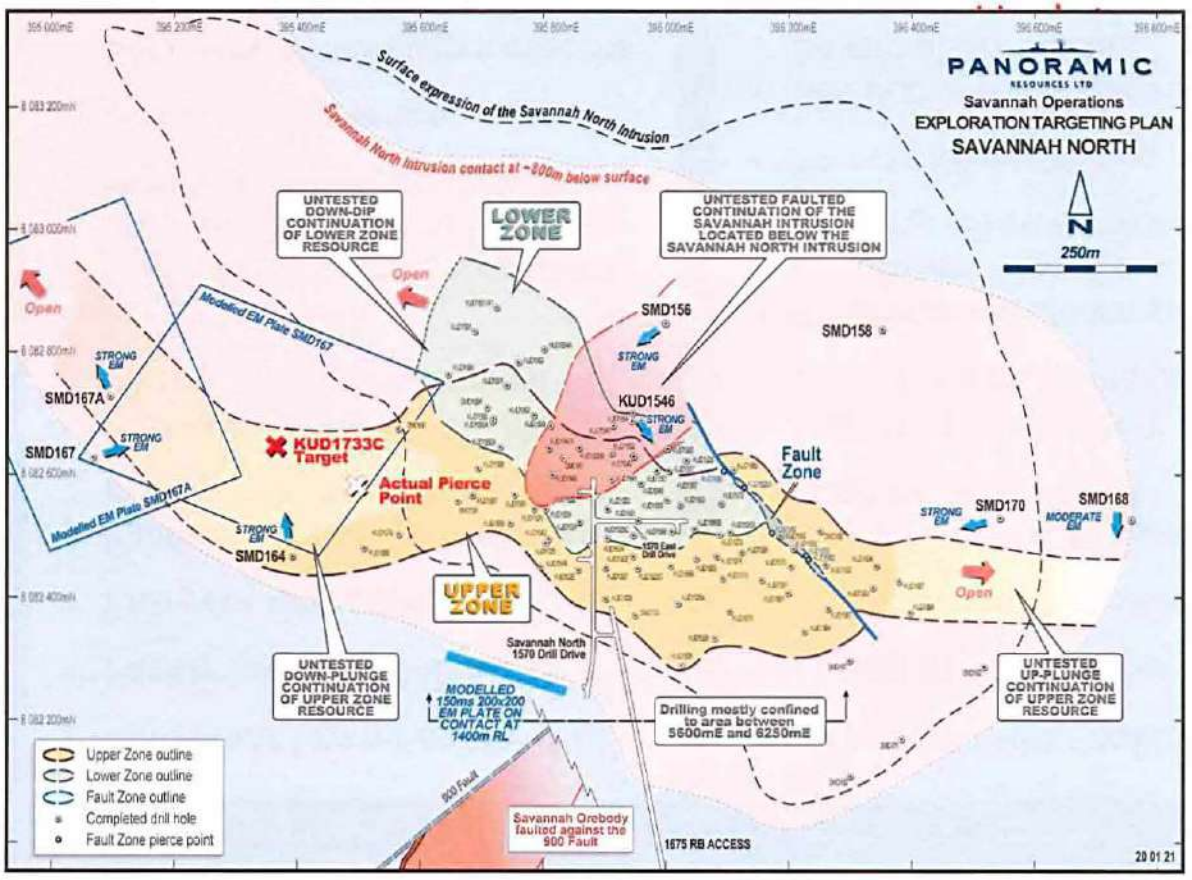
Revolving Credit Facility (RCF)

- Facility limit of US$15m
- 18 month term from drawdown
- Expires if PLF not fully drawn down by 24 Dec 2021
- Interest rate is 3-month USD Libor plus interest margin
- Additional voluntary repayments are allowed without penalty, including full early repayment
- No mandatory hedging
- Secured with mortgages over the Savannah tenements

Concentrate offtake

- Five year concentrate offtake agreement from Feb 2023 – Feb 2028
- Aligns with the expiry of the Jinchuan offtake agreement
- Contract is for 100% of Savannah's production during the term
- Payabilities are as attractive or better than current terms
- Contract terminates if PLF is not draw down by 24 Dec 2021

Exploration pathway to longer mine life



Near-mine target

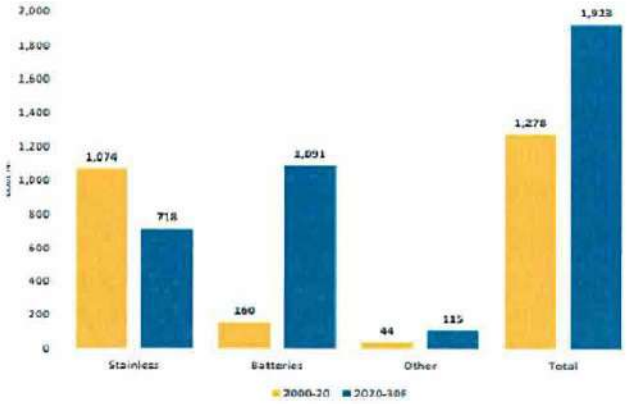
- Large DHEM target interpreted as a potential extension of the Savannah North upper zone
- Located 200m from planned working
- Drill hole KUD1733C completed in late 2020 did not effectively test the target
- Establishment of underground drill drive under consideration
- Target scale has potential to provide multi-year mine life extension

Regional targets

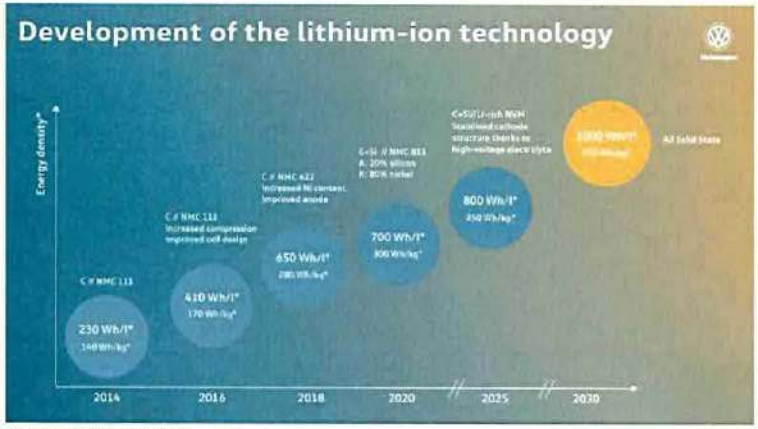
- Multiple intrusion targets identified
- Whistlepipe Exploration conducting peer review and target generation underway

Market outlook – a structural shift to EVs

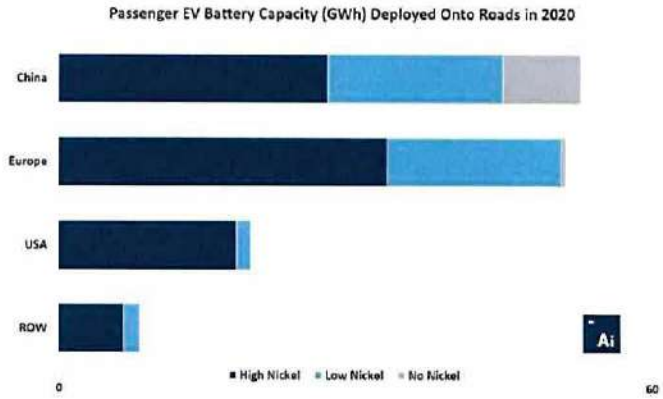
- Tesla delivered 184,000 EVs in Q1 2021, more than double Q1 2020 and expects a 50% increase throughout 2021[3]
- Tesla aims to achieve 3TWh of production capacity by 2030, while VW aims to achieve 240GWh battery capacity by 2030[4]
- Adamas Intelligence estimates in 2020 >60% of passenger EV battery capacity produced globally utilised high-nickel cells[5]
- Macquarie estimates nickel demand for batteries to increase from ~200kt (2000-20) to +1.0Mt (2020-30)
- Increased energy density requirements contributes to increase in Ni intensity



Source: Macquarie Research



Source: Volkswagen



Source: Adamas Intelligence

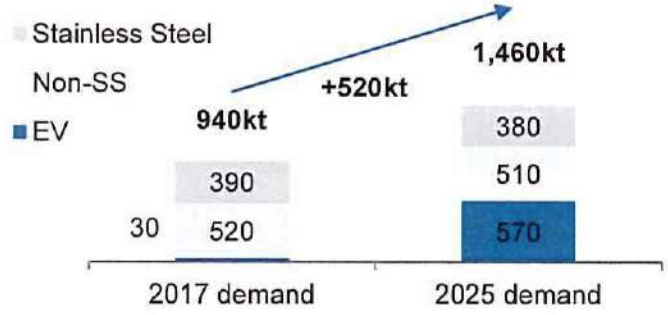
3. https://www.wsj.com/articles/tesla-kicks-off-2021-with-rising-deliveries-11617368680
4. https://thedriven.io/2021/03/18/vws-power-day-shows-electric-vehicles-have-arrived-but-can-it-catch-tesla/
5. https://www.mining.com/nickel-was-king-in-ev-battery-capacity-deployment-in-2020/

Market outlook – a structural shift to EVs

Vehicle manufacturers have committed >US$500bn into electrification between 2017-25 and increasing

- A significant increase in nickel production will be required to satisfy this new source of demand with very few new nickel sulphide operations in the global project pipeline:
  - High purity Class 1 nickel is the most important metal required in battery production
  - Sulphide production forecast to remain flat from now until 2025 and then decline at a CAGR of (3.4)% to 2040
- Ethical nickel supply is becoming increasingly important for consumers
- Rapid pivot of global vehicle markets towards EVs influences demand via:
  - Overall increase in demand for batteries as EV demand increases; and
  - Majority of higher capacity battery cathodes require a higher nickel intensity

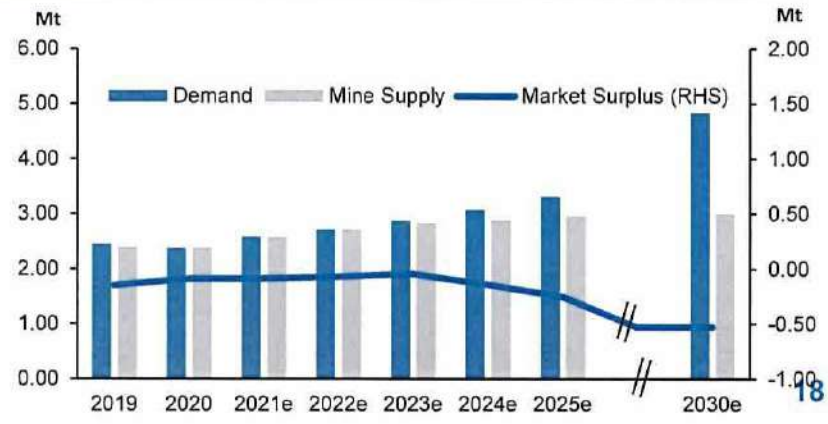
Demand for Class 1 Nickel (ktpa)[6]



Global Nickel Production (Mtpa)[7]



Global Nickel Production (Mtpa)[7]



6. The future of nickel: a class act (McKinsey & Company, 2017). Class 1 Nickel defined as a product with 99.8% Ni content or above.
7. WoodMac production forecasts and historical data as at 18-Mar-20.

Investment summary

PANORAMIC RESOURCES LTD

230

Savannah restart decision April 2021 with first shipment targeted for December 2021

Savannah North ventilation, underground development and ancillary works have prepared the operation for restart

Experience from Savannah's operating history, detailed planning and a new contractor strategy have prepared the operation for restart

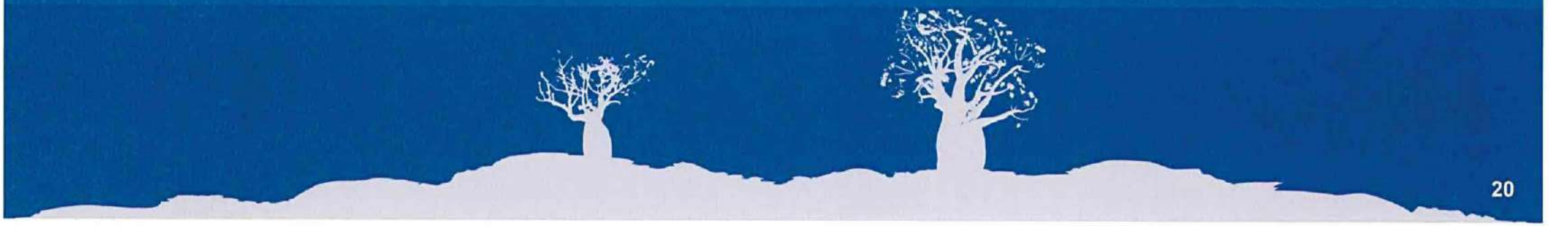
New offtake and financing package avoids any dilutive equity raising to support the restart decision

Updated Mine Plan has outlined a 12 year mine life with attractive financial outcomes including a base case NPV_8 of A$353M

Base case LOM All-in Cost A$6.36/lb Ni provides significant leverage to the demand outlook for nickel

PANORAMIC
RESOURCES LTD

APPENDIX – RESERVES & RESOURCES



Savannah Project Mineral Resource Estimate (May 2020)

PANORAMIC RESOURCES LTD

Resource	Date	Metal	JORC Compliance	Measured		Indicated		Inferred		Total		Metal Tonnes
				Tonnes	(%)	Tonnes	(%)	Tonnes	(%)	Tonnes	(%)	
Savannah (above 900F)	Apr 20	Nickel	2012	1,010,000	1.44	565,000	1.77	-	-	1,575,000	1.56	24,500
		Copper			0.80		1.44				1.03	16,200
		Cobalt			0.07		0.08				0.07	1,200
Savannah (below 900F)	Jun 15	Nickel	2012	-	-	780,000	1.64	125,000	1.72	905,000	1.65	14,900
		Copper			-		0.76		0.75	-	0.76	6,900
		Cobalt			-		0.10		0.09	-	0.10	900
Savannah North (Upper)	Apr 20	Nickel	2012	1,840,000	1.48	3,050,000	1.43	1,544,000	1.25	6,434,000	1.40	90,100
		Copper			0.66		0.57		0.42		0.56	35,900
		Cobalt			0.10		0.10		0.07		0.09	6,100
Savannah North (Lower)	Apr 20	Nickel	2012	-	-	2,654,000	1.84	958,000	1.67	3,612,000	1.79	64,800
		Copper			-		0.90		0.73		0.85	30,800
		Cobalt			-		0.13		0.11		0.12	4,500
Savannah North (Other)	Apr 20	Nickel	2012	46,000	1.71	414,000	1.34	470,000	1.93	930,000	1.66	15,400
		Copper			0.49		0.48		0.46		0.47	4,400
		Cobalt			0.12		0.09		0.12		0.11	1,000
Total		Nickel								13,456,000	1.56	209,800
		Copper									0.70	94,200
		Cobalt									0.10	13,700

Savannah Project Mineral Resource Estimate (May 2020)

PANORAMIC RESOURCES LTD

Qualifying Statements and Notes:

Refer to ASX announcement dated 7 May 2020 covering the Savannah Project May 2020 Mineral Resource update for detailed assumptions and estimation methodologies.
Figures have been rounded and therefore may not add up exactly to the reported totals.
All Mineral Resources are inclusive of Ore Reserves.
Mineral Resource cutoff grade is 0.50% Ni.

Cross references to previous Company ASX announcements:

Savannah (above 900F) – refer to ASX announcement of 30 September 2019, titled "Mineral Resources and Ore Reserves at 30 June 2019"
Savannah (below 900F) – refer to ASX announcement of 30 September 2015, titled "Mineral Resources and Ore Reserves at 30 June 2015"
Savannah North – refer to ASX announcement of 24 August 2016, titled "Major Resource Upgrade for Savannah North"

No New Information or Data

The Mineral Resource estimate tabled above for Savannah (below 900F), have been previously reported and the relevant market announcements cross referenced. Except where stated otherwise, the Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements and, in the case of estimate of Mineral Resources, that all material assumptions and technical parameters underpinning the estimate in the relevant market announcement continue to apply and have not materially changed.

Ni Equivalent References

References to Ni equivalent contained metal in Mineral Resources and Ore Reserves is based on assumed metal prices as noted in footnotes and calculated using the formula Ni Eq kt = [(Ni grade * Ni price + Cu kt * Cu price + Co kt * Co price) * Total Mineral Resource Tonnes] / Ni price. Ni equivalent grade % in Mineral Resources are calculated on the formula Ni Eq % = Ni Eq kt / Total Mineral Resource tonnes. It is the Company's opinion that all elements included in the metal equivalent calculation have a reasonable potential of being recovered and sold. Metallurgical recoveries for all metals are assumed to be equal.

Savannah Project Ore Reserve Estimate (June 2020)

Ore Reserve	Metal	Proved		Probable		Total		Metal Tonnes
		Tonnes	(%)	Tonnes	(%)	Tonnes	(%)	
Savannah	Nickel	1,233,000	0.95	-	-	1,233,000	0.95	11,700
	Copper		0.66		-		0.66	8,100
	Cobalt		0.05		-		0.05	600
Savannah North	Nickel	1,795,000	1.21	5,246,000	1.28	7,041,000	1.28	90,100
	Copper		0.54		0.57		0.57	40,400
	Cobalt		0.09		0.09		0.09	6,400
Total	Nickel	3,028,000	1.10	5,246,000	1.28	8,274,000	1.23	101,800
	Copper		0.59		0.57		0.59	48,500
	Cobalt		0.07		0.09		0.08	7,000

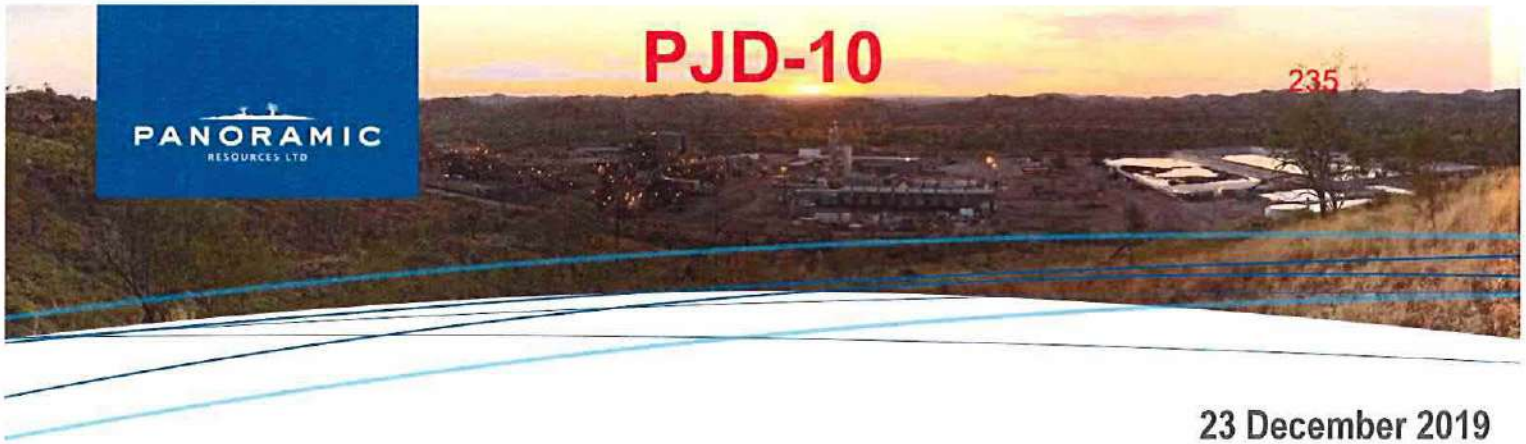
Qualifying Statements and Notes:

Calculations have been rounded to the nearest 1,000t of ore, 0.01% Metal grade and 100t of metal

Savannah & Savannah North Ore Reserve average cut-off (NSR) of $135/t.

Competent Person Statement

The information in this presentation that relates to Ore Reserves for Savannah and Savannah North is based on information compiled by or reviewed by Shane McLeay. Mr McLeay is a fellow of the Australasian Institute of Mining and Metallurgy (AusIMM) and is a Principal Mining Engineer and full-time employee of Entech Consulting based in Perth, Western Australia.



23 December 2019

RECEIPT OF INDEPENDENT EXPERT'S REPORT

Highlights

- First Supplementary Target's Statement released following receipt of Independent Expert's Report by KMPG
- KPMG has assessed the Offer as "fair and reasonable to Panoramic Shareholders, in the absence of a superior proposal"
- Assessed value per Panoramic share of $0.459 to $0.521 has only minor overlap with assessed value of Offer consideration of $0.446 to $0.473 per Panoramic share
- Independent Expert's assessed value per Panoramic share utilises forecast nickel prices below broker consensus expectations (as shown in Panoramic Target's Statement) and attributes zero value for Savannah exploration upside outside of existing Mineral Resources
- Panoramic Board will now carefully review the Independent Expert's Report and provide its detailed response in early January 2020
- Pending the Board's review and any impact it may have on the Board's current **REJECT** recommendation, Panoramic Shareholders should **TAKE NO ACTION** in relation to the Offer or any documents sent by IGO
- Panoramic remains in discussions with third parties who have been granted due diligence access

Panoramic Resources Limited (ASX:PAN, Panoramic or the **Company)** advises of the release of a First Supplementary Target's Statement (attached to this ASX announcement) in respect of an Independent Expert's Report received from KPMG Corporate Finance, a division of KPMG Financial Advisory Services (Australia) Pty Ltd (ABN 43 007 363 215) (**KPMG**).

Panoramic appointed KPMG to prepare an Independent Expert's Report opining on whether the offer from Independence Group NL (**IGO**) to acquire ordinary shares in Panoramic announced on 4 November 2019 (**Offer**) is fair and reasonable to the Panoramic Shareholders.

KPMG has now provided Panoramic with its Independent Expert's Report, which can be found in Appendix A of the attached Supplementary Target's Statement. As part of the preparation of the Independent Expert's Report, SRK Consulting (Australasia) Pty Ltd (**SRK**) was engaged as an independent technical expert.

KPMG has assessed the Offer as "fair and reasonable to Panoramic Shareholders, in the absence of a superior proposal". This opinion has been formed on the basis that the assessed value of the IGO scrip consideration at the **top** end of the range is greater than the assessed value of Panoramic shares at the **bottom** end of the range.

Directors

PETER SULLIVAN
Non-Executive Chairman

VICTOR RAJASOORIAR
Managing Director & CEO

NICHOLAS CERNOTTA
Lead Independent
Non-Executive Director

REBECCA HAYWARD
Non-Executive Director

GILLIAN SWABY
Non-Executive Director

TREVOR ETON
CFO / Company Secretary

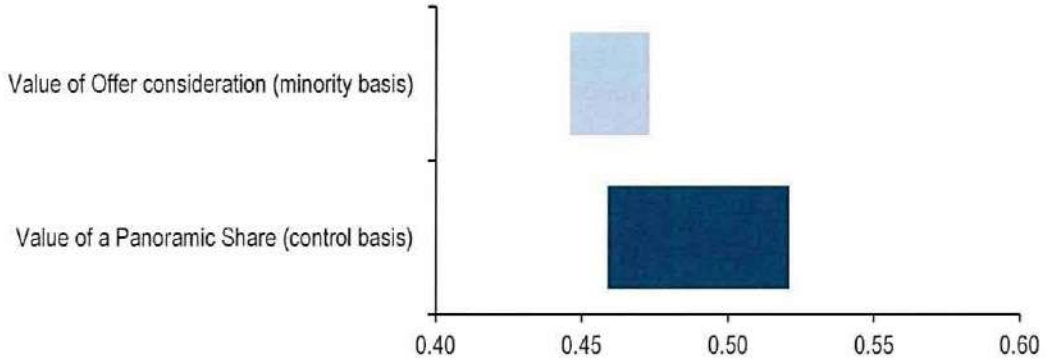
Panoramic Resources Limited
Level 9, 553 Hay St,
Perth, Western Australia 6000

Telephone: +61 8 6266 8600
Website: www.panoramicresources.com
ABN: 47 095 792 288

ASX: PAN

However, as shown in Figure 1 below, the overlap between the Independent Expert's view on the value of the Offer consideration and the value of Panoramic shares is minor (i.e. 1.4 cents per share).

Figure 1: Value of Offer consideration versus value of a Panoramic Share (Independent Expert's Report estimates)



The Board notes that the Independent Expert's Report relies primarily on recent market trading in IGO shares to form a view on the value of the Offer consideration. KPMG has been unable to undertake a fundamental valuation of IGO's assets or shares.

The Board also notes that the Independent Expert's Report:

- states that if the value of IGO shares were to fall below $5.97, the implied Offer value would fall below KPMG's range of assessed fair value for Panoramic Shares. IGO shares have traded below that level on several occasions since the announcement of the Offer;
- confirms the inequality in the relative contribution of Panoramic to the enlarged IGO's contained nickel equivalent Ore Reserves and Mineral Resources relative to the pro rata interest acquired by Panoramic Shareholders in the enlarged IGO; and
- states that Panoramic Shareholders that have a different view as to the prospects and operations of the Savannah Project, forecast commodity prices, exchange rates and potential for further exploration success, could conclude that the Offer is not fair. The Independent Expert's Report observes that those Panoramic Shareholders will then need to consider, despite it not being fair, whether there are sufficient other factors for them to accept the Offer.

Board Response to Independent Expert's Report

In the Original Target's Statement, Panoramic Directors unanimously recommended that Panoramic shareholders **REJECT** the Offer from IGO.

The Panoramic Board will now carefully review the Independent Expert's Report and provide its detailed response, including any updates to the Board's current recommendation, by way of a further supplementary target's statement. This is expected to be released and mailed to shareholders (along with the Independent Expert's Report) in early January 2020.

Pending the outcome of the Board's review and any impact it may have on the Board's current recommendation, Panoramic Shareholders should **TAKE NO ACTION** in relation to the Offer or any documents sent by IGO.

The Board notes that the Offer has been extended to 17 January 2020, so there remains ample time for Panoramic Shareholders to consider the Offer. As noted in the Independent Expert's Report, there does not appear to be any commercial imperative for Panoramic Shareholders to accept the Offer early.

The Offer remains highly conditional and there is no certainty that it will proceed. Zeta Resources Limited (**Zeta**) has stated that it does not intend to accept the Offer in its current form (see its ASX announcement of 12 November 2019).[1] Further, several conditions to the Offer have been breached and IGO has reserved its position in relation to those breaches.

In the context of the minor overlap between the Independent Expert's view on the value of the Offer consideration and the value of Panoramic shares, the Board makes the following further observations in relation to the Independent Expert's Report:

- in calculating its valuation of the Savannah Ore Reserves, KPMG has applied forecast nickel prices that are below the consensus forecasts shown in Panoramic's Target's Statement. KPMG has included in its Independent Expert's Report sensitivity analysis that illustrates the impact on its valuation of key assumptions including commodity prices;
- the Panoramic Board will closely examine the methodology applied to form a view on Mineral Resources at Savannah not currently in the life-of-mine plan, including the selection of relevant comparable transactions and the manner of their utilisation; and
- **zero** value is attributed to Savannah exploration upside, outside of existing Mineral Resources. The Panoramic Board reiterates observations it made in the Original Target's Statement that the Savannah North orebody remains open in a number of directions and that exploration drilling and associated down-hole electromagnetic (DHEM) surveys indicate the Savannah North mineralisation may extend beyond the currently defined Mineral Resources.

It should also be noted that the Independent Expert's Report values Panoramic Shares on the basis of the enlarged share capital of the Company following completion of the Entitlement Offer. IGO has not yet determined whether the Offer will be extended to the Panoramic Shares issued under the Entitlement Offer or shortfall placement.

Third Party Proposals

Panoramic is continuing to provide data room access to third parties, as well as IGO, for the purpose of due diligence inquiries. These due diligence enquiries have included Savannah site visits. Panoramic remains in discussions with those parties.

No third party proposals have yet been received by Panoramic. While there can be no guarantee that any such proposals will emerge, Panoramic Shareholders who accept the Offer will not be able to accept any superior proposal that may emerge.

Further Information

Panoramic shareholders who have any questions in relation to the Offer should call the Panoramic Shareholder Information Line on 1300 362 398 (within Australia) or +61 2 8355 1004 (outside Australia), on Monday to Friday between 9.00am and 5.00pm (Sydney time).

This ASX release was authorised on behalf of the Panoramic Board by: Victor Rajasooriar, Managing Director & CEO

For further information contact:
Victor Rajasooriar, Managing Director & CEO
+61 8 6266 8600

Media inquiries:
Michael Vaughan, Fivemark Partners
+61 422 602 720

[1] Zeta has reserved the right to accept a superior proposal from IGO or any other bidder for Panoramic.

First Supplementary Target's Statement

Panoramic Resources Limited (ACN 095 792 288)

IN RESPECT OF THE OFFER BY IGO ANNOUNCED ON 4 NOVEMBER 2019

1 Important notice

This document is a supplementary target's statement under section 644 of the *Corporations Act 2001* (Cth). It is the first supplementary target's statement issued by Panoramic Resources Limited ACN 095 792 288 (**Panoramic**) in relation to the off-market takeover bid by Independence Group NL ACN 092 786 304 (**IGO**) for all the fully paid ordinary Shares in Panoramic it does not already own and which were on issue as at the date of the takeover bid (**First Supplementary Target's Statement**). This First Supplementary Target's Statement supplements, and should be read together with, Panoramic's target's statement dated 9 December 2019 (**Original Target's Statement**). A copy of this First Supplementary Target's Statement was lodged with ASIC on 23 December 2019. Neither ASIC nor any of its officers take any responsibility for its contents.

2 Independent Expert's Report

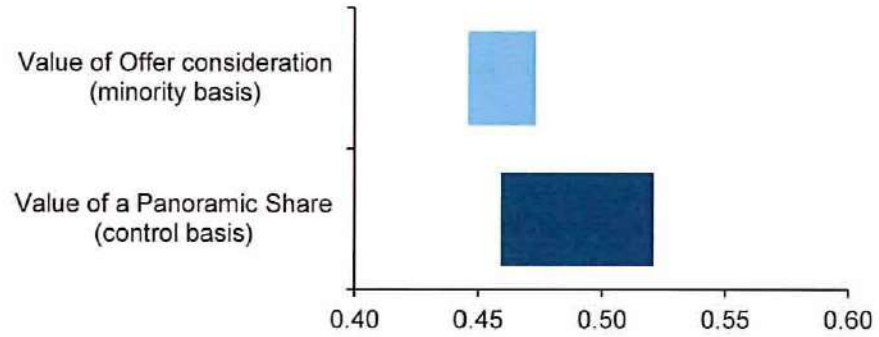
Panoramic appointed KPMG Corporate Finance, a division of KPMG Financial Advisory Services (Australia) Pty Ltd (ABN 43 007 363 215) (**KPMG**), to prepare an Independent Expert's Report opining on whether IGO's offer to acquire your ordinary Shares in Panoramic announced on 4 November 2019 (**Offer**) is fair and reasonable to the Panoramic Shareholders.

KPMG has now provided Panoramic with its Independent Expert's Report which is attached in Appendix A. As part of the preparation of the Independent Expert's Report, SRK Consulting (Australasia) Pty Ltd (**SRK**) was engaged as an independent technical expert to prepare the Independent Specialist Report (**ISR**). The ISR provides detailed information about the mineral assets of Panoramic and IGO. KPMG has assessed the Offer as "fair and reasonable to Panoramic Shareholders, in the absence of a superior proposal".

KPMG has formed an opinion that the Offer is fair. This opinion has been formed on the basis that the assessed value of the Offer consideration at the **top** end of the range is greater than the assessed value of a Panoramic Share at the **bottom** end of the range. As the Offer has been assessed as fair, it has also been deemed to be reasonable.

However, as shown in Figure 1 below, the overlap between the Independent Expert's view on the value of the Offer consideration and the value of Panoramic Shares is minor (i.e. 1.4 cents per Share).

Figure 1: Value of Offer consideration versus value of a Panoramic Share (Independent Expert's Report estimates)



The Board notes that the Independent Expert's Report relies primarily on recent market trading in IGO shares to form a view on the value of the Offer consideration.[1] KPMG has been unable to undertake a fundamental valuation of IGO assets or shares.[2]

The Board also notes that the Independent Expert's Report:

- states that if the value of IGO shares were to fall below $5.97, the implied Offer value would fall below KPMG's range of assessed fair value for Panoramic Shares.[3] IGO shares have traded below that level on several occasions since announcement of the Offer;
- confirms the inequality in the relative contribution of Panoramic to the enlarged IGO's contained nickel equivalent Ore Reserves and Mineral Resources relative to the pro rata interest acquired by Panoramic Shareholders in the enlarged IGO;[4] and
- states that Panoramic Shareholders who have a different view as to the prospects and operations of the Savannah Project, forecast commodity prices, exchange rates and potential for further exploration success, could conclude the Offer is not fair. The Independent Expert's Report observes that those shareholders will then need to consider, despite it not being fair, whether there are sufficient other factors for them to accept the Offer.[5]

3 Board Response to Independent Expert's Report

In the Original Target's Statement, Panoramic Directors unanimously recommended that Panoramic shareholders **REJECT** the Offer from IGO.

The Panoramic Board will now carefully review the Independent Expert's Report and provide its detailed response, including any updates to the Board's current recommendation, by way of a further supplementary target's statement. This is expected to be released and mailed to shareholders (along with the Independent Expert's Report) in early January 2020.

Pending the outcome of the Board's review and any impact it may have on the Board's current recommendation, Panoramic Shareholders should **TAKE NO ACTION** in relation to the Offer or any documents sent by IGO.

[1] Page 9, Independent Expert's Report.

[2] Pages 9 and 96, Independent Expert's Report.

[3] Page 12, Independent Expert's Report.

[4] Pages 16 and 72, Independent Expert's Report.

[5] Page 5, Independent Expert's Report.

The Board notes that the Offer has been extended to 17 January 2020, so there remains ample time for Panoramic Shareholders to consider the Offer. As noted in the Independent Expert's Report, there does not seem to be any commercial imperative for Panoramic Shareholders to accept the Offer early.[6]

The Offer remains highly conditional and there is no certainty that it will proceed. Panoramic's largest shareholder, Zeta Resources Limited, has stated that it does not intend to accept the Offer in its current form (see its ASX announcement of 12 November 2019).[7] Further, several conditions to the Offer have been breached, and IGO has reserved its position in relation to those breaches.

In the context of the minor overlap between the Independent Expert's view on the value of the Offer consideration and the value of Panoramic shares, the Board makes the following further observations in relation to the Independent Expert's Report:

- in calculating its valuation of the Savannah Ore Reserves, KPMG has applied forecast nickel prices[8] that are below the consensus forecasts shown in Figure 8 of Panoramic's Original Target's Statement (see Figure 2 below). KPMG has included in its Independent Expert's Report sensitivity analysis that illustrates the impact on its valuation of key assumptions including commodity prices;[9]

  Figure 2: Historical & Forecast Nickel Prices (Broker Consensus vs. KPMG Forecast, US$/t)



- the Panoramic Board will closely examine the methodology applied to form a view on the value attributed to Mineral Resources at Savannah not currently in the life-of-mine plan, including the selection of relevant comparable transactions and the manner of their utilisation; and

[6] Page 5, Independent Expert's Report.

[7] Zeta has reserved the right to accept a superior proposal from IGO or any other bidder for Panoramic.

[8] Page 84, Independent Expert's Report.

[9] Page 85, Independent Expert's Report.

- zero value is attributed to Savannah exploration upside, outside of existing Mineral Resources.[10] The Board reiterates observations made in the Original Target's Statement that the Savannah North orebody remains open in a number of directions, and that exploration drilling and associated down-hole electro-magnetic surveys indicate the Savannah North mineralisation may extend beyond the currently defined Mineral Resource.

It should also be noted that the Independent Expert's Report values Panoramic Shares on the basis of the enlarged share capital of the Company following completion of the Entitlement Offer. As at the date of this First Supplementary Target's Statement, IGO has not determined whether the Offer will be extended to the Panoramic Shares issued under the Entitlement Offer or shortfall placement.

4 Third Party Proposals

Panoramic is continuing to provide data room access to third parties, as well as IGO, for the purpose of due diligence inquiries. These due diligence enquiries have included Savannah site visits. Panoramic remains in discussions with those parties.

As at the date of this First Supplementary Target's Statement, no Third Party Proposals have been received by Panoramic. While there can be no guarantee that any such proposals will emerge, Panoramic Shareholders who accept the Offer will not be able to accept any superior proposal that may emerge.

5 Entitlement Offer

As at the date of this First Supplementary Target's Statement, the accelerated (institutional) component of the Entitlement Offer has closed with strong demand, with commitments received for approximately $6.4 million, including approximately $3.9m raised by the settlement of the accelerated component of the previously announced Entitlement Offer and the additional approximately $2.5 million shortfall settlement subject to shareholder approval (if required).

The closing date for the retail component of the Entitlement Offer has recently been extended to 10 January 2020 (unless extended or withdrawn). An extraordinary general meeting of Panoramic Shareholders has been convened for 13 January 2020 to consider resolutions for the placement of shortfall shares under the Entitlement Offer to the Underwriter (and sub-underwriters) for the purposes of ASX Listing Rule 7.9 and for all other purposes.

As at the date of this First Supplementary Target's Statement, IGO has not confirmed whether the Offer will be extended to the Panoramic Shares issued under the Entitlement Offer or shortfall placement. Accordingly, those Shares will trade on ASX under the separate ticker "PANND" unless and until the Offer is extended to them, withdrawn or lapses. As disclosed previously, those Shares may trade with limited liquidity.

6 Consents

KPMG has given, and not withdrawn before the lodgement of this First Supplementary Target's Statement with ASIC, its written consent to be named in this First Supplementary Target's Statement as the Independent Expert in the form and context it is so named and to the inclusion of the Independent Expert's Report contained in Appendix A to this First Supplementary Target's Statement. KPMG has not caused or authorised the issue of this First Supplementary Target's Statement and, other than any references to its name and the Independent Expert's Report, takes no responsibility for any part of this First Supplementary Target's Statement.

SRK has given, and not withdrawn before the lodgement of this First Supplementary Target's Statement with ASIC, its written consent to be named in this First Supplementary Target's Statement as independent technical expert in the form and context it is so named and to the

[10] Page 83, Independent Expert's Report.

inclusion in the Independent Expert's Report contained in Appendix A to this First Supplementary Target's Statement of the ISR. SRK has not caused or authorised the issue of this First Supplementary Target's Statement and, other than any references to its name and the ISR, takes no responsibility for any part of this First Supplementary Target's Statement.

7 Further information

Capitalised terms in this First Supplementary Target's Statement have the same meaning given in the Original Target's Statement, unless the context otherwise requires.

The First Supplementary Target's Statement prevails to the extent of any inconsistency with the Original Target's Statement.

Panoramic shareholders who have any questions in relation to the off-market takeover bid by IGO should call the Panoramic Shareholder Information Line on 1300 362 398 (within Australia) or +61 2 8355 1004 (outside Australia), on Monday to Friday between 9.00am and 5.00pm (Sydney time).

8 Approval of this First Supplementary Target's Statement

This Target's Statement has been approved by a resolution passed by Directors.

Signed for and on behalf of Panoramic Resources Limited

Date 23 December 2019

Signed for and on behalf of Panoramic Resources Limited
By

Sign here ►



Director

Print name Peter Sullivan

Appendix A – Independent Expert's Report

KPMG Financial Advisory Services
(Australia) Pty Ltd
Australian Financial Services Licence No. 246901
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Perth WA 6000

GPO Box A29
Perth WA 6837
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Telephone: +61 8 9263 7171
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www.kpmg.com.au

The Directors
Panoramic Resources Limited
Level 9, 533 Hay Street
Perth WA 6000

22 December 2019

Dear Directors

INDEPENDENT EXPERT REPORT AND FINANCIAL SERVICES GUIDE

PART ONE – INDEPENDENT EXPERT REPORT

1 Introduction

On 4 November 2019, Independence Group NL (**IGO**), announced that it intended to make a conditional off-market offer to acquire all of the issued capital of Panoramic Resources Limited (**Panoramic**) it did not already own (**the Offer**). The consideration to be paid under the Offer to eligible Panoramic shareholders [1] comprises one new ordinary IGO share for every 13 ordinary Panoramic shares on issue (**the Exchange Ratio**) (**the Offer Consideration**).

On 4 November 2019, IGO lodged a bidder's statement with the Australian Securities and Investments Commission (**ASIC**) and ASX Ltd (**ASX**) in relation to the Offer. On 22 November 2019, IGO lodged a replacement bidder's statement with ASIC and the ASX (**the Bidder's Statement**[2]). No change was made under the Bidder's Statement to the previously announced Offer Consideration. IGO gave notice that it had completed dispatch of the Bidder's Statement to Panoramic shareholders on 25 November 2019. The Offer opened on 25 November 2019 and, after being extended by IGO on 18 December 2019, will close at 7pm (Eastern Standard Time) on 17 January 2019, unless withdrawn or further extended (**the Offer Period**).

On 5 December 2019, Panoramic announced a conditionally underwritten 1 for 6 accelerated pro-rata non-renounceable entitlement offer to raise approximately $31 million, net of costs (**Entitlement Offer**).

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[1] Other than Panoramic shareholders determined to be "foreign shareholders" or "small parcel shareholders" for the purpose of the Offer. IGO shares that would otherwise have been issued to these shareholders will be sold by a nominee and the net proceeds after costs will be remitted to the relevant shareholder. Further details are set out in section 5 of this report.

[2] Unless the context requires otherwise, references to "the Bidder's Statement" are references to the replacement bidder's statement dated 22 November 2019.

KPMG Financial Advisory Services (Australia) Pty Ltd is an affiliate of KPMG. KPMG is an Australian partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.

At the date of this report, IGO has not confirmed whether it will seek to vary the Offer so that it extends to new Panoramic shares issued under the Entitlement Offer.

Panoramic's board of directors **(the Board)** announced on 5 December 2019 that it unanimously recommended shareholders reject the Offer; noting that the Board would review its recommendation following receipt of this report. Panoramic issued a target's statement on 9 December 2019 **(Target's Statement)**, which included a reaffirmation of the Board's previous recommendation.

Panoramic is an Australian mineral exploration and mining company listed on the Official List of ASX. As at 20 December 2019, Panoramic had a market capitalisation of approximately $253 million[3]. Panoramic's principal asset comprises its 100% owned Savannah nickel-copper-cobalt project located in the East Kimberley, Western Australia **(the Savannah Project)**. Panoramic is headquartered in Perth, Western Australia.

IGO is an Australian mineral exploration and mining company listed on the Official List of ASX, and also has an established American Depositary Receipts program. As at 20 December 2019, IGO had a market capitalisation of approximately $3,739 million. IGO's principal assets comprise its 100% owned Nova nickel-copper-cobalt project located in the Fraser Range, Western Australia **(the Nova Project)** and a 30% joint venture interest in the Tropicana gold project located on the western edge of the Great Victorian Desert, Western Australia **(the Tropicana JV)**. IGO is headquartered in Perth, Western Australia.

IGO shareholders voted on 20 November 2019 to change the legal status of IGO from a no liability company to a public company limited by shares and to change its name to IGO Limited.

2 Requirements for our report

Under Section 640 of the Corporations Act **(the Act)**, an Independent Expert Report **(IER)** is required to be included in a target's statement where the bidder is connected with the target. A bidder is regarded as being connected with the target under the following circumstances:

- the bidder's voting power in the target is 30% or more
- the bidder and target have a common director.

There is no statutory requirement for Panoramic to commission an IER in the present circumstances, as IGO's voting power in the Panoramic, when it made the Offer, was approximately 3.8%, and there are no common directors between Panoramic and IGO. However, in order to assist shareholders in assessing the Offer, the Directors of Panoramic have requested KPMG Financial Advisory Services (Australia) Pty Ltd (of which KPMG Corporate Finance is a division) **(KPMG Corporate Finance)** to prepare an IER setting out whether or not, in our opinion, the Offer is fair and reasonable to Panoramic shareholders taken as a whole.

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[3] All amounts are stated in Australian dollars **($ or AUD)** unless otherwise specifically noted. Where applicable, United States dollars are denoted as US$ or USD, Canadian dollars are denoted as C$ or CAD.

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Accordingly, this report has been prepared for inclusion in Panoramic's supplementary target's statement (**Supplementary Target's Statement**) in response to the Offer as if it was required for the purposes of Section 640 of the Act.

In undertaking our work, we have referred to guidance provided by ASIC in its Regulatory Guides, in particular Regulatory Guide 111 'Content of expert reports' (**RG 111**) which outlines the principles and matters which ASIC expects a person preparing an IER to consider when providing an opinion on whether a transaction is "fair and reasonable".

The sole purpose of this report is an expression of the opinion of KPMG Corporate Finance as to whether the Offer is fair and reasonable to Panoramic shareholders. This report should not be used for any other purposes or by any other party. Our opinion should not be interpreted as representing a recommendation to Panoramic shareholders to either accept or reject the Offer, which remains a matter solely for individual shareholders to determine.

This report should be considered in conjunction with and not independently of the information set out in both the Target's Statement and the Supplementary Target's Statement in their entirety.

KPMG Corporate Finance's Financial Services Guide is contained in Part Two of this report.

3 Opinion

In our opinion the Offer is fair and reasonable to Panoramic shareholders, in the absence of a superior proposal.

Assessment of fairness

We have assessed the value of the equity of Panoramic to lie in the range of $350.7 million to $397.7 million, which equates to an assessed value per Panoramic share (on a diluted basis[4]) of between approximately $0.459 to $0.521. Our range of assessed values represents the value of a 100% interest in Panoramic and includes a premium for control. As the valuation includes a control premium, it exceeds the price at which we expect Panoramic shares would trade on the ASX in the absence of the Offer.

We have assessed the value of the equity of Panoramic on a "sum-of-the-parts" basis by aggregating the estimated market value of Panoramic's 100% interest in the Savannah Project, its other mineral assets and

[4] Whilst the final outcome of the Entitlement Offer, and in particular the underwriting of any shortfall which is subject to shareholder approval, is not known at the date of this report, our range of values reflects that there is no reason to expect that shareholder approval will not be received, particularly as Panoramic's major shareholder, Zeta Resources Limited (**Zeta**), which holds approximately 34.5% of Panoramic's issued capital has confirmed its intention, subject to certain conditions being satisfied, to subscribe for its full entitlement under the Entitlement Offer, and is eligible to vote in relation to the underwriting. Zeta's current interest in Panoramic reflects that the Institutional element of the Entitlement Offer has been completed. Following completion of the Entitlement Offer in its entirety, it is expected that Zeta's current interest in Panoramic will return to 35.2%. Accordingly, for the purpose of this report we have adopted an interest of 35.2% in relation to Zeta's interest in Panoramic.

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assets considered to be surplus to the mineral assets and deducting net borrowings and non-trading liabilities.

In contrast, we have assessed the value of the Offer Consideration having regard to recent trading in IGO shares on the ASX[5] and then adjusting for the Exchange Ratio. This is required because, in the event the Offer is successful, Panoramic shareholders will receive consideration in the form of a minority interest share in the enlarged IGO (**Enlarged IGO**). Neither the theoretical value of the Enlarged IGO as a stand-alone entity nor considerations of control premia are relevant to minority interest shareholders in the Enlarged IGO except in the event of an offer for the Enlarged IGO itself.

We have assessed the implied value of the Offer Consideration to be in the range $0.446 to $0.473 per Panoramic share[6].

As the Offer Consideration crosses over our assessed value range for a Panoramic share, we consider the Offer to be fair.

In arriving at our range of assessed values for Panoramic, we have placed reliance on the report prepared by SRK Consulting (Australasia) Pty Ltd (**SRK**), the independent mining industry specialist engaged by Panoramic, and instructed by us, to assist in relation to the assessment of the value of the mineral asset interests held by Panoramic. A copy of SRK's independent technical specialist's report is attached at Appendix 7.

In considering our range of assessed values, we would highlight that, although we consider our range of assessed market values for Panoramic to be reasonable at the date of this report:

- whilst Panoramic's principal asset, being its interest in the Savannah Project, is potentially very valuable, the project has not recently operated to budgeted levels following its re-commissioning, is yet to achieve full ramp-up and is dependent upon the successful exploitation of the yet to be mined Savannah North stope ore, which is currently forecast by the Company to commence in the March 2020 quarter. As a result, such assets are by their nature difficult to value.

  Panoramic has recently completed an operational review (**Operational Review**) to address the issues encountered to date and SRK has taken each of these issues and the outcome of the Operational Review into account in forming its view as to reasonable technical and operational assumptions to be adopted by us; however there remains a degree of risk inherent in the balance of work to be completed in the re-commissioning, development and ramp-up of the Savannah Project in comparison to an established production project with consistent operating profiles and parameters. Should any further material delays or operational difficulties not already addressed by Panoramic be encountered, this would likely adversely impact upon our range of assessed values for a Panoramic share and may place strain on Panoramic's short term working capital position.

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[5] Over the period from the announcement of the Offer to 16 December 2019, inclusive.

[6] Calculated as our range of assessed values for a share in the Enlarged IGO of $5.80 to $6.15 divided by the Exchange Ratio

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- our range of assessed values for Panoramic is particularly sensitive to future metal production, AUD:USD exchange rates and USD nickel price assumptions.

  There is a wide range of views on the part of commodity, foreign exchange and market analysts as to future USD nickel prices and AUD:USD exchange rates. KPMG Corporate Finance's forecast commodity price and foreign exchange rate assumptions have been determined after consideration of the forecasts of various broking houses and market analysts, as well as prevailing forward curves. However, a wide range of assumptions could credibly be adopted, which could impact assessed fair values either positively or negatively.

In this context, we would draw shareholders' attention to the sensitivity analysis set out in section 11 of this report.

Depending on shareholders' views as to the prospects and operations of the Savannah Project, particularly in light of the outcomes of the recent Operational Review and adjustments made by SRK to various Panoramic operating assumptions, the forecast commodity prices and AUD:USD exchange rates selected by KPMG Corporate Finance and the potential for further exploration success, it is conceivable that some shareholders could potentially form a view that the value of Panoramic, inclusive of a premium for control, more appropriately lies at or above the midpoint of our range of assessed fair values for Panoramic. In these circumstances Panoramic shareholders would conclude the Offer is not fair. These shareholders would then need to consider whether, despite not being fair, there are sufficient other factors to accept the Offer.

In considering this shareholders should take into account that whilst, based on our range of assessed fair values for Panoramic, there is a significant potential upside by continuing to hold a Panoramic share compared to its current trading price on the ASX, the risk and liquidity profile compared to holding a share in the much larger, steady state, more financially robust and dividend paying IGO is also significantly different.

It is also open to those Panoramic shareholders wishing to maintain an increased level of exposure to the volatility of the nickel market to that offered by holding a share in the Enlarged IGO, to sell the new Enlarged IGO shares issued to them on market and reinvest the proceeds in an alternative early stage nickel play company.

We also note that the Offer Period was recently extended until 17 January 2020. Given the outcome of the Entitlement Offer will be known by that date and that the period between the release of this report, including SRK's report and 17 January 2020 should provide sufficient time for any other potential bidder for the Company or its assets to emerge, particularly as Panoramic opened up a due diligence process to interested parties some time ago, there does not seem any commercial imperative for Panoramic shareholders minded to accept the Offer to do so until closer to the end of the Offer Period, particularly as there have already been various breaches of the conditions precedent to the Offer to enable IGO to withdraw the Offer should it so wish.

Our analysis of the fairness of the Offer is detailed further in section 3.1 below.

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Assessment of Reasonableness

Whilst we have determined the Offer to be fair based on our assessment of the underlying value of Panoramic and therefore, in accordance with RG111, the Offer is also considered reasonable, we have considered various additional matters that shareholders may also wish to take into account in deciding whether or not to accept the Offer. These include:

- Based on our range of assessed values for the Offer Consideration, Panoramic shareholders are receiving a premium for control over the volume weighted average price (**VWAP**) of Panoramic shares at various points in the six months prior to the announcement of the Offer, ranging between a low of 37.2% (1 week VWAP) and a high of 54.1% (1 month VWAP), the level of which exceeds that typically observed in recent mining sector transactions
- In the event IGO is successful in acquiring Panoramic, Panoramic shareholders will hold shares in a larger, more financially robust multi-location mineral producer, which compares to Panoramic's current status as a single location producer in ramp up. However, Panoramic shareholders will have contributed approximately 28% of the Enlarged IGO's nickel equivalent Ore Reserves and 39% of nickel equivalent Mineral Resources compared to the 8.8% pro rata interest acquired in the Enlarged IGO[7]
- Zeta, which owns approximately 35.2% of Panoramic's issued capital, advised the market on 8 November 2019[8], that it does not intend to accept the Offer in its current form. Accordingly, the maximum shareholding that IGO can currently achieve is 64.8%. In these circumstances, scrip-for-scrip capital gains tax (**CGT**) rollover relief will not be available to Panoramic shareholders
- Panoramic remains in discussions in relation to an alternative transaction, accordingly, the prospect of a superior offer emerging cannot be discounted at this time
- IGO has paid regular dividends in recent times, in contrast Panoramic has not paid a dividend since 2015. Based on the current Offer Period, Panoramic shareholders will, in the event the Offer is successful, be entitled to participate in all future IGO dividends
- Panoramic's share price may fall from current levels in the absence of the Offer, or a superior offer. We also note that in the event IGO is successful in acquiring control but not full control of Panoramic and Zeta does not accept the current Offer, there is a real risk that the market for Panoramic's shares following the close of the Offer will be illiquid.

  In these circumstances, Panoramic shareholders may wish to continue to monitor the level of shares acquired by IGO and consider the potential impact on the future liquidity in Panoramic in deciding whether to accept the Offer

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[7] Assuming that all potential shares under the Entitlement Offer are issued and participate in the Offer. Refer to section 10 for further details

[8] Zeta Resources Believes Independence Group's Bid for Panoramic to be Opportunistic, Zeta website

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- as the Offer Consideration is in the form of scrip, the final value of the Offer Consideration will not be known until the Offer closes

Further information in relation to each of the above and other matters we have considered in forming our opinion is set out below.

3.1 The Offer is fair

3.1.1 Valuation of Panoramic

We have assessed the value of Panoramic to lie in the range of $350.7 million to $397.7 million, inclusive of a premium for control, which equates to an assessed value per Panoramic share of between $0.459 and $0.521 per share. Our valuation is set out in full in section 11 of this report and summarised below.

Table 1: Summary of assessed market values of Panoramic inclusive of a premium for control

	Assessed Values	
	Low $m	High $m
Market values of Panoramic's interests in mineral assets:		
Savannah Project Ore Reserves	301.9	312.9
Savannah Project Mineral Resources (not included in the Life of Mine Model)	32.7	42.9
Other mineral assets	23.7	39.8
Total mineral assets	**358.3**	**395.6**
Add: Cash and cash equivalents [2]	39.4	39.4
Add: Panoramic's 51% interest in Horizon	10.2	19.8
Add: Other net assets[3]	1.3	1.3
Less: Out of the money hedgebook[4]	(26.7)	(26.7)
Less: Debt[5]	(27.6)	(27.6)
Less: Future corporate overheads	(4.1)	(4.1)
Total equity value	**350.7**	**397.7**
Number of ordinary shares - undiluted (millions)	654.2	654.2
Add: Entitlement Offer share[6]	109.0	109.0
Number of ordinary shares - diluted (millions)	**763.3**	**763.3**
Value per share, inclusive of a premium for control - $	**0.459**	**0.521**

Source: KPMG Corporate Finance analysis and the SRK Report

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Notes:

1 *Figures may not add exactly due to rounding*
2 *Aggregate cash and cash equivalents as at 30 November 2019 adjusted to reflect the proceeds expected from the Entitlement Offer of $32.7 million less expected transaction costs of the Entitlement Offer of $1.4 million*
3 *Other net assets comprise other current assets ($0.2 million) as at 30 November 2019 and shares in listed equities ($1.0 million), excluding Panoramic's investment in Horizon Gold Limited (**Horizon**), as at 16 December 2019*
4 *Mark to market as at 16 December 2019*
5 *Total debt as at 30 November 2019 comprising borrowings and finance lease arrangements*
6 *Assumes the Entitlement Offer is completed in full, either through acceptance or underwriting*

Our range of assessed values represents the value of a 100% interest in Panoramic and incorporates direct corporate cost savings that would generally be available to a pool of purchasers but does not include any indirect benefits, such as potential economies of scale or increases in bargaining positions that a pool of purchasers might be able to achieve. Similarly, our valuation does not include any potential strategic or operational synergies that may be unique to individual investors. Accordingly, our range of values has been prepared independent of the specific circumstances of any potential bidder.

Our valuation of Panoramic shares exceeds the price at which, based on current market conditions, we would expect Panoramic shares to trade on the ASX in the absence of the Offer or some superior offer.

In arriving at our range of values for Panoramic, we have placed reliance on the assumptions prepared by SRK in relation to a reasonable production scenario, including appropriate Ore Reserves estimations, capital expenditure and operational cost profiles in respect of the Savannah Project. In addition, SRK has assessed the value of other mineral asset interests held by Panoramic not captured in the Savannah Project operating model prepared by it, including Panoramic's indirect 51% interest in Horizon's Gum Creek Project. SRK's report is attached as Appendix 7.

The production, operating cost and capital cost assumptions prepared by SRK were adopted by us. KPMG Corporate Finance was responsible for specific corporate and other matters, including determining macro-economic and taxation assumptions.

We would highlight that whilst Panoramic's principal asset, being its interest in the Savannah Project, is potentially very valuable, the project has not recently operated to budgeted levels following its re-commissioning, is yet to achieve full ramp-up and is dependent upon the successful exploitation of the yet to be mined Savannah North stope ore, which is currently forecast by the Company to commence in the March 2020 quarter. As a result, such assets are by their nature difficult to value.

In this context, we would draw shareholders' attention to the sensitivity analysis set out in section 11 of this report. Whilst we consider our range of assessed market values for Panoramic to be appropriate at the date of this report, we note that, depending on shareholders' views as to long term macro-economic factors and the prospects of the Savannah Project, individual shareholders could form a view that the value of Panoramic lies at or above the midpoint of our assessed range for Panoramic and therefore could reach a different opinion in relation to fairness.

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3.1.2 Comparison of assessed values to recent sharemarket trading

Our valuation range for a Panoramic share of $0.459 to $0.521 reflects a premium over the $0.335 closing price of Panoramic shares immediately prior to the Offer of between 37.3% and 55.8%. This premium in part reflects a valuation of 100% of Panoramic inclusive of a premium for control rather than a valuation of a portfolio interest in Panoramic as traded on the ASX. However, in our opinion it may also be as a result of adverse market sentiment in relation to, amongst other things:

- the operational difficulties and delays in the ramp-up of the Savannah Project and in the development of the Savannah North ore body, along with disappointing associated financial outcomes, including the need to renegotiate the Savannah Facility Agreement (**SFA**) entered into with Macquarie Bank Limited (**Macquarie**) in March 2019 and September 2019
- Panoramic approaching the market on two separate occasions in the eight months prior to the Offer seeking additional equity to fund working capital needs and debt repayments, with each raising being completed at a discount to the then prevailing share price,

which have likely acted to suppress Panoramic's share price in recent times.

Panoramic considers that its recent Operational Review has confirmed the integrity of the overall Savannah mine design and general operating parameters and that the Operational Review has also confirmed the absence of any fatal flaws in the overall project design and operating plan[9]. In addition, Panoramic considers the successful completion of the Entitlement Offer will provide Panoramic with sufficient funds to meet its working capital requirements to, inter alia, continue development and mining of the Savannah North orebody and repay an existing $10.5 million bridging loan from Zeta.

In our view, it may take some time to create confidence in the market as to the future performance and prospects of Panoramic and this certainly not will not occur before the current scheduled close of the Offer. As such, any discount for uncertainty that may currently be attaching to Panoramic shares will remain for some time. In this regard we note that were we to use the closing price of a Panoramic share on the ASX as a basis of determining value, which was $0.335 on 16 December 2019, it would need to increase by $0.138 (or approximately 41%) to $0.473 for us conclude the Offer is not fair.

3.1.3 Value of the Offer Consideration

The Offer Consideration to be received by Panoramic shareholders comprises new ordinary shares in the Enlarged IGO. Accordingly, RG 111 requires the value of the scrip consideration to be assessed on a minority interest basis. We have assessed the value of the Offer Consideration having regard to the Exchange Ratio to be in the range of $0.446 to $0.473.

It is common practice in these circumstances to have reference to the post announcement market price of the Offeror as a basis for estimating the value of an offer with a scrip component, as this is the price at which non-associated shareholders can monetise the Offer Consideration. Neither the theoretical value of the Enlarged IGO as a stand-alone entity nor considerations of control premia are relevant to portfolio

[9] Panoramic ASX announcement "*Savannah North Update and Operational Review Outcomes*" 4 December 2019

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shareholders in the Enlarged IGO except in the event of an offer for the Enlarged IGO itself. We note that in any event we have not had access to the internal records or management of IGO and the information contained in the Bidder's Statement is insufficient to enable a fundamental valuation of the company to be performed on a reasonable basis.

In assessing the estimated trading value of a share in the Enlarged IGO under current market conditions and assuming the Offer is successful, we have considered traded share prices for IGO on the ASX subsequent to the announcement of the Offer on 1 November 2019 and up to and including 16 December 2019. Utilising the post announcement market prices of IGO also requires consideration as to whether there are any factors that might suggest IGO's current trading prices may not be representative of future trading prices in the Enlarged IGO. Accordingly we have also considered the liquidity of IGO shares, the relative performance of IGO against its peers, recent comparative trading in IGO and Panoramic shares based on the Exchange Ratio and recent brokers forecasts as to the expected trading price of an IGO share on the ASX published in the periods immediately pre and post the announcement of the Offer.

Key factors influencing our valuation approach included:

- the trading price of IGO shares reflects the value of portfolio interests as required by RG111
- IGO is a publicly listed company and is required to comply with ASX Listing Rules in relation to continuous disclosure, including in particular the release of price sensitive information
- there has been sufficient time and information available, including the information contained in:
  - IGO's Bidder's Statement, released to the market on 4 November 2019[10]
  - Panoramic's announcement as to the outcome of its Operational Review, released to the market on 4 December 2019
  - Panoramic's announcement as to details of the Entitlement Offer, released to the market on 5 December 2019
  - Panoramic's Target's Statement, released to the market on 9 December 2019
  - various broking house notes covering Panoramic and/or IGO, released subsequent to the Offer[11],

  for the market to assess the Offer and its implications for IGO should IGO's Offer be successful. Therefore, trading in IGO shares subsequent to 4 November 2019 should reflect the estimated impacts associated with the acquisition, albeit the market may also be taking into account an increasing level of completion risk associated with the Offer
- IGO is followed by various broking houses specifically and the Australian nickel and gold industries more generally by market analysts, both of which publish periodic research reports, which arguably

[10] Along with IGO's' First Supplementary Bidder's Statement dated 22 November 2019.

[11] Considered further in section 12 of this report.

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assists the ability of shareholders to make informed decisions regarding the prospects of the company and industry and prices at which IGO shares should trade

- trading in IGO shares were traded on the ASX on each of the available trading days over the 12 months prior to the announcement date and also in the subsequent period and average daily trading volumes have been sufficient for portfolio shareholders desirous of realising their investments to do so.

Based on our assessed value range of an IGO share and the Exchange Ratio of 1 new IGO share for every 13 Panoramic ordinary shares held, the assessed value of the Offer Consideration is in the range of $0.446 to $0.473 per Panoramic share as summarised below.

Table 2: Assessed value of the Offer Consideration

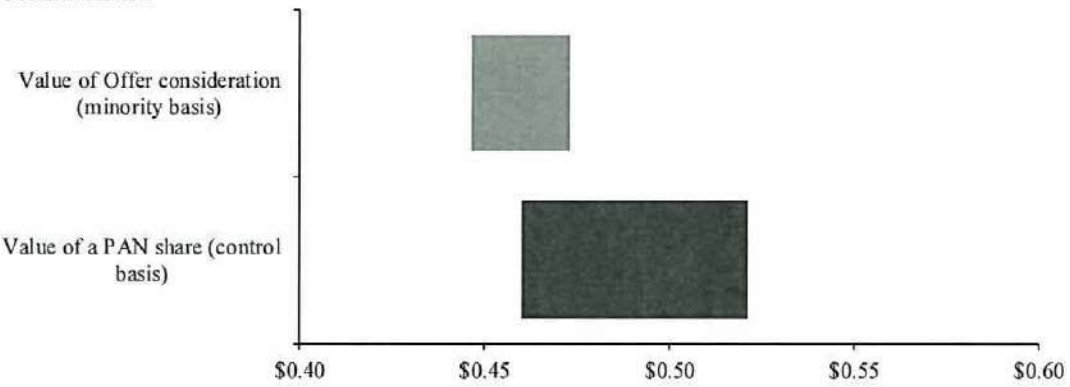
	Valuation range	
	Low	**High**
Value per IGO share - $	5.80	6.15
Exchange Ratio (1:13)	0.77	0.77
Assessed value of the Offer Consideration ($)	**0.446**	**0.473**

Source: KPMG Corporate Finance analysis

3.1.4 Comparison of Value

The chart below provides a comparison of our assessed valuation ranges for a Panoramic share on a control basis and the assessed value of the Offer Consideration.

Figure 1: Comparison of our assessed valuation ranges for a Panoramic share and the Offer Consideration



Source: KPMG Corporate Finance Analysis

According to RG 111, the Offer should be considered fair if the consideration offered to Panoramic shareholders is equal to or higher than our assessed value of a Panoramic share. As the value attributed to the Offer Consideration crosses over our assessed value range for a Panoramic share, we consider the Offer is fair.

However, we note that the implied value of the Offer Consideration under the Offer will vary with movements in the IGO traded price over the Offer Period, which will reflect company specific, industry

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and general market factors. Accordingly, the final value of the Offer Consideration will not be known until the Offer closes, which is currently scheduled for 17 January 2020, and could ultimately exceed, or be less than, $5.80 to $6.15 per Enlarged IGO share[12].

Also, as mentioned previously, in the event shareholders were to form the view that the value of a Panoramic share lies at or above the midpoint of our range of assessed values for a Panoramic share, then these shareholders would conclude that the Offer is unfair. These shareholders would then need to consider whether, despite not being fair, there are sufficient other factors to accept the Offer

The table below illustrates the sensitivity of the implied value of the Offer Consideration to changes in IGO's share price.

Table 3: Sensitivity of the implied value of the Offer Consideration

IGO share price ($)	5.70	5.85	6.00	6.15	6.30	6.45	6.60
Value of Offer consideration ($)	0.438	0.450	0.462	0.473	0.485	0.496	0.508

Source: KPMG Corporate Finance analysis

Accordingly, Panoramic shareholders will also need to consider the impact of company specific events and announcements, along with general market and industry conditions over the period leading up to the close of the Offer in deciding whether or not to accept the Offer.

Based on our assessed value range of $0.459 to $0.521 per Panoramic share and the exchange ratio of 1:13, the value of IGO shares would need to fall to $5.97 in order for the Offer Consideration to fall beneath the low end of our range of assessed fair values for a Panoramic share. We note that IGO shares have traded down to a closing low of $5.78 during the currency of the Offer Period.

3.2 Reasonableness

In accordance with RG111, a transaction is considered to be reasonable if it is fair. Accordingly, as we have determined that the Offer is fair, there is no technical requirement for us to separately consider matters of reasonableness. Notwithstanding this, we believe that there are various issues that shareholders may also wish to consider in deciding whether or not to accept the Offer, including those set out below.

3.2.1 Advantages

Based on our range of assessed values for the Offer Consideration and traded prices for a Panoramic share prior to the Offer, shareholders are receiving a premium

Based on our range of assessed values for the Offer Consideration of $0.446 to $0.473 per Panoramic share, the implied premium of the Offer Consideration over the VWAP of Panoramic shares at various points in the six months prior to the announcement of the Offer is detailed in the table below.

[12] We note that IGO's closing shareprice on 16 December 2019 was $6.30.

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Table 4: Comparison of the Offer Consideration to Panoramic's VWAP prior to the announcement of the Offer

Period up to and including 1 November 2019	Panoramic VWAP $	Offer Consideration Low - $	Premium %	Offer Consideration High - $	Premium %
1 day	0.322	0.446	38.5	0.473	46.9
1 week	0.325	0.446	37.2	0.473	45.5
1 month	0.307	0.446	45.3	0.473	54.1
3 months	0.316	0.446	41.1	0.473	49.7
6 months	0.322	0.446	38.5	0.473	46.9

Source: IRESS and KPMG Corporate Finance Analysis

In order to assess a reasonable range for implied acquisition premia in Australia, we have considered the outcome of a recent study[13] in relation to control premia observed in successful takeovers and schemes of arrangement in the Australian metals and mining sector over the 10 year period 2006 to 2016, which indicated over a data set of 134 transactions, the 2 day, 5 day and 20 day pre-bid:

- average premium was 29.9%, 32.4% and 35.8% respectively
- median premium was 26.3%, 27.9% and 30% respectively.

Having considered these outcomes, we consider, on balance, that it is reasonable to suggest that in Australia, successful transactions in the metals and mining sector are typically likely to complete within an acquisition premia range of 25% to 35%.

In considering the evidence provided by actual transactions, it is important to recognise, however, that the observed premium for control is an outcome of the valuation process, not a determinant of value and that each transaction will reflect to varying degrees the outcome of a unique combination of factors, including amongst other things:

- pure control premium in respect of the acquirer's ability to utilise full control over the strategy and cash flows of the target entity
- the level of synergies available to all acquirers, such as the removal of costs associated with the target being a listed entity and/or costs related to duplicated head office functions
- synergistic or special value that may be unique to a specific acquirer
- whether the acquisition is competitive.

The premia implied by the Offer Consideration over the VWAP for the various periods set out above lies above the range usually observed in Australian takeovers. In considering this, we note that during the 6 months prior to 4 November 2019:

- the AUD nickel spot price increased from $17,189/t to $24,305/t over the six months to 1 November 2019, or by approximately 41%, which would be expected to positively impact both Panoramic and

[13] RSM "Control Premium Study 2017"

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IGO, however as a result of the stage of development of each company's projects, with Panoramic still working towards full steady-state production, IGO is currently more leveraged to immediate term movements in nickel prices. We also note IGO has significant exposure to movements in the spot AUD gold price through its 30% interest in the Tropicana JV. The spot prices for gold increased from $1,841/t to $2,187/t over the six months to 1 November 2019, or by approximately 19%.

- Over the six month period IGO's closing share price increased from $4.58 to $6.40, a 40% increase. In contrast, Panoramic's share price fell slightly from $0.375 on 1 May 2019 to $0.335, principally due to the ramp-up of mining of the Savannah remnant ore body being slower than forecast due to a various factors, which culminated in the Operational Review being completed in October/November 2019 and a revised life of mine operational plan being designed. As noted previously, management is confident this updated plan will appropriately address the key operational issues previously impacting upon the Savannah Project. These issues and the revised operational plan have been taken into account by SRK in its assessment of reasonable operational and capital assumptions to be adopted in relation to the Savannah Project. We also note that Panoramic completed a fully underwritten 2 for 11 pro-rata renounceable entitlement offer in September 2019 to raise $28.2 million (before costs) at a significant discount to the then prevailing share price.

Successful completion of the Offer will result in Panoramic shareholders holding shares in a larger more diversified and financially robust business

All else being equal, larger businesses tend to be more liquid investments then their smaller peers owing to lower operating risk given the more diversified nature of their operations, and lower earnings volatility.

In the event the Offer is successful, Panoramic shareholders will own up to approximately 8.8% of the Expanded IGO, which will hold interests in three producing assets.

The pro forma financial position of the Enlarged IGO suggests that it will immediately be in a strong net cash position. In contrast, whilst the Savanah Project is expected to generate significant free cash flow to equity over the life of mine, current working capital and debt repayment needs and the potential unwinding of Panoramic's existing hedge book may limit Panoramic's financial flexibility in at least the short term. Furthermore, any further delays and/or unexpected adverse financial results during ramp-up period of the Savannah Project will place further strain on Panoramic's working capital position.

The pro forma financial position of the Enlarged IGO indicates that it is expected to have a greater level of coverage of short-term liabilities than Panoramic has as a stand-alone entity, even after taking into account the cash to be raised under the Entitlement Offer.

Shares in the Enlarged IGO will be more liquid than shares in either Panoramic or IGO as standalone entities

Over the twelve months prior to the announcement of the Offer approximately 44.2% of Panoramic's issued capital was traded on either the ASX or Chi-X (70.6% of Panoramic's free-float). In comparison, 135.9% of IGO's issued capital was traded (163.4% of IGO's free-float).

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As a result of the Expanded IGO's increased scale, footprint and shareholder base, there appears to be a reasonable prospect that a greater number of investors may be attracted to the Expanded IGO, which should result in a greater level of liquidity than is currently the case in respect of IGO as a stand-alone entity.

In contrast:

- should IGO achieve control but not full control of Panoramic, and Zeta does not accept the Offer, Panoramic's two major shareholders will hold a combined of at least 85.3%[14] of the issued capital of Panoramic. In these circumstances, we consider there is a real prospect that the market for Panoramic's remaining free-float will be illiquid
- it is also possible that IGO may declare the Offer unconditional at some point during the Offer Period, in which case any shares acquired by IGO will reduce the free-float of Panoramic.

In these circumstances, Panoramic shareholders may wish to continue to monitor the level of shares acquired by IGO and consider the potential impact on the future liquidity in Panoramic in deciding whether to accept the Offer.

IGO has established a recent track record of paying dividends

IGO has an established history of paying dividends and has recently adopted a capital allocation policy that targets a return of 15% to 25% of free cash flow to shareholders in the form of dividends and/or share buybacks. A fully franked interim dividend of 2.0 cents per share and a final dividend of 8.0 cents per share franked to 97% was paid in respect of FY19. Following payment of the final dividend in respect FY19, IGO has no surplus franking credits available for subsequent periods.

In contrast, Panoramic's dividend policy was suspended in 2015. Having regard to the funding needed in bringing the Savannah Project to steady state production, coupled with the requirement to repay existing debt funding prior to March 2022, we consider it unlikely that Panoramic will be in a position to pay a dividend in the immediate future.

3.2.2 Disadvantages

Based on the current terms of the Offer and the stated intention of Panoramic's major shareholder, roll-over taxation relief will not be available

In the event the Offer is successful, eligible Panoramic shareholders will receive one new ordinary IGO share for every 13 Panoramic shares currently held. This will represent a disposal of the relevant Panoramic shares for CGT purposes.

Panoramic's major shareholder, Zeta, which owns approximately 35.2% of the Company's issued capital, advised the market on 8 November 2019[15], that it does not intend to accept the Offer in its current form. That being the case, the maximum shareholding in Panoramic that IGO will be able to acquire is 64.8%.

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[14] Being Zeta's 35.2% shareholding and a notional IGO controlling interest of a least 50.1%

[15] "Zeta Resources Believes Independence Group's Bid for Panoramic to be Opportunistic", Zeta website

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Accordingly, scrip-for-scrip CGT rollover relief, which requires that IGO acquires a minimum 80% interest in Panoramic, will not be available to Panoramic shareholders.

In these circumstances, any CGT implications for individual Panoramic shareholders, including the potential requirement to fund any CGT obligation without the benefit of receiving any cash consideration for the Panoramic shares disposed of, will be crystallised, at a time which may not be the most financially beneficial for the relevant holder.

Panoramic shareholders are strongly encouraged to read the outline of the taxation implications for Panoramic shareholders in respect of the Offer set out in Section 7 of the Target's Statement and, if any doubt, should seek their own independent taxation advice regarding the tax consequences of accepting the Offer.

The Offer does not provide certainty as to the value of consideration to be received

As the consideration offered under the Offer does not include a cash alternative, in the event the Offer is successful Panoramic shareholders will receive new ordinary shares in the Expanded IGO.

Whilst the assumptions adopted by us in determining our range of assessed values for a Panoramic share and the Offer Consideration are considered reasonable at the date of this report, the value ultimately received by Panoramic shareholders for their existing Panoramic shares will be dependent upon the trading price for an Expanded IGO share.

Current Panoramic shareholders are contributing a significantly greater share of the Enlarged IGO's nickel equivalent Mineral Resources and Ore Reserves than the pro-rata interest being received in the Enlarged IGO

In the event that the Offer is successfully completed, Panoramic shareholders will, in aggregate, hold up to an 8.8% shareholding in the expanded capital of IGO.

As such, the interest of Panoramic shareholders in Panoramic's existing development and exploration assets will be significantly diluted. However, Panoramic shareholders will also receive a similar pro rata interest in IGO's more advanced Nova Project and its Tropicana JV interest, which are already in production, its exploration assets and also any synergies and cost savings realised by the Enlarged IGO as a result of the integration of Panoramic.

In considering this we note however that Panoramic shareholders will have contributed approximately 28% of the Enlarged IGO's nickel equivalent Ore Reserves and 39% of nickel equivalent Mineral Resources.

3.2.3 Other considerations

The possibility of an alternative offer emerging cannot be discounted

On 22 November 2019, Panoramic announced that it has provided several parties with access to due diligence to allow them the opportunity to put forward alternate proposals to the Offer.

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Whilst no alternative offers have been received by Panoramic since the announcement of the Offer on 4 November 2019, we have been advised that the company is still in discussions in relation to potential alternatives to the Offer. As such, the prospect of an alternative offer emerging is not without prospect.

Panoramic shareholders will have limited ability to withdraw their acceptances once given.

We note that the Offer Period was recently extended until 17 January 2020. Given the outcome of the Entitlement Offer will be known by that date and that the period between the release of this report, including SRK's report and 17 January 2020 should provide sufficient time for any other potential bidder for the Company or its assets to emerge, particularly as Panoramic opened up a due diligence process to interested parties some time ago, there does not seem any commercial imperative for Panoramic shareholders minded to accept the Offer to do so until closer to the end of the Offer Period, particularly as there have already been various breaches of the conditions precedent to the Offer to enable IGO to withdraw the Offer should it so wish.

It is not clear whether a Panoramic share will fall from current levels in the absence of the Offer or an alternative superior offer

Based on the Exchange Ratio and:

- the closing price for an IGO share on 1 November 2019, being the last trading date prior to the announcement of the Offer, of $6.40 and the closing price of a Panoramic share on the same date of $0.335, the implied Offer premium was approximately 47%.
- the closing price of an IGO share on the day of the announcement of the Offer of $6.35 per share and the closing price of a Panoramic share of $0.425, up approximately 26.9% on the prior trading day, the implied Offer premium reduced to 15%
- the closing price for an IGO share on 16 December 2019 of $6.30 and of a Panoramic share of $0.335, the implied premium was approximately 45%,

suggesting that the implied Offer premium captured in the trading price of Panoramic shares immediately following the announcement of the Offer, as implied by the price movements noted in the two bullet point above, has largely unwound.

This unwinding, along with a general lack of correlation in the trading prices of IGO and Panoramic since the announcement of the Offer[16] may, in turn, suggest that the market is incorporating a growing level of completion risk into both Panoramic's and IGO's recent share prices.

If that is the case, it is possible that the share price of Panoramic may not fall significantly from current trading levels in the event the Offer is unsuccessful, recognising that Panoramic's recent trading prices are similar to their pre-Offer trading prices

[16] Discussed further in section 12.2

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The underlying value of Panoramic can be expected to change as it moves through its development cycle

The value of a mineral project changes as it successfully moves through each stage of its development. Panoramic has in recent times undertaken a significant Operational Review and developed an updated life of mine operational plan. Recent historical performance results have been adversely impacted by the slower than forecast ramp-up in production at the Savannah Project, with first stoped ore from the Savannah North ore body now expected in the March 2020 quarter. Accordingly, the success of Panoramic's updated operational plan and the steady state performance of the Savannah Project will not be known for some time. Whilst the value attributed to Panoramic is considered reasonable at the date of this report, the fair value of the company may increase significantly, or conversely decline in value, in the future depending upon the success of the current operating plans.

Value of Panoramic to IGO may exceed our range of assessed values

IGO notes in its Bidder's Statement that it has pegged over 6,000km^2 of exploration tenor around the Savannah Project.

If IGO is successful in acquiring Panoramic, the current mine infrastructure at Savannah would be available to IGO to underpin any future production project should its exploration activities in the region be successful, significantly reducing IGO's development and execution risk.

Ineligible foreign shareholders and small parcel shareholders involuntary disposal

Restrictions in certain foreign countries may make it impractical or unlawful to offer or receive securities in those countries, therefore some Panoramic shareholders will be ineligible foreign shareholders.

In the event the Offer is successful, the Expanded IGO shares to which the ineligible foreign shareholders would otherwise have been entitled to will be issued to a nominee and realised, with the net proceeds of such sales distributed to the relevant ineligible foreign shareholders, notwithstanding that those ineligible foreign shareholders may have desired to retain an interest in the Expanded IGO.

Similarly, the shares in the Enlarged IGO that small parcel shareholders would otherwise have received will be realised on market by the nominee, notwithstanding these parties may have wished to hold exposure in the Expanded IGO.

In the event the Enlarged IGO in turn receives a takeover offer, Panoramic shareholders will participate in any premium offered

Panoramic shareholders would be entitled to participate in any control premium should the Enlarged IGO in turn receive a takeover offer.

We also note that, based on the current shareholder profiles of Panoramic and IGO, the share register of the Expanded IGO will remain relatively open immediately following completion of the Offer, as such we do not consider the prospects of the Expanded IGO receiving a takeover offer in the future to be diminished as a result of completing the Offer. Indeed, it is arguable that given the Expanded IGO's increased scale and multi-project status this may increase the attractiveness of the company to potential acquirers. Should an offer emerge in the future for the Expanded IGO, current Panoramic shareholders t that continue to hold Expanded IGO shares would be entitled to participate in any takeover premium paid.

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Transition risk

There is a potential that various shareholders in the Expanded IGO will seek to realise their portfolio holdings in the period immediately following the close of the Offer. In these circumstances, until the shareholder base of the Expanded IGO is rebalanced, a risk exists of greater volatility in the Expanded IGO share price, at least in the short-term post the completion of the Offer, than may otherwise have been the case, all other things being equal. As noted previously the nominee appointed to realise Expanded IGO shares on behalf of ineligible "foreign shareholders" and "small parcel shareholders" is likely to be a seller of Expanded IGO shares during this period.

We note however that given Panoramic shareholders will only hold up to 8.8% of the Expanded IGO's issued capital, we would not expect any additional share trading to create an overhang in the market for Expanded IGO shares.

3.2.4 Consequences if the Offer does not proceed

In the event that the Offer is not successful or any conditions precedent preventing the Offer from being implemented are not waived by IGO, Panoramic will continue to operate in its current form and remain listed on the ASX. As a consequence:

- Panoramic shareholders will not receive the Offer Consideration and the implications of the Offer, as summarised above, will not occur
- Panoramic shareholders will continue to be exposed to the benefits and risks associated with an investment in Panoramic, which will be closely tied to the success or otherwise of the Savannah Project as it moves through its development and operational cycles. Whilst the Savanah Project is expected to generate significant free cash flow to equity over the life of mine, any further delays and/or unexpected adverse financial results during ramp-up period of the Savannah Project will place strain on Panoramic's working capital position and could require Panoramic to explore its funding options again
- It is possible that the share price of Panoramic may not fall significantly from current trading levels recognising that Panoramic's shares have recently been trading around pre-Offer levels
- Whilst Panoramic is still engaged in discussions in relation to a potential alternative transaction to the Offer, there is no certainty that an alternative offer will emerge. Furthermore, the existence of a major shareholder with approximately 35% of Panoramic's issued capital may act as an impediment to an alternative offer in the near future in the event one does not emerge prior to the close of the Offer.

4 Other matters

In forming our opinion, we have considered the interests of Panoramic shareholders as a whole. It is not practical or possible to assess the implications of the Offer on individual Panoramic shareholders as their financial situation, objectives or needs are not known.

The decision of shareholders as to whether or not to accept the Offer is a matter for individuals based on, amongst other things, their risk profile, liquidity preference, investment strategy and tax position.

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Individual shareholders should therefore consider the appropriateness of our opinion to their specific circumstances before acting on it. As an individual's decision to accept or reject the Offer may be influenced by his or her particular circumstances, we recommend that individual shareholders seek their own independent professional advice.

Our report has been prepared solely for the purpose of assisting shareholders in considering the Offer. We do not assume any responsibility or liability to any other party as a result of reliance on this report for any other purpose. Our opinion should not be construed to represent a recommendation as to whether or not shareholders should accept the Offer, which remains a matter solely for each individual shareholder to determine.

Neither the whole nor any part of our report or its attachments or any reference thereto may be included in or attached to any document, other than the Supplementary Target's Statement to be sent to shareholders in relation to the Offer, without the prior written consent of KPMG Corporate Finance as to the form and context in which it appears. KPMG Corporate Finance consents to the inclusion of our report in the form and context in which it appears in the Supplementary Target's Statement.

Our opinion is based solely on information available as at the date of this report as set out in Appendix 2. We have not undertaken to update our report for events or circumstances arising after the date of this report other than those of a material nature which would impact upon our opinion. We refer readers to the limitations and reliance on information as set out in section 6 of our report.

References to an Australian financial year (i.e. the 12 months to 30 June) have been abbreviated to FY, and references to calendar years have been abbreviated to CY.

The above opinion should be considered in conjunction with and not independently of the information set out in the remainder of this report, including the appendices.

Yours faithfully

Jason Hughes
Authorised Representative

Ian Jedlin
Authorised Representative

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Contents

Independent Expert Report and Financial Services Guide

Part 1 – Independent Expert Report

1	Introduction	1
2	Requirements for our report	2
3	Opinion	3
4	Other matters	19
5	Summary of the Offer	22
6	Scope of the report	23
7	Industry overview	27
8	Profile of Panoramic	27
9	Profile of IGO	51
10	Profile of the Enlarged IGO	70
11	Valuation of Panoramic	77
12	Valuation of the Offer Consideration	96
Appendix 1 – KPMG Corporate Finance Disclosures		106
Appendix 2 – Sources of Information		108
Appendix 3 – Overview of the nickel, copper and cobalt industries		109
Appendix 4 – Calculation of discount rates		118
Appendix 5 – Selected listed companies		126
Appendix 6 – Selected transactions		128
Appendix 7 – SRK report		131

Part 2 – Financial Services Guide

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5 Summary of the Offer

The principal terms of the Offer as they affect Panoramic shareholders are that eligible shareholders will receive one new IGO ordinary share for every 13 ordinary shares in Panoramic they hold.

If this calculation results in an entitlement to a fraction of an IGO Share, that fraction will be rounded down to the next whole number of IGO shares.

IGO shares that would otherwise have been issued to "foreign shareholders"[17] or "small parcel shareholders"[18] for the purpose of the Offer will be sold by a nominee and the net proceeds after costs will be remitted to the relevant shareholder.

On 5 December 2019, Panoramic announced the Entitlement Offer. At the date of this report, IGO has not confirmed whether it will seek to vary the Offer so that it extends to new Panoramic shares issued under the Entitlement Offer.

Eligible Panoramic shareholders may only accept the Offer in respect of all of their shares.

5.1 Conditions precedent

Completion of the Offer is subject to a number of conditions precedent as set out in the Bidder's Statement, including (in summary form only):

- IGO obtaining a relevant interest in at least 50.1% in Panoramic (on a fully diluted basis) (**Minimum Acceptance**)
- Panoramic not acquiring or disposing of any significant assets or entering into any significant transaction
- FY20 forecast production guidance for Savannah not being revised downwards
- no breach, prepayment event or similar event under the current financing agreement with Macquarie for the Savannah Project
- various due diligence conditions, including that:
    - a Technical Expert be appointed to confirm various financial and operational thresholds in relation to the Savannah Project; and
    - Panoramic's Target's Statement confirms various statements in relation to the Savannah Project.
- Panoramic not incurring, or committing to incur, significant capital expenditure (subject to certain exceptions)
- no prescribed occurrences occurring.

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[17] being a Panoramic shareholder whose address as shown in the register of members of Panoramic is in a jurisdiction other than Australia or its external territories, New Zealand or Bermuda

[18] a Panoramic shareholder holding a parcel of shares having a value of less than $500 over the relevant period

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- no material adverse change occurring with respect to Panoramic.

On 14 November 2019, Panoramic announced amongst other things that:

- due to underperformance of the Savannah Project against its operational budget over the 4 months to the end of October 2019 and an expectation of continuing below forecast performance, potentially into the June 2020 quarter, it had commenced an immediate operational review of the project
- as a consequence of the below budget performance, the Board considered there to be a need to raise additional funds to maintain an appropriate working capital position and provide enhanced financial flexibility.
- having regard to the above, a number of IGO's conditions precedent had been or were likely to be breached.

The Target's Statement sets out at page 27 a summary of each of the Offer's defeating conditions, along with the status of each defeating condition as at 9 December 2019.

As a result of various breaches of the conditions precedent to the Offer, it is open to IGO to rely on any breach, unless already waived, to terminate the Offer. In the event that each of the conditions precedent are not satisfied or waived by the closing date, the Offer will lapse and any acceptances will be void.

6 Scope of the report

6.1 Basis of assessment

RG 111 issued by ASIC indicates the principles and matters which it expects a person preparing an IER to consider, in determining whether an offer is "fair and reasonable".

Fairness

RG 111 issued by ASIC provides that an offer is fair if the value of the consideration is equal to or greater than the value of the shares subject to the offer. It is a requirement of RG 111 that the comparison be made assuming 100% ownership of the 'target'[19] and irrespective of whether the consideration is scrip or cash and without regard to the percentage holding of the bidder or its associates in the target prior to the bid.

[19] On 8 November 2019, Panoramic's major shareholder, Zeta, which holds approximately 35.2% of the Panoramic's issued capital, advised the market that it does not intend to accept the Offer in its current form. That being the case, the maximum shareholding IGO will be able to achieve under the Offer is 64.8%. Notwithstanding this, in accordance with the requirements of RG111 we are required to assess the value of Panoramic as though 100% of Panoramic's issued capital was available to be acquired.

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Accordingly, the principal matter we are required to consider is whether the Offer Consideration, comprising one new ordinary share in the Enlarged IGO, on a minority interest basis, is equal to or exceeds the market value of 13 existing Panoramic shares on a 100% control basis.

In addition to the points noted above, RG 111 indicates that the weight of judicial authority is that any special value of the 'target' to a particular 'bidder' (e.g. synergies that are not available to other bidders) should not be taken into account under this comparison, rather they are matters that an expert might consider in assessing whether an offer is reasonable. As such, in assessing the full underlying value of Panoramic, we have considered those synergies and benefits that would be available to a pool of potential purchasers of Panoramic. Accordingly, our valuation of Panoramic has been determined without regard to the specific bidder and any special benefits have been considered separately.

Reasonableness

An offer is deemed by RG 111 to be "reasonable" if it is fair. However an offer can also be reasonable even if despite not being fair there are sufficient reasons for security holders to accept the offer in the absence of any higher bid before the close of the offer. In considering matters of reasonableness, we have also considered, inter alia, the following factors:

- recent trading prices and liquidity for Panoramic and IGO shares on ASX
- the risk profile of the Enlarged IGO relative to Panoramic, including the potential for synergies
- the relative contribution of nickel equivalent Ore Reserves and Mineral Resources by Panoramic and IGO to the Enlarged IGO
- the comparative net asset backing of Panoramic and the Enlarged IGO
- the recent dividend history of Panoramic and IGO
- the impact on liquidity for the shares in the Enlarged IGO
- any special value to IGO in acquiring Panoramic
- tax consequences for Panoramic shareholders
- the nature of the conditions precedent to the Offer
- likely trading in Panoramic shares in the absence of the Offer
- any other advantages and disadvantages that would have an impact on Panoramic shareholders.

6.2 Limitations and reliance on information

In preparing this report and arriving at our opinion, we have considered the information detailed in Appendix 2 of this report. In forming our opinion, we have relied upon the truth, accuracy and completeness of any information provided or made available to us without independently verifying it. Nothing in this report should be taken to imply that KPMG Corporate Finance has in any way carried out an audit of the books of account or other records of Panoramic or any or its associated entities for the purposes of this report.

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Further, we note that an important part of the information base used in forming our opinion is comprised of the opinions and judgements of management. In addition, we have also had discussions with Panoramic's management and its advisers in relation to the nature of the business operations, specific risks and opportunities, historical results and prospects for the foreseeable future. This type of information has been evaluated through analysis, enquiry and review to the extent practical. However, such information is often not capable of external verification or validation.

Panoramic has been responsible for ensuring that information provided by it or its representatives is not false or misleading or incomplete. Complete information is deemed to be information which at the time of completing this report should have been made available to KPMG Corporate Finance and would have reasonably been expected to have been made available to KPMG Corporate Finance to enable us to form our opinion.

We have no reason to believe that any material facts have been withheld from us but do not warrant that our inquiries have revealed all of the matters which an audit or extensive examination might disclose. The statements and opinions included in this report are given in good faith, and in the belief that such statements and opinions are not false or misleading.

The information provided to KPMG Corporate Finance included forecasts/projections and other statements and assumptions about future matters (forward-looking financial information) prepared by or on behalf of the management of Panoramic, including FY20 budgets, the outcome of the Operational Review and updated life of mine plan in relation to the re-commissioning of the Savannah Project. KPMG Corporate Finance has relied upon this forward-looking financial information in preparing this report and Panoramic remains responsible for all aspects of this forward-looking financial information. The forecasts and projections as supplied to us are based upon assumptions about events and circumstances which have not yet transpired. We have not tested individual assumptions or attempted to substantiate the veracity or integrity of such assumptions in relation to any forward-looking financial information or tested the mathematical integrity of the models. However, we have made sufficient enquiries to satisfy ourselves that such information has been prepared on a reasonable basis.

KPMG Corporate Finance has instructed SRK to undertake various enquiries in relation to the forecast information, including review of technical and operational data and holding discussions with management in regard to the technical and operational assumptions underlying the forecast operations of the Savannah Project. SRK has, where necessary, made adjustments to reflect its judgement and provided its preferred forecast production and cost schedules to KPMG Corporate Finance. KPMG Corporate Finance is of the view that this forward-looking information has been prepared on a reasonable basis and, therefore, is suitable as a basis for our valuations. Further detail in relation to the involvement of the independent technical specialist and a summary of its projections is set out in section 11 of this report. A copy of SRK's report is included at Appendix 7 to this report.

Notwithstanding the above, KPMG Corporate Finance cannot provide any assurance that the forward-looking financial information will be representative of the results which will actually be achieved during the forecast period. Any variations in the forward looking financial information may affect our valuation and opinion.

It is not the role of the independent expert to undertake the commercial and legal diligence that a company and its advisers may undertake. The Directors are responsible for conducting diligence in

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relation to the Offer. KPMG Corporate Finance provides no warranty as to the adequacy, effectiveness or completeness of the diligence process, which is outside our control and beyond the scope of this report. We have assumed that the diligence process has been and is being conducted in an adequate and appropriate manner.

The opinion of KPMG Corporate Finance is based on prevailing market, economic and other conditions at the date of this report. Conditions can change over relatively short periods of time. Any subsequent changes in these conditions could impact upon our opinion. We note that we have not undertaken to update our report for events or circumstances arising after the date of this report other than those of a material nature which would impact upon our opinion.

6.3 Disclosure of information

In preparing this report, KPMG Corporate Finance has had access to all financial information considered necessary in order to provide the required opinion. Due to commercial sensitivity and/or confidentiality undertakings given by Panoramic we have limited the level of disclosure in relation to certain key business arrangements however we have disclosed a summary of material information which we relied on in forming our view.

6.4 Reliance on Technical Expert

ASIC Regulatory Guides envisage the use by an independent expert of specialists when valuing specific assets. To assist KPMG Corporate Finance in the valuation of Panoramic's mineral assets, SRK was engaged by Panoramic, and instructed by us, to prepare an independent technical report in relation to the development and operational forecast assumptions for the Savannah Project as well as the valuation of any other mineral interests, such as defined resources and other exploration tenements held by Panoramic but not included in the forecasts in respect of the Savannah Project. A copy of the SRK's report, dated 22 December 2019, is attached to this report at Appendix 7.

SRK's report was prepared in accordance with the requirements of the Australasian Code for Public Reporting of Technical Assessment and Valuation of Mineral and Petroleum Assets (2015 Edition) (**the ValMin Code**) to the extent applicable.

ASIC Regulatory Guides recommend the fees payable to the technical specialists be paid in the first instance by the independent expert and claimed back from the party commissioning the independent expert. KPMG Corporate Finance's preferred basis for appointment of independent technical specialists is that the client commissions, and pays the fees directly to, the technical specialist, whilst KPMG Corporate Finance defines the scope of work for the technical specialist. We do not consider that the independence of the technical specialist is impaired by this arrangement.

We have satisfied ourselves as to SRK's qualifications and independence from Panoramic and IGO, and have placed reliance on its report.

Following discussion and enquiry with SRK, the development and operational assumptions recommended by SRK have been adopted in the cash flow projections used by us in assessing the value for Panoramic's interest in the Savannah Project. KPMG Corporate Finance was responsible for the determination of

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certain macroeconomic and other assumptions such as commodity prices, exchange rates, discount rates, inflation and taxation assumptions.

The valuation methodologies adopted by SRK in respect of mineral assets outside of the Savannah Project are based on the yardstick, unit area value, geoscientific rating and/or comparable transactions methods as appropriate.

Due to the various uncertainties inherent in the valuation process, SRK has determined a range of values within which it considers the value of each of these additional mineral assets to lie. The valuations ascribed by SRK to the other mineral assets of Panoramic have been adopted in our report.

7 Industry overview

Panoramic's principal assets include interests in nickel-copper-cobalt development and exploration assets. Accordingly, the financial performance of Panoramic is significantly impacted by developments in the international industries for these commodities. To provide a context for assessing the prospects of Panoramic, we have included an overview of recent trends in the international nickel, copper and cobalt markets at Appendix 3.

8 Profile of Panoramic

8.1 Company overview

Panoramic is a Western Australian mining company listed on the securities exchange of the ASX. Panoramic's current principal activities comprise the ramp-up and further development of its 100% owned Savannah Project, which is located approximately 240km south of Kununurra in the East Kimberley region of Western Australia.

Panoramic also holds direct interests in various other mineral projects, including:

- the 100% owned Panton platinum and palladium development project (**the Panton Project**), located 60km south of the Savannah Project
- the 100% owned Thunder Bay North platinum and palladium exploration project (**Thunder Bay Project**), located in Northern Ontario, Canada[20].

In addition, Panoramic also holds an indirect a 51% interest in the Gum Creek Gold Project (**Gum Creek Project**), located near Wiluna in Western Australia, via its corresponding equity interest in Horizon, which in turn owns 100% of the Gum Creek Project.

An overview of the Savannah Project and Panoramic's mineral assets is set out below and discussed in more detail in SRK's report which is attached as Appendix 7 to this report.

[20] Panoramic is in the process of selling the Thunder Bay Project to Benton Resources Inc. for approximately C$9 million. Based on a spot AUD:CAD exchange rate of 0.91, C$9 million equates to approximately $10.0 million.

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8.2 The Savannah Project – 100% interest

8.2.1 Overview

After its purchase by Panoramic in 2001, the Savannah Project was constructed in 2003 and commissioned in late 2004, initially sourcing ore from an open pit. After 18 months, the operations transitioned to underground mining.

Over an initial twelve-year period to May 2016, the Savannah Project milled 8.5 million tonnes (**Mt**) from the Savannah orebody at an average grade of 1.29% nickel, 0.65% copper and 0.06% cobalt to produce 1.23Mt of nickel concentrate containing 94,600 tonnes (**t**) of nickel, 53,000t of copper and 5,000t of cobalt.

In 2014, the Company discovered the Savannah North orebody, 600m north of the Savannah orebody. Savannah North is composed of two discrete zones of mineralisation, an upper zone, which is dominated by areas of massive sulphides at the base of the intrusion, and a lower zone, which consists of higher grade, off-contact massive sulphides.

The Savannah Project was placed on care and maintenance in May 2016 pending a sustained recovery in the nickel price.

In October 2017, the Company delivered an updated feasibility study on mining and processing the remnant Savannah orebody and the new Savannah North orebody (**Updated Feasibility Study**) which, following the completion of a new four year offtake agreement with Sino Nickel Pty Ltd (**Sino Nickel**), a joint venture company owned 60% by Jinchuan Group Co., Ltd (**Jinchuan**) and 40% by Sino Mining International Ltd (**Sino Mining**) (**Offtake Agreement**) and a $40 million debt facility with Macquarie, underpinned a decision by Panoramic in July 2018 to restart the Savannah Project (including the development and mining of the higher-grade Savannah North). At that time, the mine life was expected to be approximately 8.3 years, with an average annual production rate of 10,800t nickel, 6,100t copper and 800t of cobalt contained in concentrate.

A map of the location of the Savannah Project and a plan of the mine are set out in the figures below.

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Figure 2: Savannah Project location

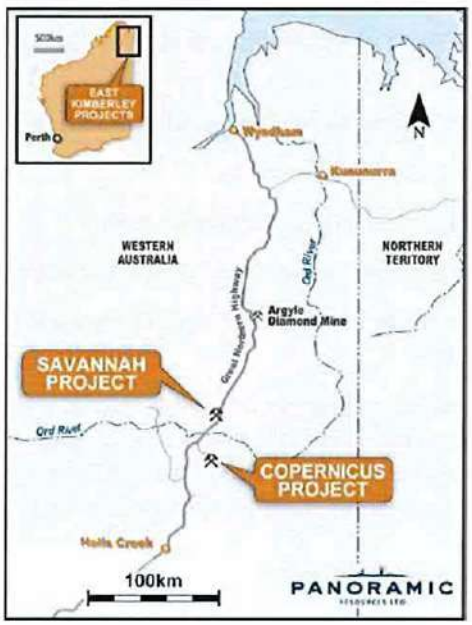
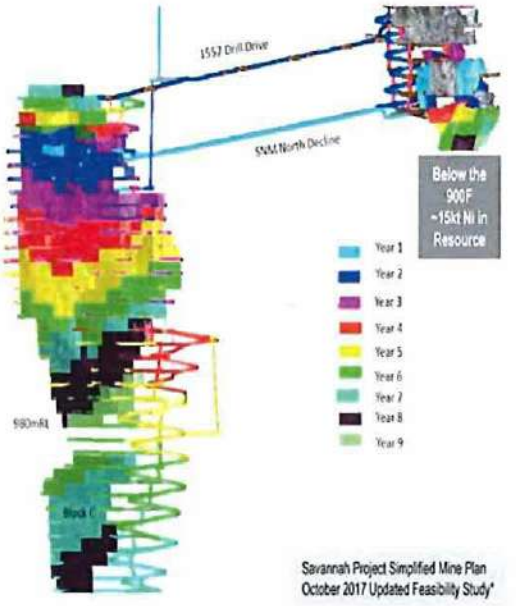


Figure 3: Savannah Project simplified mine plan



Source: FY19 Annual Report, Investor Presentation 3 December 2019
Note: The Copernicus Project mine was closed in the September 2016 quarter

Over CY19, the development rate and operational performance of the Savannah Project has fallen short of key metrics in the Updated Feasibility Study due to a variety of factors, including amongst others:

- operational and maintenance staff and mobile equipment availability issues
- delayed commissioning and underperformance of the paste plant and paste reticulation system
- mining the Savannah remnant orebody out of sequence to make up for tonnage shortfalls in earlier months
- underestimation of the amount of rehabilitation required
- lower nickel grade due to hanging wall failure and paste dilution in stopes
- slower than anticipated completion of the twin declines accessing the Savannah North orebody.

In response, Panoramic announced on 14 November 2019 the commencement of an operational review of the Savannah Project. The key objectives of the Operational Review were stabilising and improving short-term operational performance at Savannah and optimising Savannah North development plans.

On 25 November 2019, Panoramic announced that as part of that Operational Review, it had determined that production guidance for Savannah for FY20 should be adjusted to 7,000-7,500t nickel, 4,500-5,000t copper and 400-450t cobalt.

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On 3 December 2019, Panoramic announced that the twin declines had accessed the Savannah North orebody that first cut produced 60% sulphides (approx. 1.5%-1.8% nickel) and that production of ore from stopes was expected early in the March 2020 quarter, with completion of the ventilation shaft in the June 2020 quarter.

On 4 December 2019, Panoramic announced the full results of its Operational Review, which included:

a) a detailed assessment and update of the Savannah life-of-mine (**LOM**) schedule

b) a review and optimisation of current operating cost levels and the forecast LOM cost profile

c) identification of opportunities to accelerate development to deliver further flexibility of ore sourcing

d) identification and implementation of initiatives to capture greater efficiencies, lift utilisation levels and enhance productivity within the underground operations.

Panoramic reported that the Operational Review has confirmed the integrity of the overall Savannah mine design and general operating parameters and the absence of any fatal flaws in the overall project design and operating plan, and provided a comparison of the key physicals from the updated Savannah Project LOM determined under the Operational Review compared to the equivalent outputs from the Feasibility Study, which are summarised in the table below.

Table 5: Key physicals from updated Savannah LOM plan compared to equivalent outputs from Updated Feasibility Study

	Unit	Updated Savannah LOM Plan	Updated Feasibility Study	% change
Ore mined and process	Mt	7.23	7.65	-5%
Average nickel grade	%	1.39	1.42	-2%
Average copper grade	%	0.66	0.68	-2%
Average cobalt grade	%	0.09	0.10	-3%
Contained nickel in concentrate	kt	83.7	90.2	-7%
Contained copper in concentrate	kt	46.9	50.7	-7%
Contained cobalt in concentrate	kt	6.1	6.7	-9%

Source: Panoramic ASX announcement 4 December 2019
Note: kt means thousand tonnes

Panoramic's review of existing operating costs and sustaining capital levels resulted in a forecast weighted average "all-in-sustaining-cost" (**AISC**)[21] for the Savannah Project's remaining LOM of US$3.77 per pound (**lb**)[22], which Panoramic notes compares to US$3.50/lb included in the Updated

[21] Calculated net of by-product credits, calculated using spot commodity prices as at 2 December 2019 of US$6.19/lb nickel, US$2.66/lb copper and US$16.01/lb cobalt and an AUD:USD spot exchange rate of 0.68. AISC excludes corporate and exploration costs.

[22] Panoramic's revised AISC excludes the forecast results of the second half of FY2020, which are considered by Panoramic to be non-representative given the ongoing ramp-up and accelerated development strategy to be employed at Savannah North during this period.

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Feasibility Study when equivalent commodity price and foreign exchange assumptions are adopted and adjusting for inflationary impacts.

8.2.2 Production results and guidance

Recent summary production results and guidance published by Panoramic in relation to the Savannah Project are set out below.

Table 6: Savannah Project production results and guidance

	Unit	Actual FY19	Actual 3 months to 30 Sep 19	Guidance FY20
Nickel in concentrate production	t	2,484	1,342	7,000 – 7,500
Copper in concentrate production	t	1,474	855	4,500 – 5,000
Cobalt in concentrate production	t	130	64	400 – 450

Source: 2019 Annual Report, 30 September 2019 Quarterly Report, ASX announcement 25 November "Update on IGO offer, operational review and funding"

Note: No results were reported for FY17 and FY18 as the ramp-up of production commenced in December 2018

8.2.3 Ore Reserves and Mineral Resources

A summary of the Ore Reserves and Mineral Resources contained within the Savannah Project deposit area as at 30 June 2019 is set out below.

Table 7: Savannah Project Ore Reserves as at 30 June 2019

Reserves	Metal	Proven		Probable		Total		Metal
		Mass (Mt)	Grade (%)	Mass (Mt)	Grade (%)	Mass (Mt)	Grade (%)	tonnes (kt)
Savannah (above 900 fault)	Nickel	1.37	1.16	-	-	1.37	1.16	**15.9**
	Copper		0.75		-		0.75	**10.3**
	Cobalt		0.06		-		0.06	**0.8**
Savannah North	Nickel	-	-	6.65	1.42	6.65	1.42	**94.5**
	Copper		-		0.61		0.61	**40.9**
	Cobalt		-		0.10		0.10	**6.7**
Total Ore Reserves	Nickel							**110.4**
	Copper							**51.2**
	Cobalt							**7.5**

Source: 2019 Annual Report

Notes:

1 *Ore Reserve figures have been reported in compliance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 Edition (**JORC code**) and were approved for release in the form and context in which they appear by a Competent Person, as defined by the JORC code*

2 *The 900 fault is a fault at approximately 900 metres below the surface*

3 *Amounts may not add exactly due to rounding*

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Table 8: Savannah Project Mineral Resources as at 30 June 2019

Resources	Metal	Measured		Indicated		Inferred		Total		Metal
		Mass (Mt)	Grade (%)	Mass (Mt)	Grade (%)	Mass (Mt)	Grade (%)	Mass (Mt)	Grade (%)	tonnes (kt)
Savannah (above 900 fault)	Nickel	1.18	1.40	0.62	1.70	-	-	1.80	1.50	**27.1**
	Copper		0.86		1.41		-		1.05	**18.9**
	Cobalt		0.07		0.08		-		0.07	**1.3**
Savannah (below 900 fault)	Nickel	-	-	0.78	1.64	0.13	0.17	0.91	1.65	**14.9**
	Copper		-		0.76		0.75		0.76	**6.9**
	Cobalt		-		0.10		0.09		0.10	**0.9**
Savannah North (upper)	Nickel	-	-	4.23	1.64	1.76	1.25	5.99	1.53	**91.3**
	Copper		-		0.65		0.49		0.60	**36.1**
	Cobalt		-		0.12		0.10		0.11	**6.8**
Savannah North (lower)	Nickel	-	-	2.70	1.96	0.85	2.02	3.55	1.97	**70.1**
	Copper		-		0.98		0.93		0.97	**34.4**
	Cobalt		-		0.14		0.13		0.14	**4.9**
Savannah North (other)	Nickel	-	-	0.24	2.22	0.49	1.67	0.74	1.85	**13.6**
	Copper		-		0.50		0.53		0.52	**3.8**
	Cobalt		-		0.14		0.11		0.12	**0.9**
Total Mineral Resources	Nickel							**12.98**	**1.67**	**217.0**
	Copper								**0.77**	**100.1**
	Cobalt								**0.11**	**14.8**

Source: 2019 Annual Report

Notes:

1 *Mineral Resources are inclusive of Ore Reserves*

2 *Mineral Resource figures have been reported in compliance with the JORC code and were approved for release in the form and context in which they appear by a Competent Person, as defined by the JORC code*

3 *The 900 fault is a fault at approximately 900 metres below the surface*

4 *Amounts may not add exactly due to rounding*

8.2.4 Offtake Agreement

The Offtake Agreement replaces a previous concentrate sales agreement which was due to expire on 31 March 2020. The terms of the Offtake Agreement were given effect from the first shipment of concentrate from the recommissioned Savannah Project, which departed on 13 February 2019 and incorporates improved payabilities for certain contained metals compared to the previous agreement.

A summary of the general terms and conditions of the new Offtake Agreement is set out below.

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Table 9: General terms and conditions of new Offtake Agreement

General terms and conditions of new Offtake Agreement	
Product	Sulphide concentrate
Specifications	8% nickel, 4.5% copper, 0.6% cobalt, 46% Fe, <1.0% manganese oxide
Quantity (in-bulk)	100% of production from the Savannah Project
Load port	Wyndham, Western Australia
Payable metals	nickel, copper and cobalt
Price basis	Agreed percentage of the London Metal Exchange (**LME**) cash price for nickel and copper and agreed % of the Metal Bulletin price for cobalt
Life of contract	4 years commencing from date of first shipment or 31 March 2019, whichever first

Source: 2019 Annual Report, ASX announcement 29 June 2018

We note that the detailed terms of the Offtake Agreement are commercial in confidence and subject to confidentiality agreements, accordingly we have been required to limit our disclosure to that level usually put into the public domain.

8.2.5 Further development opportunities

Panoramic considers that further upside opportunities exist at the Savannah Project, including:

- the acceleration of development ore and enhancement of mining and operational flexibility through the concurrent development of the Savannah North upper crown with the development of the Savannah North upper central zone
- potential conversion of Inferred Mineral Resources to Measured and Indicated Mineral Resources and potentially to Ore Reserves through infill drilling. At present 2.3% of Inferred Mineral Resource material is included in the updated Savannah Project LOM plan.
- drilling of up and down plunge extensional targets, where the Savannah North mineralisation remains open.

8.3 Other mineral assets

8.3.1 The Panton Project – 100% interest

Panoramic holds the Panton platinum and palladium development project, located 60km from the Savannah Project.

Test work completed in 2014 and 2015 demonstrated high-grade Platinum Group Metals (**PGM**) concentrates can be produced by standard fine grinding and flotation techniques. In 2015, Panoramic entered into a four-year research agreement with Curtin University to investigate alternative extraction methods applicable to Panton ore.

Test work completed in FY19 showed that in addition to producing a high-grade PGM concentrate, a metallurgical grade chromite concentrate by-product can be recovered from the high-grade PGM concentrate flotation tails, using simple wet high intensity magnetic separation techniques. Test work by Curtin University in FY19 focused on evaluating the feasibility of producing further value-added direct

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platinum, palladium and gold refinery feed products from the Panton Project while maintaining the ability to produce an economic chromite by-product revenue stream.

In May 2019, Panoramic contracted Mr. Len Jubber, a consulting mining engineer, to undertake a detailed review of the Panton Project with the aim to produce a financial model based on the latest flow sheet designs and their respective operating and capital costs.

A summary of the Mineral Resources contained within the Panton Project deposit area as at 30 June 2019 is set out below.

Table 10: Panton Project Mineral Resources as at 30 June 2019

Resource	Category	Mass	Grade					Contained metal	
			Pt	Pd	Au	Cu	Ni	Pt	Pd
		(Mt)	(g/t)	(g/t)	(g/t)	(%)	(%)	(koz)	(koz)
Top Reef									
	Measured	4.4	2.46	2.83	0.42	0.08	0.28	348	400
	Indicated	4.1	2.73	3.21	0.38	0.09	0.31	363	426
	Inferred	1.6	2.10	2.35	0.38	0.13	0.36	105	118
Middle Reef									
	Measured	2.1	1.36	1.09	0.10	0.03	0.18	93	75
	Indicated	1.5	1.56	1.28	0.10	0.04	0.19	75	62
	Inferred	0.6	1.22	1.07	0.10	0.05	0.19	24	21
Total Panton		**14.3**	**2.19**	**2.39**				**1,008**	**1,102**

Source: 2019 Annual report

Notes:

1 *Mineral Resource figures have been reported in compliance with the JORC code and were approved for release in the form and context in which they appear by a Competent Person, as defined by the JORC code*

2 *Pt means platinum, Pd means palladium, Au means gold, Cu means copper, Ni means nickel, g/t means grams per tonne, Koz means thousand ounces*

3 *Amounts may not add exactly due to rounding*

8.3.2 Thunder Bay Project – 100% interest

Panoramic holds a 100% interest in the Thunder Bay Project in Ontario, Canada, via its wholly owned subsidiary, Panoramic PGMs (Canada) Limited (**Panoramic PGMs**).

In 2015, Rio Tinto Exploration Canada Inc. (**RTEC**) commenced a farm-in whereby RTEC was able to earn a 70% interest in the Thunder Bay Project by sole funding of C$20 million in expenditure over five years, with a minimum spend of C$5 million. In January 2017, RTEC confirmed that it had achieved the minimum spend of C$5 million on the project however the farm-in agreement was subsequently terminated in 2019.

On 2 July 2019, Panoramic announced that it had signed a binding Letter Agreement with Canadian company Benton Resources Inc. (**Benton**) for the sale of the issued shares in Panoramic PGMs for a purchase consideration of C$9 million, subject to the satisfaction of certain conditions precedent.

On 1 September 2019, Panoramic and Benton agreed to amend the acquisition agreement such that the consideration will now be paid as follows:

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(a) C$4.5 million on completion of the transaction

(b) C$1.5 million on each of the first, second and third anniversaries of completion.

Completion is subject to the following conditions precedent:

(a) signing a Definitive Agreement

(b) receipt of any necessary regulatory approvals and shareholder approvals required by Benton

(c) Benton raising sufficient finance to fund the C$4.5 million payable on completion.

On 4 December 2019, Panoramic and Benton agreed to extend the deadline for signature of the Definitive Agreement to 31 January 2020.

8.3.3 Gum Creek Project – indirect 51% interest

Panoramic holds a 51% indirect interest in the Gum Creek Project via its majority equity investment in ASX listed Horizon. Horizon was spun out of Panoramic in December 2016.

The Gum Creek Gold Project located near Wiluna in Western Australia hosts Mineral Resources of 15.9Mt averaging 2.7g/t gold, for 1.39 million ounces (**Moz**) of gold. It is located within a well-endowed gold region that hosts multi-million ounce deposits including Big Bell, Wiluna, Mt Magnet, Meekatharra and Agnew/Lawlers.

Horizon has identified the Swan and Swift open pit high grade gold resources as likely candidates for mining activities to recommence at the Gum Creek Project. A scoping study was completed in November 2019 and the Company announced on 20 November 2019 that the results were sufficiently positive to justify further infill drilling. The results of the drill program will be used to support higher confidence studies being carried out on the Swan/Swift project in CY2020.

Horizon has also discovered new zinc-copper-silver mineralisation at the Altair prospect located within the Gum Creek Project tenement, which could have a strike extent of up to eight kilometres.

Horizon plans to continue exploration and development studies with the aim of becoming a stand-alone gold producer and potentially a base metal producer depending on the extent and economics of the Altair prospect.

8.4 Historical financial performance

Panoramic's historical audited consolidated financial performance for each of the financial years ended 30 June 2017, 2018 and 2019 are summarised below.

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Table 11: Panoramic's historical consolidated financial performance

S'000	Audited 12 months 30 Jun 17	Audited 12 months 30 Jun 18	Audited 12 months 30 Jun 19
Revenue	8,409	-	25,112
Cost of sales of goods	(8,963)	-	(29,803)
Gross profit / (loss)	**(554)**	**-**	**(4,691)**
Other income[1]	1,257	1,714	2,773
Care and maintenance expenses	(7,539)	(5,201)	(847)
Corporate and marketing costs	(5,365)	(4,022)	(4,929)
Exploration and evaluation expenditure	(493)	(487)	(671)
Exploration expenditure written-off	-	(619)	(901)
Reversal of stock obsolescence provision	-	-	5,341
Fair value losses on derivatives	-	-	(2,071)
Change in fair value of financial assets at fair value through profit or loss	-	-	(1,511)
Impairment loss	-	(45,152)	-
Reversal of impairment loss	9,178	7,260	19,156
Share based payments	(473)	(160)	-
Other expenses	(291)	(429)	(1,037)
Finance costs	(490)	(943)	(1,383)
Profit / (loss) before income tax	**(4,770)**	**(48,039)**	**9,229**
Income tax expense	-	-	-
Profit / (loss) for the year	**(4,770)**	**(48,039)**	**9,229**
Profit / (loss) for the year attributable to:			
Non-controlling interests	(529)	(7,236)	(1,098)
Owners of Panoramic	(4,241)	(40,803)	10,327
Other comprehensive income			
Items that may be reclassified to profit or loss			
Changes in fair value of available-for-sale financial assets, net of tax	528	1,422	-
Changes in fair value of cash flow hedges, net of tax	-	-	(276)
Exchange differences on translation of foreign operations	(324)	439	-
Other comprehensive income / (loss) for the year, net of tax	**204**	**1,861**	**(276)**
Total comprehensive income / (loss) for the year	**(4,566)**	**(40,803)**	**10,327**
Total comprehensive income / (loss) for the year attributable to:			
Non-controlling interests	(529)	(7,236)	(1,098)
Owners of Panoramic	(4,037)	(38,942)	10,051
Weighted average ordinary shares on issue[2] (m)	*428.6*	*450.4*	*506.1*
Earnings per share[3] (cents)	*(1.0)*	*(9.1)*	*2.0*

Source: FY18 and FY19 Annual Reports, KPMG Corporate Finance analysis

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Notes:

1 *Interest income of $557,000 in FY17 was classified as Other income for comparability purposes (classified as Revenue in FY18 Annual Report)*
2 *Performance rights are not considered in the calculation of diluted loss per share as their issue is not certain. There are nil performance right on issue at 30 June 2019*
3 *Profit / (loss) used in calculating earnings / (loss) per share is profit/(loss) for the year attributable to owners of Panoramic of FY17:$(4.241 million), FY18:$(40.803 million), FY19:$10.327 million*
4 *Amounts may not add exactly due to rounding*

We note the following in relation to Panoramic's recent financial performance:

- Panoramic's financial performance and earnings per share over the period reflect the Savannah Project being placed on care and maintenance until a decision was made in July 2018 to re-start the project. Following the re-commencement of bulk Savannah nickel-copper-cobalt concentrate shipments to China in February 2019 and an associated reversal of a previously recognised impairment loss, profits attributable to the owners of Panoramic, net of tax increased from a loss of $40.8 million in FY18 to a $10.3 million profit in FY19. Over the same period, basic earnings per share increased from negative 9.1 cents to positive 2.0 cents
- Panoramic achieved a loss at the gross profit level in FY19 mainly as a result of the Savannah Project not operating at full capacity, with the re-commencement of mining operations at the Savannah Project occurring early in FY19.

8.4.1 FY17

Panoramic's FY17 results reflect:

- revenue of $8.4 million, which reflects a 91% decrease compared to the revenue generated in FY16 of $91.6 million due largely to the Savannah Project being placed on care and maintenance in May 2016
- total care and maintenance costs of $7.5 million were significantly higher than the prior year due to: (i) the costs of placing and maintaining the Savannah Project on full care and maintenance; and (ii) the closure and rehabilitation costs incurred at the previously operated Copernicus Project. Mining of ore at the Copernicus open-pit was completed in February 2016 and rehabilitation of the Copernicus site was carried out between March and July 2016
- a 20% decrease in corporate and marketing costs compared to the prior year as a result of the reduction of corporate activity and lower employee costs following the termination and resignation of full-time staff during the financial year
- an impairment reversal made during the financial period of approximately $9.2 million in relation to Panoramic's interest in the Gum Creek Gold Project[23].

[23] The results of Horizon are consolidated with those of Panoramic, reflecting Panoramic's controlling interest in Horizon

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8.4.2 FY18

Panoramic's FY18 results reflect:

- no sales revenue generated by the Company as its operations remained on care and maintenance during the financial year
- total care and maintenance costs of $5.2 million.
- a 25% decrease in corporate and marketing costs compared to the prior year as a result of the continued reduction of corporate activity and lower employee costs following the termination and resignation of full-time staff during the financial year
- the recognition of an impairment loss of $45.2 million, comprised of: (i) an impairment loss of $12.6 million in relation to the Gum Creek Project's exploration and evaluation expenditure; and (ii) an impairment loss of $32.6 million against the Thunder Bay Project
- an impairment loss reversal of $7.3 million to increase the carrying value of the exploration and evaluation expenditure and mineral properties expenditure of the previously held Lanfranchi Nickel Project.

8.4.3 FY19

Panoramic's FY19 results reflect:

- the re-commencement of bulk Savannah nickel-copper-cobalt concentrate shipments to China from February 2019, generating sales revenue of $25.1 million
- a gain on the sale of the Lanfranchi Project of $0.8 million which was sold for a total consideration of $15.1 million.
- a 23% increase in corporate and marketing costs compared to the prior year driven by the increase in corporate activity and higher employee costs as a result of the re-commencement of mining at the Savannah Project
- a reversal of stock obsolescence provision of $5.3 million
- a reversal of the previous impairment loss of $19.2 million recorded against the carrying values of the Savannah Project as a result of the re-commencement of the mining operations.

8.5 Dividends, payout ratio and franking credits

No dividends have been declared since FY15. On 26 February 2015, an interim fully franked dividend of 1.0 cent per share was declared and paid on 2 April 2015. No final dividend was declared. This represented a payout ratio of approximately 60%.

Panoramic has franking credits of $10.5 million available for subsequent periods.

Panoramic has confirmed in its Target's Statement that it does not intend to declare a distribution to Panoramic shareholders in the period before the end of the Offer Period.

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8.6 Historical financial position

Panoramic's historical audited consolidated financial position as at each of 30 June 2017, 30 June 2018, 30 June 2019 and 30 November 2019 are summarised below.

Table 12: Panoramic's historical financial position

$'000	Audited 30 Jun 17	Audited 30 Jun 18	Audited 30 Jun 19	Unaudited[1] 30 Nov 19
Assets				
Cash and cash equivalents	20,650	25,430	12,733	8,675
Trade and other receivables	545	421	19,278	784
Inventories	3	184	8,415	15,224
Prepayments	226	246	1,354	1,025
Derivative financial instruments	-	-	3,742	122
Disposal group classified as held for sale	-	17,002	4,299	4,349
Total current assets	**21,424**	**43,283**	**49,821**	**30,179**
Available-for-sale financial assets	1,200	2,703	-	-
Financial assets at fair value through profit or loss	-	-	957	1,125
Property, plant and equipment	11,555	10,630	59,004	69,872
Exploration and evaluation	91,772	45,763	27,763	28,805
Development properties	17,028	17,222	84,745	91,612
Mineral properties	1,403	27	29	28
Derivative financial instruments	-	-	4,409	56
Other non-current assets	1,803	1,303	181	6
Total non-current assets	**124,761**	**77,648**	**177,088**	**200,085**
Total assets	**146,185**	**120,931**	**226,909**	**230,265**
Liabilities				
Trade and other payables	2,533	3,764	22,094	24,343
Borrowings	769	-	8,082	7,032
Derivative financial instruments	-	-	2,721	3,483
Provisions	971	923	2,205	2,828
Liabilities directly associated with the disposal group classified as held for sale	-	3,502	-	-
Total current liabilities	**4,273**	**8,189**	**35,102**	**37,686**
Borrowings	68	-	38,553	20,589
Derivative financial instruments	-	-	5,584	18,574
Provisions	29,722	26,822	31,548	31,700
Total non-current liabilities	**29,790**	**26,822**	**75,685**	**70,863**
Total liabilities	**34,063**	**35,011**	**110,787**	**108,555**
Net assets	**112,122**	**85,920**	**116,122**	**113,128**
Net assets attributable to owners of Panoramic[2]	*98,146*	*79,180*	*110,480*	*108,032*
Shares on issue (m)	*428.6*	*491.6*	*553.6*	*654.2*
Net asset backing per share (cents)[3]	*22.9*	*16.1*	*20.0*	*16.5*
Gearing[4]	*0%*	*0%*	*15%*	*9%*
Current ratio[5]	*5.0x*	*5.3x*	*1.4x*	*0.8x*

Source: FY18 and FY19 Annual Reports, 30 November 2019 management accounts prepared by Panoramic, KPMG Corporate Finance analysis

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Notes:

1. *30 November 2019 figures the addition of Panoramic's unaudited consolidated group totals (excluding Horizon), per management accounts prepared by Panoramic, and 100% of Horizon's unaudited consolidated group totals as at the same date, provided by Management*
2. *Net assets attributable to owners of Panoramic is after deducting 49% outside equity interests in the net assets of Horizon as disclosed in Panoramic's Annual Report (FY17:$14.0 million, FY18:$6.7 million, FY19:$5.6 million) and management accounts prepared by Panoramic (Nov-19: $5.1 million)*
3. *Net asset backing per share represents net assets attributable to owners of Panoramic divided by shares on issue*
4. *Gearing represents net debt divided by total assets, where net debt is total current and non-current borrowings less cash and cash equivalents. Where net debt is less than $nil, gearing has been recorded as zero. No adjustments have been made for the 49% outside equity interests in the assets and liabilities of Horizon*
5. *Current ratio represents current assets divided by current liabilities. No adjustments have been made for the 49% outside equity interests in the assets and liabilities of Horizon*
6. *Amounts may not add exactly to due to rounding*

8.6.1 Going concern

Panoramic's FY19 audit opinion included an emphasis of matter in relation to Panoramic's ability to obtain sufficient funding for ongoing operating and capital requirements.

The financial statements do not include any adjustment relating to the recoverability or classification of recorded asset amounts or to amounts or classification of liabilities that may be necessary should the Company not be able to continue as a going concern.

Panoramic announced the Entitlement Offer on 5 December 2019, which is expected to raise approximately $31 million, net of costs. Management has advised that based on current expectations these funds will be sufficient to meet its foreseeable working capital requirements in bringing the Savannah Project fully on-stream.

8.6.2 Cash and cash equivalents

The movement in cash and equivalents over FY18 and FY19 largely reflect that proceeds from the issue of shares of $41.0 million (FY18 $19.8 million, FY19 $21.2 million), additional borrowings of $40.0 million and proceeds from disposal of subsidiaries of $15.1 million (before costs) were more than offset by cash outflows from operating activities of ($15.3 million) (FY18 ($6.9 million), FY19 ($8.4 million)); development, exploration and evaluation expenditure of ($60.5 million) (FY18 ($7.0 million), FY19 ($53.5 million)) and the payment for property, plant and equipment of $26.9 million as Panoramic continued the re-commissioning of the Savannah Project.

Panoramic's cash and cash equivalent position as at 30 June 2019 does not reflect the benefit of the Entitlement Offer or the entitlement offer completed in September 2019.

8.6.3 Other working capital items

The significant movement in trade and other receivables, inventories, and trade and other payables over FY19 reflects the re-commencement of bulk Savannah nickel-copper-cobalt concentrate shipment following the recommissioning of the Savannah Project.

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8.6.4 Derivative financial instruments

To limit the exposure to commodity price risk and AUD:USD foreign exchange currency risk, Panoramic has established mandatory and discretionary commodity and USD foreign exchange derivate hedging lines under agreement with Macquarie. None of the existing fixed forward contracts entered into by the consolidated entity are subject to margin calls.

Consolidated derivative financial instruments in place as at 30 June 2019 are summarised below.

Commodity Hedges

Table 13: Panoramic's commodity hedges as at 30 June 2019

As at 30 June 2019		Tonnes Hedged	Average price per lb
Nickel Fixed Forwards	Not later than one year	2,058	US$6.32
	Later than one year	5,932	US$6.18
Copper Fixed Forwards	Not later than one year	1,292	US$2.76
	Later than one year	1,344	US$2.77
Nickel Put Options	Not later than one year	1,319	$7.48

Source: FY19 Annual Report

Foreign Currency Hedges

Table 14: Panoramic's commodity hedges as at 30 June 2019

As at 30 June 2019		USD Hedged $000	Average AUD:USD rate
USD Forwards	Not later than one year	31,206	0.7418
	Later than one year	72,848	0.7437

Source: FY19 Annual Report

8.6.5 Disposal group classified as held for sale

The significant increase and subsequent reduction of this asset category largely reflects the fair value of the Lanfranchi Project having regard to an agreement entered into for its sale in FY18 and its subsequent sale during FY19.

As at 30 June 2019, the Thunder Bay Project was classified as an asset held for sale.

8.6.6 Financial assets at fair value through profit and loss

Financial assets at fair value through profit and loss represents Panoramic's investment in shares in listed companies (excluding Horizon, which is consolidated for accounting purposes) acquired principally for the purpose of selling in the short term, i.e. are held for trading.

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8.6.7 Property, plant and equipment, exploration and evaluation assets and development and mineral property assets

The carrying value of Panoramic's property, plant and equipment, exploration and evaluation assets and mine property assets at 30 June 2019 was $171.5 million. Of this total amount, $142.5 million related to the Savannah Project.

Exploration and evaluation expenditure, mine development expenditure and development and mineral properties expenditure are capitalised to the extent they are expected to be recouped through successful development and exploitation of the area or, alternatively, by its sale.

8.6.8 Borrowings

On 20 September 2018, Panoramic executed the SFA with Macquarie for a project loan of up to $40 million (including executing a Master International Swaps Derivatives Association Agreement **(ISDA)** to undertake mandatory commodity and AUD:USD foreign currency hedging).

In March 2019, the SFA was amended in response to the slower than expected ramp-up in production from the Savannah orebody and lower metal prices. The first loan repayment, originally scheduled for 31 March 2020, was deferred to 30 June 2020 without changing the repayment end date of 31 December 2021. The SFA was also split over two tranches comprising $30 million in senior debt and $10 million in mezzanine debt.

In September 2019, the SFA was restructured again, principally to reduce the loan amount to a total of $20 million, with $20 million being repaid early. The repayment was funded by a pro-rata 2 for 11 rights issue completed in September 2019.

Details of the restructured SFA as at September 2019 are summarised below.

- Debt – Facility A1 (Senior) - $20 million
- Repayment Schedule – Quarterly from September 2020 to March 2022
- Loan Covenants and project ratios – Debt Service Cover Ratio removed
- Minimum Project Liquidity Amount – $7.5 million minimum removed until mid-2020, then one month operating costs
- No additional hedging required - existing hedging rolled to FY2021/22 to match the new loan repayment profile i.e. delivery between September 2020 – March 2022.

On 25 November 2019, Panoramic announced that it had executed a short term $10.5 million unsecured loan with Zeta (**the Zeta Loan**). The key terms of the Zeta Loan are summarised below.

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Table 15: Summary of key terms of the Zeta Loan

Key terms and conditions of the Zeta Loan	
Principal	$10.5 million
Interest rate	5% per annum (increasing to 10% per annum in the event principal not repaid by 31 December 2019)
Security	Unsecured and no financial covenants
Repayment	Earlier of: - Change of control in Panoramic - Last date of shares issued under the Entitlement Offer - An event of default - 30 June 2020
Entitlement Offer	Zeta commits to subscribe for its entitlement under the Entitlement Offer, provided it opens prior to 31 January 2020 and does not exceed $35 million
Set Off	Zeta may elect to set-off monies due under the Entitlement Offer against funds due to be recovered under the Zeta Loan
Establishment Fee	1.0% of the loan amount payable on the loan repayment date (increasing to 1.5% in the event loan not repaid by 31 December 2019).

Source: Panoramic ASX announcement 25 November 2019

Panoramic has advised that it expects that the Zeta Loan will be repaid in full through the Set Off arrangements set out in the table above.

As a consequence of the operational issues encountered by Panoramic in bringing the Savannah Project on stream and as a result of entering into the Zeta Loan, Panoramic has breached various loan covenants under the SFA. Macquarie has provided Panoramic with a waiver in relation to these breaches.

8.7 Statement of cash flows

Panoramic's historical audited consolidated statement of cash flows for each of FY17, FY18 and FY19 are summarised below.

Table 16: Panoramic's historical consolidated statement of cash flows

$'000	Audited 12 months 30 Jun 17	Audited 12 months 30 Jun 18	Audited 12 months 30 Jun 19
Cash flows from operating activities			
Receipts from customers (incl. GST)	8,782	1,305	24,289
Payments to suppliers and employees (incl. GST)	(16,098)	(7,732)	(31,248)
Interest paid	(53)	(22)	(732)
Payments for exploration and evaluation expenditure	(493)	(487)	(671)
Net cash used in operating activities	**(7,862)**	**(6,936)**	**(8,362)**
Cash flows from investing activities			
Payments for property, plant and equipment	(249)	(1,209)	(25,732)
Payments for available-for-sale financial assets	-	(81)	-
Payments for purchase of financial assets at fair value through profit or loss	-	-	(53)
Payment for development costs	(265)	(2,697)	(47,529)
Exploration and evaluation expenditure	(4,955)	(4,297)	(5,961)
Proceeds from disposal of subsidiary (net of cost)	-	-	14,285
Return of proceeds from cash backed performance bonds	-	500	1,122

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S'000	Audited 12 months 30 Jun 17	Audited 12 months 30 Jun 18	Audited 12 months 30 Jun 19
Proceeds from sale of property, plant and equipment	693	55	-
Proceeds from sale of financial assets at fair value through profit or loss	-	-	286
Interest received	557	467	451
Net cash from investing activities	**(4,219)**	**(7,262)**	**(63,131)**
Cash flows from financing activities			
Proceeds from issue of shares (net of cost)	-	19,816	21,249
Proceeds from disposal of subsidiary (net of cost)	14,055	-	-
Proceeds from borrowings	-	-	40,000
Repayment of borrowings	(761)	(838)	(1,453)
Capitalised borrowing costs	-	-	(1,000)
Net cash from financing activities	**13,294**	**18,978**	**58,796**
Net increase/ (decrease) in cash and cash equivalents	**1,213**	**4,780**	**(12,697)**
Cash and cash equivalents at the beginning of the period	19,437	20,650	25,430
Cash and cash equivalents at the end of the period	**20,650**	**25,430**	**12,733**

Source: FY18 and FY19 Annual Reports

We note the following in relation to Panoramic's recent statement of consolidated cash flow:

- In FY19, Panoramic raised capital of $61.2 million (comprised of $21.2 million of equity, $40.0 million of borrowings) and sold the Lanfranchi Project for a total consideration of $15.1 million (before costs) in order to fund the re-start of the Savannah Project
- Panoramic's cash and cash equivalents decreased from $25.4 million as at 30 June 2018 to $12.7 million as at 30 June 2019, principally as a result of costs associated with the re-commissioning of the Savannah Project.

8.7.1 Deferred tax assets

As at 30 June 2019, Panoramic had unused revenues tax losses of $173.7 million, representing a potential tax benefit of $51.8 million. Until such time as the Savannah Project is generating sustainable taxable income, this asset is not being recognised by Panoramic in its financial position.

Overall, Panoramic had an unrecognised net deferred tax asset of $48.0 million as at 30 June 2019.

8.8 Commitments

As at 30 June 2019, Panoramic had operating lease commitments of $12.1 million and finance lease commitments of $6.7 million. In addition, Panoramic had capital expenditure contracted for in respect of mineral tenements, totalling $20.5 million.

Panoramic's key commitments as at 30 June 2019 are summarised in the table below.

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Table 17: Panoramic's commitments as at 30 June 2019

$'000	Mineral tenements expenditure	Finance leases	Operating leases
Within one year	2,130	1,685	2,678
Later than one but not later than five years	4,975	5,053	6,152
Later than five years	13,434	-	3,305
Total commitment	**20,539**	**6,738**	**12,135**

Source: FY19 Annual Report

8.9 Board of Directors

The current Directors of Panoramic are set out below.

Table 18: Panoramic's Board of Directors

Board member	
Peter Sullivan Non-Executive Chairman of the Board	**Victor Rajasooriar** Managing Director, Chief Executive Officer
Nicholas Cernotta Non-Executive Director	**Rebecca Hayward** Non-Executive Director
Gillian Swaby Non-Executive Director	

Source: Bidder's Statement, FY19 Annual Report

Further details in relation to the experience and other directorships of the Directors of Panoramic are set out in Section 4.2 of the Target's Statement and on pages 24 to 36 of the FY19 Annual Report.

8.10 Share capital and ownership

As at 9 December 2019, Panoramic had approximately 654.2 million ordinary shares on issue[24] and its substantial shareholders so far as known to Panoramic based on publicly available information were as set out in the table below.

Table 19: Panoramic's substantial shareholders as at 9 December 2019

Substantial shareholder	Interest in Panoramic shares	Voting power in Panoramic
Zeta Resources Limited	230,106,528	35.17%

Source: Target's Statement

[24] Following the completion of the remainder of Entitlement Offer, Panoramic's issued capital is expected to increase to approximately 763.2 million shares.

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8.11 Entitlement Offer

On 5 December 2019, Panoramic announced the Entitlement Offer, comprising a conditionally underwritten 1 for 6 accelerated pro-rata non-renounceable entitlement offer to raise approximately $31 million, net of costs.

Shares under the Entitlement Offer are offered at $0.30 per new Panoramic Share. The maximum number of new Panoramic Shares that may be issued under the Entitlement Offer is 109,039,285 new Panoramic shares to raise up to approximately $32.7 million (before costs), based on Panoramic's current capital structure.

The proceeds of the Entitlement Offer will be used to repay the Zeta Loan and meet Panoramic's working capital requirements as it progresses the development of Savannah North and implementation of the plan outlined in the Operational Review announced on 4 December 2019.

The accelerated (institutional) component of the Entitlement Offer settled on 16 December 2019 and raised approximately $3.9 million from subscriptions for new Panoramic shares. IGO declined to participate in the Entitlement Offer. Zeta has committed to participate for its full rights (subject to applicable laws and partially as a set off against the Zeta Loan). Zeta will be settling in the retail component of the Entitlement Offer.

As at the date of this report, IGO has not confirmed whether it will seek to vary the Offer so that it extends to the new Panoramic shares issued under the Entitlement Offer. Shares issued under the Entitlement Offer therefore trade under the separate ASX ticker 'PANND"

8.12 Options

There are currently no options issued over ordinary shares in Panoramic.

8.13 Performance rights

Panoramic shareholders approved an Employee Share Plan (**ESP**) on 21 November 2018. Under the ESP, senior executives and senior managers are able to be granted options and performance rights.

There are currently performance rights on issue.

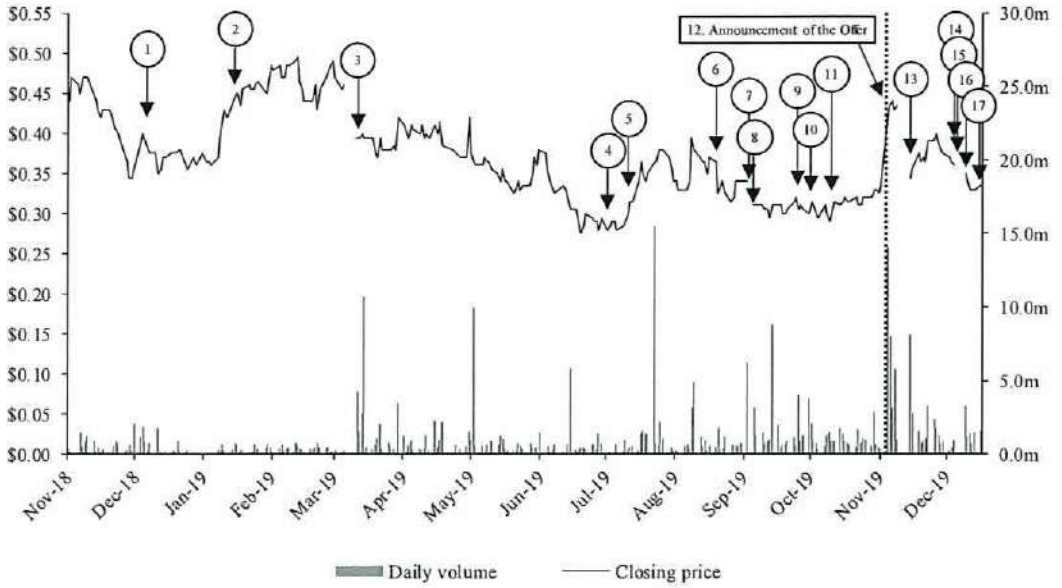
8.14 Share trading history

8.14.1 Recent trading in ordinary shares

The chart below depicts Panoramic's daily closing price on the ASX over the 12 month period to 1 November 2019, being the last trading day prior to the announcement date, and for the period subsequent to that date to 16 December 2019, along with the daily volume of shares traded on the ASX and Chi-X over the period.

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Figure 4: Panoramic daily close price and volume traded on the ASX and Chi-X



Source: IRESS, KPMG Corporate Finance Analysis and ASX announcements
Note: Gaps in the closing price indicate a trading halt over that period.

As illustrated in the figure above, Panoramic's share price prior to the Offer displayed a degree of volatility, but generally trended down over the period with a closing high of $0.495 per share on 12 February 2019 and a closing low of $0.275 per share on 19 June 2019. Panoramic's shares closed at $0.335 on 1 November 2019, being the last trading day prior to the announcement of the Offer.

Other than normal full year financial reporting and quarterly activities reporting, announcements made by Panoramic identified on the ASX website as being price sensitive since 1 November 2018 include:

1 6 December 2018: Panoramic announced the completion of the settlement on the sale of Lanfranchi Project to Black Mountain Metals for a total cash consideration of $15.1 million

2 15 January 2019: Panoramic announced that the first shipment of Savannah concentrates scheduled for early February 2019

3 11 March 2019: Panoramic announced a placement raising $5.0 million, together with a fully underwritten 1 for 13 pro-rata renounceable entitlement offer raising $14.8 million to provide additional funds to meet liquidity requirements under the SFA with Macquarie due to slow ramp-up of production from the Savannah Project. The offer price of $0.38 per new share represented a 17.4% discount on the last closing price of $0.46

4 2 July 2019: Panoramic announced the signing of a binding Letter Agreement with Benton to sell all of the shares in Panoramic PGMs for a total consideration of C$9.0 million

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5 11 July 2019: Panoramic announced preliminary June 2019 quarterly statistics detailing increases compared to the previous quarter in development (up 38%), ore milled (up 15%), metallurgical recoveries (nickel recovery up 19%), metal production (nickel up 64%) and concentrate shipped (up 68%)

6 20 August 2019: Panoramic announced that Managing Director, Peter Harold, would leave the company. His last date of employment would be on 19 August 2020

7 3 September 2019: Panoramic provided an operational update on the Savannah Project, announcing below budget production from the remnant orebody for July 2019 and August 2019 and further amendments to the SFA including debt reduction of $20 million and adjustments to the repayment schedule and liquidity requirements

8 5 September 2019: Panoramic announced a fully underwritten 2 for 11 pro-rata renounceable entitlement offer of ordinary shares to raise $28.2 million to provide funds primarily to pay back $20 million of the SFA and provide additional working capital for the Savannah Project

9 25 September 2019: Panoramic advised the abovementioned entitlement offer closed on 23 September, with a total of 100.7 million new Panoramic shares issued pursuant to the offer. Morgans Corporate Limited took up the shortfall of $5.3 million

10 30 September 2019: Panoramic announced the Group's Annual Mineral Resources and Ore Reserves as at 30 June 2019. Nickel, copper and cobalt decreased between FY18 and FY19 as a result of the resumption of mining at Savannah and the sale of the Lanfranchi Project in December 2018. There were no changes to the PGM Mineral Resources since FY18

11 10 October 2019: Panoramic provided an operational update on infill drilling activities at the Savannah North orebody, including "better than expected" drilling results, and confirming access development across to the Savannah North orebody remained on track for first development ore by November 2019

12 4 November 2019: IGO announced its intention to make an off-market takeover offer to acquire all of the ordinary shares of Panoramic that it did not already own. Panoramic issued a response recommending shareholders take no action in relation to the Offer

13 14 November 2019: Panoramic provided an update on the Offer, advising that the previous FY2020 production guidance would not be met and announcing an operational review of the Savannah Project, with the objectives of stabilising and improving short term performance, optimising the Savannah North development plans and identifying options to enhance profitability. Further, the Board advised that, as a result of below-budget performance, there was a need to raise addition funds to maintain an appropriate working capital position, and that the most likely approach would be in the form of an entitlement offer of ordinary shares

14 4 December 2019: Panoramic advised that it had accessed first development ore from Savannah North, and announced the results of the above mentioned operational review, including an updated LOM schedule showing "modest reductions" in forecast ore tonnes and nickel grade relative to the Feasibility Study, and an AISC broadly in line with the Feasibility Study

15 5 December 2019: Panoramic announced the Entitlement Offer, at an offer price of 30 cents.

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16 9 December 2019: Panoramic announced the completion of the institutional component of the Entitlement Offer, with take-up of approximately 61%, and released the Retail Offer Booklet, the Record Date for eligible retail shareholders being 4pm Perth time on that day. The Target's Statement was also released on this date, reaffirming the Directors' recommendation that shareholders reject the Offer.

17 16 December 2019: Panoramic announced the Independent Expert's Report is expected to be received by 23 December 2019, stating the Board will reconsider its recommendation to shareholders at this time.

Further details in relation to all announcements made by Panoramic to the ASX can be obtained from either Panoramic's website at www.panoramicresources.com or the ASX's website at www.asx.com.au.

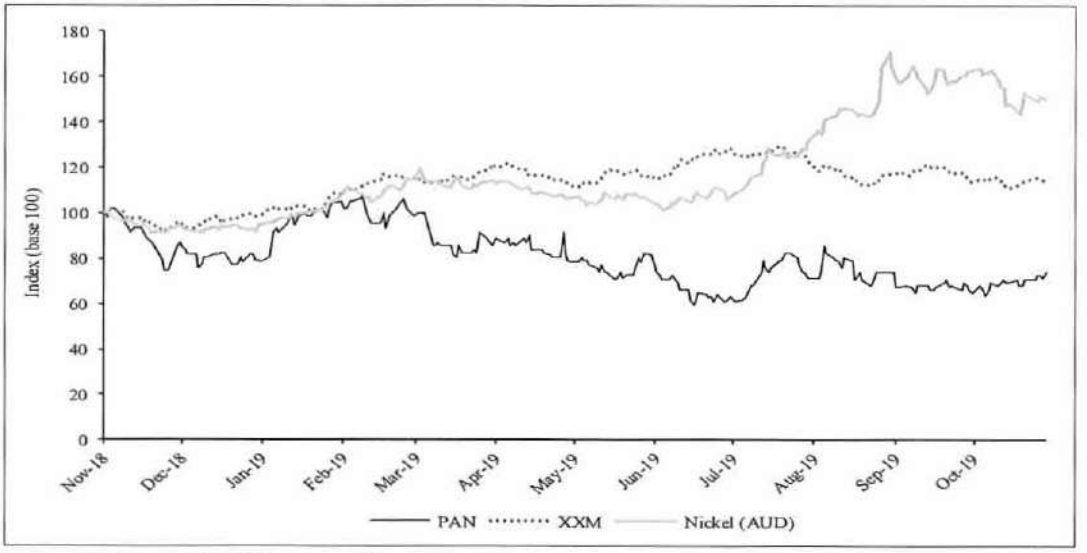
8.14.2 Relative share price performance

As illustrated in the figure below, Panoramic's share price generally underperformed against both the S&P/ASX 300 Metals & Mining Index (**XMM**) and the AUD nickel price over the 12 months to 1 November 2019, being the last trading date prior to the announcement of the Offer, which likely reflects negative market sentiment to:

- the delays in ramping-up the Savannah Project and in the development of the Savannah North ore body, along with disappointing associated financial outcomes
- Panoramic's recent need to raise additional capital on more than one occasion.

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Figure 5: Panoramic's performance relative to ASX 300 Metals & Mining Index and AUD nickel prices



Source: IRESS and KPMG Corporate Finance Analysis

8.14.3 Trading liquidity on the ASX

An analysis of volume of trading in Panoramic's shares over various periods in the 12 months to 1 November 2019, being the last trading day prior to Panoramic's announcement of the Offer, is set out in the table below.

Table 20: Trading liquidity in Panoramic shares pre-announcement of the Offer

Period up to and including 1 Nov 19	Price (low)[1] $	Price (high)[1] $	Price VWAP $	Cumulative value $m	Cumulative volume m	% of issued capital[2]
1 day	0.325	0.335	0.322	0.13	0.39	0.1%
1 week	0.315	0.350	0.325	1.62	4.97	0.8%
1 month	0.285	0.350	0.307	7.00	22.81	3.5%
3 months	0.285	0.415	0.316	27.03	85.58	14.5%
6 months	0.275	0.415	0.322	49.32	153.01	26.8%
12 months	0.275	0.500	0.347	82.14	236.80	44.2%

Source: IRESS, Capital IQ and KPMG Corporate Finance Analysis

Notes:

1 *Share price data represents intra-day trading rather than closing prices*

2 *Note: percentage of issued capital is the cumulative volume traded over the period divided by the weighted average number of shares on issue over that period.*

Panoramic shares exhibited moderate liquidity over the 12 month period to 1 November 2019, with an average of approximately 0.15% of issued capital traded per day, with a daily value of approximately

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$0.3 million. Over this period, Panoramic shares were traded on all available trading days on the ASX other than when under a trading halt pending a market sensitive announcement.

An analysis of the volume of trading in Panoramic's shares in the period from 2 November 2019 to 16 December 2019 inclusive is set out below, over which Panoramic shares were traded on 26 days.

Table 21: Trading liquidity in Panoramic shares post-announcement of the Offer

Period from 2 November 2019 to 16 December 2019 incl.	Price (low)[1] $	Price (high)[1] $	Price VWAP $	Cumulative value $m	Cumulative volume m	% of issued capital[2]
45 days	0.310	0.460	0.388	26.93	69.34	10.6%

Notes:

1 *Share price data represents intra-day trading rather than closing prices*

2 *Note: percentage of issued capital is the cumulative volume traded over the period divided by the weighted average number of shares on issue over that period.*

9 Profile of IGO

9.1 Company overview

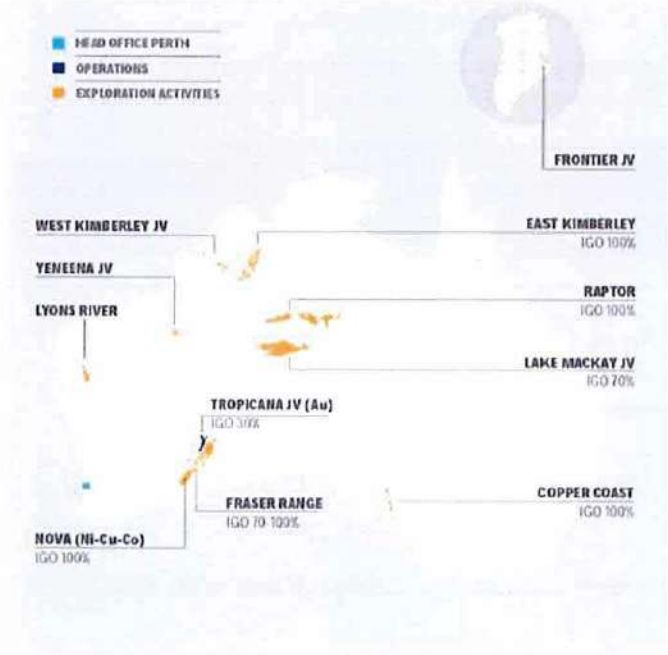
IGO is a mineral exploration and mining company listed on the securities exchange of the ASX. IGO's principal assets comprise:

- its 100% owned Nova nickel-copper-cobalt project located in the Fraser Range, Western Australia, approximately 160km east-northeast of Norseman, 360km southeast of Kalgoorlie and 380km from the Port of Esperance
- a 30% non-operating joint venture interest in the Tropicana gold production assets located on the western edge of the Great Victoria Desert, Western Australia.

The Company also manages – through direct ownership and through joint venture - various exploration projects in Western Australia, the Northern Territory, South Australia, Queensland and in Greenland.

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Figure 6: IGO Key Operations and Projects



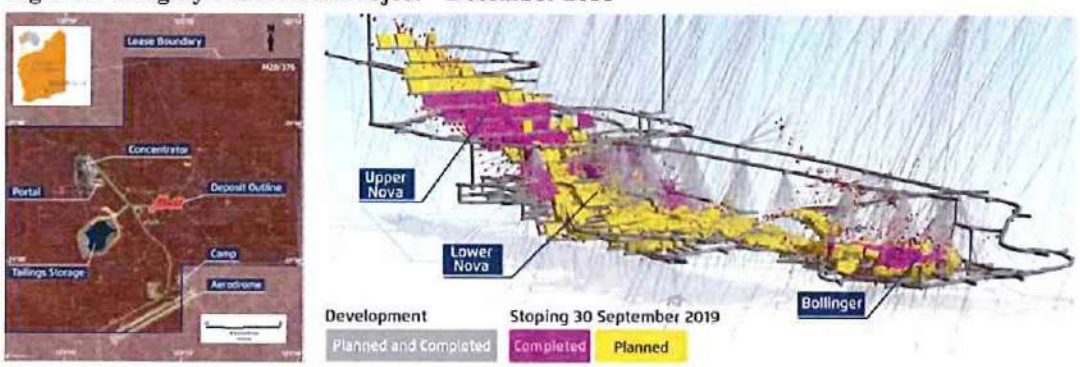
Source: IGO FY19 Annual Report

9.2 The Nova Project

The Nova Project, comprising the Nova and Bollinger deposits, was discovered in July 2012 and approved by the Department of Mines and Petroleum in November 2014. IGO acquired the Nova Project, then a development stage asset, through the acquisition of Sirius Resources NL in September 2015.

Commercial production commenced in July 2017 and the operation reached nameplate production in the September 2017 quarter. The Nova Project currently has an expected mine life of at least 7 years.

Figure 7: Imagery of the Nova Project – December 2018



Source: IGO Annual mineral Resource and Ore Reserve Statement, 20 February 2019. IGO AGM presentation, 20 November 2019

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9.2.1 Operational Scorecard and Outlook

Recent summary operating statistics, results and guidance published by IGO in relation to the Nova Project are set out below.

Table 22: Nova Project Operating Statistics, Results and Guidance

	Unit	FY17 results	FY18 results	FY19 results	FY20 guidance
Nickel in concentrate production	t	3,502	22,258	30,708	27,000 – 30,000
Copper in concentrate production	t	2,106	9,545	13,693	11,000 – 12,500
Cobalt in concentrate production	t	112	740	1,090	850 - 950
Cash cost (payable) [1]	$/Ni lb	-	2.78	2.07	2.00 – 2.50
Sustaining capex[1]	$M	-	5.7	11.2	24 - 26
Development capex[1]	$M	-	53.9	23.0	6 - 8

Source: IGO FY19, FY18 and FY17 Annual Reports

Note 1: Actual result not reported by IGO for FY17 due to extended period of "pre-production" costs and revenue

In FY19, the Nova Project produced 30.7kt of nickel (exceeding previous full year guidance of 27-30kt by 2.4%), 13.7kt copper and 1.1kt cobalt, at a cash cost of $2.07/lb of payable nickel. FY20 guidance has been set at 27-30kt of nickel, 1-12.5kt copper and 0.85-0.95kt cobalt, at a cash cost of $2.00-$2.50/lb of payable nickel.

The rate of mine development declined over FY19 as jumbo crews reduced from three in the first quarter to two for the remainder of the year. The majority of capital development and resource definition drilling has been completed for the life-of-mine, with development requirements now essentially only for maintenance of ore production.

Mining has entered the highest-grade parts of the ore bodies with a resulting uplift in mined grades during FY19. The paste fill plant was modified to increase capacity in line with future production scenarios.

During FY19 IGO's mining contract with Barminco, a business unit of diversified mining services company Perenti Global Limited, was extended for a further six years, to mid-2024.

The Nova Project processing plant is currently constrained by ore grades in the flotation section of the plant, with concentrate filtration capacity being closely matched to the flotation section.

IGO has reported that borefields continue to have excess capacity, however dissolved iron and manganese in some bores has caused difficulties in the reverse osmosis plant. The tailings storage facility continues to be used as a water storage dam and water efficiency projects continue to reduce the requirements from the borefields. Electric power is provided by Zenith Pacific's 20 megawatt (**MW**) power station.

In May 2019, Zenith Pacific began site construction on a 6.7MW solar power station, with first power expected in the December quarter of FY20. The Nova solar project is a fully integrated commercial hybrid diesel-solar facility. It is expected the hybrid energy solution will reduce costs and carbon footprint, with approximately 15-20% of the Nova Project's total energy requirements to be provided by solar energy.

In the September quarter of FY20, the Nova Project produced 7.7kt tonnes of nickel, 3.5kt copper and 0.3kt cobalt, at a cash cost of $2.59/lb of payable nickel. IGO noted that the increase in cash costs

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(payable) during the September FY20 quarter was principally due to higher notional royalties as a result of high metal prices and lower capitalised lateral development.

On 1 November 2019, IGO announced that following the conclusion of parallel work streams comprising:

- a competitive tender process to replace existing nickel concentrate contracts with Glencore International AG and BHP, which are due to expire in December 2019 and June 2020 respectively
- a Downstream Nickel Sulphate Pre-Feasibility Study (**Downstream PFS**),

IGO had determined that of the two options, entering into traditional concentrate offtake agreements was likely to result in an increased return to IGO shareholders. As a consequence, a binding concentrate off-take agreement for a three-year term has been executed with Trafigura Pte Ltd for 50% of nickel concentrate and for 100% of copper concentrate. An offtake term sheet with BHP Billiton Nickel West Pty Ltd (**BBNW**) for an additional 50% of the nickel volume for a period of five years has also been executed, with the parties agreeing key commercial terms subject to the completion of the formal agreement within one month of the date of the term sheet (which formal agreement will be based on the current off-take agreement with BBNW and all necessary internal approvals of both parties).

IGO has reported that whilst the terms of the new agreements are commercial-in-confidence, the agreed commercial terms are materially better than the expiring off-take agreements.

9.2.2 Ore Reserves and Mineral Resources

The Nova Project's Mineral Resources and Ore Reserves were updated as at 31 December 2018 utilising updated information from final grade control and minor extensional drilling information, as well as updated metal pricing, as the basis for the current mine plan.

A summary of the Ore Reserves and Mineral Resources contained within the Nova Project deposit area as at 31 December 2018 is set out below.

Table 23: Ore Reserves and Mineral Resources as at 31 December 2018

Deposit	Category	Mass (Mt)	Ni (%)	Cu (%)	Co (%)	Ni (kt)	Cu (kt)	Co (kt)
Mineral Resources								
	Measured	12.6	2.1	0.8	0.07	263	104	9
	Indicated	0.6	1.0	0.4	0.04	6	2	0.2
	Inferred	0.04	1.9	0.7	0.06	1	0.2	<0.1
Total Mineral Resources		**13.2**	**2.0**	**0.8**	**0.07**	**270**	**107**	**9**
Ore Reserves								
	Proved	11.4	1.91	0.76	0.06	216	87	7
	Probable	0.2	1.26	0.46	0.04	2	1	<0.1
Total Ore Reserves		**11.5**	**1.90**	**0.76**	**0.06**	**219**	**87**	**7**

Source: 2019 Annual report, ASX announcement 20 February 2019 "Annual Mineral Resource and Ore Reserve Statement"

Notes:

1 Mineral Resources are inclusive of Ore Reserves

2 Mineral Resources and Ore Reserves are inclusive of stockpiles

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3 *Ore Reserve and Mineral Resource figures have been reported in compliance with the JORC code and were approved for release in the form and context in which they appear by a Competent Person, as defined by the JORC code*

4 *Amounts may not add exactly due to rounding*

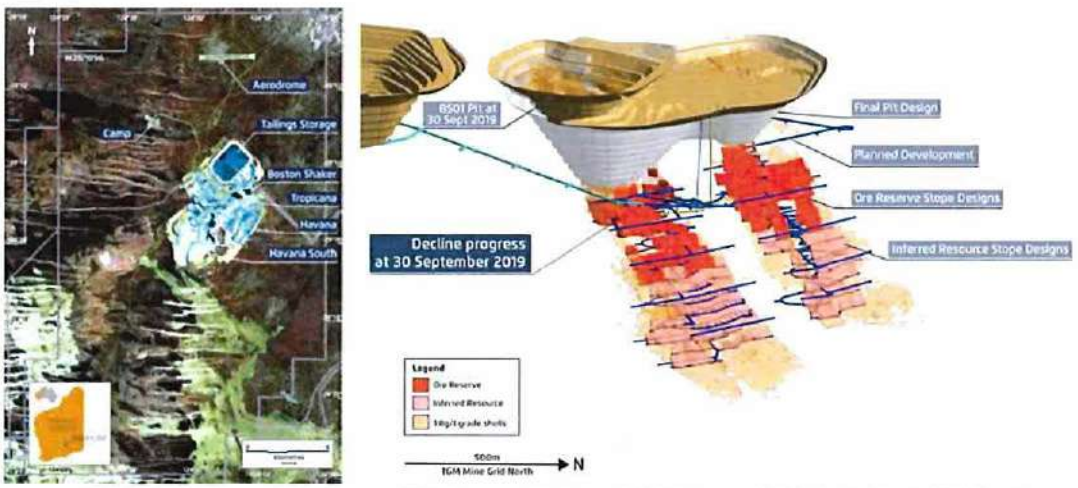
9.3 Tropicana Joint Venture

IGO has a 30% non-operating joint venture interest in the Tropicana gold mine located on the western edge of the Great Victoria Desert, Western Australia. AngloGold Ashanti Australia (**AGAA**) holds 70% and is the operational manager.

IGO targeted and pegged the area containing the current ore reserves in 2001. AGAA farmed into the project immediately after IGO listed on the ASX in 2002, discovering the Tropicana, Havana and Boston Shaker gold deposits in 2005, 2006 and 2010 respectively.

The decision to develop the Tropicana operation was announced in November 2010 following completion of a positive Bankable Feasibility Study. Mining of the Havana deposit commenced in 2012 and first gold was produced in September 2013. To date, the Tropicana gold mine has produced more than 2.8Moz of gold.

Figure 8: Imagery of the Tropicana gold mine – December 2018



Source: IGO Annual Mineral Resource and Ore Reserve Statement, 20 February 2019. September 2019 Quarter Presentation, 22 October 2019.

Mining comprises open pit contract mining with production from up to four contiguous pits extending some 5km in strike length. During FY19, 35.3 million bank cubic metres (**bcm**) were mined, comprising of 14.7Mt of ore and 75.9Mt of waste. The mining strategy at Tropicana uses a phased approach with multiple cut-backs and in pit dumping of waste to minimise waste haulage distances.

Processing comprises conventional crushing, grinding and carbon-in-leach recovery. FY19 mill throughput was 8.2Mt, at an average grade of 2.2g/t. Construction and installation of a second 6MW ball

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mill was completed in October 2018, with the project commissioned in December 2018, enabling the processing throughput rate to be increased by about 5%.

9.3.1 Operational Scorecard and Outlook

Summary operating statistics, results and guidance published by IGO in relation to the Tropicana gold mine are set out below.

Table 24: Tropicana Operating Statistics, Results and Guidance

	Unit	FY17 results	FY18 results	FY19 results	FY20 guidance
Gold produced (100%)	'000 oz	431.6	467.1	518.2	450 - 500
Gold sold (IGO 30%)	'000 oz	128.6	138.7	154.4	135 - 150
Cash Cost	$/oz Au	817	713	680	700 - 780
AISC	$/oz Au	1,162	1,061	951	1,090 – 1,210
Sustaining and improvement capex (30%)	$M	9.7	14.3	15.5	13 - 15
Capitalised waste stripping (30%)	$M	39.9	43.4	36.1	42 - 47
Underground capex (30%)	$M	-	-	2.0	26 - 29

Source: IGO FY19, FY18 and FY17 Annual Reports

Note: AISC comprises cash costs and capitalised sustaining deferred waste stripping costs, sustaining exploration costs, sustaining capital and non-cash rehabilitation accretion costs. AISC excludes improvement capital expenditure and greenfields exploration expenditure.

Gold recovery in FY19 was 89.4%, with gold production of 518.2 koz (100% basis), at a cash cost of $680/oz and an AISC of $951/oz.

In the September quarter of FY20, Tropicana produced 123.3koz of gold (FY20 full year guidance has been set at 450-500koz of gold), at a cash cost of $741/oz and an AISC of $1,066/oz. IGO noted that September quarter FY20 cash costs were consistent with full year guidance and AISC was better than FY20 guidance. Gold recoveries were in line with the prior quarter, while quarter on quarter production was lower as a result of lower milled grade of 1.9g/t (4Q19 2.2g/t).

On 28 March 2019, the Tropicana JV announced commitment to the development of the Boston Shaker Underground mine (**Boston Shaker**). Development of Boston Shaker commenced in May 2019 at an estimated capital cost of $105 million (including contingency). Based on a mining rate of approximately 1.1Mtpa at estimated grades of 3.5g/t gold, Boston Shaker is expected to produce approximately 100,000oz of gold per annum over a seven year period, with first gold in the September 2020 quarter.

Macmahon Holdings is the current open pit mining contractor at Tropicana and has been appointed as the underground mining contractor.

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9.3.2 Tropicana JV Ore Reserve and Mineral Resources

A summary of the Ore Reserve and Mineral Resources at the Tropicana gold mine (100% basis) as at 31 December 2018 is set out below.

Table 25: Ore Reserves and Mineral Resources as at 31 December 2018 (100% basis)

Deposit	Category	Mass (Mt)	Au (g/t)	Au (koz)
Mineral Resources				
Open pit	Measured	6.5	1.29	270
	Indicated	75.5	1.50	3,640
	Inferred	5.6	1.31	240
Underground	Measured	-	-	-
	Indicated	8.5	4.11	1,120
	Inferred	12.4	4.36	1,730
Stockpiles	Measured	27.8	0.79	700
Total	Measured	34.3	0.88	970
	Indicated	84.0	1.76	4,760
	Inferred	17.9	3.41	1,970
		136.2	**1.76**	**7,700**
Ore Reserves				
Open Pit	Proved	4.2	1.68	230
	Probable	43.2	1.94	2,690
Underground	Proved	-	-	-
	Probable	2.7	3.65	320
Stockpiles	Proved	15.5	1.01	500
Total	Proved	19.8	1.15	730
	Probable	45.9	2.04	3,010
Total Ore Reserves		**65.7**	**1.77**	**3,740**

Source: 2019 Annual report, ASX announcement 20 February 2019 "Annual Mineral Resource and Ore Reserve Statement"

Notes:

1 *Mineral Resources are inclusive of Ore Reserves*

2 *Ore Reserve and Mineral Resource figures have been reported in compliance with the JORC Code and were approved for release in the form and context in which they appear by a Competent Person, as defined by the JORC code*

3 *Amounts may not add exactly to due to rounding*

9.4 Exploration

In addition to undertaking near mine brownfields exploration activities at the Nova Project and Tropicana, IGO also manages – through direct ownership and through joint venture - various exploration projects in Western Australia, the Northern Territory, South Australia, Queensland and in Greenland.

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Table 26: IGO greenfield exploration activities

Project	Commodity	Activities
Fraser Range Project (various partnerships)	Ni, Cu & Co	• Regional geochemical sampling, geophysical surveying and drilling. • Regional aircore drilling and geophysical programs have identified numerous anomalous results requiring reverse circulation (**RC**) and/or diamond drill testing.
Lake Mackay JV (70%)	Cu, Au, Ni, Co	• Unexplored mineral province in the Northern Territory. • Regional geochemical sampling, airborne and ground electromagnetic surveys and drilling have identified several new mineralised prospects
West Kimberley JV (up to 80%)	Ni, Cu, Co	• New belt-scale project targeting magmatic Ni-Cu-Co. • Airborne electromagnetic survey completed. • Regional aeromagnetic and radiometric survey, prospect scale geophysics, geological mapping surface sampling and drilling planned.
Raptor Project (100%)	Ni, Cu, Co	• New belt-scale project targeting Ni-Cu-Co sulphides along the Willowra Gravity Ridge, Northern Territory. • Regional aeromagnetic and radiometric surveys undertaken, and additional surveys planned.
Yeneena JV Option (up to 70%)	Cu, Co	• New sediment-hosted Cu-Co project with existing prospects in the Paterson Province, Western Australia.
Frontier Project, Greenland (up to 80%)	Cu, Co	• Earn-in/JV Option on belt-scale project targeting Zambia-style Cu-Co. • Traverse mapping and sampling of prospective domains underway.
Other		• Other early-stage opportunities across Australia include lithium exploration along the eastern margin of the Carnarvon Basin at the Lyons River project, and copper exploration along the Torrens Hinge Zone within the Stuart Shelf, South Australia known as the Copper Coast Project. • In addition, IGO is also involved in two early-stage gold JVs with Moho Resources Limited (**Moho**) – the Empress Springs project in the historically significant Croydon Goldfield in north QLD, and the Burracoppin Project in southwest WA. Moho is the project manager.

Source: 2019 Annual report, ASX announcement 20 February 2019 "Annual Mineral Resource and Ore Reserve Statement"

IGO has indicated that $66 million is expected to be spent on exploration activities in FY20, with $26m to be spent in the immediate area of the Nova Project, $24 million in the surrounding Fraser Range and $3m at Tropicana[25], the majority of which will be spent on drilling activities.

Further detailed discussion in relation to IGO's mineral production, development and exploration assets is contained in the Bidder's Statement, IGO's FY19 Annual Report and its Calendar Year 2018 Annual Mineral Resource and Ore Reserve Statement, each of which has been lodged by IGO with ASX.

[25] IGO presentation to Australian Nickel Conference 15 October 2019

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9.5 Historical financial performance

IGO's historical audited consolidated financial performance for each of the financial years ended 30 June 2017, 2018 and 2019 are summarised below.

Table 27: IGO's historical consolidated financial performance

S'000	Audited 12 months ended 30 Jun 17	Audited 12 months ended 30 Jun 18	Audited 12 months ended 30 Jun 19
Revenue from continuing operations	421,926	777,946	784,512
Other income	-	2,689	8,377
Mining, development and processing costs	(146,135)	(241,302)	(262,851)
Employee benefits expense	(64,740)	(88,795)	(53,234)
Share based payments expense	(1,147)	(3,267)	(3,123)
Fair value of movement in financial investments	4,343	231	(6,915)
Depreciation and amortisation expense	(89,773)	(252,133)	(237,118)
Exploration and evaluation	(21,244)	(38,926)	(57,317)
Royalty expense	(14,391)	(30,489)	(30,506)
Ore tolling expense	(9,606)	(8,776)	(57)
Shipping and wharfage costs	(12,092)	(19,787)	(18,340)
Borrowing and finance expense	(1,258)	(10,699)	(6,638)
Impairment of exploration and evaluation expense	(24,891)	-	-
Impairment of other assets	(135)	-	-
Acquisition and integration costs	(3,910)	-	-
Other expenses	(10,530)	(7,626)	(11,342)
Profit before tax	**26,417**	**79,066**	**105,448**
Income tax (expense)/benefit	(9,406)	(26,380)	(29,363)
Profit after tax for the period	**17,011**	**52,686**	**76,085**
Other comprehensive income			
Items that may be reclassified to profit or loss			
Effective portion of changes in fair value of cash flow hedges, net of tax	241	1,784	(1,054)
Exchange differences on translation of foreign operations	4	42	(27)
Other comprehensive (loss)/income, net of tax	**245**	**1,826**	**(1,081)**
Profit attributable to the members of IGO	**17,256**	**54,512**	**75,004**
Weighted average ordinary shares on issue (m)	*580.42*	*586.81*	*590.34*
Adjustments for share rights (m)	*1.33*	*2.26*	*2.52*
Diluted weighted average ordinary shares on issue (m)	*581.76*	*589.07*	*592.86*
Basic earnings per share (EPS)[1] (cents)	*2.93*	*8.98*	*12.89*
Diluted earnings per share[1] (cents)	*2.92*	*8.94*	*12.84*
Dividend per share (cents)	*2.0*	*3.0*	*10.0*
Dividend payout ratio[2]	*68.3%*	*33.4%*	*77.6%*
Franking[3]	*100*	*100*	*97.6*

Source: FY18, FY19 Annual Reports, Bidder's Statement, KPMG Corporate Finance analysis

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Notes:

1 *Profit used in calculating basic and diluted earnings per share is FY17: $17.011m, FY18:$52.686m, FY19:$76.085m*
2 *Dividend payout ratio calculated as dividend per share divided by basic earnings per share*
3 *Franking for FY19 based on a weighted average of the interim dividend of 2.0 cents per share fully franked and the final dividend of 8.0 cents per share franked to 97%*
4 *Amounts may not add exactly due to rounding*

We note that IGO's financial performance and earnings per share have shown a strong positive trend over the period considered, with profits attributable to the members of IGO, net of tax increasing from $17.3m in FY17 to $75.0m in FY19, over the same period basic earnings per share have increased from 2.93 cents to 12.89 cents.

9.5.1 FY17

IGO's FY17 results reflect:

- the progressive ramp-up of mining and processing operations at the Nova Project towards nameplate production capacity. Commercial production was declared with effect from 1 July 2017. The Nova operations reported a net operating segment loss before tax of $0.8m
- a contribution by the Tropicana and previously held Jaguar operations to segment net operating profit before tax of $58.3 million and $33.5m respectively
- $6.4m of retention and redundancy costs recognised to reflect that IGO's previously held Long Operation had an expected remaining mine life of less than one year. The Long Operation contributed a segment net operating profit of $0.7m
- a $24.4m before tax impairment charge against its previously held Stockman exploration project, reflecting the terms of that project's proposed sale to be completed subsequent to year end.

9.5.2 FY18

IGO's FY18 results reflect:

- the Nova Project's first year of commercial production. Nova recorded sales to external customers of $348.6m (FY17 $nil) and a contribution to segment operating profit before tax of $35.6m (FY17 loss before tax of $0.8m)
- the Tropicana operation's contribution to segment operating profit before tax of $86.3m (2017 $58.3m). Revenue from the Tropicana operation for the period was $240.4m, up 13% on FY17 as a result of higher AUD gold prices and more gold sold. The average AUD gold price achieved throughout the period was $1,729/oz, an increase of $79/oz on FY17. IGO's share of gold refined and sold was 138,748oz, up 8% on the prior year, reflecting higher ore milled, and improved mill feed grades attributed to a grade streaming strategy commenced towards the end of the financial year. Cash costs per ounce produced were $713 (FY17 $817) and AISC per ounce was $1,061 (FY17 1,162)

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- IGO's divestment during the year of its Jaguar operation, which was completed on 31 May 2018, for a total consideration of $73 million. Prior to its divestment, the Jaguar operation had contributed $12.9m to segment net operating profit before tax, on total revenue of $112.1m
- the transition of the Long operation to care and maintenance in June 2018
- a significant increase in depreciation and amortisation charge principally as a result of a charge of $159.8m (FY17 $nil) in respect of Nova.

9.5.3 FY19

IGO's FY19 results reflect:

- a contribution by the Nova Project to segment operating profit before tax of $95.4m (FY18 $35.6m) on total revenue of $501.9m (FY18 $348.8m). Sales of concentrate totalled 22,434t of payable nickel (FY18 14,074t), 12.208t of payable copper (FY18 8,455t) and 372t of payable cobalt ((FY18 217t). Cash costs and AISC of $2.07/lb of payable nickel (FY18 $2.78) and $2.79 (FY18 $4.51) respectively
- The Tropicana operation's contribution to segment operating profit before tax of $97.6m (2018 $86.3m). Revenue from the Tropicana operation for the period was $278.5 million, up 16% on the previous year result of $240.4 million as a result of higher AUD gold prices and more gold sold. The Company's share of gold refined and sold was 154,402oz, up 11% on the prior year, reflecting higher throughput and improved mill feed grades

  Cash costs per ounce produced were $680 (FY17 $713) and AISC per ounce were $951 (FY17 $1,061)
- sale of the Long operation on 31 May 2019
- depreciation and amortisation expense of $237.1 million, down slightly on the previous financial year (FY18: $252.1 million) due to the absence of Jaguar and Long operations, offset by an increase in respect of Tropicana due to higher ore mined during the year.

9.5.4 Dividend policy, payout ratio and franking credits

IGO has an established history of paying dividends and has recently adopted a capital allocation policy that targets a return of 15% to 25% of free cash flow to shareholders in the form of dividends and/or share buybacks. A fully franked interim dividend of 2.0 cents per share and a final dividend of 8.0 cents per share franked to 97% was paid in respect of FY19. Based on a basic EPS figure of 12.89 cents per share, this represents a payout ratio of approximately 77.5%.

Following payment of the final dividend in respect FY19, IGO has no surplus franking credits available for subsequent periods.

9.6 Historical financial position

IGO's historical audited financial position as at each of 30 June 2017, 30 June 2018 and 30 June 2019 are summarised below.

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Table 28: IGO's historical financial position

S'000	Audited 30 Jun 17	Audited 30 Jun 18	Audited 30 Jun 19
Assets			
Cash and cash equivalents	35,763	138,688	348,208
Trade and other receivables	59,383	94,093	47,748
Inventories	63,158	82,487	70,274
Financial assets at fair value through profit and loss	15,348	24,294	27,531
Derivative financial instruments	657	1,990	484
Assets classified as held for sale	31,745	-	-
Total current assets	**206,054**	**341,552**	**494,245**
Receivables	14	29,495	14,988
Inventories	20,077	33,012	52,594
Property, plant and equipment	44,922	35,417	41,622
Mines properties	1,612,919	1,457,688	1,311,376
Exploration and evaluation	73,068	70,493	95,197
Deferred tax assets	251,429	207,271	180,237
Total non-current assets	**2,002,429**	**1,833,376**	**1,696,024**
Total assets	**2,208,483**	**2,174,928**	**2,190,269**
Liabilities			
Trade and other payables	49,052	56,586	49,902
Borrowings	56,226	56,226	56,226
Derivative financial instruments	965	-	-
Provisions	15,259	4,894	5,180
Total current liabilities	**121,502**	**117,706**	**111,308**
Borrowings	140,815	84,589	28,363
Derivative financial instruments	251	-	-
Provisions	73,228	62,168	63,626
Deferred tax liabilities	139,903	131,638	137,912
Total non-current liabilities	**354,197**	**278,395**	**229,901**
Total liabilities	**475,699**	**396,101**	**341,209**
Net assets	**1,732,784**	**1,778,827**	**1,849,060**
Shares on issue (m)	*586.7*	*586.9*	*590.5*
Net asset backing per share ($)	*2.95*	*3.03*	*3.13*
Net tangible asset backing per share[1] ($)	*2.76*	*2.90*	*3.06*
Gearing[2]	*9%*	*0%*	*0%*
Current ratio[3]	*1.8x*	*2.9x*	*4.4x*

Source: FY18 and FY19 Annual Reports and KPMG Corporate Finance analysis

Notes:

1 *Net tangible assets per share exclude the impact of deferred tax assets and liabilities*

2 *Gearing represents net debt divided by total assets, where net debt is total current and non-current borrowings less cash and cash equivalents. Where net debt is less than $nil, gearing has been recorded as zero*

3 *Current ratio represents current assets divided by current liabilities*

4 *Amounts may not add exactly due to rounding*

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9.6.1 Cash and cash equivalents

Cash and cash equivalents increased significantly over the period, largely due to net cash inflow from operations of $277.8m and $373.3m in FY18 and FY19 respectively. In July 2016, the Company also raised net $274m in new equity to secure additional funding to complete the construction of the Nova Project, and the partial repayment of debt. Over the period, IGO repaid a total of $185.3m in borrowings and made cash payments in respect of dividends of $53.0m.

9.6.2 Trade and other receivables

The significant increase in trade and other receivables in FY18 largely reflects amounts outstanding on the sale of the Jaguar Operation in May 2018, with discounted values of the outstanding cash proceeds of $15.5m (FY19 $15.5m) and $29.5m (FY19 $15.0m) shown in current and non-current receivables respectively. IGO has indicated normal trade receivables are generally received up to four months after the shipment date.

9.6.3 Financial assets at fair value through profit and loss

Financial assets at fair value through profit and loss represents IGO's investment in shares in Australian listed companies. IGO classifies financial assets at fair value through profit or loss if they are acquired principally for the purpose of selling in the short term, i.e. are held for trading.

9.6.4 Assets held for sale

Assets held for sale as at 30 June 2017 comprised the Stockman exploration project.

9.6.5 Mine properties

Mine properties comprise capitalised costs, net of amortisation and impairment, in respect of mine properties in development, mine properties in production and deferred stripping. As at 30 June 2019 the net carrying amounts in respect of each of these asset categories were $4.3m, $1,255.5m and $0.5m respectively.

9.6.6 Deferred tax assets

As at 30 June 2019, IGO recognised carry forward revenue losses, with a tax-effected value of $154.4m, within its deferred tax asset balance.

In addition, IGO had a further $14.0m in unrecognised tax-effected revenue losses available, as well as $25.7m of unrecognised tax-effected capital losses.

9.6.7 Borrowings

In July 2015, IGO entered into a Syndicated Facility Agreement (**Facility Agreement**) with National Australia Bank Limited, Australia New Zealand Banking Group Limited and Commonwealth Bank of Australia Limited for a $550m unsecured committed term finance facility comprising: a five year $350m amortising loan facility and a five year $200m revolving loan facility. As at 30 June 2019, the outstanding balance of the Facility Agreement was $85.7m, which expires in September 2020.

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9.7 Statement of cash flows

IGO's historical audited consolidated statement of cash flows for each of FY17, FY18 and FY19 are summarised below.

Table 29: IGO's historical consolidated statement of cash flows

S'000	Audited 12 months ended 30 Jun 17	Audited 12 months ended 30 Jun 18	Audited 12 months ended 30 Jun 19
Cash flows from operating activities			
Receipts from customers	416,375	783,395	841,684
Payments to suppliers and employees (incl. GST)	(323,416)	(457,652)	(426,194)
Interest and other costs of finance paid	-	(7,896)	(4,538)
Interest received	2,201	659	3,973
Payments for exploration activities	(18,022)	(40,729)	(54,123)
Receipts from other operating activities	540	28	11,508
Net cash used in operating activities	**77,678**	**277,805**	**372,310**
Cash flows from investing activities			
Interest and other costs of finance paid	(13,431)	(1,008)	-
Payments for property, plant and equipment	(14,564)	(20,498)	(16,384)
Proceeds from sale of property, plant and equipment and other investments	2,418	198	3,268
Payments for development expenditure	(220,481)	(114,536)	(78,056)
Payments for purchase of listed investments	(5,994)	(8,919)	(6,652)
Payments for capitalised exploration and evaluation expenditure	(3,662)	(5,162)	(11,753)
Payments for acquisition of subsidiary, net of cash acquired	(17,574)	-	-
Net proceeds from sale of Stockman Project	-	21,782	10,000
Net proceeds from sale of Jaguar Operation	-	23,140	16,764
Net cash from investing activities	**(273,288)**	**(105,003)**	**(82,813)**
Cash flows from financing activities			
Proceeds from the issue of shares	281,459	-	-
Share issue transaction costs	(7,526)	-	-
Repayment of borrowings	(71,000)	(57,142)	(57,142)
Payment of dividends	(17,601)	(11,736)	(23,619)
Net cash from/(used in) financing activities	**185,332**	**(68,878)**	**(80,761)**
Net increase/(decrease) in cash and cash equivalents	**(10,278)**	**103,924**	**208,736**
Cash and cash equivalents at the beginning of the period	46,264	35,763	138,688
Effect of exchange rate changes on cash and cash equivalents	(223)	(999)	784
Cash and cash equivalents at the end of the period	**35,763**	**138,688**	**348,208**

Source: FY17, FY18 and FY19 Annual Reports and KPMG Corporate Finance analysis

9.8 Commitments

As at 30 June 2018, IGO had operating lease commitments of $74.1m. In addition, IGO had significant capital expenditure contracted for in respect of mine properties in development but not recognised as liabilities, totalling $30.7m.

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IGO also enters into various contracts for the future delivery of gold, these gold delivery commitments as at 30 June 2019 are summarised in the table below.

Table 30: Gold delivery commitments as at 30 June 2019

	Gold for physical delivery oz	Average contracted sale price $/oz	Value of committed sales $'000
Within one year	76,020	1,818	138,182
Later than one but not later than five years	49,320	1,814	89,452
	125,340	1,816	227,634

Source: FY19 Annual Reports and KPMG Corporate Finance analysis

9.9 Board of Directors

The current Directors of IGO are set out below.

Table 31: IGO's Board of Directors

Board member	
Peter Bilbe Non-Executive Chairman of the Board	**Peter Bradford** Managing Director, Chief Executive Officer
Debra Bakker Non-Executive Director, Chair – Audit Committee	**Kathleen Bozanic** Non-Executive Director
Peter Buck Non-Executive Director, Chair – Sustainability & Risk	**Neil Warburton** Non-Executive Director
Keith Spence Non-Executive Director, Chair – People & Performance	

Source: Bidder's Statement, FY19 Annual Report

Further details in relation to the experience and other directorships of the Directors of IGO are set out in Section 2.2 of the Bidder's Statement and on pages 34 to 35 of the FY19 Annual Report.

9.10 Share capital and ownership

As at 4 November 2019, IGO had approximately 590.8 million ordinary shares on issue and its substantial shareholders so far as known to IGO based on publicly available information were as set out in the table below.

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Table 32: IGO substantial shareholders as at 4 November 2019

Substantial shareholder	Interest in IGO shares[1]	Voting power in IGO
Mark Gareth Creasy, Yandal Investments, FraserX Pty Ltd, Ponton Minerals Pty Ltd, Lake Rivers Gold Pty Ltd, XNi Pty Ltd and Free CI Pty Ltd	76,860,969	13.0%
T. Rowe Price Group, Inc.	48,341,790	8.2%
FIL Limited	45,566,028	7.7%
Ausbil Investment Management Limited	29,829,860	5.0%

Source: Bidder's Statement

9.10.1 Options

At the date of the Bidder's Statement, there were no options issued over ordinary shares in IGO.

9.10.2 Performance rights

Performance rights under IGO's Employee Incentive Plan (**EIP**) are granted annually. The performance rights vest after three years from the start of the financial year, subject to certain performance conditions being met.

On vesting, each right automatically converts into one ordinary share. IGO employees who hold performance rights do not receive any dividends and are not entitled to vote in relation to the rights during the vesting period. If an employee ceases employment before the rights vest, the rights will be forfeited, except in certain circumstances that are approved by the IGO Board.

As at 4 November 2019, a total of 2,548,664 performance rights were on issue.

9.10.3 Service rights

Service rights issued under the EIP are granted following the determination of the final performance measure for the performance year. The service rights component of the short term incentives vest in two tranches, with the first tranche of 50% vesting on the 12 month anniversary of the award date, and the second tranche of 50% vesting on the 24 month anniversary of the award date.

The employees who hold service rights do not receive any dividends and are not entitled to vote in relation to the rights during the vesting period. If an employee ceases employment before the rights vest, the rights will be forfeited, except in limited circumstances that are approved by the IGO Board on a case-by-case basis.

As at 4 November 2019, a total of 448,502 service rights were on issue.

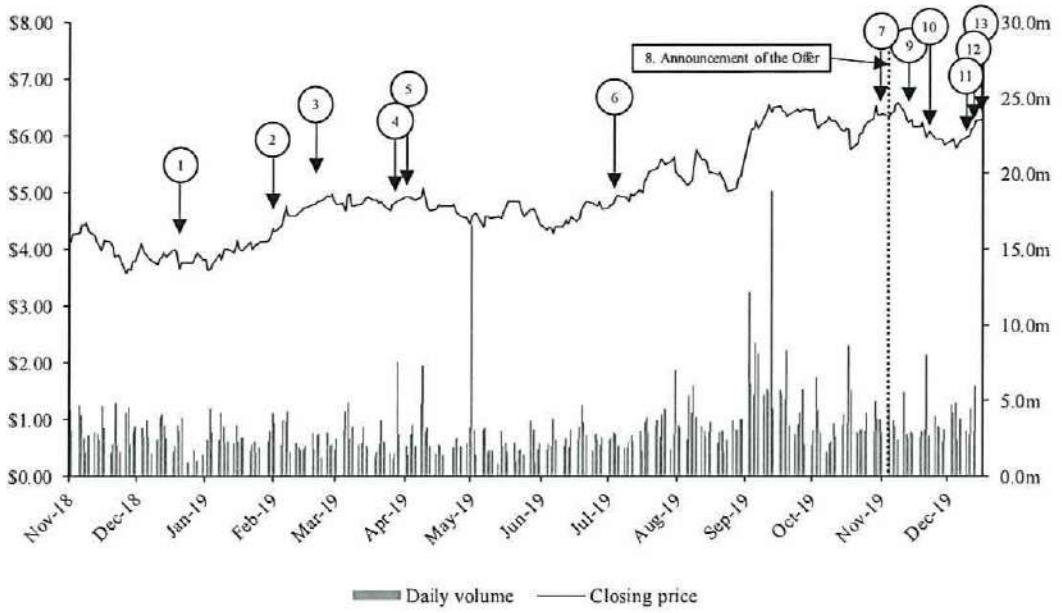
9.11 Share trading history

9.11.1 Recent trading in ordinary shares

The chart below depicts IGO's daily closing price on the ASX over the 12 month period to 1 November 2019, being the last trading day prior to IGO's announcement of the Offer, and for the period subsequent to that date to 16 December 2019, along with the daily volume of shares traded on the ASX over the period.

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Figure 9: IGO daily close price and volume traded on the ASX



Source: IRESS, KPMG Corporate Finance Analysis and ASX announcements

As illustrated in the figure above, IGO's share price, although displaying a degree of volatility, traded strongly upwards over the 12 months prior to the announcement of the Offer, trading in the range of $3.56 per share, on 27 November 2018, to $6.64 per share on 17 September 2019. IGO's shares closed at $6.40 on 1 November 2019, being the last trading day prior to the announcement of the Offer.

Subsequent to the announcement of the Offer, to 16 December 2019, IGO shares have closed in the range of $5.78 per share to $6.58 per share.

Other than normal half year and full year financial reporting and quarterly activities reporting and announcements made by other companies in relation to exploration projects in which IGO has an interest, announcements made by IGO identified on the ASX website as being price sensitive since 1 November 2018 include:

1 20 December 2018: Pre-feasibility study confirms the potential for underground mining beneath the Boston Shaker pits at Tropicana

2 31 January 2019: Details of FY19 interim dividend and 2Q19 and first half results presentation

3 20 February 2019: CY18 Mineral Resources and Ore Reserve Statement

4 28 March 2019: Tropicana JV approves Boston Shaker Underground Development following successful completion of a Feasibility Study. Development of the underground mine expected to enable gold production at Tropicana to be maintained between 450,000 and 500,000 oz pa (100%) over the five years up to and including 2023

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5 2 April 2019: Update on the Downstream PFS, advising that test work to date indicates IGO's proprietary processing route is capable of delivering high extraction rates, is low cost and is environmentally sustainable. IGO also announced that in parallel with the continuing study, it would commence a competitive process for the replacement of existing off-take agreements.

6 4 July 2019: Preliminary FY19 metal production results for the Nova Project and the Tropicana gold mine indicate production at the Nova Project exceeded previous full year guidance, while Tropicana gold mine production was within guidance range.

7 1 November 2019: Completion of the Downstream PFS and the competitive off-take agreement tender indicate that whilst IGO's proprietary processing route demonstrates a technologically advanced and cost competitive process, the improved commercial terms negotiated for the new offtake agreements will maximise value to shareholders and, as a result, IGO will not progress to a full Feasibility Study on the downstream process

8 4 November 2019: Off-market takeover offer for Panoramic announced and Bidder's Statement lodged. Panoramic recommends shareholders take no action.

9 12 November 2019: Panoramic announces that various conditions precedent of the Offer have already been breached, with further breaches in the future likely. Panoramic re-iterates shareholders should take no action.

10 22 November 2019: IGO announces it has entered into a Confidentiality Deed with Panoramic to allow it to conduct due diligence on Panoramic and the Savannah Project. IGO noted Panoramic was assessing options to raise additional capital and reiterated that it reserves its right to terminate the Offer should and equity raising be announced.

11 9 December 2019: Panoramic release their Target's Statement, with the directors unanimously recommending shareholders reject the Offer.

12 12 December 2019: Prodigy Gold NL released results of drilling and leach test work on Co-Ni-Mn samples from the Grimlock Prospect at the Lake Mackay JV (70% IGO, 30% PRX).

13 16 December 2019: Panoramic announced the Independent Expert's Report is expected to be received by 23 December 2019, stating the Board will reconsider their recommendation shareholders reject the Offer at this time.

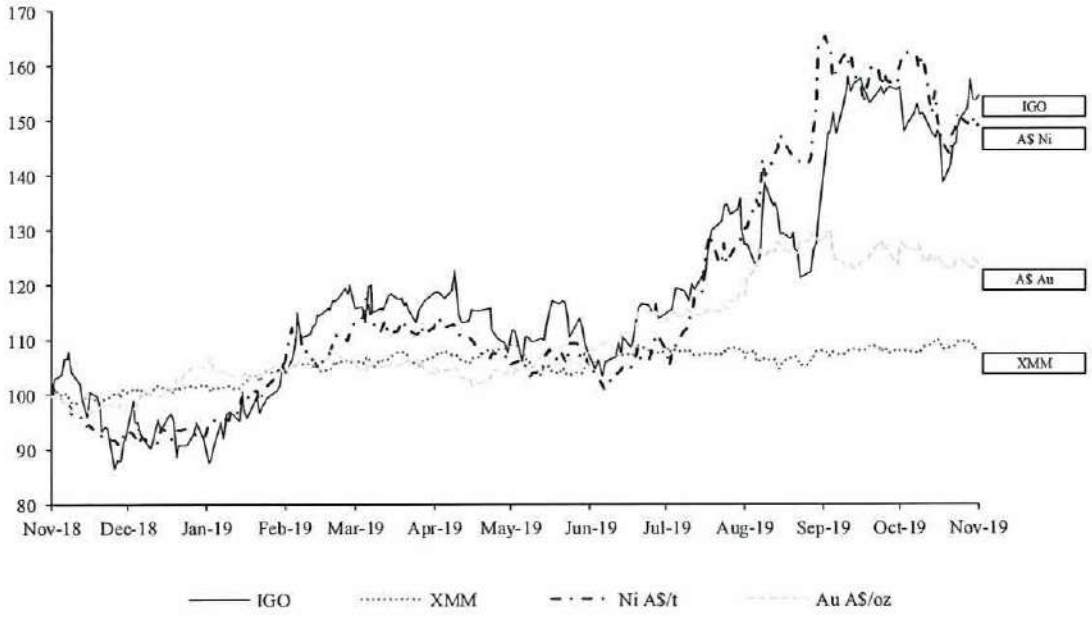
Further details in relation to all announcements made by IGO to the ASX can be obtained from either IGO's website at www.igo.com.au or the ASX's website at www.asx.com.au.

9.11.2 Relative share price performance

As illustrated in the figure below, IGO's share price generally tracked the XMM over the 9 months to August 2019, after which it outperformed over the 3 months to 1 November 2019, being the last trading date prior to the announcement of the Offer.

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Figure 10: IGO's performance relative to XMM and AUD nickel and gold prices



Source: IRESS, Capital IQ and KPMG Corporate Finance Analysis

9.11.3 Trading liquidity on the ASX

An analysis of volume of trading in IGO's shares over various periods in the 12 months up to and including 1 November 2019, being the last trading day prior to IGO's announcement of the Offer, is set out in the table below.

Table 33: Trading liquidity in IGO shares pre-announcement of the Offer

Period up to and including 1 November 19	Price (low)[1] $	Price (high)[1] $	Price VWAP $	Cumulative value $m	Cumulative volume m	% of issued capital[2]
1 day	6.19	6.42	6.35	18.3	2.9	0.5%
1 week	6.19	6.55	6.39	118.1	18.5	3.1%
1 month	5.75	6.55	6.19	534.1	86.3	14.6%
3 months	4.97	6.64	6.04	1,747.6	289.3	49.0%
6 months	4.24	6.64	5.61	2,568.7	457.9	77.5%
12 months	3.56	6.64	5.08	4,081.7	803.2	135.9%

Source: IRESS, Capital IQ and KPMG Corporate Finance Analysis

Notes:

1 *Share price data represents intra-day trading rather than closing prices*

2 *Note: percentage of issued capital is the cumulative volume traded over the period divided by the weighted average number of shares on issue over that period.*

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IGO shares exhibited strong liquidity over the 12 months to 1 November 2019, with an average daily volume of 3.2 million shares traded per day with a daily value of approximately $16.1 million. We note that over this period IGO shares were traded on all 253 available trading days on the ASX.

An analysis of the volume of trading in IGO's shares in the period from 2 November 2019 to 16 December 2019 inclusive is set out below.

Table 34: Trading liquidity in IGO shares post-announcement of the Offer

Period from 2 Nov 19 to 16 Dec 19 incl.	Price (low) $	Price (high) $	Price VWAP $	Cumulative value $m	Cumulative volume m	% of issued capital
45 days	5.76	6.65	6.13	692.9	113.1	19.1%

Source: IRESS and KPMG Corporate Finance Analysis

Note: Share price data represents intraday trading rather than closing prices

10 Profile of the Enlarged IGO

10.1 Panoramic and IGO shareholders' interest

Prior to the Entitlement Offer, Panoramic and IGO had approximately 654.2 million and 590.8 million shares on issue respectively. Under the Entitlement Offer, Panoramic may issue up to 109.0 million new ordinary shares, which would increase Panoramic shares on issue to approximately 763.2 million shares (including the 24.9 million26 Panoramic shares already owned by IGO).

In the event that IGO achieves 100% control of Panoramic, the number of new IGO shares to be issued to Panoramic shareholders having regard to the Exchange Ratio is approximately 56.8 million as summarised in the table below, resulting in an ownership interest of 8.8% by Panoramic shareholders. Given Zeta's advice to the market that it does not intend to accept the Offer in its current form, we have also shown purely for illustrative purposes a scenario where IGO achieves a 50.1% ownership interest in Panoramic consistent with the Minimum Acceptance condition precedent to the Offer, which indicates Panoramic shareholders would hold approximately 4.4% of the Enlarged IGO in these circumstances.

[26] Bidder's Statement

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Table 35: Shareholder ownership scenarios following the Offer

	Pre-Offer Panoramic shares million	Exchange Ratio 1:13 x	100% IGO Shares million	100% Relative ownership %	50.1%[3] IGO Shares million	50.1%[3] Relative ownership %
Pre-Offer Panoramic shares not already owned by IGO	629.3					
Maximum Panoramic shares to be issued under the Entitlement Offer	109.0					
Assumed eligible Panoramic Shares[1,2]	738.4	0.0769	56.8	8.1	27.5	4.4
Existing IGO shares			590.8	91.2	590.8	95.6
Total			**647.6**		**618.3**	

Source: ASX Announcements and KPMG Corporate Finance Analysis

Notes:

1 *This reflects an undiluted interest. In the event all of IGO's current Performance Rights and Service Rights were converted to IGO shares, this would reduce existing Panoramic shareholders' interest to 8.7% assuming 100% acceptance, or 4.4% assuming 50.1% is acquired*

2 *Assuming IGO extends the Offer to new Panoramic Shares issued under the Entitlement Offer, and IGO does not participate in the Entitlement Offer*

3 *50.1% control based on IGO acquiring an additional 357.5 million Panoramic shares under the Offer, in exchange for issuing 27.5 million new IGO shares*

10.2 Relative contribution to the Expanded IGO's Ore Reserves and Mineral Resources

Based on the latest publicly available Ore Reserve and Mineral Resource statements issued by Panoramic and IGO, the relative contributions of each company to the combined contained nickel equivalent Ore Reserves and Mineral Resources of the Enlarged IGO, assuming 100% control of Panoramic, are summarised in the tables below.

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Table 36: Relative contribution to combined nickel equivalent Ore Reserve

	Interest	Total tonnage Mt [1]	Average grade Nickel %	Copper %	Cobalt %	Gold g/t	Attributable Ni-Eq. metal kt
IGO:							
Nova	100%	11.5	1.90%	0.76%	0.06%		274
Tropicana	30%	65.7				1.8	121
IGO total							**396**
Panoramic:							
Savannah - Above 900 Fault	100%	1.4	1.16%	0.75%	0.06%		22
Savannah North	100%	6.7	1.42%	0.61%	0.10%		129
Panoramic total							**152**
Overall total							**548**
Panoramic percentage of combined Ore Reserve (Ni-Eq.)							***28%***

Source: ASX Announcements and KPMG Corporate Finance Analysis

Notes:

1 *Totals include Proven and Probable Ore Reserves*

2 *Total attributable contained nickel equivalent metal has been calculated having regard to each company's ownership interest and the following spot metal prices as at 30 November 2019, sourced from Capital IQ: US$13,618/t Ni, US$5,843/t Cu, US$35,500/t Co and US$1,473/oz Au*

The analysis above indicates that in the event IGO is successful in acquiring 100% control of Panoramic, Panoramic is contributing approximately 28% to the contained nickel equivalent Ore Reserves of the Enlarged IGO.

Table 37: Relative contribution to combined nickel equivalent Mineral Resource

	Interest	Total tonnage Mt [1]	Average grade Ni %	Cu %	Co %	Au g/t	Pt g/t	Pd g/t	Attributable Ni-Eq. metal excl. PGMs kt
IGO:									
Nova	100%	13.2	2.0%	0.8%	0.07%				339
Tropicana	30%	136.2				1.8			250
IGO total									**589**
Panoramic:									
Savannah	100%	13.0	1.7%	0.8%	0.11%				297
Thunder Bay	100%	10.4					1.1	1.1	Excluded
Panton	100%	14.3					2.2	2.4	Excluded
Horizon	51%	15.9				2.7			77
Panoramic total									**374**
Overall total									**963**
Panoramic percentage of combined Mineral Resources (Ni-Eq.)									***39%***

Source: ASX Announcements and KPMG Corporate Finance Analysis

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Notes:

1 *Totals include Measured, Indicated and Inferred Mineral Resources. Mineral Resources are quoted inclusive of Ore Reserves*

2 *Total attributable contained nickel equivalent metal, excludes the PGM assets and has been calculated having regard to each company's ownership interest and the following spot metal prices as at 30 November 2019, sourced from Capital IQ: US$13,618/t Ni, US$5,843/t Cu, US$35,500/t Co and US$1,473/oz Au*

The analysis above indicates that in the event IGO is successful in acquiring 100% control of Panoramic, Panoramic is contributing a minimum of 39% to the contained nickel equivalent Mineral Resources of the Enlarged IGO. Given their early stage we have not included the additional contained nickel equivalent contribution of Panoramic's PGM Mineral Resources.

10.3 IGO's intentions for Panoramic

As set out in Section 7 of the Bidder's Statement, IGO's specific intentions should IGO achieve a 90% or greater interest in Panoramic include, amongst others:

- to proceed with compulsory acquisition of Panoramic to achieve a 100% ownership interest in Panoramic
- to undertake a strategic review of underground mining and processing operations at the Savannah Project, and of Panoramic's other assets
- arrange for Panoramic to be removed from the Official List of the ASX and replace the Board with nominees of IGO
- integration of Panoramic with IGO's existing operational and corporate structure. IGO notes that some operational and head office functions may become redundant but will seek to redeploy Panoramic employees within IGO where practicable.

IGO's intentions should it achieve control of Panoramic but less than a 90% interest, include:

- seeking to replace some of the members of Panoramic's Board with IGO's nominees
- depending upon the level of ownership acquired and satisfaction of various required criteria, pursuing a delisting of Panoramic shares from the Official List of the ASX.

Further details in relation to IGO's intentions following closure of the Offer are set out in the Bidder's Statement.

10.4 Pro forma Historical Statement of Financial Position as at 30 June 2019

Section 8.4 of the Bidder's Statement sets out, for illustrative purposes only, the pro forma financial position of IGO as at 30 June 2019, assuming it acquires 100% of Panoramic. We have adjusted IGO's pro forma financial position of its "Merged Group" to include the notional impact of the Entitlement Offer on cash and issued capital, assuming the issue of 109.0 million new Panoramic shares at an issue price of $0.30 each, net of transaction costs of $1.4 million.

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Table 38: IGO pro forma financial position as at 30 June 2019 assuming 100% acceptance

Pro forma	As at 30 June 2019					
100% acquisition scenario	IGO	Panoramic	Adjustments	Merged Group	Entitlement Offer adj.	Merged Group adj.
A$'000	Audited	Audited	Reviewed	Reviewed	Unaudited	Unaudited
Current assets						
Cash and cash equivalents	348.2	12.7	(1.4)	359.6	31.3	390.9
Trade and other receivables	47.7	19.3	-	67.0	-	67.0
Inventories	70.3	8.4	-	78.7	-	78.7
Financial assets	27.5	-	-	27.5	-	27.5
Derivative financial instruments	0.5	3.7	(3.7)	0.5	-	0.5
Prepayments	-	1.4	-	1.4	-	1.4
Assets held for sale	-	4.3	-	4.3	-	4.3
Total current assets	**494.2**	**49.8**	**(5.1)**	**538.9**	**31.3**	**570.2**
Non-current assets						
Receivables	15.0	-	-	15.0	-	15.0
Inventories	52.6	-	-	52.6	-	52.6
Property, plant and equipment	41.6	59.0	-	100.6	-	100.6
Mine and development properties	1,311.4	84.8	216.8	1,613.0	-	1,613.0
Exploration and evaluation expenditure	95.2	27.8	-	123.0	-	123.0
Deferred tax assets	180.2	-	-	180.2	-	180.2
Derivative financial instruments	-	4.4	(4.4)	-	-	-
Financial assets	-	1.0	-	1.0	-	1.0
Other non-current assets	-	0.2	-	0.2	-	0.2
Total non-current assets	**1,696.0**	**177.1**	**212.4**	**2,085.5**	**-**	**2,085.5**
Total assets	**2,190.3**	**226.9**	**207.3**	**2,624.5**	**31.3**	**2,655.8**
Current liabilities						
Trade and other payables	49.9	22.1	15.0	87.0	-	87.0
Borrowings	56.2	8.1	-	64.3	-	64.3
Provisions	5.2	2.2	-	7.4	-	7.4
Other current liabilities	-	2.7	(2.7)	-	-	-
Total current liabilities	**111.3**	**35.1**	**12.3**	**158.7**	**-**	**158.7**
Non-current liabilities						
Borrowings	28.4	38.6	(20.0)	46.9	-	46.9
Provisions	63.6	31.5	-	95.2	-	95.2
Deferred tax liabilities	137.9	-	-	137.9	-	137.9
Derivative financial instruments	-	5.6	40.7	46.3	-	46.3
Total non-current liabilities	**229.9**	**75.7**	**20.7**	**326.3**	**-**	**326.3**
Total liabilities	**341.2**	**110.8**	**33.0**	**485.0**	**-**	**485.0**
Net assets	**1,849.1**	**116.1**	**174.3**	**2,139.5**	**31.3**	**2,170.8**

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Pro forma	As at 30 June 2019					
100% acquisition scenario	IGO	Panoramic	Adjustments	Merged Group	Entitlement Offer adj.	Merged Group adj.
A$'000	Audited	Audited	Reviewed	Reviewed	Unaudited	Unaudited
Statistics:						
Shares on issue at period end (million)	*590.5*	*553.6*		*639.2*	*8.4*	*647.6*
Net assets per share ($)	*3.13*	*0.21*		*3.35*		*3.35*
Gearing	*n/a*	*23%*		*n/a*		*n/a*
Current ratio (times)	*4.4*	*1.4*		*3.4*		*3.5*

Source: Bidder's Statement, Annual reports, Panoramic management and KPMG Corporate Finance analysis

We make the following observations in relation to the expanded IGO's pro forma financial position as at 30 June 2019:

- IGO has prepared its pro forma financial position of the Merged Group assuming 100% acceptance of the Offer on the basis of the audited consolidated financial positions of IGO and Panoramic as at 30 June 2019, after adjusting for the effect of certain subsequent events and pro forma adjustments described in Section 8.4 of the Bidder's Statement.
- IGO's pro forma net asset backing per share increases from $3.13 to $3.35, which based on the Exchange Ratio represents a net asset backing per Panoramic share of $0.26.
- IGO maintains a net cash position
- IGO's pro forma current ratio decreases from 4.4 times to 3.4 times.

A more detailed discussion of the assumptions and adjustments incorporated in the pro forma financial position of IGO's Merged Group is set out in Section 8.4 of the Bidder's Statement.

IGO also set out in Section 8.4e of the Bidder's Statement the adjustments to IGO's Merged Group position that would be required in the event IGO only acquires a 50.1% interest in Panoramic. Given Zeta's advice to the market that it does not intend to accept the Offer in its current form, Panoramic shareholders may also wish to consider these adjustments.

10.5 Transaction costs

As set out in Section 8.4d of the Bidder's Statement, IGO has estimated transaction costs (comprising advisory fees and landholder duty) relating to the Offer to be in the order of approximately $15.0 million (assuming IGO obtains a 100% interest in Panoramic). In the event that IGO is only successful in acquiring 50.1% of Panoramic's issued capital, IGO estimates that its transaction costs will reduce to approximately $7.5 million.

10.6 Potential cost savings and synergies available to a market participant

We have been provided with a schedule prepared by Panoramic that sets out Panoramic's assessment of the synergy benefits and cost savings likely to be available to a pool of purchasers (including IGO) in acquiring a 100% interest in Panoramic. These synergy benefits and cost savings total in the order of

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approximately $4.0 million to $5.0 million per annum (in 2019 pre-tax dollars) over the estimated life of Panoramic's operations. Once-off costs incurred in achieving these synergies and cost savings have been estimated to be in the order of approximately $1.0 million.

The quantum of these synergies has been estimated having regard principally to the matters set out below:

- Head office wage and on-cost savings – various management and head office functions would be subsumed within the organisational structure of the acquirer
- Directors' and Officers' fees and insurance – any acquirer would seek to rationalise the Board of Panoramic
- Audit, tax and compliance costs – an acquirer is expected to realise economies of scale from consolidation in terms of statutory reporting and compliance requirements charged in respect of the enlarged entity when compared to two standalone entities
- Shareholder related, including listing fees, investor relations and consultant fees – an acquirer is expected to realise significant cost savings as a result of shareholder related functions no longer required, reduced or subsumed within the organisation structure of the acquirer
- Rent – Panoramic anticipates an acquirer would be able to realise cost savings associated with the reduction of space requirements as a direct result of the reduction in head office executive and employee head count, having regard to existing lease commitments.

In addition to the direct synergies described above, acquirers of Panoramic may achieve indirect synergies such as procurement and marketing synergies and economies of scale and increased liquidity in their stock due to increased size. However, it is very difficult to assess the likelihood of these synergies being achieved or to quantify the extent of these synergies in the short term.

We also note that an acquirer of Panoramic may be able to accelerate the utilisation of Panoramic's existing tax losses as part of a larger tax consolidation group compared to Panoramic in its current form. The ability of any purchaser to utilise these tax losses would however be subject to the satisfaction of various statutory tests and also would be dependent upon the availability and timing of taxable income derived from sources unrelated to the Savannah Project.

10.7 Synergies unique to IGO

Having regard to the existing operational profile and location of IGO's asset base it is not expected that IGO will realise any immediate significant direct cost savings that a general pool of purchasers may not otherwise be able to achieve, however, we consider that there are certain benefits to IGO from the acquisition of Panoramic that may be unique to IGO, including that IGO has pegged over 6,000km^2 of exploration tenure surrounding the Savannah Project. Whilst IGO does not currently have defined Ore Reserves or Mineral Resources in this surrounding area, it is possible IGO may be able to leverage the existing infrastructure at Savannah to assist with project development should its exploration activities be successful in identifying and developing future Ore Reserves.

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11 Valuation of Panoramic

11.1 Valuation methodology

The principal assets of Panoramic comprise its interests in mineral assets at various stages of development, from early stage exploration to production. Such assets have limited lives and future profitability and asset lives depend upon factors that are inherently unpredictable.

In our experience, the most appropriate method for determining the value of companies similar to Panoramic is on the basis of the value of the sum of the parts of the underlying net assets, with its principal asset, its interest the Savannah Project, being valued using the discounted cash flow (**DCF**) approach.

The DCF methodology has a strong theoretical basis, valuing a business or asset on the net present value (**NPV**) of its future cash flows. It requires an analysis of future cash flows, the capital structure and costs of capital. This technique is particularly appropriate for assets with limited lives, which is often the case with mineral projects dependent upon depleting Ore Reserves. Application of this technique generally requires a 5-year minimum period of analysis, however for longer dated finite life mineral projects it is common practice to have regard to forecast cash flows over the LOM. In addition, a sensitivity analysis for variations in key assumptions adopted needs to be performed.

ASIC Regulatory Guides envisage the use by an independent expert of specialists when valuing specific assets. To assist KPMG Corporate Finance in the valuation of Panoramic's mineral interests, SRK was engaged by Panoramic, and instructed by us, to prepare an independent technical specialist report in relation to a reasonable production scenario, including appropriate estimations, capital expenditure and operational cost profiles to be adopted by us in the preparation of forecast cash flows for Panoramic's interest in the Savannah Project. In addition, SRK has assessed the value of Panoramic's interests in other mineral assets not captured in the Savannah Project DCF valuation. A copy of SRK's report, which was prepared in accordance with the ValMin Code to the extent applicable, is attached to this report as Appendix 7.

The development and operational assumptions recommended by SRK have been adopted in the cash flow projections prepared by us in assessing the value of Panoramic's interest in the Savannah Project. KPMG Corporate Finance was responsible for the determination of certain macroeconomic and other assumptions such as commodity prices, exchange rates, discount rates, inflation, royalty and taxation assumptions. SRK has also determined a range of values within which it considers the value of each of the relevant interests in other mineral assets to lie. The valuations ascribed by SRK to Panoramic's interests in other mineral assets have been adopted in our report.

Other assets and liabilities of Panoramic have been incorporated in our valuation based on book values as at 30 November 2019, as reasonable estimates of market value unless specifically noted otherwise.

11.2 Valuation summary

We have assessed the market value of Panoramic assuming 100% of the company was available for sale, inclusive of a premium for control, to lie in the range of $350.7 million to $397.7 million, which equates to between $0.459 and $0.521 per Panoramic Share. The valuation exceeds the price at which, based on

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current market conditions, we would expect Panoramic shares to trade on the ASX in the absence of the Offer.

The market value of Panoramic was determined after aggregating the estimated market value of Panoramic's interests in mineral assets, adding the assessed value of other assets and, if appropriate, deducting any external borrowings and non-trading liabilities. The value of Panoramic has been assessed on the basis of market value, that is, the value that should be agreed in a hypothetical transaction between a knowledgeable, willing, but not anxious buyer and a knowledgeable, willing, but not anxious seller, acting at arm's length.

Our range of assessed values represents the value of a 100% interest in Panoramic and incorporates direct corporate cost savings that would generally be available to a pool of purchasers but does not include any indirect benefits, such as potential economies of scale or increases in bargaining positions that a pool of purchasers might be able to achieve. Similarly, our valuation does not include any potential strategic or operational synergies that may be unique to individual investors. Accordingly, our range of values has been prepared independent of the specific circumstances of any potential bidder.

Table 39: Summary of assessed market values of Panoramic inclusive of a premium for control

	Assessed Values	
	Low $m	High $m
Market values of Panoramic's interests in mineral assets:		
Savannah Project Ore Reserves	301.9	312.9
Savannah Project Mineral Resources (not included in the Life of Mine Model)	32.7	42.9
Other mineral assets	23.7	39.8
Total mineral assets	**358.3**	**395.6**
Add: Cash and cash equivalents [2]	39.4	39.4
Add: Panoramic's 51% interest in Horizon	10.2	19.8
Add: Other net assets[3]	1.3	1.3
Less: Out of the money hedgebook[4]	(26.7)	(26.7)
Less: Debt[5]	(27.6)	(27.6)
Less: Future corporate overheads	(4.1)	(4.1)
Total equity value	**350.7**	**397.7**
Number of ordinary shares - undiluted (millions)	654.2	654.2
Add: Entitlement Offer share[6]	109.0	109.0
Number of ordinary shares - diluted (millions)	763.3	763.3
Value per share, inclusive of a premium for control - $	**0.459**	**0.521**

Source: KPMG Corporate Finance analysis and the SRK Report

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Notes:

1 *Figures may not add exactly due to rounding*
2 *Aggregate cash and cash equivalents as at 30 November 2019 adjusted to reflect the proceeds expected from the Entitlement Offer of $32.7 million less expected transaction costs of the Entitlement Offer of $1.4 million*
3 *Other net assets comprise other current assets ($0.2 million) as at 30 November 2019 and shares in listed equities ($1.0 million), excluding Panoramic's investment in Horizon, as at 16 December 2019*
4 *Mark to market as at 16 December 2019*
5 *Total debt as at 30 November 2019 comprising borrowings and finance lease arrangements*
6 *Assumes the Entitlement Offer is completed in full, either through acceptance or underwriting*

Our range of assessed fair values for a Panoramic share of between $0.459 and $0.521 per share compares to a closing price for a Panoramic share on the last trading day prior to the announcement of the Proposal of $0.335, and is also at a premium to Panoramic's VWAP over the 12 months immediately prior to the announcement of the Proposal. In this regard, we note the traded share price will not incorporate a control premium as it reflects trades in minority interests in Panoramic shares but in our view may also reflect an adverse market sentiment in relation to:

- the operational difficulties and delays in the ramp-up the Savannah Project and in the development of the Savannah North ore body, along with disappointing associated financial outcomes, including the need to renegotiate the SFA entered into with Macquarie in March 2019 and September 2019
- Panoramic approaching the market on two separate occasions in the eight months prior to the Offer seeking additional equity to fund working capital needs and debt repayments, with each raising being completed at a discount to the then prevailing share price,

which have likely acted to suppress Panoramic's share price in recent times.

11.2.1 Valuation of Panoramic's interest in the Savannah Project Ore Reserves

We have valued Panoramic's 100% interest in the projected cash flows from the Savannah Project Ore Reserves as lying in the range of $301.9 million to $312.9 million.

In forming our opinion we have developed, in conjunction with SRK, a cash flow model reflecting SRK's view as to a reasonable forecast development/production scenario for the Savanah Project, based on SRK's discussions with Panoramic's management and other supporting documentation. As a result of its analysis, SRK determined that whilst there was a reasonable basis for valuing the Savannah Project Ore Reserves using the DCF methodology, the Savannah Project Mineral Resources (not included in the LOM) were more appropriately valued using other methodologies for earlier stage mineral assets.

We consider the production and operational cash flow models prepared by SRK are sufficiently robust and reliable to adopt as an input to our assessment, having regard to the following:

- the starting point LOM operational plans provided by Panoramic to SRK were prepared by Panoramic in conjunction with independent mining consultants, Entech Pty ltd.
- SRK completed a site visit to the Savannah Project and has held discussions with Panoramic management and considered supporting information to the updated LOM in determining its underlying assumptions

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- the cash flows are underpinned by JORC compliant Ore Reserves
- where relevant, SRK has adopted macro-economic assumptions determined by us
- we completed a high-level review of the veracity of the SRK production and cash flow models and SRK, where appropriate after discussion with us, amended the production cash flow models.

Key operational assumptions

The principal operational assumptions provided by SRK and adopted in our valuation of the Savannah Project Ore Reserves are summarised below.

Table 40: SRK's key operating assumptions

	Unit	Assumption
Remaining mine life as at 30 November 2019	Years	7.1
LOM model commencement date	Date	1 Dec 2019
Total ore processed	Mt	6.7
Average annual plant throughput	Mtpa	0.9
Average nickel processing grade	%	1.4
Average nickel recovery	%	82.3
Average nickel recovered	000tpa	11.0
Average annual concentrate production	000dmt	138.4
Average concentrate nickel grade	%	8.0
Average operating cost per nickel tonne recovered (2019 dollars)[1]	A$/t	10,445
Total capital cost over life of mine (LOM) (2019 dollars)	A$M	232.1

Source: SRK LOM Model

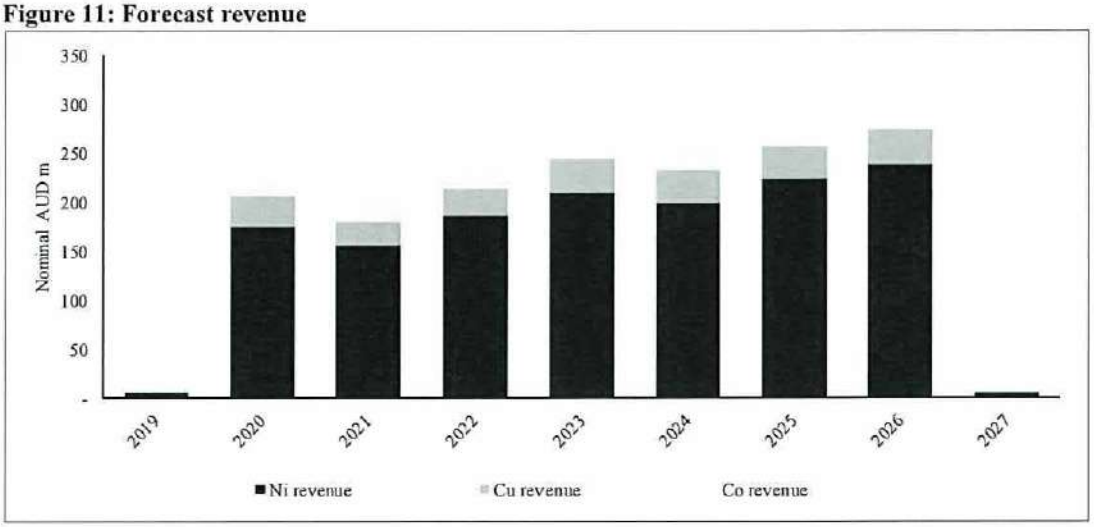
Note 1: Excluding royalties

Revenue

Forecast revenue is a function of the quantity of product produced from the Savannah Project and the prices of nickel, copper and cobalt and is summarised in the chart below.

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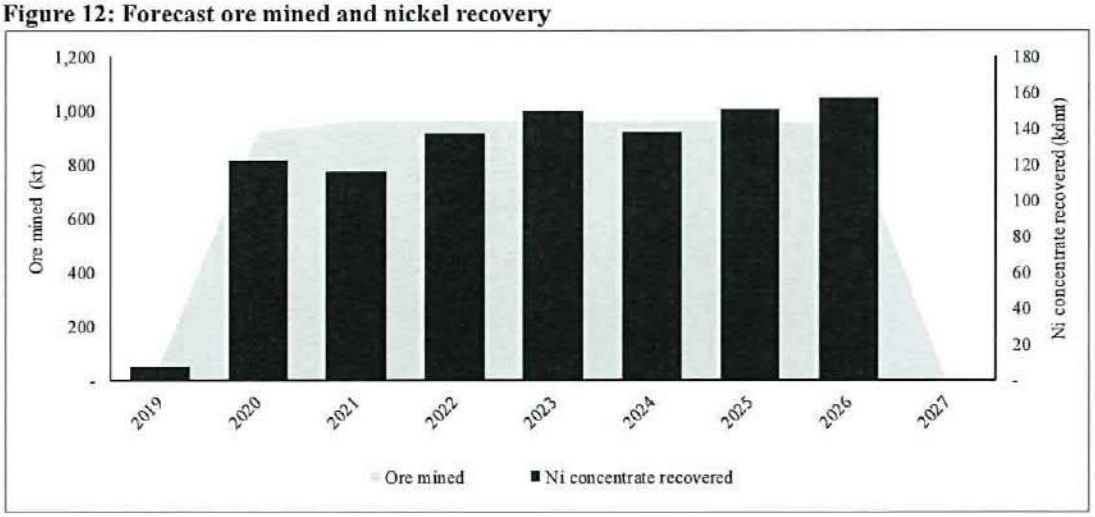
Figure 11: Forecast revenue



Source: KPMG Corporate Finance Analysis

Nickel revenue contributes approximately 79% of the total projected revenue over the life of the project. We have set out the ore mined and nickel concentrate recovered profile over the project life in the figure below.

Figure 12: Forecast ore mined and nickel recovery



Source: KPMG Corporate Finance Analysis

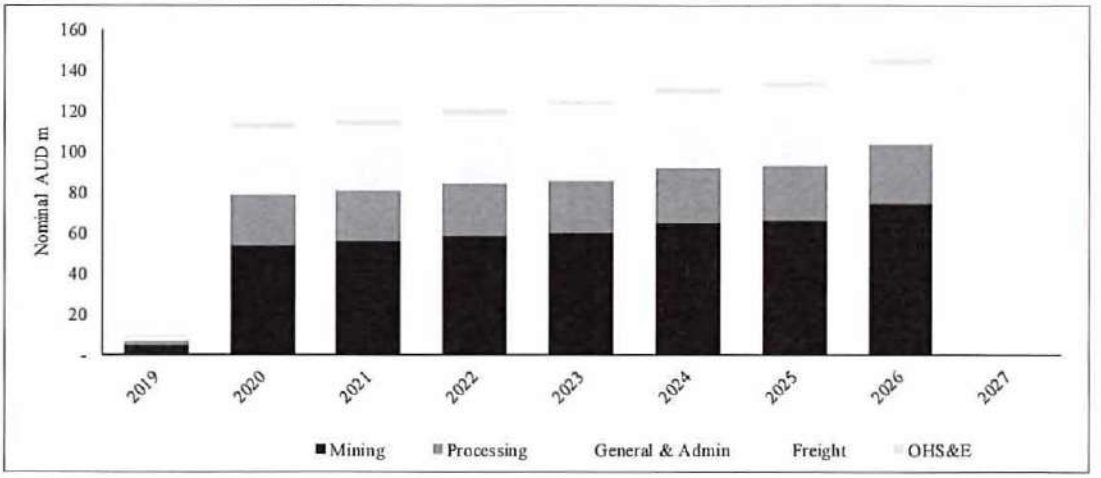
Nickel recovered is primarily driven by grade and recovery rates, with minimal variation in processing throughput.

Operating costs

Operating costs comprise mining, processing, general & administration, freight and occupational health, safety and environment (**OHS&E**) over the life of the project as set out in the chart below.

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Figure 13: Forecast operating costs

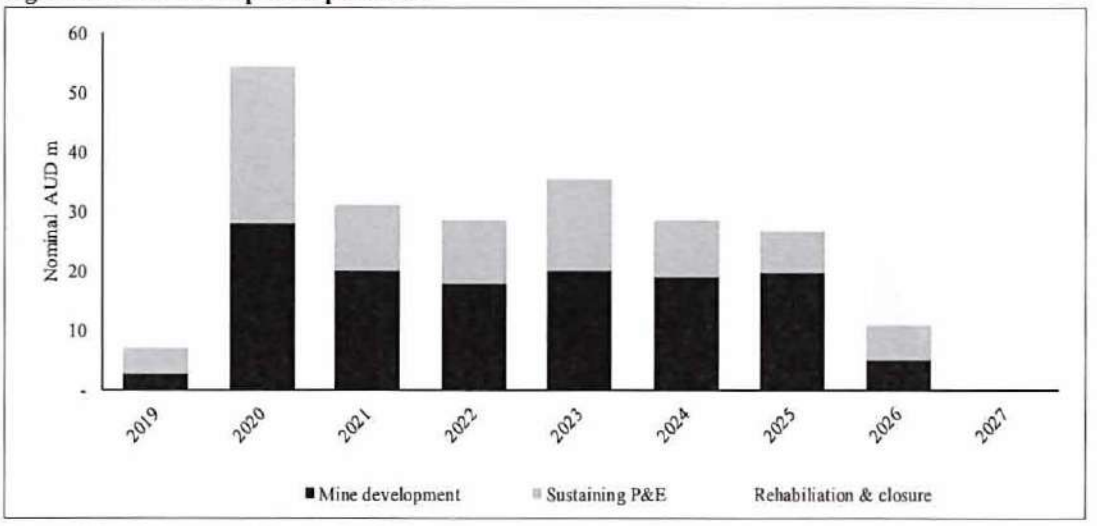


Source: KPMG Corporate Finance Analysis

Capital expenditure

Aggregate mine development, sustaining plant & equipment expenditure and rehabilitation & closure capital expenditure are set out in the chart below.

Figure 14: Forecast capital expenditure



Source: KPMG Corporate Finance Analysis

Further details in relation to SRK's assumptions are set out in its report which is attached at Appendix 7.

Our range of assessed fair values for Panoramic's interest in Savannah Project does not incorporate any terminal value. At the end of the discrete forecasting period we have adopted net closure and rehabilitation costs as advised by SRK.

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In reality, there may be a prospect of Panoramic achieving further success with its development and exploration programs resulting in an extension of mining inventory available for exploitation, which may extend the life of the Savannah Project's operations past the end of the discrete forecast period. SRK has however captured the value of existing inferred Mineral Resources in its separate assessed values of Panoramic's interest in other mineral assets not included in the LOM model.

Furthermore, we note SRK has considered that whilst the mineralisation remains open in several directions in Savannah North, SRK does not consider there to be a reasonable basis at this time to ascribe a value to this prospectivity.

Key economic and financial assumptions

Denominations of cash flows

The NPV of the Panoramic's interest in the Savannah Project has been calculated in AUD terms. LOM inputs denominated in USD have been converted to AUD terms based on the inflation and foreign exchange rate assumptions set out below.

Inflation

Inflation rate assumptions adopted by us in the DCF are set out in the table below.

Table 41: Summary of inflation assumptions

%	2020	2021	2022	2023
Australia	2.0	2.0	2.2	2.4
United States	2.1	2.0	2.0	2.0

Source: Capital IQ, brokers' notes, various economic commentaries and KPMG Corporate Finance analysis

Inflation rates have been determined having regard to the forecasts of a range of brokers and economic commentators. Subsequent to 2023, the rate has been assumed to be constant at 2.5% per annum for Australia and 2.0% per annum for the United States.

Forecast currency exchange

Nominal AUD:USD assumptions adopted by us in the DCF are set out in the table below.

Table 42: Summary of nominal foreign currency exchange assumptions

	2020	2021	2022	2023
AUD:USD	0.69	0.71	0.71	0.71

Source: Bloomberg, Oxford Economics, Economist Intelligence Unit and KPMG Corporate Finance Analysis

Exchange rates have been determined having regard to the forecasts of brokers and economic commentators and also the AUD:USD forward curve.

Subsequent to 2023, we had adopted an exchange rate for AUD:USD such that the nominal exchange rate is assumed to be driven by the long-term inflation differential between the AUD and USD, maintaining the relative purchasing power parity between both currencies. That is, the exchange rate stays constant in real terms.

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Commodity prices

Panoramic sells all of its nickel concentrates under an offtake agreement with Sino Nickel, a joint venture company owned 60% by Jinchuan and 40% by Sino Mining. The offtake runs for 4 years from the date of first shipment and has prices based on an agreed percentage of quoted LME prices for nickel and copper, and an agreed percentage of Metal Bulletin Co prices for cobalt.

Management has advised that, at the offtake agreement's expiry, it expects to extend or enter into a new offtake agreement on similar terms. Accordingly, we have assumed the current offtake terms prevail over the LOM.

As this contract remains commercial in confidence and subject to confidentiality restrictions we have been requested by the Company not to disclose the specific details of this arrangement in our report.

Forecast nickel, copper and cobalt price assumptions adopted by us in the DCF are set out in the table below.

Table 43: Summary of nominal commodity price assumptions

	2020	2021	2022	2023	2024	2025
Nickel (US$/t)	15,300	15,200	15,500	15,800	16,300	16,700
Copper (US$/t)	6,200	6,300	6,400	6,500	6,600	6,700
Cobalt (US$/lb)	16.6	18.6	19.2	19.9	19.9	20.0

Source: Bloomberg, Consensus Economics and KPMG Corporate Finance Analysis

In determining our forecast nickel, copper and cobalt price assumptions we have had regard to current spot prices, forecast nickel, copper and cobalt prices published by various economic commentators and broking houses as well as the prevailing nickel, copper and cobalt forward curves.

Subsequent to 2025, we have assumed that the commodity prices will increase by the long term inflation rate for the United States. In effect, the commodity prices are assumed to remain constant in real USD terms post 2025.

In selecting commodity prices and other macro economy assumptions, we have adopted what we consider to be reasonable inputs that a purchaser of long-term assets would adopt.

Other assumptions

Other key financial and economic assumptions adopted by us in assessing the value of Panoramic's interest in production at the Savannah Project include:

- corporate income tax rate of 30% for Australian companies and utilisation of the accumulated tax losses, subject to available fraction limitations
- State royalty charges for nickel mining and concentrate operations calculated as 2.5% of gross revenue after adjustments for allowable deductions
- native title royalty charges calculated as 1.25% of revenue after adjustments for allowable deductions
- an AUD ungeared, post-tax nominal discount rate in the range of 8.0% per annum to 9.0% per annum. The basis of our calculation of discount rates is discussed at Appendix 4 to this report.

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Sensitivity analysis

We have undertaken a sensitivity analysis around the mid-point of our DCF valuation range for the Savannah Project based on a range of key assumptions, the outcome of which is set out below in the table below.

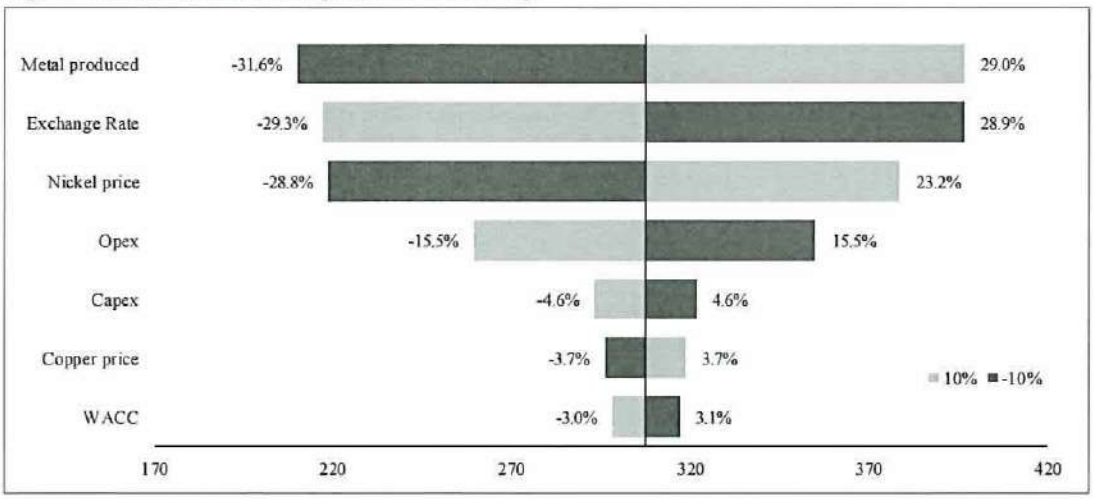
Table 44: Sensitivity analysis

Sensitivity	-10%	-5%	0%	5%	10%
Metal produced	210	259	307	352	396
Exchange Rate	396	352	307	263	217
Nickel price	219	263	307	343	379
Opex	355	331	307	284	260
Capex	322	314	307	300	293
Copper price	296	302	307	313	319
WACC	317	312	307	303	298

Source: KPMG Corporate Finance analysis

This analysis indicates that our range of assessed values of Panoramic's interest in the Savannah Project is most sensitive to metal production, AUD:USD exchange rate and nickel price assumptions, as set out in the tornado chart below based on a 10% variance to each key input.

Figure 15: The Savannah Project DCF sensitivity



Source: KPMG Corporate Finance Analysis

Valuation of Panoramic's interest in other mineral assets

The value of Panoramic's interest in the Savannah Project Mineral Resources that are not included in its forecast production for the Savannah Project Ore Reserves as well as interests in other mineral assets in the range of $56.8 million to $83.2 million are as summarised in the table below.

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Table 45: Summary of valuations of other mineral assets held by Panoramic

	Assessed Values	
	Low $m	High $m
Mineral Resources not included in the Savannah Project LOM	**32.7**	**42.9**
Other mineral assets		
Copernicus	2.8	3.2
Panton	12.0	27.7
Thunder Bay	9.0	9.0
Total other mineral assets	**23.7**	**39.8**

Source: SRK's report, KPMG Corporate Finance analysis
Notes: Amounts may not add exactly due to rounding

In its assessment of the value of the other mineral assets (excluding the Thunder Bay Project), SRK has adopted generally accepted methods for valuing mineral assets including yardstick, geoscientific rating and market-based approaches having regard to exploration and development transaction comparisons as appropriate. Further details in relation to each of these assets and the valuation methodology adopted are set out in SRK's report which is included at Appendix 7. It should be noted that the valuation of early stage/exploration assets is highly subjective and involves subjective assessments based on professional judgements made by SRK.

Panoramic has advised that it expects to sign the Definitive Agreement in relation to the sale of Panoramic PGMs to Benton in the short term. We have adopted a value for Panoramic's interest in the Thunder Bay project of $9.0 million, based on the present value of the schedule for payments of the consideration under the terms of the Panoramic PGMs sale agreement, which is C$4.5 million on completion and C$1.5 million on each of the 1st, 2nd and 3rd anniversaries of completion, converted to Australian dollars.

Other assets

Net assets not valued as part of Panoramic's mineral assets comprise cash and other sundry assets and liabilities held by Panoramic. Except as specifically noted below, having regard to their nature and quantum, these assets and liabilities have been incorporated in our valuation at net book values as at 30 November 2019.

Cash and cash equivalents

We have adopted a cash balance of $39.4 million for the purpose of our valuation, comprising:

- $8.1 million held by Panoramic as at 30 November 2019
- the estimated net $31.3 million in respect of the Entitlement Offer (being the estimated funds to be raised of $32.7 million less transaction costs of $1.4 million). Whilst the Entitlement Offer has not yet completed at the date of this report, we note that subject to receiving shareholder approval of the issue of any shortfall shares, the Entitlement Offer is fully underwritten by Morgans Corporate Limited. We have no reason to expect that shareholder approval will not be achieved given that Panoramic's largest shareholder, Zeta, which holds approximately 35.2% of Panoramic's issued

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capital, has committed to subscribe to its full entitlement of approximately $11.5 million under the retail component and is eligible to vote in relation to the underwriting of the Entitlement Offer.

The short term bridging loan provided by Zeta was drawn down on 4 December 2019 and is therefore not reflected in either the cash nor debt balances as at 30 November 2019.

Valuation of Panoramic's 51% interest in Horizon

The value of Panoramic's 51% interest in Horizon in the range of $10.2 million to $19.8 million is as summarised in the table below.

Table 46: Summary of valuations of Panoramic's 51% interest in Horizon

51% Interest in Horizon	Assessed Values Low $m	High $m
Market values of Panoramic's interests in Horizon's mineral assets:		
Gum Creek Project mineral resources	8.7	15.1
Other mineral assets	2.3	5.3
Total mineral assets	**11.1**	**20.4**
Add: Cash and cash equivalents	0.3	0.3
Add: Property, plant and equipment	2.2	2.2
Less: Rehabilitation liability	(3.1)	(2.8)
Less: Other net liabilities	(0.3)	(0.3)
Total equity value - $	**10.2**	**19.8**

Source: SRK's report, Management accounts, Panoramic Gum Creek Gold Project closure cost estimate report, KPMG Corporate Finance Analysis

Notes: Amounts may not add exactly due to rounding

Panoramic's 51% interest in Gum Creek Project mineral resources as well as interests in other mineral assets have been assessed by SRK in the range of $11.1 million to $20.4 million. Net assets not valued as part of Horizon's mineral assets comprise cash and cash equivalents, property, plant and equipment, a rehabilitation provision and other sundry assets and liabilities held by Horizon. Except as specifically noted below, having regard to their nature and quantum, these assets and liabilities have been incorporated in our valuation at net book values (51% interest) as at 30 November 2019.

Rehabilitation

We have assessed a present value of the rehabilitation liability relating to Gum Creek Gold Project in the order of $2.8 million to $3.1 million having regard to the following:

- the assessed real 30 June 2016 rehabilitation cost estimate of $9.6 million (100% interest) estimated by Martinick Bosch Sell Pty Ltd
- given that it is open to defer the rehabilitation liability indefinitely whilst Horizon continues exploration and development activities and Management's advice that Panoramic, as Horizon's 51% shareholder, is not aware of any reason to expect that Horizon would not continue to explore in the foreseeable future, we have adopted a notional deferred period of 10 years for the purpose of this report

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- actual and forecast AUD inflation forecasts over the relevant period
- a corporate income tax rate of 30% for Australian companies
- an AUD ungeared, post-tax nominal discount rate in the range of 4.0% per annum to 5.0% per annum to reflect that whilst this represent a known obligation, there is the possibility of payment being deferred indefinitely subject to continued finds being expended on exploration.

Working capital balances

Trade debtors, prepayments, trade creditors and accruals and provisions as at 30 November 2019 have been reflected in the forecast assumptions in the LOM model.

Other net assets

Other net assets comprise other current assets ($0.2 million) and shares in listed companies (approximately $1.1 million marked to market based on last close share prices as at 16 December 2019).

Hedge book

We have estimated the marked to market value of Panoramic's commodity and foreign currencies hedge arrangements as being approximately $26.7 million out of the money, based on the terms of each instrument and spot and forward commodity and exchange rates as at 16 December 2019.

Future corporate overheads

Panoramic incurs corporate overheads in relation to managing its business. These costs have not been incorporated into the valuation of Panoramic's interest in the mineral assets set out above, and therefore it is necessary to deduct the present value of anticipated future management and administrative costs in relation to Panoramic's operating assets from the value of the Company. Panoramic estimates that its corporate costs, in the absence of the Offer, to be in the order of $3.4 million per annum (in FY20 pre-tax dollars).

We have been provided with a schedule prepared by Panoramic that sets out the Company's assessment of the direct synergies and cost savings likely to be available to a pool of purchasers in acquiring a 100% interest in Panoramic. Depending upon the size and nature of the acquirer these synergy benefits and cost savings could total up to approximately $2.6 million per annum (in FY20 pre-tax dollars) over the life of the Panoramic's operations.

In assessing the quantum of these synergies and cost savings for the purpose of our valuation we have considered:

- head office costs - a large acquirer with excess capacity should be able realise head office wage and on-cost savings as a result of various management and head office functions being subsumed within the organisational structure of the acquirer
- directors' and officers' fees – any acquirer would seek to rationalise the Board of Panoramic
- audit and compliance costs – any acquirer is expected to realise economies of scale from consolidation in terms of statutory reporting and compliance requirements charged in respect of the enlarged entity when compared to two standalone entities.

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- external rent –an acquirer may be able to realise cost savings associated with the reduction of space requirements as a direct result of the reduction in head office executive and employee head count.

We have discussed with Panoramic's management the basis of its assessment as to the level of synergies and cost savings that may be realised by a pool of purchasers. Whilst there is both downside risk and potential upside in relation to the final quantum and nature of the synergies that may ultimately be realised, we believe, based on information available that Panoramic's estimated synergy benefits and cost savings are reasonable for the purpose of our evaluation.

The after-tax NPV of these adjusted corporate costs, having regard to the nature of the Company's assets, has been estimated to be in order of $4.1 million to $4.1 million.

11.3 Synergies unique to IGO

Having regard to the existing operational profile and location of IGO's asset base it is not expected that IGO will realise any significant direct cost savings that a general pool of purchasers may not otherwise be able to achieve, however, we consider that there are various benefits to IGO from completing the Offer that may be unique to IGO, including that IGO has pegged over 6,000km2 of exploration tenure surrounding the Savannah Project. Whilst IGO does not currently have defined Ore Reserves or Mineral Resources in this surrounding area, it is possible IGO may be able to leverage the existing infrastructure at Savannah to assist with project development should its exploration activities be successful in identifying and developing future Ore Reserves.

We have not factored these special benefits to IGO into our determination of the underlying value of Panoramic. We have however considered these benefits in our assessment of the reasonableness of the Offer.

11.4 Other valuation parameters

Having regard to our assessed values in respect of Panoramic's assets and liabilities, the implied enterprise value for Panoramic as at 16 December 2019, is between approximately $339.0 million and $385.9 million[27]. We have adjusted this further to remove the value of Panoramic's PGM assets which results in implied values of between approximately $318.0 million and $349.3 million for the purpose of calculating nickel equivalent Ore Reserves and Mineral Resources, which are summarised in the table below.

[27] Enterprise value has been calculated throughout the report as equity value plus external debt less cash.

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Table 47: Ore Reserve and Mineral Resource multiples per tonne of contained nickel equivalent implied by our assessed values

Parameter	Low $/t	High $/t
Ore Reserves[1,2]	2,108	2,315
Mineral Resources[1,3,4]	840	923

Source: KPMG Corporate Finance analysis

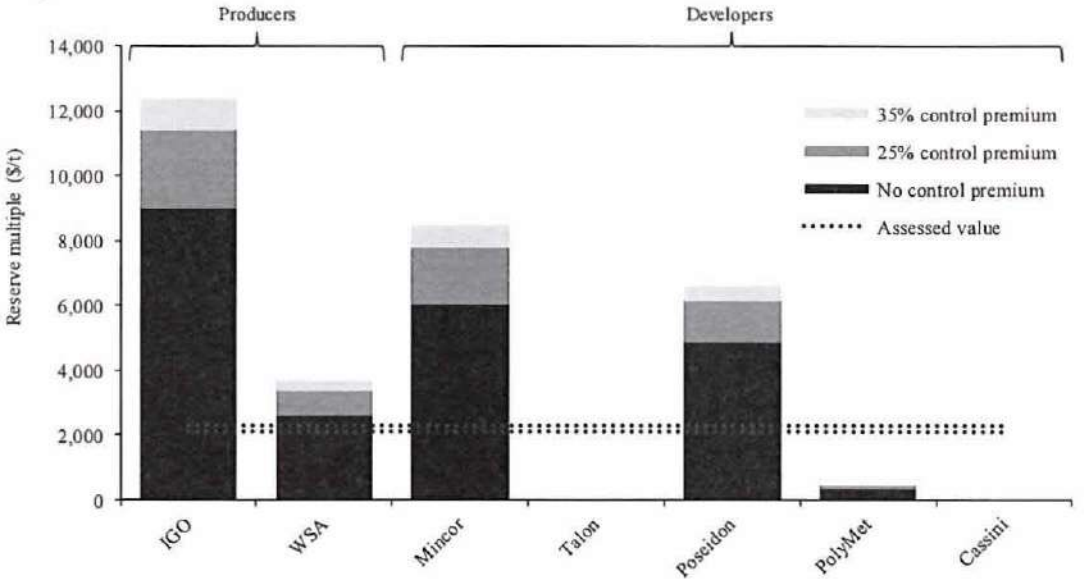
Notes:

1. *Ore Reserve and Mineral Resource multiples implied by our assessed values are calculated using the most recent published Ore Reserve and Mineral Resource information for the Savannah Project*
2. *Ore Reserves include Proved and Probable Reserves*
3. *Mineral Resources include Measured, Indicated and Inferred Resources*
4. *Mineral Resources are inclusive of Ore Reserves*
5. *Excludes Panoramic's PGM assets from both the implied values and the Ore Reserve and Mineral Resource amounts*

Comparison to listed company nickel Ore Reserve multiples

Summarised in the figure below is a comparison of the results set out above with the value per nickel equivalent Ore Reserve tonnes for a selection of listed nickel companies (at various stages of development and/or production) implied by their market capitalisation as at 16 December 2019, a notional allowance, solely for comparison purposes, for a premium for control of 25% to 35% and their most recent reported net debt/(cash) positions.

Figure 16: Ore Reserve multiples per tonne of contained nickel equivalent implied by selected listed companies



Source: KPMG Corporate Finance Analysis, Capital IQ, respective company announcements and Annual Reports

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This analysis indicates a wide range of outcomes, however we note that the range of Ore Reserve multiples implied by our range of assessed market values for the enterprise value of Panoramic lie within the range of equivalent observed listed company multiples.

In considering this outcome, we would highlight:

- our selection of listed production/pre-production nickel companies includes PolyMet Mining Corp. (**PolyMet**) whose principal nickel project, NorthMet, is located in Minnesota, USA
- with the exception of Western Areas NL (**Western Areas**), all of the companies (including Panoramic) have by-products within their nickel projects and/or other base and precious metal projects
- only IGO, Panoramic and Western Areas are in production as at the date of this report. PolyMet has completed a definitive feasibility study (**DFS**) and Mincor Resources NL (**Mincor**) has a DFS underway. Talon Metals Corp. (**Talon**), Poseidon Nickel Limited (**Poseidon**) and Cassini Resources Limited (**Cassini**) are at the pre-feasibility stage
- IGO has substantial gold Ore Reserves in its Tropicana gold project which, whilst we have included theses in our nickel equivalent calculation for IGO, may impact its observed multiple

These results need to be viewed with some caution as they do not capture such things as:

- the weighting of Reserves to Resources and whether there is any imperative for conversion. In this regard we note that companies in development stage with limited funding might not be willing to spend money to convert resources to reserves. This may be impacting positively on the reserve multiples of Mincor and Poseidon.
- potential timing differences by companies in reporting updated Reserves figures
- other assets and liabilities held by the selected companies not reflected in the Reserves balances.

Accordingly, whilst in our view the outcome of this analysis provides broad support for our range of values, this form of analysis should only be considered as a high level cross-check of the outcomes of other valuation methodologies.

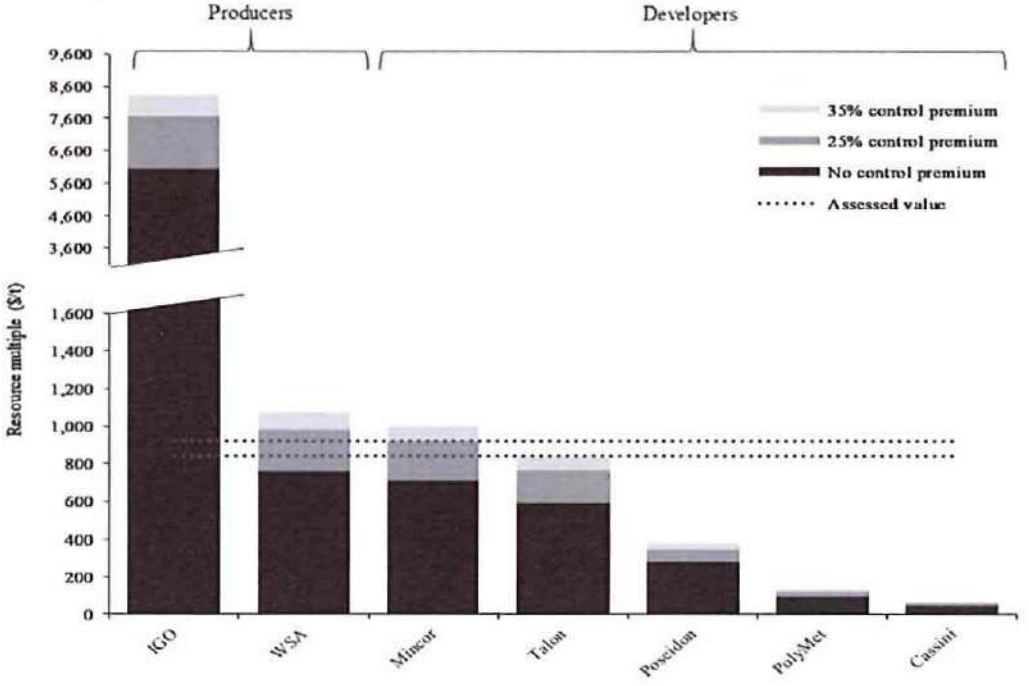
Further details of our analysis is set out in Appendix 5 to this report.

Comparison to listed company contained nickel equivalent Mineral Resource multiples

Summarised in the figure below is a comparison of the results set out above with the value per nickel equivalent Mineral Resource tonne for a selection of listed nickel companies implied by their market capitalisation as at 16 December 2019, a notional allowance, solely for comparison purposes, for a premium for control of 25 percent to 35 percent and their most recent reported net debt/(cash) positions.

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Figure 17: Mineral Resource multiples per tonne of contained nickel equivalent implied by selected listed companies



Source: KPMG Corporate Finance Analysis, Capital IQ, respective company announcements and Annual Reports

This analysis indicates a wide range of outcomes, however we note that the range of Mineral Resource multiples implied by our range of assessed market values for the enterprise value of Panoramic lies well within the range of equivalent observed listed company multiples.

In considering these outcomes we note that many of the comments in relation to the multiples implied by listed company Ore Reserve multiples are equally relevant here, including:

- our selection of listed production/pre-production nickel companies includes companies with projects located outside of Australia; Talon's Tamarack project and PolyMet's NorthMet project are both located in Minnesota, USA.
- with the exception of Western Areas, all of the companies (including Panoramic) have by-products within their nickel projects and/or other base and precious metal projects
- only Independence Group NL, Panoramic Resources Limited and Western Areas NL are in production as at the date of this report. PolyMet Mining Corp. has completed a DFS and Mincor has a DFS underway. Talon, Poseidon and Cassini are at the pre-feasibility stage.

We also note:

- IGO has substantial gold Mineral Resources in its Tropicana gold project which, whilst we have included theses in our nickel equivalent calculation for IGO, may impact its observed multiple

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- Talon has substantial iron ore Mineral Resources from a separate operation to its Tamarack project, which have been excluded from the Nickel equivalent calculation. Including these iron ore resources would have the impact of reducing the Nickel equivalent Mineral Resource multiple significantly.

These results need to be viewed with some caution as they do not capture such things as:

- potential timing differences by companies in reporting updated Mineral Resources figures
- other assets and liabilities held by the selected companies not reflected in the Mineral Resources balances.

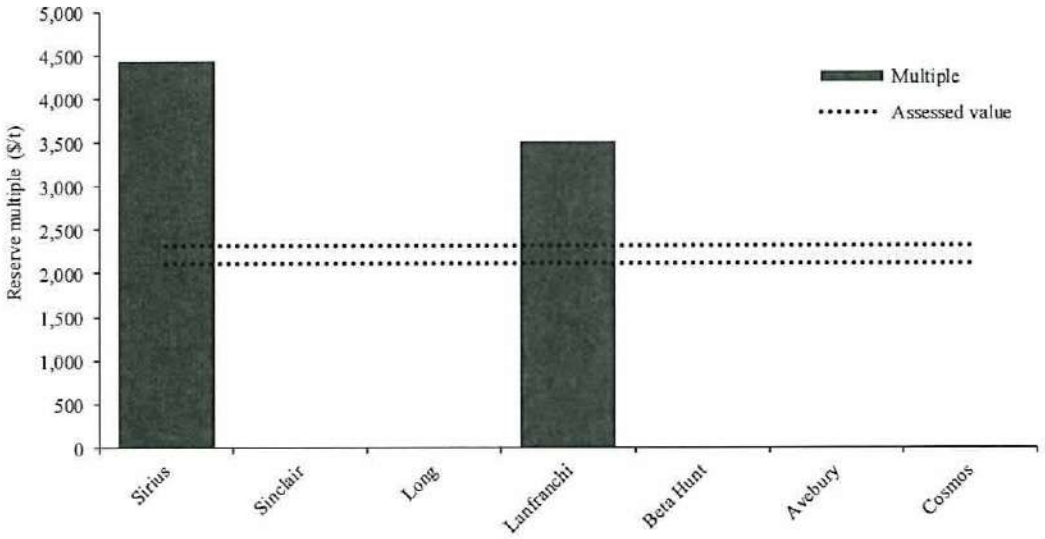
Our previous comments in relation to the use of the analysis simply as a high level cross-check also have equal application here.

Further details of our analysis is set out in Appendix 5 to this report.

Comparison to contained nickel equivalent Ore Reserve multiples implied by recent nickel corporate and asset transactions

Summarised in the figure below is a comparison of the contained nickel equivalent Ore Reserves multiples implied by the range of enterprise values for Panoramic with the implied value per nickel equivalent Ore Reserve tonne for a selection of recent corporate transactions involving companies with nickel production and / or development operations.

Figure 18: Ore Reserve multiples per tonne of contained nickel implied by selected corporate and asset transactions



Source: KPMG Corporate Finance Analysis, Capital IQ, Merger Market and respective company announcements and Annual Reports

In considering the outcomes of the comparison to nickel equivalent Ore Reserve multiples implied by recent nickel company transactions we note the following limitations:

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- many of the previously mentioned comments in relation to the multiples implied by listed companies have equal relevance here
- of the transactions identified, only Panoramic's Lanfranchi project and Sirius' Nova-Bollinger project had disclosed Ore Reserves as at the transaction announcement date
- the transactions considered were completed under different prevailing market conditions and the participants may have held different expectations in relation to future nickel prices
- we would expect assets in or near production to attract a higher reserve multiple than early stage projects, all else being equal. Whilst not yet in production, Sirius' Nova project had begun construction, after delivering a DFS contemplating a high margin, 10-year mine, producing 26ktpa of nickel in concentrate, with permits and offtake agreements secured
- the Lanfranchi mine had been previously operated for 10 years before being placed on care and maintenance in 2015, approximately 3 years prior to the transaction date. The mine was acquired by a private equity firm, which at the time indicated its intention was to restart the mine. No further details in relation to the key value drivers for the acquisition were disclosed. However, we note that the mine also included a significant level of established infrastructure.

Accordingly, our previous comments in relation to the use of the analysis simply as a high level cross-check have equal application here.

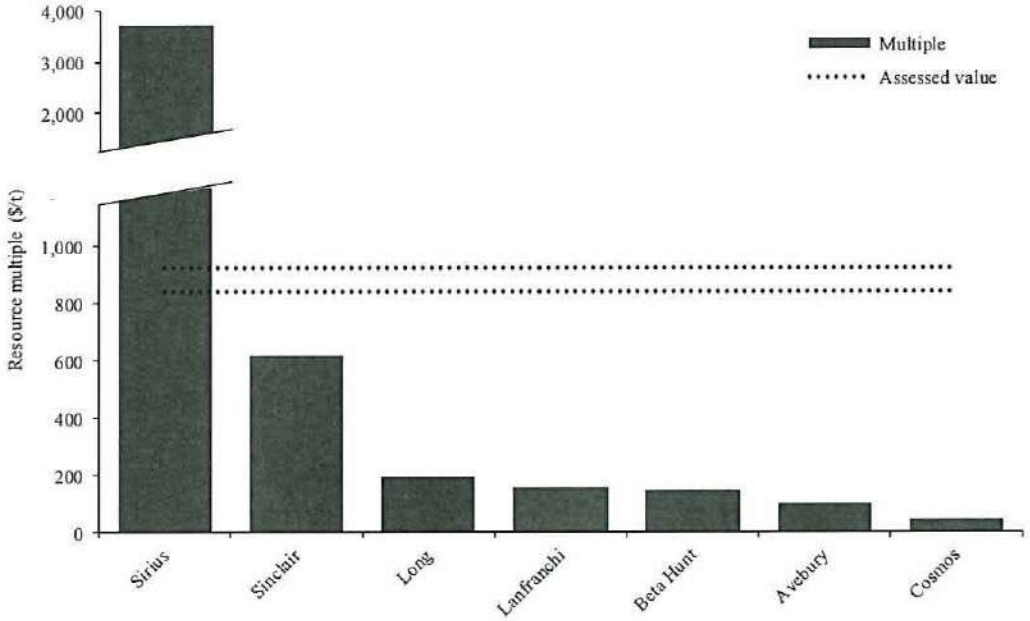
Further details of our analysis is set out in Appendix 6 to this report.

Comparison to listed contained nickel equivalent Mineral Resource multiples implied by recent corporate and asset transactions

Summarised in the figure below is a comparison of the contained nickel equivalent Mineral Resources multiples implied by the range of values for the enterprise value of Panoramic with the implied value per contained nickel equivalent Mineral Resource tonne for a selection of recent corporate transactions involving companies with nickel development or production operations.

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Figure 19: Resource multiples per tonne of contained nickel equivalent implied by selected corporate and asset transactions



Source: KPMG Corporate Finance Analysis, Capital IQ, Merger Market and respective company announcements and Annual Reports

This analysis indicates a wide range of outcomes, however we note that the range of the Mineral Resource multiples implied by our range of assessed values for the enterprise value of Panoramic lies within the observed range.

In considering the outcomes of the comparison to contained nickel equivalent Mineral Resource multiples implied by recent company transactions we note:

- many of the previously mentioned comments in relation to the multiples implied by listed companies' Enterprise Values have equal relevance here
- the Beta Hunt mine incorporates significant gold by-product credits in its nickel equivalent resource multiple, while Sirius's Nova-Bollinger project has copper by-products
- the transactions considered were completed under different prevailing market conditions and the participants may have held different expectations in relation to future nickel prices
- we would expect assets in or near production to attract a higher reserve multiple than early stage projects, all else equal. Whilst not yet in production, Sirius' Nova project had begun construction, after delivering a DFS contemplating a high margin, 10-year mine, producing 26ktpa of nickel in concentrate, with permits and offtake agreements secured

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- the Lanfranchi mine had been previously operated for 10 years before being placed on care and maintenance in 2015, approximately 3 years prior to the transaction date. The mine was acquired by a private equity firm who at the time indicated its intention was to restart the mine. No further details in relation to the key value drivers for the acquisition were disclosed. However, we note that the mine also included a significant level of established infrastructure
- the final price paid by the successful acquirer may incorporate an element of synergies and cost savings unique to that purchaser that it was required to pay away. This value is excluded from the commonly accepted definition of market value but is extremely difficult to quantify but if excluded could reduce the implied transaction multiples. In this regard, we note:
  - Mincor intended to utilise infrastructure and road access from the Long operation for its other Kambalda projects; and
  - Similarly, Saracen highlighted that the Sinclair Project included "underexplored gold tenure immediately along strike from [their] Bannockburn Project…" and that the processing plant, as well as the resource, "unlocked value" at their nearby Waterloo/Amorac nickel deposits.

Having regard to the above mentioned analysis we do not consider our range of enterprise values for Panoramic to be unreasonable.

Further details of our analysis is set out in Appendix 6 to this report.

12 Valuation of the Offer Consideration

12.1 Summary

The Offer Consideration to be received by Panoramic shareholders comprises new ordinary shares in the Enlarged IGO. Accordingly, RG 111 requires the value of the scrip consideration to be assessed on a minority interest basis. It is common in these circumstances to have reference to the post announcement market price of the offeror for the purpose of estimating the value of an offer with a scrip component, as this is the price at which target shareholders can monetise the offer consideration.

Neither the theoretical value of the Enlarged IGO as a stand-alone entity nor considerations of control premia are relevant to portfolio shareholders in the Enlarged IGO, except in the event of an offer for the Enlarged IGO itself. We note that in any event we have not had access to the internal records or management of IGO and the information contained in the Bidder's Statement is insufficient to enable a fundamental valuation of IGO's assets or the company to be performed on a reasonable basis.

Utilising the post announcement market prices of the Offeror also requires consideration as to whether there are any factors that might suggest the Offeror's current trading prices may not be representative of future trading prices in the short/medium term.

We have assessed the estimated trading value of a share in the Enlarged IGO, under current market conditions, to lie in the range of $5.80 to $6.15, which, based on the Exchange Ratio, implies a value of the Offer Consideration in the range of $0.446 to $0.473 per Panoramic share, as set out in the table below.

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Table 48: Assessed value of the Offer Consideration

	Valuation range	
	Low	High
Value per Enlarged IGO share ($)	5.80	6.15
Exchange Ratio (1:13)	0.077	0.077
Assessed value of the Offer Consideration ($)	**0.446**	**0.473**

Source: KPMG Corporate Finance analysis
Note: May not calculate exactly due to rounding

We note that the implied value of the scrip consideration can be expected to vary with movements in IGO's traded price over the Offer Period, which will reflect both company specific and general market factors, including movements in nickel and gold markets. Accordingly, the final value of the Offer Consideration will not be known until the Offer closes, which is currently scheduled for 17 January 2020, and could ultimately exceed, or be less than, $5.80 to $6.15 per Enlarged IGO share.

In assessing the Offer Consideration, which is underpinned by the value of a new ordinary share in the Enlarged IGO, we have considered a combination of matters, including recent traded share prices for and the liquidity of IGO on the ASX and Chi-X, performance of IGO shares relative to various other listed nickel sulphide companies and brokers' target prices for an IGO share on the ASX published in the periods immediately prior to and post the announcement of the Offer.

Key factors influencing our approach included:

- the trading price of IGO shares reflects the value of portfolio interests as required by RG111
- IGO is a publicly listed company and is required to comply with ASX Listing Rules in relation to continuous disclosure, including in particular the release of price sensitive information. A review of announcements made by IGO over calendar 2019 indicates that it regularly releases a significant amount of financial and operational information to the market. In addition, other ASX listed companies also release information in relation to various other exploration projects in which IGO has an interest, which are included on IGO's and the ASX's websites.
- IGO is followed by various broking houses, which publish periodic research reports, which arguably assists the ability of shareholders to make informed decisions regarding the prospects of the company and prices at which IGO shares should trade. In this regard, in the period:
    - between the release of IGO's latest quarterly activities report and presentation on 22 October 2019 and the announcement of the Offer on 4 November 2019, we have sourced ten investment notes in relation to IGO published by broking houses; of these, five also published updated research in the period between the announcement on 1 November 2019 that IGO had negotiated new offtake arrangements on more favourable commercial terms than existing agreements and the announcement of the Offer on 4 November 2019
    - subsequent to the announcement of the Offer, we have sourced research published by nine broking houses reflecting on the Offer or other corporate developments either in respect of Panoramic or IGO in the period to 13 December 2019
- there has been sufficient time and information available, including the information contained in:

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- IGO's Bidder's Statement, released to the market on 4 November 2019[28]
- Panoramic's announcement as to the outcome of its Operational Review, released to the market on 4 December 2019
- Panoramic's announcement as to details of the Entitlement Offer, released to the market on 5 December 2019
- Panoramic's Target's Statement, released to the market on 9 December 2019
- various broking house notes covering Panoramic and/or IGO, released subsequent to the Offer

for the market to assess the Offer, its prospects of success and its implications for IGO should the proposed acquisition of Panoramic be successful. Therefore, trading in IGO shares subsequent 4 November 2019 should reflect the estimated impacts associated with the Offer, albeit IGO's market price may, as discussed later, also be reflecting an increasing level of completion risk given Panoramic has already breached various conditions precedent, which IGO is yet to waive, and the announcement by Panoramic's 35.2% shareholder, Zeta, that it does not intend to accept the Offer in its current form and.

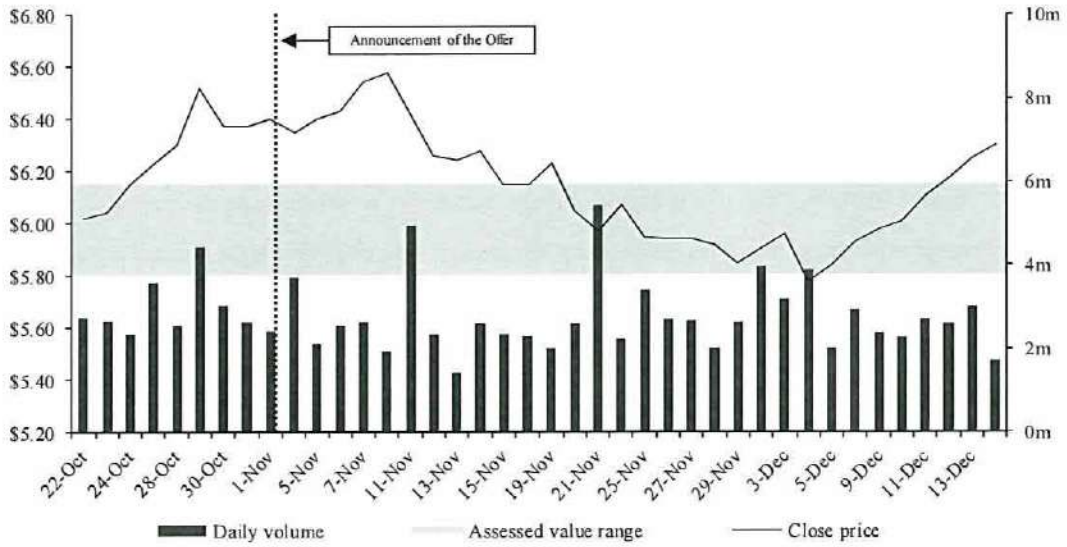
- IGO's shares were traded on ASX on each of the available trading days over the 12 months prior to the announcement of the Offer and also in the subsequent period and average daily trading volumes have been sufficient for portfolio shareholders desirous of realising their investments to do so.

[28] Along with IGO's First Supplementary Bidder's Statement dated 22 November 2019.

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A summary of recent share trading activity in IGO shares since the announcement of IGO's September 2019 quarterly report to 16 December 2019 and our selected valuation range is set out in the chart below.

Figure 20: Selected valuation range and recent trading in IGO shares



Source: KPMG Corporate Finance analysis

12.2 Analysis of trading in IGO shares

12.2.1 IGO's share price and liquidity

Prior to the Offer

The trading price and volume of IGO shares traded prior to the Offer was discussed previously in section 9.11. Over the 12 month period prior to the announcement of the Offer, IGO shares, whilst exhibiting volatility, generally traded strongly upwards, closing at $6.40 on 1 November 2019 (the last trading day prior to the announcement of the Offer), representing an increase of approximately 80% over the 12 month trading low of $3.56 per share on 27 November 2018. This increase in value is not unexpected given the corresponding 64% increase in the AUD spot price of nickel over the same period, increasing from $14,820/t to $24,305/t, and also the increase in the AUD gold price, which increased by 27% from $1,723/oz to $2,187/oz, both of which contributed to a strong operational performance of IGO over the period, resulting, as discussed in section 9.6, in a significant increase in the level of free cash flows to equity.

Our review of IGO's ASX releases indicates that it regularly releases information into the market. In addition to typical reporting of half year and full year financials, it has historically also provided full year operational guidance to the market, quarterly activities and results updates and also periodically presents at industry events. In the period between 1 July 2019 and the announcement of the Offer, IGO:

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- released its June 2019 Quarterly Activities Report and supporting 4Q19 Results Presentation on 31 July 2019, in addition IGO hosted a live webcast of its presentation on the same day
- hosted site visits at the Nova and Tropicana projects
- released its full statutory accounts for FY19 on 29 August 2019, as well as details of its dividend distribution and FY19 Results Presentation on the same date, which included IGO's assessment of its operational outlook for the Nova Project and Tropicana JV and planned FY20 exploration expenditure and focus
- released its September 2019 Quarterly Activities Report and supporting 1Q20 Results Presentation on 22 October 2019, in addition IGO hosted a live webcast of its presentation on the same day
- presented at the Diggers and Dealers Mining Forum on 5 August 2019 and the Australian Nickel Conference on 15 October 2019.

Accordingly, the market was arguably well informed about the trading results and short to medium term prospects of each of IGO's operations immediately leading up to the announcement of the Offer. IGO's shares closed down at $6.35 on 4 November 2019 compared to its closing price per share on 1 November 2019 of $6.40.

Post the announcement of the Offer

In the period 4 November 2019 to 16 December 2019 inclusive, IGO shares traded in the range of $5.76 to $6.65 per share, closing at $6.30 on 16 December 2019, representing a fall from its $6.40 closing price on 1 November 2019 in the order of 2%.

Other than an announcement:

- on 28 November 2019 by Encounter Resources Limited (**ERL**) in relation to the identification of a suite of new copper drill targets in the Paterson Province, Western Australia (included under IGO's ticker on the ASX's website due to IGO's collaboration with ERL in the project and IGO's option to earn-in)
- on 12 December 2019 by Prodigy Gold in relation to leach extraction results from the Grimlock prospect and reverse circulation, which form part of the Lake Mackay JV (included under IGO's ticker on the ASX's website due to IGO's 70% interest in the Lake Mackay JV),

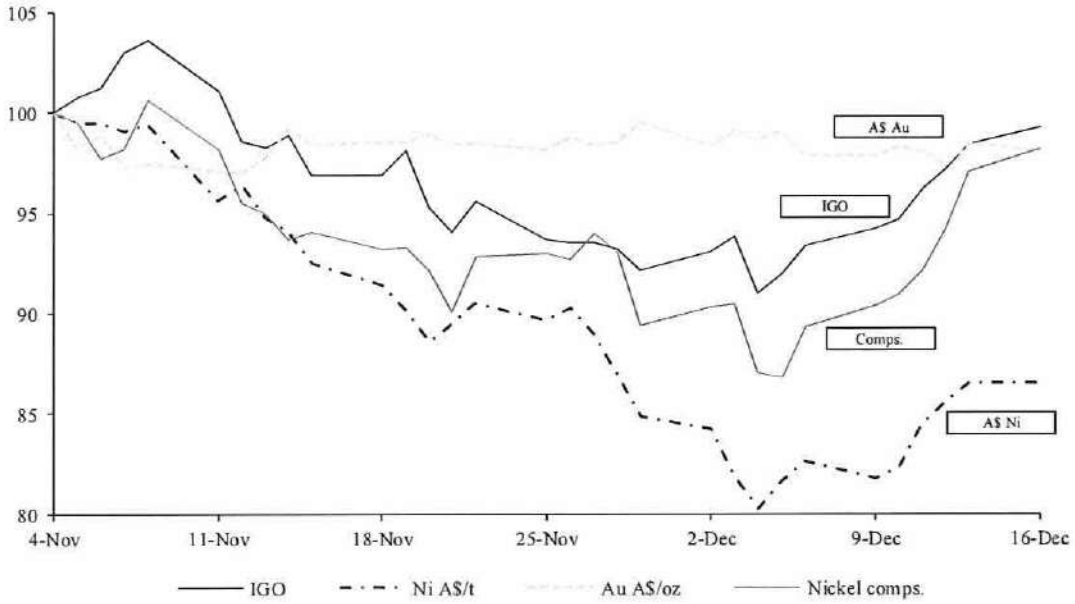
IGO did not issue any new price sensitive information other than relating to the Offer in this period.

Accordingly, it is likely that movements in IGO's share price over the period likely reflects a mixture of both general market factors and the market's assessment of the prospects and impact of IGO successfully completing the acquisition of Panoramic.

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The figure below depicts IGO's relative share market performance in the period 4 November 2019 to 16 December 2019 inclusive against the AUD spot price of nickel, the AUD spot price of gold and an index of Australian nickel companies focussed selected for comparison[29].

Figure 21: IGO's relative share price performance between 4 November 2019 and 16 December 2019 inclusive



Source: Capital IQ, KPMG Corporate Finance analysis

The chart above indicates that whilst IGO's closing share price fell marginally in the period since the announcement of the Offer to 16 December 2019, IGO has, in general, outperformed against its Australian peers. Whilst IGO's share price has exhibited correlation with the movement in AUD spot prices for nickel it has not been as strong as that of its peers, which may reflect that, unlike most of its peers, IGO has a significant exposure to gold production. Over the period the AUD spot price for gold fell only 1.9% in comparison to the fall in the AUD spot price for nickel of 13.5%.

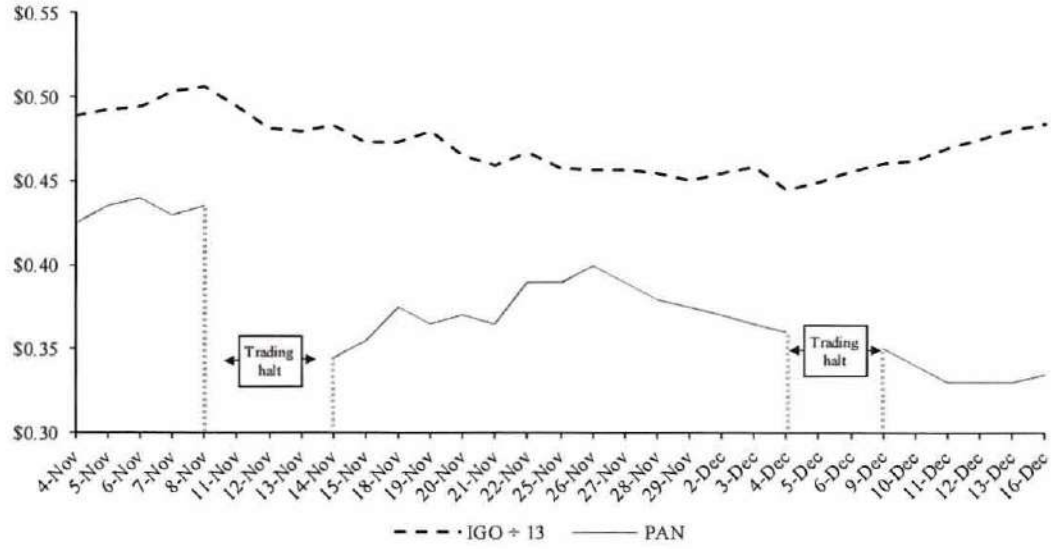
As shown in the chart below, based on the Exchange Ratio under the Offer of 1 new IGO share for every 13 Panoramic shares, Panoramic has, since the announcement of the Offer:

- traded with little clear correlation to the movements in IGO's shares
- traded over the entire period below the implied Offer Consideration, and at an increasing level of discount leading up to 16 December 2019.

[29] Comprising Panoramic, Western Areas, Mincor, Poseidon, and Cassini. Further detail on comparable companies selected for comparison purposes is set out in Appendix 5 of this report.

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Figure 22: IGO share price vs offer exchange ratios



Source: Capital IQ and KPMG Corporate Finance Analysis

The trading profile of IGO and Panoramic since the announcement of the Offer may indicate that whilst the market initially considered there to a reasonable prospect of the Offer completing, evidenced by the significant 26.9% increase in Panoramic's closing share price from $0.335 on 1 November 2019 to $0.425 on 4 November 2019, the disconnect in the relative trading profiles and recent widening in the implied transaction metrics, may indicate that the market also considers there to be residual and increasing completion risk, resulting in a partial unwinding in the control premium embedded in Panoramic's share price. In this regard, we note that based on the closing price of IGO on 16 December 2019 of $6.30 the implied premium to Panoramic's closing price on the same day of $0.335, was, based on the Exchange Ratio, 45%, which compares to the implied control premium implied by closing prices on 1 November of 47% and on 4 November 2019 of 15%.

Similarly, IGO's recent share price movement may also incorporate a partial unwinding of the impact of the Offer on IGO, including the impact of the Operational Review on original deal metrics and the potential dilution of IGO's gold earnings as a percentage of overall earnings, which as noted previously, may have provided IGO with a degree of insulation from the much sharper decline in recent AUD nickel prices.

Should the market assess an increasing likelihood of completion, this may weigh upon IGO's future share price.

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12.2.2 Trading multiples

Figures 16 and 17 in section 11.4 above set out diagrammatically a comparison of the implied value per tonne of nickel equivalent Mineral Resources and Ore Reserves respectively for various listed nickel focused companies[30]. This analysis indicates that IGO is trading at a significant premium to its peers.

This premium may reflect a number of factors, including

- the Nova Project and Tropicana operations have largely achieved steady state production, with development capital, other than in relation to the development of the Boston Shaker Underground, largely already incurred, in contrast a number of the companies selected for comparison are not yet in production and/or have in train or are about to commence large capital projects.
- whilst the characteristics of other companies selected for comparison are broadly similar to the IGO, a significant portion of IGO's earnings are derived from its 30% interest in the Tropicana JV. As noted previously, this gold exposure may have provided IGO with a degree of insulation from the recent sharp decline in AUD nickel prices, which in turn will have translated to greater a reduction in the implied multiples of its peers.

Whilst for the reasons set out previously in section 11 these measures should be treated with some caution, they may suggest that there is some downside risk to the current share price of IGO.

12.2.3 Liquidity

IGO is a deeply traded stock. In the one month and 3 months prior to the announcement of the Offer, a total of 86.3 million and 289.3 million IGO shares, with an aggregate value of approximately $534.1 million and $1.747 billion respectively, were traded on ASX and Chi-X. IGO shares were traded on every available trading day, representing an average daily traded volume of approximately 3.8 million shares and 4.4 million shares over the same periods.

In the period from 4 November 2019 up to and including 16 December 2019, a total of 113.1 million IGO shares, with an aggregate value of approximately $692.9 million were traded on ASX and Chi-X. IGO shares were traded on every available trading day, at an average daily volume of 3.6 million shares traded per day.

Whilst the average daily volume of shares in the period subsequent to the announcement of the Offer has not increased compared to immediately prior to the Offer, in our view this is not unexpected in the context of an acquisition that, whilst providing IGO with various areas of synergy and optionality, might be considered to be a bolt-on rather than company transforming acquisition given the relative size of each company's existing operations and market capitalisation. We also note our previous comments in relation to the potentially increasing market uncertainty as to whether IGO will continue to pursue the Offer.

As set out in section 9.11 the VWAP for an IGO share over the period 4 November 2019 to 16 December 2019 inclusive was $6.13.

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[30] based on trading prices and other market factors as at 16 December 2019. At that date IGO's closing share price was $6.30. Refer to Appendix 5 for further details as to the relevant calculations.

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12.2.4 Broker notes

Summarised in the following table are investment notes published by twelve broking houses providing target prices for IGO in the period between the release of its September 2019 Quarterly Activities Report and supporting 1Q20 Results Presentation on 22 October 2019 and 13 December 2019.

Table 49: Brokers' Price Estimates for IGO

	Prior to announcement of the Offer				Post announcement of the Offer			
Broker	**Report date**	**Closing price at report date**	**Price target**	**Recommendation**	**Report date**	**Closing price at report date**	**Price target**	**Recommendation**
Post announcement of new commercial terms for offtake arrangements								
Broker 1	3/11/2019[1]	6.40	6.40	Neutral	n/a	n/a	n/a	n/a
Broker 2	1/11/2019	6.40	4.65	Underperform	6/11/19	6.43	4.65	Underperform
Broker 3	1/11/2019	6.40	5.70	Neutral	4/11/19	6.35	5.70	Neutral
Broker 4	1/11/2019	6.40	6.40	Neutral	4/11/19	6.35	6.40	Neutral
Broker 5	1/11/2019	6.40	7.40	Outperform	n/a	n/a	n/a	n/a
Post announcement of September quarter 2020 activities and results								
Broker 6	29/10/2019	6.52	5.90	Hold	n/a	n/a	n/a	n/a
Broker 7	23/10/2019	6.04	6.27	Accumulate	n/a	n/a	n/a	n/a
Broker 1	22/10/2019	6.02	6.00	Neutral	n/a	n/a	n/a	n/a
Broker 2	22/10/2019	6.02	4.45	Underperform	n/a	n/a	n/a	n/a
Broker 3	22/10/2019	6.02	5.70	Neutral	n/a	n/a	n/a	n/a
Broker 4	22/10/2019	6.02	6.40	Neutral	n/a	n/a	n/a	n/a
Broker 5	22/10/2019	6.02	7.40	Outperform	n/a	n/a	n/a	n/a
Broker 8	22/10/2019	6.02	6.00	Outperform	4/11/19	6.35	6.00	Outperform
Broker 9	21/10/2019	5.87	6.10	Equal-Weight	12/12/19	6.17	5.55	Equal-Weight
Broker 10	21/10/2019	5.87	6.60	Buy	4/11/19	6.35	6.60	Buy
Broker 11	n/a		n/a	n/a	4/11/19	6.35	5.50	Sell
Broker 12	n/a		n/a	n/a	7/11/19	6.54	4.65	Underperform
Minimum[1]			**4.65**				**4.65**	
Maximum[1]			**7.40**				**6.60**	
Median[1]			**6.19**				**5.63**	
Average[1]			**6.14**				**5.63**	

Source: Broker reports, KPMG Corporate Finance analysis
Note:

1 *Broker 1's note is dated 3 November 2019 which was a non-trading date. The closing price is taken as at 1 November 2019*
2 *Where a broker has more than one report in the period prior to the Offer disclosed in the table, only the latest report has been included for the purpose of calculating the minimum, maximum, average and median*
3 *'n/a' denotes not available*

This table indicates:

- a wide range of views were held by the broking community in relation to the short term prospects of IGO immediately prior to the Offer, ranging from Underperform to Outperform/Buy recommendations and target prices per share of $4.65 to $7.40
- none of the brokers providing recommendations both pre and post the Offer downgraded these as a result of the Offer, however one of these brokers has reduced its post Offer target price from $6.10 to $5.55 as a result of a change in its sentiment towards the natural resources sector more generally

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- two additional brokers publishing recommendations immediately post the Offer did so with sell/underperform recommendations, and target prices at or towards the low end of the range of pre-Offer target prices and significantly below the pre-Offer average and the median. Had these two observations been included with the pre-Offer observations, the overall range of pre-Offer target prices would not have changed, however the median and average would have fallen to $6.05 and $5.96 respectively
- post-Offer metrics may suffer from "survivor-bias", in that the most recent pre-Offer target prices of each of the broking houses that are yet to publish post-Offer reports lie above the post-Offer median and average target prices included in the table above.

12.2.5 Conclusion

We have no reason to expect that, based on prevailing market conditions, the recent trading in IGO shares does not reflect an objective market based assessment of the value of a share in IGO as at 16 December 2019. However, we also consider that IGO's share price may have benefitted recently from increased market speculation that the Offer may not complete.

In contrast, reflecting that we are required by RG111 to form a view as to the value of the Offer Consideration in the event the Offer is completed, we have assessed a range of values for a share in the Enlarged IGO, on a minority interest basis, to be in the range of $5.80 to $6.15.

The top end of our range for an Enlarged IGO share of $6.15 sits slightly above the post-Offer VWAP to 16 December 2019 of $6.13 but below the closing price for an IGO share on 16 December 2019 of $6.30, which we consider reasonable given our previous comments in relation to downside risk to IGO's current shareprice. The low end of our range approximates the closing low over the period on 4 December 2019 of $5.78.

Our selected range of values for an IGO share following completion of the Offer sits comfortably with the range of target prices published by the broking houses both prior to and subsequent to the announcement of the Offer.

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Appendix 1 – KPMG Corporate Finance Disclosures

Qualifications

The individuals responsible for preparing this report on behalf of KPMG Corporate Finance are Jason Hughes and Ian Jedlin. Each has a significant number of years of experience in the provision of corporate financial advice, including specific advice on valuations, mergers and acquisitions, as well as preparation of expert reports.

Jason Hughes is an Authorised Representative of KPMG Financial Advisory Services (Australia) Pty Ltd and a Partner in the KPMG Partnership. Jason is a Fellow of Chartered Accountants Australia and New Zealand, a Senior Fellow of the Financial Services Institute of Australasia, a member of the Australia Institute of Company Directors and holds a Bachelor of Commerce and a Graduate Diploma in Applied Finance.

Ian Jedlin is an Authorised Representative of KPMG Financial Advisory Services (Australia) Pty Ltd and a Partner in the KPMG Partnership. Ian holds a Bachelor of Economics, a Masters of Commerce, is a Senior Fellow of the Financial Securities Institute of Australasia and is a member of the Institute of Chartered Accountants Australia and New Zealand. Ian is also a graduate member of the Australian Institute of Company Directors and a member of the Standards Review Board of the International Valuations Standards Council.

Disclaimers

It is not intended that this report should be used or relied upon for any purpose other than KPMG Corporate Finance's opinion as to whether the Offer is fair and reasonable to Panoramic shareholders taken as a whole. KPMG Corporate Finance expressly disclaims any liability to any Panoramic shareholder who relies or purports to rely on the report for any other purpose and to any other party who relies or purports to rely on the report for any purpose whatsoever.

Other than this report, neither KPMG Corporate Finance nor the KPMG Partnership has been involved in the preparation of the Target's Statement or any other document prepared in respect of the Offer. Accordingly, we take no responsibility for the content of the Supplementary Target's Statement or the as a whole or other documents prepared in respect of the Offer.

We note that the forward-looking financial information prepared by Panoramic does not include estimates as to the potential impact of any future changes in taxation legislation in Australia or any other jurisdiction. Future taxation changes are unable to be reliably determined at this time.

Our report makes reference to "KPMG Corporate Finance analysis". This indicates only that we have (where specified) undertaken certain analytical activities on the underlying data to arrive at the information presented.

Independence

KPMG Corporate Finance and the individuals responsible for preparing this report have acted independently.

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In addition to the disclosures in our Financial Services Guide, it is relevant to a consideration of our independence that, during the course of this engagement, KPMG Corporate Finance provided draft copies of this report to management of Panoramic for comment as to factual accuracy, as opposed to opinions which are the responsibility of KPMG Corporate Finance alone. Changes made to this report as a result of those reviews have not altered the opinions of KPMG Corporate Finance as stated in this report.

Other than fees to be received in respect to preparing this report, neither KPMG Corporate Finance or the KPMG Partnership have provided professional services to Panoramic or IGO in relation to the Offer.

Consent

KPMG Corporate Finance consents to the inclusion of this report in the form and context in which it is included with the Supplementary Target's Statement to be issued to Panoramic Shareholders. Neither the whole nor the any part of this report nor any reference thereto may be included in any other document without the prior written consent of KPMG Corporate Finance as to the form and context in which it appears.

Professional standards

Our report has been prepared in accordance with professional standard APES 225 "Valuation Services" issued by the Accounting Professional & Ethical Standards Board.

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Appendix 2 – Sources of Information

In preparing this report we have been provided with and considered the following sources of information:

Publicly available information:

- company presentations and announcements of Panoramic and IGO
- annual reports for the periods ended 30 June 2017, 30 June 2018 and 30 June 2019 for Panoramic and IGO
- annual reports, company presentations and news releases of comparable companies
- data providers including S&P Capital IQ Pty Ltd, Bloomberg, MergerMarket, Thompson One, Consensus Economics, Connect 4, IBISWorld Pty Ltd, Economic Intelligence Unit, Oxford Economics and the Department of Industry Innovation and Science.
- various broker and analyst reports
- various press and media articles
- the Bidder's Statement
- the Target's Statement.

Non-public information

- unaudited management accounts as at 30 November 2019 in respect of Panoramic and associated entities
- life of mine forecast production and costing projections prepared by SRK in respect of the Savannah Project
- other confidential agreements, documents, presentations and industry papers
- SRK's independent technical specialist report.

In addition, we have held discussions with, and obtained information from, the senior management of Panoramic and its advisers.

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Appendix 3 – Overview of the nickel, copper and cobalt industries

To provide a context for assessing the future prospects of both Panoramic and IGO, we have set out below, an overview of the recent and expected trends in the international nickel, copper and cobalt markets respectively.

Nickel

Overview

Nickel is an internationally traded commodity and its price fluctuates on a daily basis in the commodity market, as determined by worldwide demand and supply factors. As a result of the many fundamental and speculative factors influencing global demand and supply we observe divergent views as to the likely balance of nickel consumption and supply into the future. Whilst various commentators and forecasters have suggested demand and supply drivers will result in a deficit in supply over the short to medium term, others forecast a more balanced demand and supply equation over the same period.

The industry commentary below is not intended to represent all commentator views and does not make any statement as the whether any forecasts or projections included will be achieved but rather intends to highlight some of the key factors influencing the balance.

Nickel demand

Key to the demand, and therefore the price, for nickel is the steel industry and energy storage batteries. At present, nickel prices closely follow steel industry demand and activity, with stainless steel producers currently accounting for approximately two-thirds of total nickel demand.

Stainless steel is widely used in utensils and domestic appliances, automobile manufacturing and construction and as such the demand for nickel is directly related to the performance of these industries and any other industries where stainless steel is used.

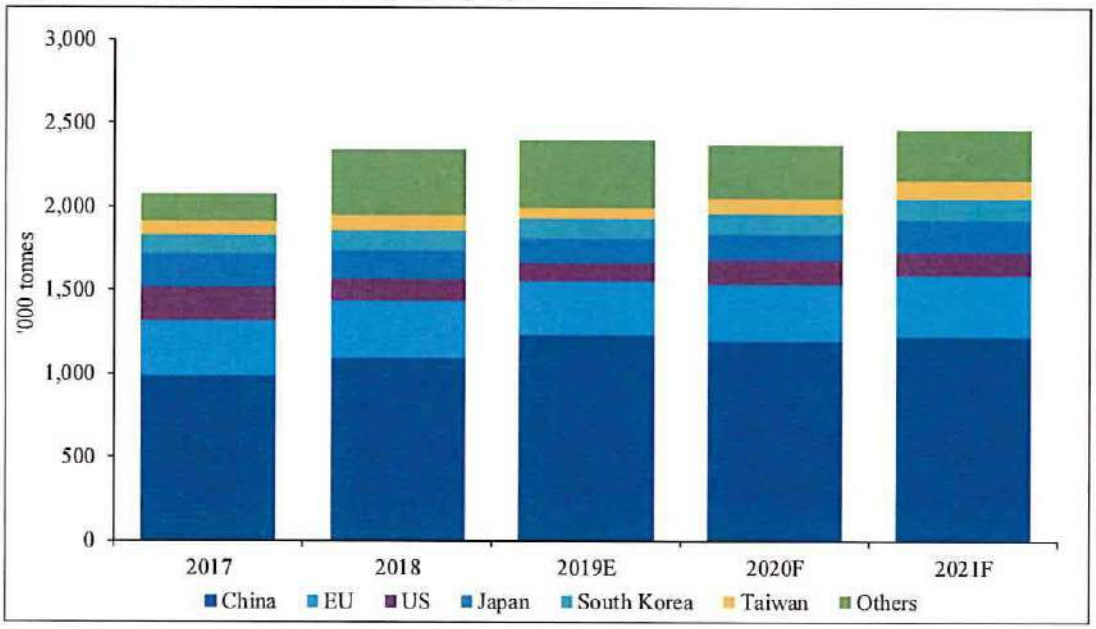
Future demand is however also expected to be heavily influenced by demand from the nascent electric vehicle (**EV**) industry and the associated battery manufacturing.

Historical and forecast global consumption of nickel is dominated by China, which consumed approximately 1.1 Mt in 2018 (approximately 47% of global consumption). The European Union (**EU**), Japan and the United States were the next 3 largest consumers in 2018.

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A summary of historical, estimated and forecast global nickel consumption by region is set out below.

Figure A3-1: Global nickel consumption by region



Source: Economist Intelligence Unit, KPMG Corporate Finance Analysis

The Economist Intelligence Unit (**the EIU**) expects refined nickel consumption to rise by 2.1% in 2019, decrease slightly by 1.2% in 2020 and then increase by 3.8% in 2021. The EIU has suggested that in 2020 the pace of global steelmaking will moderate and has forecast a decrease in consumption from China and 'Other' countries. Contributing however to the forecast increase in demand in 2021 is the expectation that production of EVs will rise during this period.

The growth in lithium-ion batteries for powering EVs will be an important component of future nickel demand, particularly should the favoured battery chemistry for EVs remain to be one containing higher nickel intensity.

Nickel supply

In addition to factors from the broader economic and political environment, nickel supply is influenced by factors that occur at both the mine and/or the refinery level. Key to recent supply forecasts over the short to medium term has been consideration of the impact on supply chains from Indonesia's upcoming ore ban (to take effect from the beginning of 2020).

Nickel can be sold as direct shipping ore to refiners, however, some companies are vertically integrated in that they refine the mined nickel ore to produce nickel metal.

The nickel ore mining industry is segmented into two types of operations: sulphide ores and laterite ores.

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Sulphide

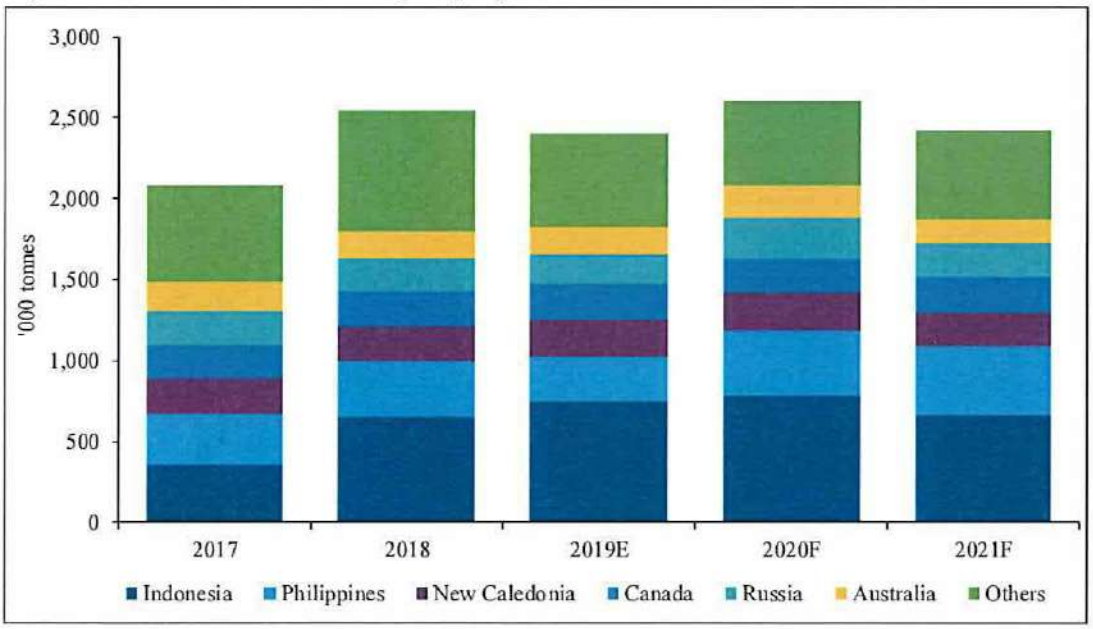
The main nickel ore in terms of historical worldwide production is sulphide mineral pentlandite (nickel sulphide) which occurs in iron and magnesium rich igneous rocks. Sulphide ore deposits are typically at greater depths than laterite deposits and can be concentrated using a flotation physical separation technique.

Laterite

Nickel bearing laterites are typically found on the surface, about 15 to 20 meters deep and occur where nickel sulphides have been converted to oxide ores through a weathering process. Being closer to surface, laterites can be mined via open-cut methods, however, as laterite is harder than sulphide ore, there is currently no simple separation technique for nickel laterites as rock must be completely molten or dissolved to enable nickel extraction.

A summary of historical and forecast global nickel mining production output is set out below.

Figure A3-2: Global nickel mine output by region



Source: Economist Intelligence Unit, KPMG Corporate Finance Analysis

Whilst Indonesia and the Philippines are the largest contributors to global mined nickel production (contributing approximately 25% and 14% respectively in 2018); China, Japan and Russia account for the largest proportions of refined nickel production (accounting for 33%, 8% and 7% respectively in 2018).

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The EIU forecast mine output to increase in 2020 by approximately 9% as some upgraded facilities and new sites come on line. Disruptions to mining operations caused by technical problems or shifting environmental policies are the key factors cited as anticipated factors leading to a decrease in mining production of almost 7% in 2021 mine output.

The EIU expects overall refined nickel production to grow at 5.2% in 2020 and 2.7% in 2021. With China accounting for roughly a third (33% in 2018) of refined nickel production it will remain critical to overall supply. The EIU expects China's output of refined nickel to continue to grow in the short to medium term, albeit at reduced levels, being 4.2% in 2019, 2.1% in 2020 and 1.3% in 2021. It is expected that the recent Indonesian nickel ore export ban will have a negative impact on China's production in both 2020 and 2021 given China's reliance on Indonesian nickel laterite ore. Stronger output by Russia as well as continued strength by Australia underpin the EIU view of a 5.2% growth in refined nickel in 2020.

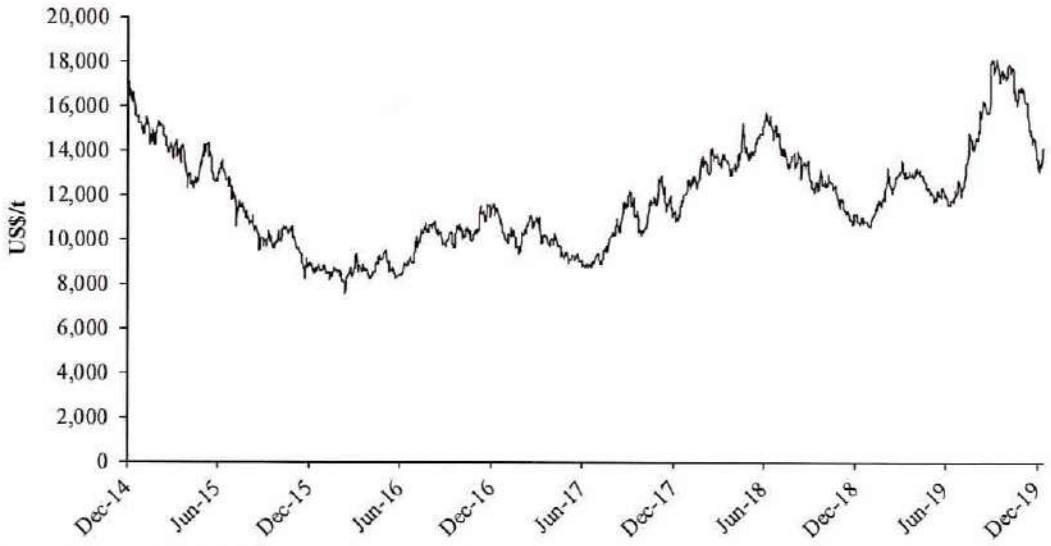
Nickel prices

Historical

Nickel prices are sensitive to global economic growth sentiment but also to economic conditions in key consuming countries such as China where local industrial condition and economic outlook also impact demand.

Set out below is the historical USD dominated cash nickel price per tonne as quoted on the London Metal Exchange (**LME**) for the four years to 16 December 2019.

Figure A3-3: Historical nickel price



Source: Capital IQ, KPMG Corporate Finance Analysis

Outlook

We have compiled nickel price forecasts from various commentators, as set out below.

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Table A3-1: Forecast nickel prices as at 16 December 2019

Forecast nominal nickel price (US$/t)							
As at 16 December 2019	**Dec-19**	**Dec-20**	**Dec-21**	**Dec-22**	**Dec-23**	**Dec-24**	**Dec-25**
Number of commentators	32	35	29	22	19	10	10
Commentator high	18,739	19,000	20,000	22,267	22,046	22,046	22,377
Commentator low	12,345	12,900	13,224	13,224	13,007	15,292	15,966
Commentator average	16,116	16,064	16,253	16,427	16,574	17,816	18,199
Commentator median	16,538	16,204	16,000	16,102	16,590	17,460	18,013
Forward curve	14,200	14,261	14,477	14,724	14,982	15,256	n/a

Source: Bloomberg, Consensus Economics, KPMG Corporate Finance
Note: n/a denotes not available

The analysis set out in the table above indicates a wide range of views as to forecast nickel prices. Nickel prices are expected to, on average, decline slightly over the next two years, and then climb gradually through to 2025. In considering these brokers' forecast, it is important to note that the publications of commentators forecast pricing analysis tends to lag changing market conditions, particularly during periods of high volatility.

Copper

Overview

Copper is an internationally traded commodity and its price fluctuates on a daily basis in the commodity market, as determined by worldwide demand and supply factors. A summary of historical, estimated and forecast short-term supply and demand published by the EIU in November 2019 is set out below.

Table A3-2: Summary of supply and demand

('000 tonnes)	2017	2018	2019E	2020F	2021F
Global production (supply)	23,397	23,661	24,027	24,416	24,884
Global consumption (demand)	23,262	23,703	24,112	24,563	25,094
Difference	**135**	**(43)**	**(85)**	**(146)**	**(210)**

Source: Economist Intelligence Unit, KPMG Corporate Finance Analysis
Note: Numbers may not add due to rounding

Copper demand

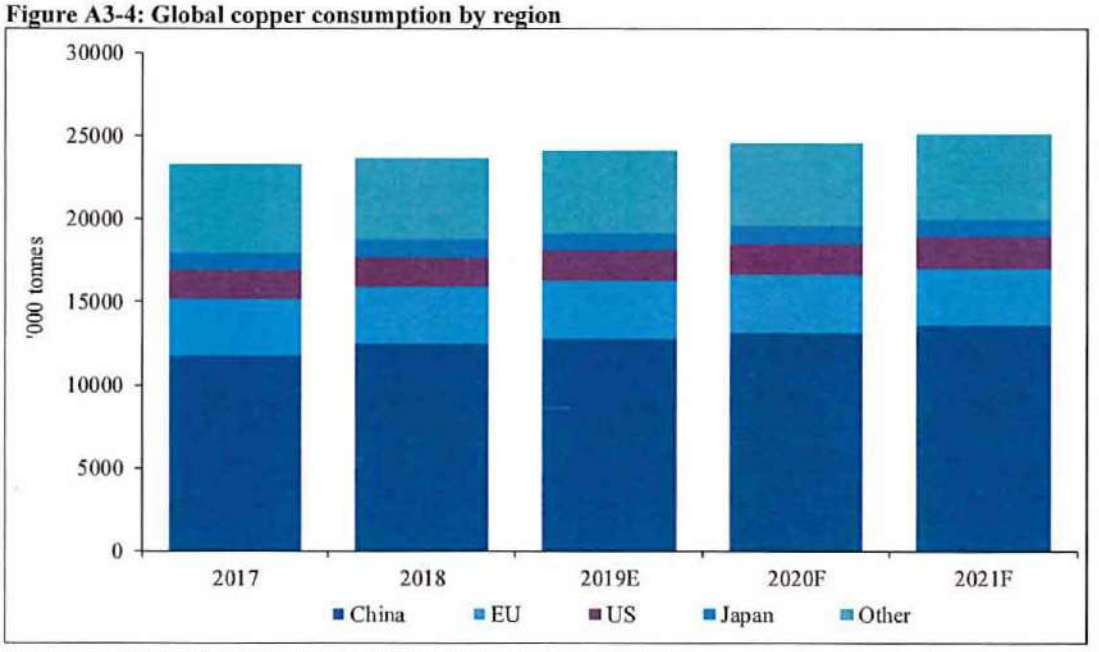
Copper's malleability, strength, resistance to corrosion and electrical conductivity has made it a key component in the electrical, building and construction industries. The Department of Industry, Innovation and Science estimates that electrical equipment manufacturing accounts for approximately 31% of current global demand for refined copper products, with the building and construction industries accounting for a further 30% of demand and the balance used in the infrastructure, transport and industrial industries.

Global consumption of copper is dominated by China which consumed approximately 12.5 Mt in 2018 (approximately 53% of global consumption), with other consumers including the European Union (**EU**), United States and Japan, consuming approximately 3.4 Mt, 1.8 Mt and 1.0 Mt, respectively in 2018.

A summary of historical estimated, estimated and forecast global copper consumption by region, as published by the EIU in November 2019, is set out below.

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Figure A3-4: Global copper consumption by region



Source: Economist Intelligence Unit, KPMG Corporate Finance Analysis

The EIU expects refined copper consumption to rise by 1.7% in 2019, 1.9% in 2020 and 2.2% in 2021. Increases in copper consumption are expected to be driven by Chinese urbanisation plans and significant investments in renewable energy infrastructure. Demand elsewhere in Asia is expected to be driven by increased construction activity through China's Belt and Road Initiative.

The EIU maintains its modest growth outlook for copper consumption in both the EU and US, which are the second and third largest consumers of copper, as a result of a dovish shift in monetary policy in major developed economies. Trade tensions between China and the United States continue to increase downside risk for manufacturing activity.

Copper supply

According to the EIU, the majority of the world's copper supply is mined in South America, specifically, Chile (28% of total global copper mine output in 2018) and Peru (12% in 2018), with China, the United States and the Democratic Republic of Congo also significant regions.

In terms of refined copper supply, the EIU expects global refined copper production to grow at 1.5% in 2019, 1.6% in 2020 and 1.9% in 2021.

EIU notes that China will remain critical to refined copper production, as it is the world's largest importer of raw materials, has the greatest smelting capacity and is the leading producer of cathode. Recent mine and smelter expansion are contributing to higher production of refined metals. EIU expects China's output of refined copper to grow at 4.2% in 2019, 4.0% in 2020 and 3.8% in 2021.

Copper prices

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Historical

Copper prices are sensitive to global economic growth sentiment but also to economic conditions in key consuming countries (such as China) as industrial condition and economic outlook impact demand.

Set out below is the historical USD dominated cash copper price per tonne as quoted on the LME for the four years to 16 December 2019.

Figure A3-5: Historical copper price



Source: Capital IQ, KPMG Corporate Finance Analysis

Outlook

Set out below is a summary of the forecast estimate copper prices by various brokers and commentators as at 30 November 2019.

Table A3-3: Forecast estimate copper prices by brokers as at 16 December 2019

Forecast nominal copper price (US$/t)							
As at 16 December 2019	**Dec-19**	**Dec-20**	**Dec-21**	**Dec-22**	**Dec-23**	**Dec-24**	**Dec-25**
Number of commentators	33	34	29	23	19	10	10
Commentator high	6171	6614	7233	7690	8048	8466	8883
Commentator low	5500	5331	5055	4700	5000	6574	6779
Commentator average	5857	6065	6285	6533	6720	7185	7388
Commentator median	5860	6090	6418	6614	6734	7053	7238
Forward curve	6199	6208	6236	6264	6307	6353	6371

Source: Bloomberg, Consensus Economics, KPMG Corporate Finance

The analysis set out in the table above indicates a wide range of views as to forecast copper prices, however on average, the copper prices are expected to increase at a compound annual growth rate (**CAGR**) of approximately 4% to 2025. In considering these brokers' forecast, it is important to note that

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the publications of commentators forecast pricing analysis tends to lag changing market conditions, particularly during periods of high volatility.

Cobalt

Overview

Cobalt is a lustrous, shiny, grey, brittle metal that is one of only three naturally occurring magnetic metals. It has similar characteristics to iron and nickel (the other two magnetic metals) in terms of tensile strength, machinability, thermodynamic properties and electrochemistry.

Cobalt has a high tolerance to large amounts of mechanical and temperature stress and it is these qualities that make the metal desirable for use in superalloys in various industrial, medical, commercial, aerospace and automotive applications.

Cobalt's efficiency as an electrode allows for power to be stored for longer periods, making it an important component in the manufacture of cathodes for certain types of rechargeable batteries. Global cobalt markets are expected to become undersupplied over the next five years with new capacity needed to outpace growth in demand. The expansion of the EV industry is a primary reason behind the expected surge in demand for cobalt with current supplies expected to not be able to meet upcoming demand.

Despite its abundance, cobalt is often very hard to mine due to its low concentrate, making mining in its own right largely uneconomical and hence production is often as a by-product from the mining of copper (60%) and nickel (38%). Only around 2% of cobalt comes from primary production. As cobalt supply is reliant in the production of nickel and copper, supply is significantly influenced by the demand for those commodities rather than that of cobalt itself.

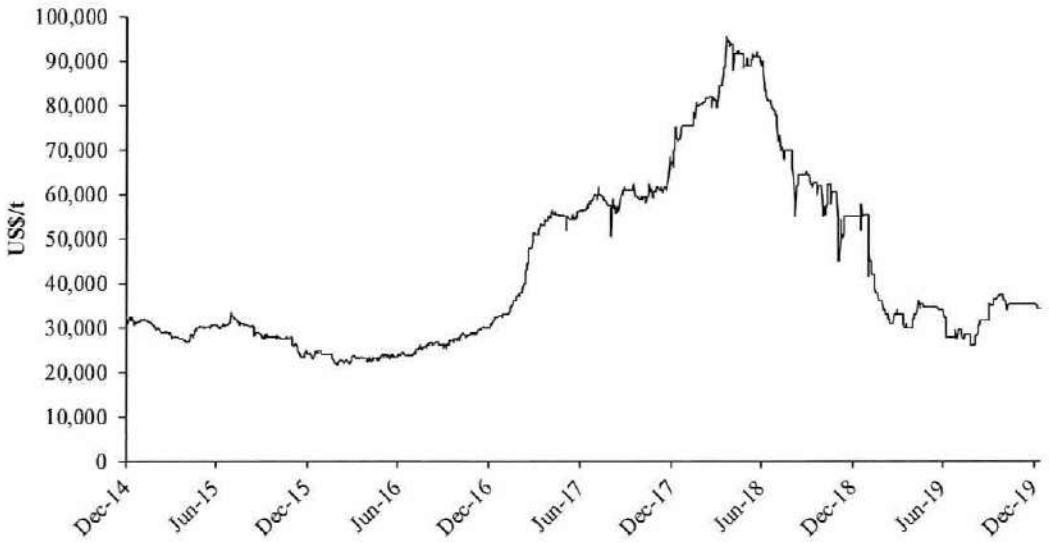
Cobalt Prices

Historical

Set out below is the historical USD dominated cash cobalt price per tonne as quoted on the LME for the four years to 16 December 2019.

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Figure A3-6: Historical cobalt price



Source: Capital IQ, KPMG Corporate Finance Analysis

Outlook

We have compiled cobalt price forecasts from various commentators, as set out below.

Table A3-4: Forecast estimate cobalt prices by brokers as at 16 December 2019

Forecast nominal cobalt price (US$/t)							
As at 16 December 2019	**Dec-19**	**Dec-20**	**Dec-21**	**Dec-22**	**Dec-23**	**Dec-24**	**Dec-25**
Number of commentators	11	11	11	10	10	6	6
Commentator high	41,888	49,604	55,116	60,627	73,855	74,951	76,048
Commentator low	30,000	35,000	38,581	39,683	37,479	37,479	37,479
Commentator average	36,035	41,269	44,109	47,095	49,957	49,960	51,110
Commentator median	35,274	39,136	42,000	43,235	44,092	46,112	48,394
Forward curve	34,292	35,285	n/a	n/a	n/a	n/a	n/a

Source: Bloomberg, Consensus Economics and KPMG Corporate Finance analysis.
Note: n/a denotes not available

The analysis set out in the table above indicates a wide range of views as to forecast cobalt prices, however on average, the cobalt prices are expected to increase strongly to 2022 after which the range widens significantly and the consensus remains broadly flat.

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Appendix 4 – Calculation of discount rates

We have assessed an appropriate nominal, post-tax weighted average cost of capital (**WACC**) applicable for the Savannah Project to be in the order of 8.0 percent per annum to 9.0 percent per annum.

The discount rates are AUD denominated discount rates, reflecting that the projected underlying cash flow models for the Savannah Project are denominated in AUD.

Selection of the appropriate rate to apply to the forecast cash flows of any asset or business operation is fundamentally a matter of judgement. Whilst there is a body of theory that may provide a framework for the derivation on an appropriate discount rate, it is important to recognise that given the level of subjectivity involved in selecting various inputs to the theoretical framework there is no absolute "correct" discount rate.

We consider the rates adopted to be reasonable discount rates that purchasers would use in the current market in assessing the Savannah Project and are reflective of the commercial, operational and technical risks of the project.

WACC

The WACC of a project is the expected cost of the various classes of capital (i.e. its equity and debt) employed in the project, weighted by the proportion of each class of capital to the total capital employed and is represented by the following formula, which calculates an after tax nominal rate:

$$\text{WACC} = K_d \times (1 - t_c) \times \left(\frac{D}{D+E}\right) + K_e \times \left(\frac{E}{D+E}\right)$$

Where the key inputs are defined as follows:

K_e	the after-tax cost of equity, which is the rate of return required by the providers of equity capital
K_d	the pre-tax cost of debt, which is the expected long-term average future borrowing cost of the relevant project and/or business
t_c	the applicable corporate tax rate
D	the market value of debt
E	the market value of equity

The WACC is an opportunity cost of capital in the sense that it reflects the returns that would have been earned in the market with the relevant capital if it was employed in the next best investment of equivalent risk profile. It represents the minimum weighted average rate of return which is required or expected by the providers of capital as compensation for bearing the risks associated with the relevant investment or business operation.

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Each of the components of the WACC formula is discussed further below:

Cost of equity (K_e)

The WACC approach represents a merger of the Capital Asset Pricing Model (**CAPM**) with capital structure theory. In the WACC formula discussed earlier, the CAPM provides the means for estimating the cost of equity.

The CAPM provides a theoretical basis for determining a discount rate that reflects the risk of a particular investment or business operation. In simple terms, the CAPM states that the returns expected by an equity investor reflect the risk of the underlying equity investment. The risk can be determined by the risk-free rate of return plus a risk premium which reflects the relative risk (as measured by the "beta" factor) and any company/project specific risk (as measured by the "alpha" factor) required to be borne by the investor. Therefore, the required rate of return for equity securities is determined as set out below.

$$K_e = R_f + (\beta \times MRP) + \alpha$$

Where the key inputs are defined as follows:

R_f	risk free rate of return
β	beta factor of the investment or business operation
MRP	equity market risk premium
α	company/project specific risk factor

A large degree of subjectivity is involved in estimating the inputs to the formula. These limitations mean that any estimate of the cost of equity must necessarily be regarded as indicative rather than as a firm and precise measure. Furthermore, because the cost of equity is a market-determined measure, changes in market conditions over time will affect its calculation.

Risk free rate (R_f)

The relevant risk-free rate of return is the return on a risk-free security, typically for a long-term period. In practice, long dated government bonds are generally accepted as a benchmark for a risk-free security. The spot yield to maturity of Australian Government Bonds has traditionally been accepted as a proxy for the risk-free rate in determining a cost of equity under the CAPM. Further, the market for Australian Government Bonds is liquid such that, in our view, the current yield on Australian Government Bonds represents an appropriate indicator of the risk-free opportunity cost of an asset for the forthcoming period at any particular point in time.

Having regard to the expected project life of the Savannah Project of approximately 7 years, we have adopted the spot yield of 1.0% per annum on 7 year Australian Government Bonds as the risk-free rate.

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Market risk premium (MRP)

The MRP represents the additional return that investors expect in return for holding risk in the form of a well-diversified portfolio of risky assets (such as a market index) over risk-free assets such as Government bonds. Given that expectations are not observable, a historical premium is generally used as a proxy for the expected risk premium.

Measurement of historical premia in Australia is subject to considerable debate, including in relation to the method of calculation, the relevance of long dated data and the relevant period of observation, as well as the impact of the introduction of imputation credits and the value attributed to imputation credits.

The most recent Australian study of historical premia was completed in by J.C. Handley in 2012[31] (**the 2012 Handley Study**), as prepared for the Australian Energy Regulator, and was based on earlier works by R.R. Officer in 1989 and T. Brailsford, J.C. Handley and K. Maheswaran in 2008 and 2012. The 2012 Handley Study found that:

- relative to 10 year bonds, the equity risk premium averaged 6.0% p.a. over 1883–2011 ignoring the impact of imputation credits (this increases to 6.3% per annum if imputation credits are valued at 100%)
- relative to 10 year bonds, the equity risk premium averaged 5.8% p.a. over 1958–2010 ignoring the impact of imputation credits (this increases to 6.6% per annum if imputation credits are valued at 100%).

Consistent with our approach to the risk free rate, we adopted a long term view in setting the market risk premium. A market risk premium of 6.0% per annum is regarded as appropriate by KPMG Corporate Finance for the current long-term investment climate in Australia.

Beta factor (β)

The beta factor is a measure of the risk of an investment or business operation, relative to a well-diversified portfolio of investments. In theory, the only risks that are captured by beta are those risks that cannot be eliminated by the investor through diversification. Such risks are referred to as systematic, undiversifiable or market risk. The concept of beta is central to the CAPM given that beta risk is the only risk that is priced into investor required rates of return.

The equity betas can be statistically measured by regressing the returns on an equity market index against the share price returns of the relevant stock. By definition, the market portfolio has an equity beta of 1.0. A beta greater than 1.0 implies that the returns on a stock are, on average, more volatile, and hence the stock is more risky than the market, whilst a beta of less than 1.0 implies the reverse.

The beta of a stock can be presented as either an adjusted beta or as an historical beta. The historical beta is obtained from the linear regression of a stock's historical data and is based on the observed relationship between the security's return and the returns on an index. Conversely, the adjusted beta is an estimate of a security's future beta. It is initially derived from the historical beta, but modified by the assumption that a

[31] J.C. Handley, "An Estimate of the Historical Risk Premium for the period 1883 to 2011", April 2012

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security's true beta will move towards the market average of one, over time. Generally, an adjusted beta is used because of its greater predictive features.

Betas derived from stock market observations represent equity betas, which reflect the degree of financial gearing of the company. Consequently, it is not possible to compare the equity betas of different companies without having regard to their gearing levels. In theory, a more valid analysis of betas can be obtained by "ungearing" the equity beta, by applying the following formula:

$$\beta_a = \frac{\beta_e}{1 + [\frac{D}{E} \times (1 - t)]}$$

where "D/E" is the debt and equity market values of the relevant equity security and "t" is the corporate tax rate. The adjustment involves stripping out the impact of financial gearing from the equity beta to obtain ungeared beta (denoted by β_a).

The following table sets out closing market capitalisation as at 16 December 2019, the 2-year and 5-year historical average financial gearing and the adjusted ungeared 2-year weekly and 5-year monthly beta estimates for a selection of Australian and International listed nickel sulphide companies.

The beta factors have been calculated relative to the Morgan Stanley Capital Index – All Countries (**MSCI**), an international equities market index that is widely used as a proxy for the global stock market as a whole. The MSCI is often used as a benchmark in respect of assets where underlying earnings streams are influenced by international markets, the marginal investor is likely to be international and/or the asset is likely to be attractive to international buyers.

Table A4-1: Selected listed companies – financial gearing and ungeared beta

Comparable companies - Beta analysis					
	Market Cap	Unlevered beta		Debt to value[1]	
Company name	AUDm	2-year weekly	5-year monthly	2-year average	5-year average
Australian nickel sulphide companies					
Independence Group NL	3,722	1.13	1.20	0%	0%
Western Areas Limited	857	1.19	1.21	0%	0%
Panoramic Resources Limited	224	0.76	1.87	0%	0%
Mincor Resources NL	210	0.70	1.19	0%	0%
Poseidon Nickel Limited	124	0.58	1.08	11%	21%
Cassini Resources Limited	38	0.63	1.36	0%	0%
Mean (Australian) excl. outliers		**1.16**	**1.32**	**0%**	**0%**
Median (Australian) excl. outliers		**1.16**	**1.21**	**0%**	**0%**
International nickel sulphide companies					
PolyMet Mining Corp.	389	0.06	0.63	26%	22%
Talon Metals Corp.	82	0.26	0.74	31%	28%
Mean (International) excl. outliers		**n/a**	**n/a**	**29%**	**25%**
Median (International) excl. outliers		**n/a**	**n/a**	**29%**	**25%**
Total Mean excl. outliers		**1.16**	**1.32**	**8%**	**7%**
Total Median excl. outliers		**1.16**	**1.21**	**0%**	**0%**

Source: Capital IQ, latest available financial statements of the companies and KPMG Corporate Finance analysis

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Notes:

1 *Market capitalisation is at 16 December 2019, converted to AUD as at the same date based on prevailing spot prices (where relevant)*
2 *Debt is average short-term and long-term debt less average cash as disclosed by Capital IQ based on financial accounts available as at 16 December 2019*
3 *Where a company does not have any interest bearing debt or the resultant net debt figure is negative, the debt to value ratio has been recorded as 0%*
4 *Outliers (shaded) have been excluded from the mean and median. For debt to value, outliers have been assessed based on statistical analysis of the data set on a category-by-category basis. For unlevered beta, outliers have been assessed based on statistical confidence levels*
5 *"n/a" denotes insufficient observations*

We have categorised the list of comparable companies into Australian nickel sulphide companies and International nickel sulphide companies, reflecting the fact that different mining assets have varying risk profiles depending on, amongst other things, the location of the asset.

In selecting an appropriate ungeared beta for the Savannah Project, we have considered that:

- the above analysis indicates that in a large number of cases, the observed 2-year beta observations exhibit a low level of statistical confidence, such that only limited reliance can be given to these directly observed beta factors
- all beta observations for the International nickel sulphide companies exhibit a low level of statistical confidence, therefore no reliance has been given to these beta factors
- a number of the comparable companies have exposure to other minerals and/or operations in addition to nickel mining. Specifically:
    - Independence Group NL has a 30% interest in the Tropicana gold mine, which has been producing gold since September 2013
    - Panoramic Resources Limited has PGM development projects in Australia and Canada. Its 5-year beta observation will also reflect its transition from a multi-location producer to holding assets on either care and maintenance and/or at pre-production and its current transition back to full production at Savannah
    - Mincor Resources NL's Widgiemooltha Gold Project commenced gold production in July 2018, however Mincor is now considering strategic options to realise value from the project. The company also owns the Tottenham Copper-Gold exploration project
    - PolyMet Mining Corp. and Talon Metals Corp. have exposure to a number of base metals including copper, nickel, platinum, palladium, gold and cobalt
    - Cassini Resources Limited's flagship West Musgrave Project is prospective for nickel-copper-PGE sulphide deposits and gold. Cassini also owns the Mount Squires gold project.

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- only Independence Group NL, Panoramic Resources Limited and Western Areas NL are in production as at the date of this report. PolyMet Mining Corp. has completed a DFS and Mincor has a DFS underway, however all other comparable companies are at the pre-feasibility stage
- the Savannah Project recommenced mining of the Savannah ore body in December 2018. However, since recommencement there have been operational setbacks resulting in below budget results. Furthermore, we note there is substantial ongoing mine development to access the Savannah North ore body. In this regard we note that SRK has reflected the recent operational performance and expectations regarding access to Savannah North in its selected mining and operational assumptions for the Savannah Project
- the forecasts provided for the Savannah project are based on the Updated Feasibility Study and the results of the operational review undertaken since recommencement. Both SRK and we consider there to be a reasonable basis for the operational assumptions underpinning our range of values based on information available at the date of this report
- the relative size of the Savannah Project.

Having regard to the above and considering the nature of the Savannah Project, we consider an ungeared beta range of 1.2 to 1.4 to be reflective of a nickel sulphide mining operation.

Having determined an appropriate ungeared beta, it is necessary to "regear" the beta to a specified level of financial gearing to determine the equivalent beta.

Debt/equity mix

The selection of an appropriate capital structure is a subjective exercise. The tax deductibility of the cost of debt means that the higher the proportion of debt, the lower the WACC for a given cost of equity. However, at significantly higher levels of debt, the marginal cost of borrowing would increase due to the greater risk which debt holders are exposed to. In addition, the cost of equity would also be likely to increase due to equity investors requiring a higher return given the higher degree of financial risk that they have to bear.

Ultimately for each company there is likely to be a level of debt/equity that represents the optimal capital structure for that company. In estimating the WACC, the debt/equity level assumption should reflect what would be the optimal or target capital structure for the relevant asset. Optimal (as opposed to actual) capital structures are not readily observable. Accordingly, any estimate of optimal capital structure is necessarily subjective. In practice, the existing capital structures of comparable businesses can be used as a guide to the likely capital structure for a firm/project, taking into consideration the specific financial circumstances of that firm/project. In drawing any conclusions from the comparable company information, it is important to note that the observed gearing levels usually represent current gearing levels, which may or may not be representative of optimal, long term gearing levels. Furthermore, the gearing level of a company at a given point in time can reflect recent new issues of debt or equity.

In selecting an appropriate capital structure we have had regard to the gearing level of those comparable companies in Table A4-1 that are currently in production. We consider an appropriate long term gearing level for the Savannah Project to be in the order of 10% debt and 90% equity.

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On this basis, the regeared beta range of the Savannah Project is in the order of 1.3 to 1.5.

Cost of equity calculation (K_e)

The following table sets out our cost of equity estimate based on the assumptions and inputs discussed above:

Table A4-2: AUD nominal cost of equity – Savannah Project

Input	Definition	Low	High
R_f	Risk free rate of return	1.0%	1.0%
β_α	Asset beta (ungeared beta estimate)	1.2	1.4
β_e	Equity beta (regeared beta estimate)	1.3	1.5
MRP	Equity market risk premium	6.0%	6.0%
K_e	**Cost of equity (post-tax)**	**8.8%**	**10.1%**

Source: KPMG Corporate Finance analysis

Note amounts may not add exactly due to rounding

Cost of debt calculation (K_d)

In determining the cost of debt appropriate for the Savannah Project, we have considered the current yield on 7 year BBB rated Australian corporate bonds.

Based on the above consideration, we consider an appropriate nominal, pre-tax cost of debt to be in the order of 2.5% per annum, which represents a margin to our assessed risk-free rate of 150 basis points.

Corporate tax rate (t_c)

The Australian corporate tax rate of 30% has been applied to calculate the post-tax, nominal discount rates for the Savannah Project.

Calculation of the WACC

The following table summarises the implied base calculation of a nominal post-tax WACC for application in our valuation assessment based on the assumptions/inputs discussed above.

Table A4-3: Summary of the WACC – Savannah Project

Input	Definition	Low	High
K_e	Cost of equity (post-tax)	8.8%	10.1%
K_d	Cost of debt (pre-tax)	2.5%	2.5%
t_c	Corporate tax rate	30%	30%
D/(D+E)	Proportion of debt in the capital mix	10%	10%
E/(D+E)	Proportion of equity in the capital mix	90%	90%
WACC	**Weighted average cost of capital (nominal, post-tax)**	**8.1%**	**9.2%**

Source: KPMG Corporate Finance analysis

Note amounts may not add exactly due to rounding

Having regard to the above variables, we have adopted a discount rate range of 8.0% per annum to 9.0% per annum for the Savannah Project.

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Whilst we consider the range of discount rates adopted by us to be reasonable, we note that the assessment of an appropriate discount rate is ultimately a matter of judgement and that it is quite possible that individual investors may select a different range depending upon their risk appetite. Any such difference would impact upon our assessed values either positively or negatively. In this regard we would refer Panoramic shareholders to section 11 in the body of the report; which sets out the sensitivity of our range of values in respect of the Savannah Project to changes in various operating and macroeconomic assumptions.

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Appendix 5 – Selected listed companies

Company	Description
Independence Group NL (**IGO**)	IGO is an Australian mining company primarily focussed on its 100% owned Nova Ni-Cu-Co project in the Fraser Range region of WA. In addition, IGO has a 30% interest in the Tropicana gold mine, also in WA, which is operated and 70%-owned by AngloGold Ashanti Limited. The company was incorporated in 2000 and is headquartered in Perth. Refer to section 10 of this report for additional information.
Western Areas Limited (**WSA**)	WSA is an Australian mining company primarily focussed on its 100%-owned Forrestania Nickel Operation located 400km east of Perth. In addition, WSA is developing its Cosmos Nickel Project, also located in WA, and has interests in various exploration-stage projects in both Australia and Canada. WSA was incorporated in 1999 and is headquartered in Perth.
Mincor Resources NL (**Mincor**)	Mincor is an Australian mining company primarily focussed on its previously-operating Kambalda Nickel Project, located south of Kalgoorlie. Mincor is progressing a restart feasibility study, due in Q1 2020. Mincor was incorporated in 1996 and is headquartered in Perth.
Poseidon Nickel Limited (**Poseidon**)	Poseidon is an Australian mining company that owns three previously-operating Nickel Sulphide mines: Windarra, Black Swan/Silver Swan and Lake Johnston, and surrounds, all located in WA. Poseidon is focussed on further exploration and recommencement of these operations, having completed a restart feasibility study in 2018, with precursor works presently underway at Black Swan. Poseidon was incorporated in 1993 and is headquartered in Perth.
Cassini Resources Limited (**Cassini**)	Cassini an Australian mining company primarily focussed on its 30%-owned West Musgrave nickel sulphide project, located in WA. A pre-feasibility study on the West Musgrave project is expected to be completed in early 2020. Cassini also holds a 100% interest in the exploration stage Mount Squires gold project adjacent to West Musgrave. Cassini was incorporated in 2011 and is based in Perth.
PolyMet Mining Corp. (**PolyMet**)	PolyMet is a Canadian mining company primarily focussed on the evaluation and development of its NorthMet nickel, copper and precious metals project, located in Minnesota. PolyMet has completed a DFS and is currently attempting to secure funding to construct and operate the project. PolyMet was incorporated in 1981 and is headquartered in Toronto.
Talon Metals Corp. (**Talon**)	Talon is a Canadian exploration and development company with a 17.56% interest is the Tamarack nickel-copper-cobalt project located in Minnesota, the United States; and a 100% interest in the Trairão iron project located in Brazil. Talon was incorporated in 2005 and is headquartered in Road Town, the British Virgin Islands.

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Company	Market cap A$m	Enterprise value[1] A$m	Ni Eq. Resources[3,5,] kt	Ni Eq. Reserves[4,5,6] kt	No control premium Resources multiple[7] A$/t	No control premium Reserves multiple[7] A$/t	25% control premium Resources multiple A$/t	25% control premium Reserves multiple A$/t	35% control premium Resources multiple A$/t	35% control premium Reserves multiple A$/t
Independence Group NL	3,781	3,517	580	391	6,062	8,987	7,691	11,403	8,342	12,369
Western Areas Limited	857	713	942	275	757	2,590	985	3,367	1,076	3,678
Mincor Resources NL	210	181	254	30	714	6,038	921	7,789	1,003	8,489
Poseidon Nickel Limited	124	122	436	25	280	4,885	352	6,126	380	6,623
Cassini Resources Limited	38	33	633	-	52	n/a	67	n/a	73	n/a
PolyMet Mining Corp.	389	390	3,911	1,070	100	364	125	455	134	491
Talon Metals Corp.	82	70	118	-	592	n/a	765	n/a	835	n/a
Mean					1,222	4,573	1,558	5,828	1,692	6,330
Median					592	4,885	765	6,126	835	6,623

Sources: Capital IQ, company financial statements and reports, publicly available resource/reserve information of relevant companies and KPMG Corporate Finance Analysis

Notes:

1. Enterprise value for selected listed companies (other than IGO) has been calculated as market capitalisation as at 16 December 2019, converted to AUD as at the same date based on prevailing spot exchange rates (where relevant), and the latest net debt/cash of the selected company reported prior to 16 December 2019. Market capitalisation for IGO is as at 1 November 2019

2. Mineral resources for Talon Metals Corp. exclude the Trairao iron project.

3. Resources are based on Measured, Indicated and Inferred Resources. Resources are quoted inclusive of reserves

4. Reserves are based on proven and probable reserves

5. Where the Resources/Reserves are not 100 percent owned, all calculations are based on the company's relevant interest

6. The table above shows resource and reserve valuation comparisons for companies predominantly focussed on nickel (Ni). In the case where the comparable companies' resources or reserves contain other metals (for example copper), a total contained Ni equivalent resource or reserve has been calculated (based on spot metal prices as at 16 December 2019). The spot metal prices used were US$14,158/t for nickel, US$1,481/oz for gold, US$17/oz for silver, US$931/oz for platinum, US$1,964/oz for palladium, US$6,193/t for copper and US$34,500/t for cobalt

7. Resource and reserve multiples have been calculated based as enterprise value divided by total contained nickel equivalent resources and reserves (Ni Eq.) respectively

8. n/a' indicates the information was not available; Reserves estimates were not available as at 16 December 2019

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Appendix 6 – Selected transactions

Target	Description
Sinclair Project (TLM)	On 27 September 2019, Saracen Mineral Holdings Limited (**Saracen**) entered into a binding agreement to acquire the Sinclair nickel project from Talisman Mining Limited. Under the terms of the agreement, Saracen paid an up-front consideration of $10 million cash, in addition to a 2% Net Smelter Royalty (**NSR**) payable on all metal production from the Sinclair tenements as well as non-precious metals produced at Saracen's Waterloo tenement. The Sinclair nickel project includes Mineral Resources of 720,000t at 2.3% nickel, a 350,000tpa processing plant, a 200-person camp, mine buildings and workshops, a core yard, a two kilometre airstrip and water resources. Saracen noted that it considered the Sinclair project to offer significant gold exploration upside close to its existing Thunderbox mill and the extensive infrastructure and other assets at Sinclair provided opportunities to enhance Saracen's Thunderbox mine and mill.
Long Nickel Operation (IGO)	On 23 May 2019, Mincor announced it had entered into a binding agreement with IGO to acquire a 100% interest in the Long Nickel Operation, located in the Kambalda District in WA, which included the underground nickel sulphide mine and key infrastructure. As consideration, Mincor issued 7.8 million shares at $0.45 per share, with a further $6 million payable upon achievement of certain production milestones. IGO had placed Long into care and maintenance in June 2018 after 16 years of production averaging approximately 10ktpa of nickel. The announcement noted Mincor's intention to leverage Long's existing infrastructure, underground declines and improved access to Mincor's nearby Durkin North Deposit.
Lanfranchi Nickel Project (PAN)	On 13 September 2018, Panoramic announced it had executed a binding agreement with Black Mountain Metals LLC (Black Mountain), whereby Black Mountain would acquire all of the issued shares in Panoramic's wholly-owned subsidiary, Cherish Metals Pty Ltd, which owned the Lanfranchi nickel mine and associated infrastructure south of Kambalda located in WA, for a total cash consideration of $15.1 million. Panoramic had placed Lanfranchi into care and maintenance in August 2015 after 10 years of production, pending a sustained recovery in the nickel price. Black Mountain stated at the time that its intention was to restart production at the mine.
Avebury Nickel Mine (MMG)	On 28 September 2016, Dundas Mining Pty Ltd (Dundas) agreed to acquire the Avebury nickel mine in Tasmania from MMG Ltd for $25 million. The mine had been on care and maintenance since 2009. Coverage noted that Dundas aimed to bring the Avebury mine back into production as soon as possible.
Beta Hunt Ni-Au Mine (SLM)	On 1 February 2016, RNC announced it had agreed to acquire a 67% interest in Salt Lake Mining Pty Ltd (SLM) in exchange for 32.5 million RNC shares and C$2.5 million. SLM's primary asset was the 100% owned Beta Hunt nickel / gold mine located in the Kambalda district in WA. The mine resumed nickel production in 2014 and gold production 2015.
Cosmos Nickel Mine (Glencore)	On 19 June 2015, WSA announced it had reached a binding agreement to acquire the Cosmos Nickel Complex from Xstrata Nickel Australasia Operations Pty Ltd, a subsidiary of Glencore Plc, for a total cash consideration of $24.5 million. The Cosmos Nickel Complex covers 88km2 in the Agnew Wiluna Nickel Belt in WA. The acquisition included a 450,000tpa concentrator, a mill and other associated infrastructure. WSA noted that the acquisition would complement its existing Forrestania Nickel operations and represented a low cost, counter-cyclical investment consistent with its brownfield acquisition strategy.

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Target	Description
Sirius Resources NL	On 25 May 2015, Sirius Resources NL announced that it had entered into a scheme implementation deed under which IGO agreed to acquire all the issued capital of Sirius by way of a scheme of arrangement, inter-conditional with a demerger and share reduction scheme by which Sirius would divest certain exploration assets into a new listed vehicle. Under the scheme, eligible Sirius shareholders would receive 0.66 IGO shares and $0.52 for each Sirius ordinary share held. Sirius's principal asset was the Nova nickel-copper sulphide mine. Sirius had completed a DFS in 2014, defining a total resource of 325kt nickel and 130kt of copper, contemplating a 1.5mtpa underground mine and processor operation. Initial construction had commenced, with production expected to begin in late 2016.

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Target	Acquirer	Date announced	Percentage acquired	Implied EV A$m	NiEq. Resources kt	NiEq. Reserves kt	Resources multiple A$/t	Reserves multiple A$/t
Sinclair Project (TLM)	Saracen Mineral Holdings Limited	27 Sep 19	100%	10.0	16	-	617x	n/a
Long Nickel Operation (IGO)	Mincor Resources NL	23 May 19	100%	6.1	32	-	191x	n/a
Lanfranchi Nickel Project (PAN)	Black Mountain Metals LLC	13 Sep 18	100%	15.1	96	4	158x	3,512x
Avebury Nickel Mine (MMG)	Dundas Mining Pty Ltd	28 Sep 16	100%	25.0	252	-	99x	n/a
Beta Hunt Ni-Au Mine (SLM)	Royal Nickel Corporation	1 Feb 16	67%	11.5	77	-	150x	n/a
Cosmos Nickel Mine (Glencore)	Western Areas Limited	19 Jun 15	100%	24.5	567	-	43x	n/a
Sirius Resources NL	Independence Group NL	25 May 15	100%	1560.4	419	352	3,723x	4,436x
Mean							**727x**	**3,974x**
Median							**154x**	**3,974x**

Sources: Capital IQ, company financial statements and reports, publicly available resource/reserve information of relevant companies and KPMG Corporate Finance Analysis

Notes:

1. Resource and reserve multiples are calculated using the Enterprise Value implied by the transaction and resources and reserves sourced from latest resource and reserve statement announced by the target prior to the announcement of the transaction.

2. Implied enterprise value calculated using the consideration offered by the acquirer and the target's net debt/cash position reported prior to the announcement of the transactio.

3. Where the transaction involved a company acquiring an interest of below 100 percent, the consideration has been grossed up to reflect an implied acquisition of 100 percent.

4. Resources are based on Measured, Indicated and Inferred Resources. Resources are quoted inclusive of reserves.

5.Reserves are based on proven and probable reserves.

6. Where the target's resources or reserves contain other metals (copper, cobalt, gold etc.) a total contained Nickel equivalent resource or reserve has been calculated based on spot metal prices at the announcement date of the transaction

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Appendix 7 – SRK report

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Independent Specialist Report on the Mineral Assets of Panoramic Resources Limited

Report prepared for

Panoramic Resources Limited and
KPMG Financial Advisory Services (Australia) Pty Ltd



Report prepared by

srk consulting

SRK Consulting (Australasia) Pty Ltd

PAN012

December 2019

Independent Specialist Report on the Mineral Assets of Panoramic Resources Limited

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Executive Summary

KPMG Financial Advisory Services (Australia) Pty Ltd (KPMG) has been engaged by Panoramic Resources Limited (Panoramic) to prepare an Independent Expert Report (IER or Report) in relation to an off-market takeover offer by Independence Group NL (Independence) for all the issued capital of Panoramic for a scrip consideration of one (1) new ordinary Independence share for every thirteen (13) ordinary Panoramic shares on issue (the Offer).

Panoramic has subsequently engaged SRK Consulting (Australasia) Pty Ltd (SRK) to prepare an Independent Specialist Report (ISR) in relation to matters on which KPMG is not an expert. The scope of the work to be completed by SRK was set by KPMG.

Panoramic holds a 100% equity interest in the Savannah nickel mine (Savannah or the Project), the Panton platinum group metals project (Panton) and the Copernicus base metals project (Copernicus), which are all located in the East Kimberley region of Western Australia. Additionally, Panoramic holds an indirect interest in the Gum Creek gold project and the Altair copper-zinc-silver project via its 51% ownership of Horizon Gold Limited (collectively the Mineral Assets).

SRK's scope of work included an assessment of the reasonableness of the technical inputs to the Project's discounted cashflow model (the Model) supplied by Panoramic. Where deemed warranted, SRK has modified production and capital and operating cost projections for use by KPMG.

Additionally, SRK has provided an independent opinion on the market valuation of the resources not included in the Model (residual resources) and:

1. An independent market valuation of the Pre-Development stage Copernicus project
2. An independent market valuation of the Pre-Development stage Panton project
3. An independent market valuation of the Advanced Exploration stage Gum Creek gold project held via Panoramic's 51% interest in Horizon Gold Limited (Gum Creek).

SRK's recommended valuation ranges and preferred values are detailed in the Valuation section of this Report and are summarised in Table ES-1. The valuation ranges were developed on the basis of the perceived potential of the Mineral Assets.

Table ES-1: Valuation Summary as at 18 December 2019

Stage	Equity basis	Low (A$M)	High (A$M)	Preferred (A$M)
Savannah residual resources (not considered in the Model)	100%	32.7	42.9	37.8
Copernicus	100%	2.8	3.2	3.0
Panton	100%	12.0	27.7	19.8
Gum Creek	51%	11.1	20.4	15.8
Total		**58.6**	**94.2**	**76.4**

Note: Any discrepancies between values in the table are due to rounding.

Table of Contents

Executive Summary ii
Disclaimer viii
List of Abbreviations ix
1 Introduction and Scope of Report 1
1.1 Reporting standard 2
1.2 Work program 3
1.3 Legal matters 3
1.4 Effective date 3
1.5 Project team 3
1.6 Limitations, reliance on information, declaration and consent 6
1.6.1 Limitations 6
1.6.2 Statement of SRK independence 6
1.6.3 Indemnities 7
1.6.4 Consent 7
1.6.5 Consulting fees 7
2 Overview of Panoramic's Projects 8
2.1 Location, access and climate 8
3 Savannah Project 10
3.1 History 10
3.2 Ownership 13
3.3 Permitting and approval 13
3.4 Native title 14
3.5 State royalties 15
3.6 Site inspection 15
3.7 Geology 15
3.8 Mineral Resource estimate 20
3.9 Metallurgical testwork and processing 21
3.10 Ore Reserves and Mine Planning 24
3.10.1 Ore Reserve estimate 24
3.10.2 Production since operational restart 24
3.10.3 Mine scheduling 25
3.10.4 Prospectivity 26
3.10.5 Supporting infrastructure 27
3.11 Environment and Mine Closure 27
3.11.1 Mine Closure Plan 27
3.11.2 Environmental considerations 27
3.12 Costs 28
4 Copernicus Project 30

4.1 History 30
4.2 Ownership 30
4.3 State royalties 30
4.4 Native title 31
4.5 Environmental liabilities 31
4.6 Geology and Mineral Resources 31
5 Panton Project 32
5.1 History 32
5.2 Ownership 32
5.3 State royalties 32
5.4 Native title 32
5.5 Environmental liabilities 32
5.6 Geology and Mineral Resources 33
5.7 Studies 34
5.8 Environmental considerations 34
6 Other Considerations 36
6.1 Commodity prices 36
6.1.1 Nickel 36
6.1.2 Copper 36
6.1.3 Cobalt 36
6.1.4 Platinum group metals 36
6.2 Previous Valuations 36
7 Valuation of Panoramic's Projects 36
7.1 Valuation basis 37
7.2 Ore Reserves considered within the Model 38
7.2.1 The Model 38
7.2.2 Mineral Resources not considered in the Model (residual resources) 40
7.2.3 Yardstick method 42
7.2.1 Residual resources – Valuation summary 43
7.3 Copernicus project 44
7.3.1 Comparable market transactions 44
7.3.1 Yardstick method 44
7.3.1 Copernicus project – Valuation summary 45
7.4 Panton project 46
7.4.1 Comparable market transactions 46
7.4.2 Yardstick method 47
7.4.3 Panton project – Valuation summary 48
8 Panoramic's Interest in Horizon Gold Limited 49
8.1 Location, access and climate 49
8.2 Ownership and tenure 50
8.3 State royalties 52

8.4 Third party royalties 52
8.5 Native title 53
8.6 Environmental liabilities 53
8.7 Geological setting 53
8.8 History 63
8.9 Other considerations 86
8.9.1 Previous valuations 87
9 Valuation of Gum Creek Project 89
9.1 Valuation basis 89
9.2 Gum Creek project – deposits with Mineral Resources 89
9.2.1 Comparable market transactions 89
10 Valuation Summary 100

List of Tables

Table 1-1: Details of the qualifications and experience of the consultants 5
Table 3-1: Historical production figures – 2011 to 2016 and total for 2004 to 2016 11
Table 3-2: Updated Savannah LOM physicals (December 2019) 13
Table 3-3: Savannah and Savannah North projects – Tenement schedule* 13
Table 3-4: Native title agreement payment schedule 14
Table 3-5: Savannah Nickel Project Mineral Resources as at 30 June 2019 21
Table 3-6: Savannah and Savannah North Ore Reserves as at 30 June 2019 24
Table 3-7: Current Production Figures, March – November 2019 25
Table 3-8: Savannah LOM Summary (Entech Plan, December 2019) 25
Table 3-9: Savannah LOM assumptions 26
Table 4-1: Copernicus project – tenement schedule 30
Table 4-2: Copernicus project – Mineral Resources 31
Table 5-1: Panton project – tenement schedule 32
Table 5-2: Panton project – Mineral Resources as at 30 June 2019 33
Table 7-1: Suggested valuation approaches according to development status 37
Table 7-2: Valuation basis 38
Table 7-3: SRK model findings 38
Table 7-4: Spot metal prices (12 December 2019) 40
Table 7-5: Summary deal metrics 41
Table 7-6: SRK's metal transaction ratio summary 42
Table 7-7: MTR calculation – Mineral Resources not considered in the Model (residual resources) 42
Table 7-8: Yardstick assumptions – nickel 43
Table 7-9: Yardstick assumptions – copper 43
Table 7-10: Yardstick assumptions – cobalt 43
Table 7-11: Yardstick calculation – Mineral Resources not considered in the Model (residual resources) 43
Table 7-12: Valuation summary – Mineral Resources not considered in the Model 44

Table 7-13: MTR calculation – Copernicus Mineral Resource 44
Table 7-14: Yardstick calculation – Copernicus Mineral Resources 44
Table 7-15: Valuation summary – Copernicus Mineral Resources 45
Table 7-16: Spot metal prices (12 December 2019) 46
Table 7-17: Comparability – PGM project resources 47
Table 7-18: MTR calculation – Panton Mineral Resources 47
Table 7-19: Yardstick calculation – Panton Mineral Resources 48
Table 7-20: Valuation summary – Panton Mineral Resources 48
Table 8-1: Gum Creek project – tenements 51
Table 8-2: Horizon Gold – third party royalties 52
Table 8-3: Gum Creek Gold Project Mineral Resources as at 12 July 2019 86
Table 8-4: CSA's Valuation summary of the Gum Creek project as at 30 June 2018 87
Table 9-1: Valuation basis of the Gum Creek Project 89
Table 9-2: Resource based transaction multiple analysis 90
Table 9-3: Valuation of the Gum Creek Resources – comparable transaction methods 91
Table 9-4: Valuation of the Gum Creek project Mineral Resources – Yardstick method 92
Table 9-5: Summary valuation – Gum Creek project Mineral Resources 92
Table 9-6: Area-based transaction multiple analysis 93
Table 9-7: Gum Creek project – Exploration Valuation – comparable transaction method 94
Table 9-8: Base acquisition cost 95
Table 9-9: Modified property rating criteria 96
Table 9-10: Geoscientific valuation scorecard – All Tenure (100% basis) 97
Table 9-11: Summary valuation – Gum Creek Exploration Potential 99
Table 9-12: Summary valuation – Gum Creek project at 100% equity 99
Table 9-13: Summary valuation – Gum Creek project at 51% equity 99
Table 10-1: Valuation summary 100
Table 10-2: General guide regarding confidence for target and Resource/ Reserve estimates 100

List of Figures

Figure 2-1: Savannah Project location map 9
Figure 3-1: Palaeoproterozoic geology of the Kimberley region 16
Figure 3-2: Plan view showing location of the Savannah and Savannah North intrusions 18
Figure 3-3: Composite plan view of the Savannah and Savannah North deposits 19
Figure 3-4: Savannah North local geology – cross section looking west 20
Figure 3-5: Summary processing flowsheet 23
Figure 3-6: Prospectivity overview (not to scale). Source: Panoramic Management Information 26
Figure 5-1: Wireframes showing the Panton 101 and 201 reef system 33
Figure 8-1: Project location map 50
Figure 8-2: Regional setting 54
Figure 8-3: Geology, deposits and major structures of the Gum Creek greenstone belt 55

Figure 8-4: Project resource and exploration areas 57
Figure 8-5: Section showing mineralisation and previous workings at the Wilsons deposit 58
Figure 8-6: Section showing mineralisation and previous workings at the Howards deposit 59
Figure 8-7: Plan view with conceptual open pits 60
Figure 8-8: Section showing mineralisation and previous workings at the Kingfisher deposit 61
Figure 8-9: Section showing mineralisation and previous workings at the Heron South deposit 62
Figure 8-10: Aircore traverses at Toedter West prospect over magnetic and electromagnetic 63
Figure 8-11: Historical geochemical sampling coverage 66
Figure 8-12: Historical drilling coverage 67
Figure 8-13: Processed magnetic survey 68
Figure 8-14: Regional total magnetic intensity image and geophysical targets 69
Figure 8-15: Ground gravity over Landsat 70
Figure 8-16: IP traverses at the Wilsons deposit over regional gravity imagery – 2016 72
Figure 8-17: IP traverses at the Wilsons deposit over regional gravity imagery – 2017 73
Figure 8-18: Swift existing pit and mineralisation with conceptual pit outline 76
Figure 8-19: Swan North existing pit and mineralisation with conceptual pit outline 76
Figure 8-20: Drill plan location map at the Altair prospect 78
Figure 8-21: Altair prospect – cross section at 7006420 mN (±20 m) 79
Figure 8-22: SkyTEM conductivity results at the Altair prospect from 2015 80
Figure 8-23: MLEM survey results and modelled plates over Bouger gravity 81
Figure 8-24: Drilling intercepts and cross section of PSA mineralisation 83
Figure 10-1: Uncertainty by advancing exploration stage 101

Disclaimer

The opinions expressed in this Report have been based on the information supplied to SRK Consulting (Australasia) Pty Ltd (SRK) by Panoramic Resources Limited (Panoramic). The opinions in this Report are provided in response to a specific request from Panoramic to do so. SRK has exercised all due care in reviewing the supplied information. Whilst SRK has compared key supplied data with expected values, the accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. SRK does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this Report apply to the site conditions and features as they existed at the time of SRK's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this Report, about which SRK had no prior knowledge nor had the opportunity to evaluate.

List of Abbreviations

Abelle	Abelle Limited
AER	Annual Environmental Report
AIG	Australian Institute of Geoscientists
Apex	Apex Minerals Limited
Artemis	Artemis Resources Ltd
ASX	Australian Securities Exchange
AusIMM	Australasian Institute of Mining and Metallurgy
BAC	Base Acquisition Cost
BIF	banded iron formation
Black Mountain	Black Mountain Metals LLC
Boliden	Boliden Mineral AB
Ca	calcium
Cl	chloride
Co	cobalt
Cu	copper
Cube	Cube Consulting Pty Ltd
DCF	Discounted Cashflow
DHEM	downhole electromagnetic survey
Dundas	Dundas Mining Pty Ltd
DWER	Department of Water and Environmental Regulation
Entech	Entech Pty Ltd
EP Act	*Environmental Protection Act 1986*
First Quantum	First Quantum Minerals Ltd
g/t	grams per tonne
Generation	Generation Mining Ltd
Glencore plc	Glencore
GLpa	gigalitres per annum
ha	hectares
Harmony	Harmony Gold Mining Company Limited
IER	Independent Expert Report
Independence	Independence Group NL
IP	induced polarisation
ISR	Independent Specialist Report
JORC	Joint Ore Reserves Committee
K	potassium
koz	kilo-ounces
KPMG	KPMG Financial Advisory Services (Australia) Pty Ltd
kt	kilotonnes
L	Miscellaneous Licence (prefix)
lb	pound

Legend	Legend Mining Limited
LOM	life-of-mine
M	Mining Lease (prefix)
m^3	cubic metres
MCP	Mine Closure Plan
Mg	magnesium
Mincor	Mincor Resources NL
MLEM	moving loop electromagnetic
MMG	MMG Ltd
Moz	million ounces
Mt	million tonnes
Mtpa	million tonnes per annum
MTR	metal transaction ratio
MW	megawatt
Na	sodium
Newexco	Newexco Services Pty Ltd
Ni	nickel
oz	ounces
PanGold	Panoramic Gold Pty Ltd
Panoramic	Panoramic Resources Limited
Pd	palladium
PGM	platinum group metals
PL	Prospecting Licence
Platina	Platina Resources Ltd
Pt	platinum
QA/QC	quality assurance and quality control
RAB	rotary air blast
RC	reverse circulation
RICS	Royal Institution of Chartered Surveyors
ROM	run-of-mine
SAG	semi-autogenous grinding
SI	Savannah Intrusion
Sibanye	Sibanye Gold Ltd
SNI	Savannah North Intrusion
SRK	SRK Consulting (Australasia) Pty Ltd
t	tonnes
Tpa	tonnes per annum
tpa	tonnes per annuum
TSF	tailings storage facility
US$	United States dollar
Western Areas	Western Areas NL

1 Introduction and Scope of Report

KPMG Financial Advisory (Australia) Pty Ltd (KPMG) has been engaged by Panoramic Resources Limited (Panoramic) to prepare an Independent Expert Report (IER or Report) in relation to an off-market takeover offer by Independence Group NL (Independence) for all the issued capital in Panoramic for a scrip consideration of one (1) new ordinary Independence share for every thirteen (13) ordinary Panoramic shares on issue (the Offer).

Panoramic has subsequently engaged SRK Consulting (Australasia) Pty Ltd (SRK) to prepare an Independent Specialist Report (ISR) in relation to matters on which KPMG is not an expert. The scope of the work to be completed by SRK was set by KPMG. SRK's ISR will form part of the KPMG Report and will be provided to Panoramic shareholders.

Panoramic holds a 100% equity interest in the Savannah nickel mine (Savannah or the Project), the Panton platinum group metals project (Panton) and the Copernicus base metals project (Copernicus), which are all located in the East Kimberley region of Western Australia. Additionally, Panoramic holds an indirect interest in the Gum Creek gold project and the Altair polymetallic project (collectively, Gum Creek) via its 51% ownership in Horizon Gold Limited (collectively the Mineral Assets).

As agreed with Panoramic and KPMG, SRK has reviewed the technical project assumptions and provided KPMG with an assessment on the reasonableness of the techno-economic assumptions used in the Company's cashflow model (the Model) relating to the Savannah Project (the Project), including the Mineral Resource and Ore Reserve estimates, the mining physicals, the processing assumptions, the operating costs, the capital expenditure and the environmental and permitting provisions. Where SRK considered any assumptions in the Model to be unreasonable, it advised KPMG and assisted KPMG with making the appropriate changes to the Model to reflect SRK's opinion. SRK's scope specifically excluded any work related to the marketing, commodity price and exchange rate assumptions, inflation rates and financial analysis adopted in the Model.

Additionally, SRK has provided an independent opinion on the market valuation of the stated Mineral Resources not included in the Model (residual resources), as well as the exploration potential of associated tenure relating to the Project, and:

1. An independent market valuation of the Pre-Development stage Copernicus project
2. An independent market valuation of the Pre-Development stage Panton project;
3. An independent market valuation of the Advanced Exploration stage Gum Creek project (including the Altair copper-zinc-silver prospect) held via Panoramic's 51% interest in Horizon Gold Limited.

SRK's ISR has been prepared in accordance with the guidelines outlined in the Australasian Code for the Public Reporting of Technical Assessment and Valuation of Mineral Assets (VALMIN Code, 2015), which incorporates the Australasian Code for the Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012). As defined in the VALMIN Code (2015), mineral assets comprise all property including (but not limited to) tangible property, intellectual property, mining and exploration tenure and other rights held or acquired in relation to the exploration, development of, and production from, those tenures. This may include plant, equipment and infrastructure owned or acquired for the development, extraction and processing of minerals relating to that tenure.

For this valuation, the Mineral Assets were classified in accordance with the categories outlined in the VALMIN Code (2015), these being:

- **Early Stage Exploration Projects** – Tenure holdings where mineralisation may or may not have been identified, but where Mineral Resources have not been identified.
- **Advanced Exploration Projects** – Tenure holdings where considerable exploration has been

undertaken and specific targets have been identified that warrant further detailed evaluation, usually by drill testing, trenching or some other form of detailed geological sampling. A Mineral Resource estimate may or may not have been made, but sufficient work will have been undertaken on at least one prospect to provide both a good understanding of the type of mineralisation present and encouragement that further work will elevate one or more of the prospects to the Mineral Resources category.

- **Pre-Development Projects –** Tenure holdings where Mineral Resources have been identified and their extent estimated (possibly incompletely), but where a decision to proceed with development has not been made. Properties at the early assessment stage, properties for which a decision has been made not to proceed with development, properties on care and maintenance and properties held on retention titles are included in this category if Mineral Resources have been identified, even if no further work is being undertaken.
- **Development Projects** – Tenure holdings for which a decision has been made to proceed with construction or production or both, but which are not yet commissioned or operating at design levels. Economic viability of Development Projects will be proven by at least a pre-feasibility study (PFS).
- **Production Projects** – Tenure holdings – particularly mines, borefields and processing plants that have been commissioned and are in production.

Based on its review of Panoramic's Mineral Assets, SRK considers the following classifications in accordance to the VALMIN Code (2015) are relevant:

The Savannah Project is classified as a Production Project.

The Copernicus project is classified as a Pre-Development Project.

The Panton project is classified as a Pre-Development Project.

The Gum Creek project is classified as an Advanced Exploration Project.

1.1 Reporting standard

This Report has been prepared to the standard of, and is considered by SRK to be, a Technical Assessment and Valuation Report under the guidelines of the VALMIN Code (2015). The authors of this Report are Members or Fellows of either the Australasian Institute of Mining and Metallurgy (AusIMM) or the Australian Institute of Geoscientists (AIG) and, as such, are bound by both the VALMIN and JORC Codes. For the avoidance of doubt, this report has been prepared according to:

- The 2015 edition of the Australasian Code for Public Reporting of Technical Assessments and Valuations of Mineral Assets (VALMIN Code)
- The 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code).

The peer reviewer of this Report, Mr Jeames McKibben, is a Registered Valuer and Chartered Valuation Surveyor with the Royal Institution of Chartered Surveyors (RICS). As a result, this Report may be subject to monitoring by RICS under the Institution's Conduct and Disciplinary Regulations. This Report does not comply with the RICS 2017 Valuation Standards, otherwise known as the 'Red Book', as SRK is required to provide a valuation range that reflects the highest and lowest likely Market Values of the subject mineralisation in accordance with our mandate. As such, it is noted that this report is a departure from the Red Book standard.

As per the VALMIN Code (2015), a first draft of the report was supplied to Panoramic to check for material error, factual accuracy and omissions before the final report was issued.

For the purposes of this Report, value is defined as 'market value', being the amount of money (or the cash equivalent or some other consideration) for which a mineral asset should change hands on the Valuation Date between a willing buyer and a willing seller in an arm's length transaction after appropriate marketing, wherein the parties each acted knowledgeably, prudently and without compulsion.

SRK's Report does not comment on the 'fairness and reasonableness' of any transaction between the owners of the Projects and any other parties.

1.2 Work program

This assignment commenced in November 2019, with a review of publicly available data and other information sourced by SRK from literature, as well as subscription databases such as S&P Global Market Intelligence database services. Panoramic also provided SRK with access to an online dataroom.

In accordance with Section 11.1 of the VALMIN Code (2015), a site inspection to the Savannah Project was undertaken by Ms Karen Lloyd of SRK's Perth office on 14 November 2019.

1.3 Legal matters

SRK has not been engaged to comment on any legal matters. SRK notes that it is not qualified to make legal representations as to the ownership and legal standing of the mineral tenements that are the subject of this valuation. SRK has not attempted to confirm the legal status of the tenements with respect to joint venture agreements, local heritage or potential environmental or land access restrictions.

1.4 Effective date

The effective date of this Report is 18 December 2019.

1.5 Project team

This Report has been prepared by a team of consultants from SRK's offices in Australia. Details of the qualifications and experience of the consultants who have carried out the work in this Report, who have extensive experience in the mining industry and are members in good standing of appropriate professional institutions, are set out below and in Table 1-1.

Karen Lloyd, Associate Principal Consultant (Project Evaluation), BSc (Hons), MBA, FAusIMM

Karen has 24 years international resource industry experience gained with some of the major mining, consulting and investment houses globally. She specialises in independent reporting, mineral asset valuation, project due diligence, and corporate advisory services. Karen has worked in funds management and analysis for debt, mezzanine and equity financing and provides consulting and advisory in support of project finance. She has been responsible for multi-disciplinary teams covering precious metals, base metals, industrial minerals and bulk commodities in Australia, Asia, Africa, the Americas and Europe.

Karen is a Fellow of the AusIMM and has the appropriate relevant qualifications, experience, competence and independence to be considered a 'Specialist' and 'Competent Person' under the VALMIN (2015) and JORC (2012) Codes, respectively.

Michael Lowry, Senior Consultant (Resource Estimation), BSc (Hons), Grad Cert (Geostatistics), MAusIMM

Michael (Mike) is a geologist with 23 years' experience in the mining industry, primarily in operations before recently moving to consulting. He has experience in a variety of terrains and commodities, primarily nickel, iron ore and gold. He has conducted orebody modelling, mineral resource estimation, geostatistical studies, reconciliation and public reporting on a range deposits in Western Australia. He has also conducted technical assurance and quality control audits globally.

Mike is a Member of the AusIMM and has the appropriate relevant qualifications, experience, competence and independence to be considered a 'Specialist' and 'Competent Person' under the VALMIN (2015) and JORC (2012) Codes, respectively.

Anne-Marie Ebbels, Principal Consultant (Mining), BEng (Mining), MAusIMM(CP)

Anne-Marie is a mining engineer with 24 years' experience in mining operations and consultancy in Australia and overseas. Her expertise includes mine design, scheduling, drill and blast, economic modelling, supervision and contract management. Anne-Marie has significant practical experience in mine planning and scheduling using 5D Planner and EPS. Her consulting experience includes scoping, pre-feasibility and feasibility studies, technical reviews, due diligence, economic modelling and site support. Anne-Marie has mining experience in open stoping, narrow vein mining, caving and drift and fill mining.

Anne-Marie is a Member of the AusIMM. She has the appropriate relevant qualifications, experience, competence and independence to be considered a 'Specialist' and 'Competent Person' under the VALMIN (2015) and JORC (2012) Codes, respectively.

Simon Walsh, Associate Principal Consultant (Process Engineering), BSc, MBA (Hons) GAICD, MAusIMM(CP)

Simon has 24 years design and operational expertise across a range of mineral processing and hydrometallurgical processes. His broad range of experience covers both management, supervisory and technical roles in plant operations, commissioning, process simulation, project studies, detailed engineering design, metallurgical testwork management and competent person reporting.

Simon is a Member of the AusIMM. He has the appropriate relevant qualifications, experience, competence and independence to be considered a 'Specialist' and 'Competent Person' under the VALMIN (2015) and JORC (2012) Codes, respectively.

Rebecca Getty, Senior Consultant (Environmental Management), MEM, BSc (Hons), MAusIMM, MAIG

Rebecca is an environmental management professional with 11 years' experience in the mining industry. Her experience as an environmental advisor includes mine closure planning and cost estimation, due diligence, assurance matters, environmental management plans and environmental approvals. She commenced her career as an exploration geologist, responsible for supervising drill programs and preparing technical and statutory reports. Rebecca has strong project management and risk assessment skills. Her duties have included planning multi-disciplinary projects, organisation of subconsultants, budget and scheduling control and effective communication. Rebecca's experience in technical reporting includes authoring and co-authoring of reports to international reporting guidelines.

Rebecca is a Member of the AusIMM and a Member of the AIG. She has the appropriate relevant qualifications, experience, competence and independence to be considered a 'Specialist' and 'Competent Person' under the VALMIN (2015) and JORC (2012) Codes, respectively.

Mathew Davies, Senior Consultant (Geology), BSc (Hons), MAusIMM

Mathew is a geologist with over eight years' experience in the Australian mining industry. His experience includes over six years' experience working as a consultant for SRK and three years' working as an exploration geologist. Mathew's multi-commodity experience includes coal and mineral exploration, with technical competency in exploration management and planning; drill rig supervision; core logging and sampling; regional- to prospect-scale geological mapping; target generation; prospectivity analysis; legislative compliance and reporting. Mathew is also competent in the development of geological models using Leapfrog and Minex, supported by a high level of competence in spatial packages such as ArcGIS and MapInfo. Mathew has been developing his skills in project valuation and has experience in valuation for a broad range of commodities and geological settings, including coal, iron ore, copper, gold, lead, zinc, silver, tin, nickel, molybdenum, heavy mineral sands, niobium, tantalum and graphite.

Mathew is a Member of the AusIMM. He has the appropriate relevant qualifications, experience, competence and independence to be considered a 'Specialist' and 'Competent Person' under the VALMIN (2015) and JORC (2012) Codes, respectively.

Jeames McKibben, Principal Consultant (Project Evaluation), BSc(Hons), MBA, FAusIMM(CP), MAIG, MRICS.

Jeames is an experienced international mining professional having operated in a variety of roles including consultant, project manager, geologist and analyst over more than 25 years. He has a strong record in mineral asset valuation, project due diligence, independent technical review and deposit evaluation. As a consultant, he specialises in mineral asset valuations and Independent Technical Reports for equity transactions and in support of project finance. Jeames has been responsible for multi-disciplinary teams covering precious metals, base metals, bulk commodities (ferrous and energy), industrial minerals and other minerals in Australia, Asia, Africa, North and South America and Europe. He has assisted numerous mineral companies, financial, accounting and legal institutions and has been actively involved in arbitration and litigation proceedings. Jeames has experience in the geological evaluation and valuation of mineral projects worldwide.

Jeames is a Fellow of the AusIMM, a Member of the AIG, and a Member of the Royal Institution of Chartered Surveyors. He has the appropriate relevant qualifications, experience, competence and independence to be considered a 'Specialist' and 'Competent Person' under the VALMIN (2015) and JORC (2012) Codes, respectively.

Table 1-1: Details of the qualifications and experience of the consultants

Specialist	Position/ Company	Responsibility	Length and type of experience	Site inspection	Professional designation
Karen Lloyd	Associate Principal Consultant/ SRK Consulting (Australasia) Pty Ltd	• Project Manager • Site inspection • Valuation	24 years; 8 years in operations, 7 years in strategic planning, 3 years in funds management, 6 years in consulting	14/11/2019	MBA, BSc (Hons), FAusIMM
Mike Lowry	Senior Consultant/ SRK Consulting (Australasia) Pty Ltd	Geology	23.5 years; 9 years in operations (Mine Geology) 1 year in open pit, 8 years underground), 2 years in exploration, 11 years in resource estimation, 1.5 years in consulting	None	BSc (Hons), Grad Cert (Geostatistics), MAusIMM
Anne-Marie Ebbels	Principal Consultant/ SRK Consulting (Australasia) Pty Ltd	Mining	24 years; 10 years in operations, 14 years in consulting	None	BEng (Mining), MAusIMM (CP)

Specialist	Position/ Company	Responsibility	Length and type of experience	Site inspection	Professional designation
Rebecca Getty	Principal Consultant/ SRK Consulting (Australasia) Pty Ltd	Environment and Permitting	11 years in consulting, 9 in exploration geology, 2 years in environment/ mine closure and due diligence consulting	None	MEM, BSc (Hons), MAusIMM, MAIG
Simon Walsh	Associate Principal Consultant/ SRK Consulting (Australasia) Pty Ltd	Processing	24 years; 10 years in operations, 14 years in engineering design, consulting and metallurgical laboratory management; independent technical reviews during the last 13 years	None	MBA, BSc (Extractive Metallurgy & Chemistry), MAusIMM (CP), GAICD
Mat Davies	Senior Consultant/ SRK Consulting (Australasia) Pty Ltd	Gum Creek project	9 years; 3 as an exploration geologist and 6 working in geology and valuation teams (SRK)	None	BSc (Hons) Geology
Jeames McKibben	Principal Consultant/ SRK Consulting (Australasia) Pty Ltd	Peer review	25 years; 15 years in valuation and corporate advisory, 2 years as an analyst and 8 years in exploration and project management roles	None	MBA, BSc (Hons) FAusIMM (CP), MAIG, MRICS

1.6 Limitations, reliance on information, declaration and consent

1.6.1 Limitations

SRK's opinion contained herein is based on information provided to SRK by Panoramic throughout the course of SRK's investigations as described in this Report, which in turn reflects various technical and economic conditions at the time of writing. Such technical information as provided by Panoramic was taken in good faith by SRK. SRK has not independently verified Mineral Resources or Ore Reserve estimates by means of recalculation.

This Report includes technical information, which requires subsequent calculations to derive subtotals, totals, averages and weighted averages. Such calculations may involve a degree of rounding. Where such rounding occurs, SRK does not consider them to be material.

As far as SRK has been able to ascertain, the information provided by Panoramic was complete and not incorrect, misleading or irrelevant in any material aspect. Panoramic has confirmed in writing to SRK that full disclosure has been made of all material information and that to the best of its knowledge and understanding, the information provided by Panoramic was complete, accurate and true and not incorrect, misleading or irrelevant in any material aspect. SRK has no reason to believe that any material facts have been withheld.

1.6.2 Statement of SRK independence

Neither SRK, nor any of the authors of this Report, has any material present or contingent interest in the outcome of this Report, nor any pecuniary or other interest that could be reasonably regarded as capable of affecting their independence or that of SRK. SRK has no beneficial interest in the outcome of this Report capable of affecting its independence.

1.6.3 Indemnities

As recommended by the VALMIN Code (2015), Panoramic has provided SRK with an indemnity under which SRK is to be compensated for any liability and/or any additional work or expenditure resulting from any additional work required:

- which results from SRK's reliance on information provided by Panoramic or Panoramic not providing material information; or
- which relates to any consequential extension workload through queries, questions or public hearings arising from this Report.

1.6.4 Consent

SRK consents to this Report being included, in full, in Panoramic and KPMGs' documents in the form and context in which it is provided, and not for any other purpose. SRK provides this consent on the basis that the technical assessment and valuation expressed in the Executive Summary and in the individual sections of this Report is considered with, and not independently of, the information set out in the complete Report.

1.6.5 Consulting fees

SRK's estimated fee for completing this Report is based on its normal professional daily rates plus reimbursement of incidental expenses. The fees are agreed based on the complexity of the assignment, SRK's knowledge of the assets and availability of data. The fee payable to SRK for this engagement is estimated at approximately A$63,000. The payment of this professional fee is not contingent upon the outcome of this Report.

2 Overview of Panoramic's Projects

2.1 Location, access and climate

The Savannah Project (comprising the Savannah and Savannah North production areas) is located approximately 2,030 km northeast of Perth, and approximately 105 km north–northeast from the nearest town of Halls Creek (Figure 2-1) in the East Kimberley area. Access to the Savannah Project from Perth is via the Great Northern Highway, northward to Port Hedland then eastward through Halls Creek. The Project is accessed by sealed road approximately 2 km from the Great Northern Highway.

The Copernicus project is located approximately 35 km south of the Savannah Project (Figure 2-1). The Copernicus project is accessed by approximately 23 km of unsealed haul road that extends to the southeast from the Great Northern Highway.

The Panton project is located approximately 50 km southwest of the Savannah Project (Figure 2-1). Access is via the Great Northern Highway, to which it is adjacent, then via unsealed four wheel drive accessible tracks.

The East Kimberley area has a semi-arid, monsoonal climate with an average annual rainfall of 600–700 mm. Almost all the rain falls between November and April as a result of thunderstorms and cyclones. During the wet season the days are hot to very hot (daily maxima of about 38°C) and humid, whereas during the dry season the days are warm to hot and dry, with the coolest month being July (average maximum of 27°C). The annual evaporation rate is between 2,000–2,500 mm, so that all watercourses are intermittent. Some creeks contain waterholes which may persist until late into the dry season.

The topography of the area is composed of rugged, chaotic hills underlain by igneous and high-grade metamorphic rocks. The hills have a maximum relief of about 150 m and are covered with boulders and tors. Where the rocks are cut by shear zones, valleys or more subdued, rounded hills have developed.

Vegetation over granitoid and felsic rocks comprises low-tree savannah of snappy gum over curly spinifex, with cane grass increasing northwards. The mafic igneous rocks carry a mixture of snappy gum, Mount House boxwood and bloodwood, with a groundcover of hard spinifex and arid short grass. In areas of substantial erosion, the groundcover may be dominated by soft roly-poly. Cracking clay plains carry Mitchell and other tall, bunch grasses and scattered trees. Some watercourses also carry small stands of boab.

The closest airport with scheduled commercial services is Kununurra, 190 km to the northeast of the Savannah Project. The Savannah Project is supported by a fly-in, fly-out (FIFO) workforce who commute from various Australian towns and cities via the Kununurra airport. There are no material topographic or climatic impediments to ongoing exploration or mining operations, other than occasional cyclones over the summer season.

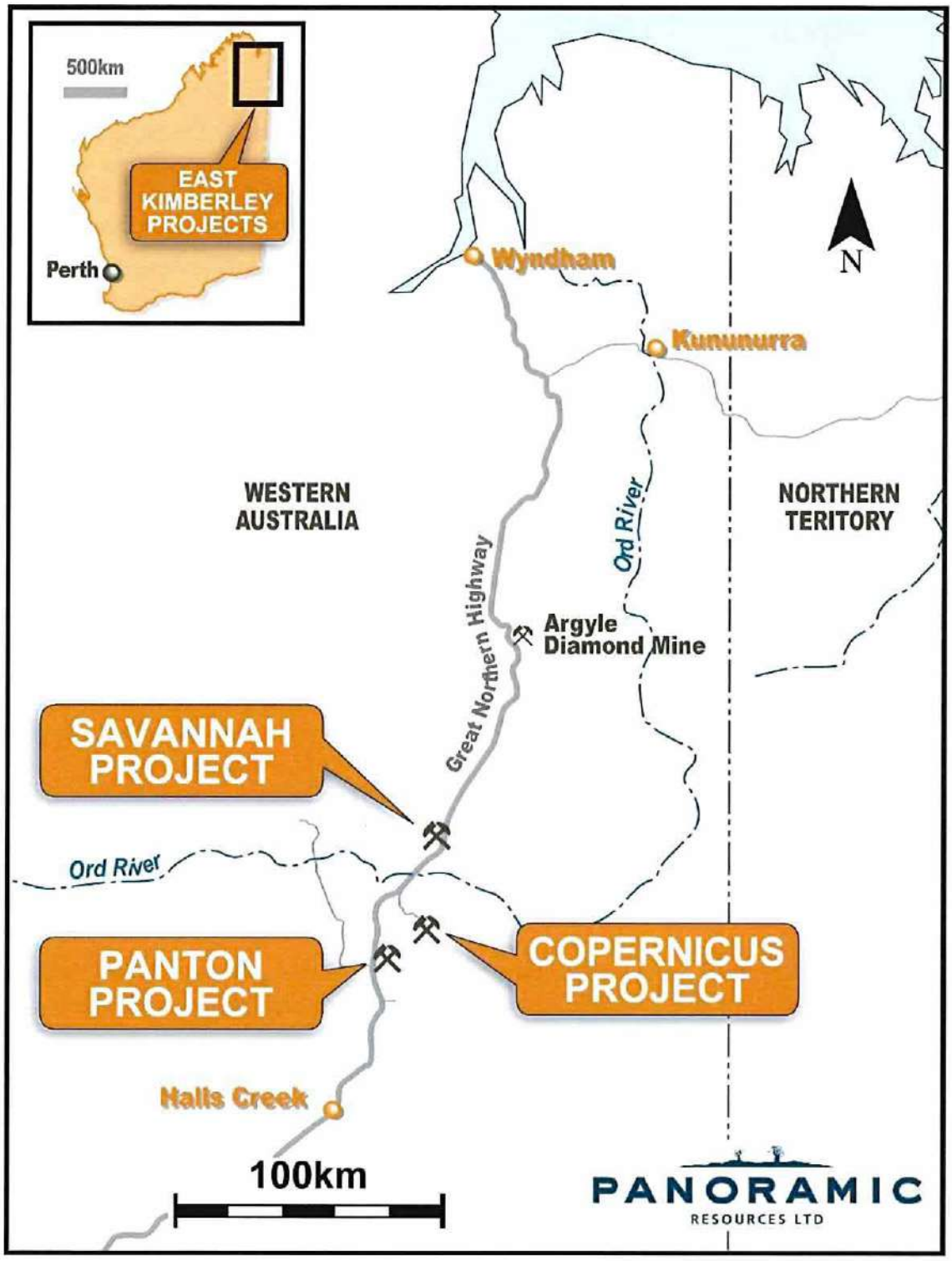


Figure 2-1: Savannah Project location map

Source: Panoramic Resources Limited

3 Savannah Project

3.1 History

The Savannah Project was discovered by Australian Anglo American Limited (Anglo) in 1973 and it was named Sally Malay at the time. Anglo spent four years evaluating the project including diamond drilling 95 holes for a total of 26,430 metres. A scoping study by Anglo reported a resource estimate of 7.2 million tonnes at 2.15% nickel to a vertical depth of 900 metres below surface.

In 1989 the Normandy Group (Normandy) acquired Anglo and assumed management of the project. Normandy undertook further evaluation work including re-sampling of the Anglo diamond core and metallurgical test work and reported a revised resource estimate of 6.1 million tonnes at 2.36% nickel equivalent.

In 1992 Normandy revised the resource estimate to 5.1 million tonnes at 1.7% nickel, 0.7% copper and 0.1% cobalt.

In 1996 Gindalbie Gold NL negotiated an option to purchase the project from Normandy for A$10 million however this option lapsed in 1997.

In April 2000 Orlando Resources NL entered a conditional sale and purchase agreement with Normandy however this agreement lapsed in August 2000.

In March 2001 Sally Malay Mining Limited (Sally Malay) signed a sale agreement with Normandy and acquired a 100% interest in Mining Leases M 80/179-183 that incorporated the project.

In July 2002, Sally Malay signed an agreement with Jinchuan Group Ltd and Sino Mining International Ltd, whereby the parties agreed upon a life-of-mine concentrate sales agreement, a project financing agreement, and an intermediate product feasibility study financing agreement for the Sally Malay project. Jinchuan agreed to purchase 100% of annual production of concentrate from the Sally Malay project on a life-of-mine (LOM) basis.

In 2003, development work started at Sally Malay, with the awarding of contracts for the construction of a 120-person village, the processing plant and village access roads following a share issue to raise cash.

In February 2004, waste stripping started at the Sally Malay open pit and by early August 2004, the commissioning of the Sally Malay processing plant was underway. Ore crushing had also begun, and the first nickel concentrate was filtered and stockpiled. Deliveries of nickel concentrate to the port in Wyndham also started. In September 2004, the first nickel concentrate shipment to China was made.

In early January 2006, Sally Malay open pit operations were suspended temporarily following a pit wall collapse.

In June 2008, Sally Malay announced it was changing its name to Panoramic Resources Limited, effective 16 June, and was renaming the Sally Malay project to 'Savannah'.

In 2014, the discovery of Savannah North was made, a major new mineralised zone approximately 700 metres northwest of the Savannah mineralisation. Resource drilling commenced in early 2015, and in October 2015, the Company released the maiden Savannah North Indicated and Inferred Mineral Resource estimate of 6.88 Mt at 1.59% Ni for 109,600 t Ni.

In January 2016, Panoramic released the results of a Scoping Study on the maiden Savannah North Mineral Resource estimate, which indicated a positive economic outcome.

In May 2016, the Savannah mine and processing plant was placed onto care and maintenance as a value preservation exercise due to the low nickel price environment. This historical production figures for the period 2004 to 2016 are presented in Table 3-1.

Table 3-1: Historical production figures – 2011 to 2016 and total for 2004 to 2016

Year (financial)	Units	2011/12	2012/13	2013/14	2014/15	2015/16	Total
Milled throughput	t	661,979	686,739	759,150	854,794	870,541	**8,545,371**
Nickel feed grade	Ni %	1.52	1.29	1.29	1.18	1.32	**1.29**
Copper feed grade	Cu %	0.79	0.67	0.75	0.66	0.74	**0.65**
Cobalt feed grade	Co %	0.08	0.06	0.06	0.06	0.06	**0.07**
Concentrate production	t	114,628	100,615	117,121	119,084	133,121	**1,224,805**
Concentrate nickel grade	Ni %	7.53	7.66	7.24	7.33	7.39	**7.72**
Concentrate copper grade	Cu %	4.35	4.42	4.64	4.46	4.48	**4.31**
Concentrate cobalt grade	Co %	0.41	0.38	0.36	0.37	0.36	**0.41**
Nickel recovery	%	85.61	87.12	86.63	86.40	85.72	**85.92**
Copper recovery	%	95.57	96.01	95.08	94.13	92.80	**95.48**
Cobalt recovery	%	89.83	89.85	89.28	88.23	89.30	**89.32**

Source: Panoramic Management Information.

In July 2016, Panoramic commenced a Feasibility Study (Savannah FS) to evaluate the technical and financial viability of recommencing operations at Savannah.

In August 2016, Panoramic announced an upgraded Savannah North Indicated and Inferred Mineral Resource estimate of 10.27 Mt at 1.70% Ni for 175,100 t Ni, 74,400 t Cu and 12,700 t Co.

In February 2017, Panoramic released the results of the Savannah FS. The Savannah FS contemplated mining the remaining Ore Reserve at Savannah, while developing across to the Savannah North mineralisation via decline from the Savannah 1440 Level to the Savannah North 1380–1360 levels. Access development from Savannah to first ore at Savannah North was scheduled to take approximately nine months, with full production from Savannah North reached 15 months after commencement of development.

Other key metrics reported from the Savannah FS were:

- Processing through the existing Savannah plant to produce a bulk Ni-Cu-Co concentrate targeting a concentrate grade of 8% Ni for a 10-year mine life (LOM)
- Processing recoveries over the LOM expected to average 87% Ni, 96% Cu and 90% Co, based on historical Savannah plant performance
- Metal in concentrate production to average 9,700 t Ni, 5,000 t Cu and 670 t Co per year, with 99,200 t Ni, 51,500 t Cu and 6,900 t Co in concentrate produced over the LOM
- Forecast average operating cash costs of US$3.30/lb Ni (on a payable nickel basis after by-product credits) over the LOM.

In February 2017, Panoramic commenced a series of technical studies to optimise the Savannah FS. Key focus areas were:

- Mining productivity – identify opportunities to increase production rate and mined nickel grade
- Product optimisation – additional metallurgical testwork to confirm the processing characteristics of Savannah North and the feasibility of producing a bulk concentrate with a higher nickel grade
- Cost reduction – review of major cost centres, particularly regarding power and contractor services
- Marketing – engage with potential offtake partners to receive indicative terms for offtake and project financing
- Financing – seek indicative term sheets from potential financiers on style and quantum of financing available for the Project.

In July 2017, Panoramic released the results of the optimised Savannah FS.

Key updates were:

- Forecast bogging rates in Savannah North were increased from 1,000 t per day to 1,200 t per day by using remote technology to bog over shift changes.
- Accelerated production in the early years via the inclusion of a vertical pillar in the upper portion of Savannah North, which facilitates the development of a second mining front.
- Removal from the mine plan of lower grade stopes resulting in approximately 750,000 t of material grading 0.9% Ni being removed (but not sterilised) from the mine plan.

The optimised Savannah FS resulted in a shorter mine life (8.5 years versus the 10 years contemplated in the Savannah FS) but with an increased mining rate (0.9 Mtpa versus 0.8 Mtpa contemplated in the Savannah FS).

In July 2018, Panoramic announced that it had made the formal decision to restart operations at the Savannah Project and ramp-up to full production over a 15-month period to a forecast LOM average annual production rate of 10,800 t Ni, 6,100 t Cu and 800 t Co metal contained in concentrate.

In September 2018, Panoramic announced that that recommissioning of the processing plant would commence in October 2018, further to refurbishment activities.

In January 2019, Panoramic announced that underground operations had re-commenced and that production drilling was underway to build up a run-of-mine (ROM) stockpile. The production ramp-up was slower than forecast due to a combination of factors, including mobile equipment availability and a severe storm, which required personnel to be deployed to reinstate essential services. Progress was being made on the development of a 900 m long ventilation shaft to allow the Savannah North project area to be developed.

In April 2019, Panoramic announced an operational performance update. Production was approximately 25% lower than forecast due to a lack of available stopes caused by delays in commissioning the paste plant. Additionally, productivities were affected by equipment availability, especially the charge-up wagon and underground loaders and further unscheduled power outages. The raiseborer working on the ventilation shaft experienced blocky ground, resulting in slow penetration rates. The decision was made late in April 2019 to reduce the reamer diameter from 5.0 m to 4.5 m to improve penetration rates. This was further reduced to 4.1m in May 2019 in recognition of the Life of Mine ventilation requirement.

In September 2019, Panoramic announced that the first development ore was scheduled to be delivered from Savannah North in November 2019, with the first stoping planned for the March 2020 quarter. The raisebore penetration rates had improved and the ventilation shaft was expected to be completed in the June 2020 quarter. The Project averaged 46,000 t of ore per month for the June 2019 quarter, which was below the forecast 60,000 t. The reasons given by Panoramic for this shortfall were the reduced availability of some high-grade stopes due to a localised seismic event in July 2019 and bridging of ore in some stopes mostly related to ground stress issues from the seismic event; additional rehabilitation required in some of the access drives; reduced remote bogger availability caused by software/ hardware issues; and intermittent manning issues with Company and Contractor personnel due to the tight labour market.

In December 2019, Panoramic announced that it had completed an Operational Review and updated the LOM schedule to reflect its current understanding of the orebodies at Savannah and Savannah North. The key forecast parameters under the updated LOM schedule (from 1 January 2020) are presented in Table 3-2.

Table 3-2: Updated Savannah LOM physicals (December 2019)

Key parameters		Updated Savannah LOM incl. physicals to date *(December 2019)*	Feasibility Study *(October 2017)*	% change
Ore mined and processed	Mt	7.23	7.65	(5%)
Average nickel grade	% Ni	1.39%	1.42%	(2%)
Average copper grade	% Cu	0.66%	0.68%	(2%)
Average cobalt grade	% Co	0.09%	0.10%	(3%)
Contained nickel in concentrate	kt	83.7	90.2	(7%)
Contained copper in concentrate	kt	46.9	50.7	(7%)
Contained cobalt in concentrate	kt	6.1	6.7	(9%)

Source: Panoramic ASX Announcement, 9 December 2019

A review of existing operating cost and sustaining capital levels and forward expectations was also undertaken as part of the Operational Review. The all-in sustaining cost (AISC) for the residual LOM at Savannah was re-forecast to US$3.77/lb as a result of the review.

3.2 Ownership

The Savannah and Savannah North projects comprise five granted Mining Leases (M) and one granted Miscellaneous Licence (Table 3-3). SRK has received representation from Panoramic that the tenement schedules presented in Table 3-3 are to be relied upon and used for the purpose of this Report. SRK has made all reasonable enquires into the status of this tenure as at 1 December 2019.

Table 3-3: Savannah and Savannah North projects – Tenement schedule*

Name	Type	Status	Granted	Expiry	Area (ha)
M 80/179	Mining Lease	Live	16 June 1987	15 June 2029	251.85
M 80/180	Mining Lease	Live	16 June 1987	15 June 2029	960.30
M 80/181	Mining Lease	Live	16 June 1987	15 June 2029	960.00
M 80/182	Mining Lease	Live	16 June 1987	15 June 2029	589.40
M 80/183	Mining Lease	Live	16 June 1987	15 June 2029	967.05
L 80/64	Miscellaneous Licence	Live	2 March 2012	1 March 2033	311.00

Note: *All tenements are registered in the name of Savannah Nickel Mines Pty Ltd.

3.3 Permitting and approval

The Notice of Intent for mining at Savannah was approved on 25 August 2003 (Reg ID 4099, known as the Sally Malay Project) and operated for 12 years before being placed under care and maintenance until December 2018. The Project currently consists of two waste rock dumps, a decommissioned open pit, an operating processing plant and supporting infrastructure. The Project is located on the Mabel Downs Pastoral Lease, an active pastoral station.

The Savannah North Underground Stage 1 Mining Proposal to extract the upper orebody was approved on 31 May 2019 (Reg ID 79141). Savannah North lies within the approved mining tenure for Savannah and the mine is currently under development. Only minimal surface disturbance (1.1 ha) is required as Savannah North will use the existing infrastructure at Savannah, including the South Waste Rock Dump and tailings storage facility (TSF1). Stage 2 will require further approvals for additional tailings storage.

The Panton deposit has been on care and maintenance since 2007. Panton was approved for a small underground operation under a Notice of Intent granted in 2001 (Reg ID 3790) and a Mining Proposal for bulk sample extraction in 2006 (Reg ID 5432).

Prescribed activities licensed under Part V of the *Environmental Protection Act 1986* (EP Act) for Savannah and Savannah North were amended on 12 December 2018 (L7967/2003/6) to permit processing of up to 950,000 tpa, 200 m^3 or more per day of sewerage and 10,000 tpa of Class II putrescible landfill. Mine dewatering was removed from the licence as predicted volumes of abstraction will be used for dust suppression and mining activities and will not be not discharged to the environment.

Water demand for the Savannah was determined to be 1.446 GLpa ("*Savannah Nickel Project Operating Strategy*", RPS, 2016). Savannah Nickel Mines Pty Ltd holds groundwater licence GWL 153527(6) which is valid until 31 October 2022 (renewable) and permits abstraction of 1.446 GLpa of water for mine dewatering, dust suppression, accommodation camp purposes and mineral processing.

Savannah North will be mined concurrently with Savannah. The Savannah North Stage 1 tailings will be accommodated in existing stop voids and optimisation of TSF1 and the groundwater assessment completed by AECOM in 2019 does not anticipate additional water abstraction requirements. Savannah North will therefore be able to operate under existing permits.

Clearing required for development and operations is conducted under exemption clause 2(2) of Schedule 1 of Part V of the *Environmental Protection Act 1986,* which allows up to 10 hectares per financial year for clearing activities authorised under the *Mining Act 1978.* No additional clearing permits are held for the Savannah and Savannah North projects.

3.4 Native title

Mining leases grated prior to 1 January 1994 are considered a past act under the *Native Title Act 1993* and can therefore be validly renewed without native title agreements in place. Under section 24 of the *Mining Act 1978*, the grant of a Miscellaneous Licence is subject notification of native title claim groups and a 2-month objection period. No objections are recorded for L 80/64 and native title was cleared on 2 March 2012.

A native title agreement exists for the mining leases of Savannah and Savannah North – the Kimberley Nickel Co-Existence Agreement between the Sally Malay, Kimberley Nickel Mine and the Native Title claimants of the Purnululu and Malarngowem People was signed in 2007. The agreement permits mining activities on the mining leases and contains provision for royalties, cultural heritage protection and training, employment and contracting opportunities, consultation for mine implementation and closure planning, and implementation committee meetings every six months. A summary of payments to a trust fund required under the agreement is shown in Table 3-4. Under clause 21.3, any party can request a review of the agreement after 2017.

Table 3-4: Native title agreement payment schedule

Description	Commencement	Duration	Amount (A$)
Costs incurred to attend committee meetings	After commencement of the agreement	Each financial year	Up to A$4,000 then annually adjusted to CPI
A Purnululu or Malarngowem person (or other suitably qualified person) is appointed as mentor	After commencement of the agreement	Each financial year	A$74,000 then annually adjusted to CPI
Education, health services and programs	After commencement of the agreement and during commercial operations	Each year on the anniversary of 1 July	A$150,000
Appoint a suitable qualified person to pro-actively provide business	If more than 15,000 tonnes of nickel	Annual salary	Not defined

Description	Commencement	Duration	Amount (A$)
development opportunities for Purnululu and Malarngowem People	concentrate or more is produced in any year		
Cultural heritage training provided to each person every two years by the Purnululu or Malarngowem People	If people are employed on site	No less than once every three months (unless no training is required)	Not defined
Smoking ceremonies on existing operations	After commencement of the agreement	Up to eight each year	Up to A$30,000
Two part-time Cultural Heritage Rangers	After commencement of the agreement	Annual salary	Combined salary of A$30,000 then annually adjusted to CPI

CPI = consumer price index

3.5 State royalties

State royalties will be distributed to the Western Australian Government at the rate of 2.5% of the royalty value of any concentrate produced from the Project. This rate is the *ad valorem* rate that applies to concentrate material as defined under the Mining Regulations 1981 (Regulation 86).

3.6 Site inspection

In accordance with Section 11.1 of the VALMIN Code (2015), a site inspection was made to the Project by SRK representative Ms Karen Lloyd on 14 November 2019. The site inspection included a meeting with key site personnel to discuss the operating performance and the key risks and opportunities and a site tour.

3.7 Geology

The Project is located in the central zone of the Lamboo geological province of the East Kimberley region. The geological history of the East Kimberley region is complex and spans almost 2 billion years. A period of Palaeoproterozoic plate collision during the assembly of the supercontinent Nuna produced crystalline basement rocks forming the Hooper and Lamboo provinces. The plate collision was complex, involving the accretion of the Tickalara arc to the Kimberley Craton during the 1870–1850 Ma Hooper Orogeny, before suturing during the 1835–1805 Ma Halls Creek Orogeny.

The Lamboo geological province is dominated by medium-grade to high-grade turbiditic metasedimentary and mafic volcanic and volcaniclastic rocks of the Tickalara Metamorphics, interpreted as an oceanic island arc developed at c. 1865 Ma (Tyler et al., 2012). These were intruded by tonalitic sheets and deformed and metamorphosed between c. 1865–1856 Ma and 1850–1845 Ma. Layered mafic-ultramafic bodies were intruded into the Central zone between c. 1856 Ma and 1830 Ma.

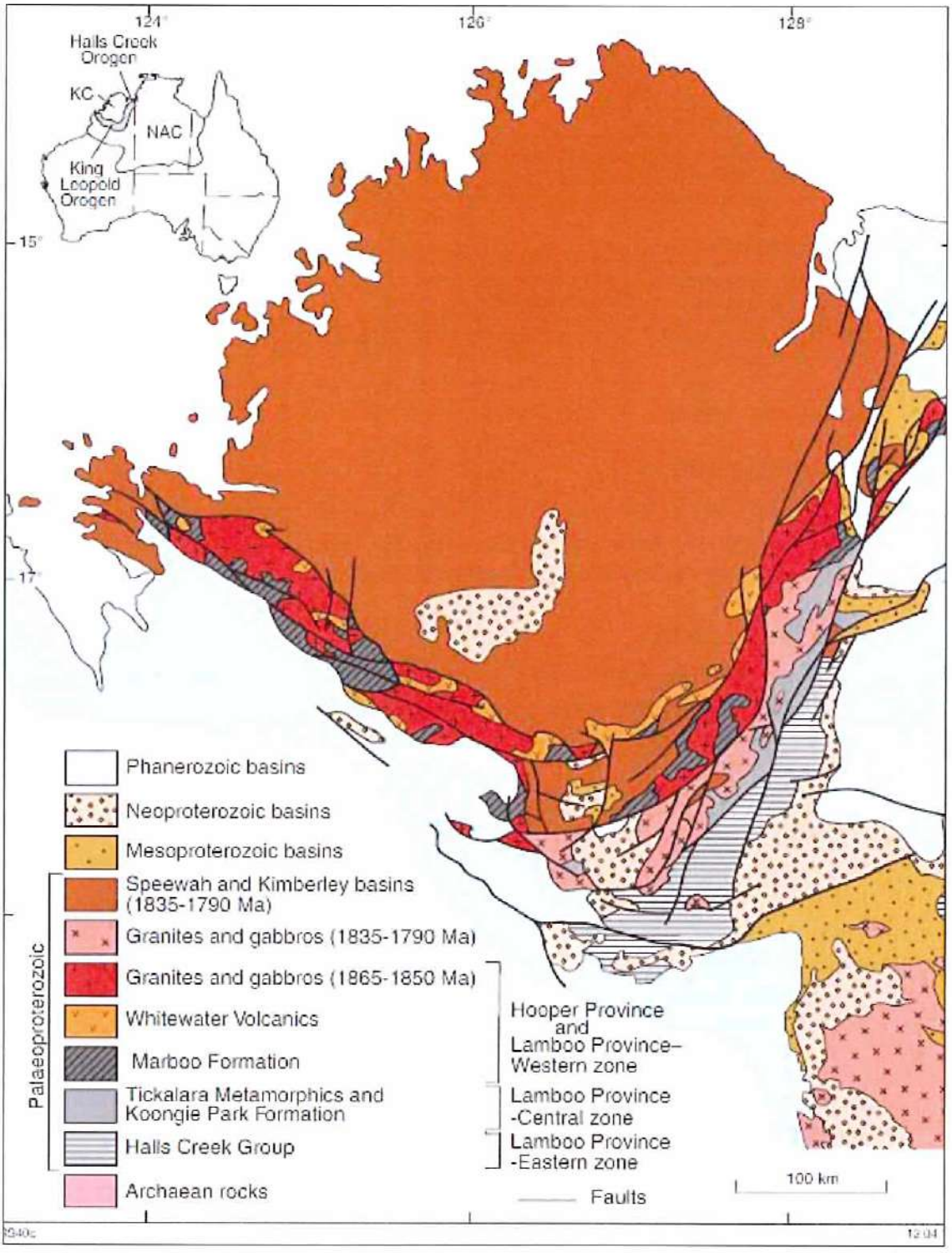


Figure 3-1: Palaeoproterozoic geology of the Kimberley region

Source: Griffin et al., 2000

The nickel-copper-cobalt mineralisation at Savannah is mostly confined to a marginal norite unit up to 40 m thick occurring above the base of a layered mafic-ultramafic intrusion referred to as the Savannah Intrusion (SI). Areas of massive, matrix and disseminated sulphide mineralisation, dominated by pyrrhotite, chalcopyrite, pentlandite and minor pyrite occur throughout the marginal norite unit and dip steeply to the northwest. Mineralisation has been modelled as three distinct zones – the Upper Zone,

Lower Zone and Sub 900 zone – that have been offset to the northwest by a series of sub-horizontal thrust faults (Figure 3-3):

- Fault 500 – occurs approximately 500 m below the surface and offsets the Lower Zone approximately 200 m to the northwest of the overlying Upper Zone
- Fault 900 – occurs approximately 900 m below the surface and offsets the Sub 900 zone approximately 250 m to the northwest of the overlying Lower Zone.

The mineralisation varies in thickness from 1 m to 50 m and extends approximately 350 m along strike and from surface to depths greater than 900 m. Mineralisation at Savannah North occurs along the basal contact of an olivine gabbro unit referred to as the Savannah North Intrusion (SNI) to the northwest of the Savannah deposit, with mineralisation occurring within two main zones – the Upper Zone and Lower Zone (Figure 3-4).

The Upper Zone occurs along the basal contact of the SNI striking east–west and dipping moderately to the north–northwest. In the east, the Upper Zone is dominated by massive sulphide mineralisation is typically 5–8 m thick which then transitions to dominantly matrix-style mineralisation (20%–40% sulphides), which is typically 15–20 m thick and has associated thin zones of semi-massive to massive sulphide mineralisation.

The Lower Zone is a consistent zone of higher-grade massive sulphide mineralisation occurring within the Tickalara Metamorphics underlying the SNI that is interpreted to have been remobilised from the Upper Zone mineralisation thought to be associated with Fault 500. The massive sulphide is up to 15 m thick and dips 50°–60° to the northwest.

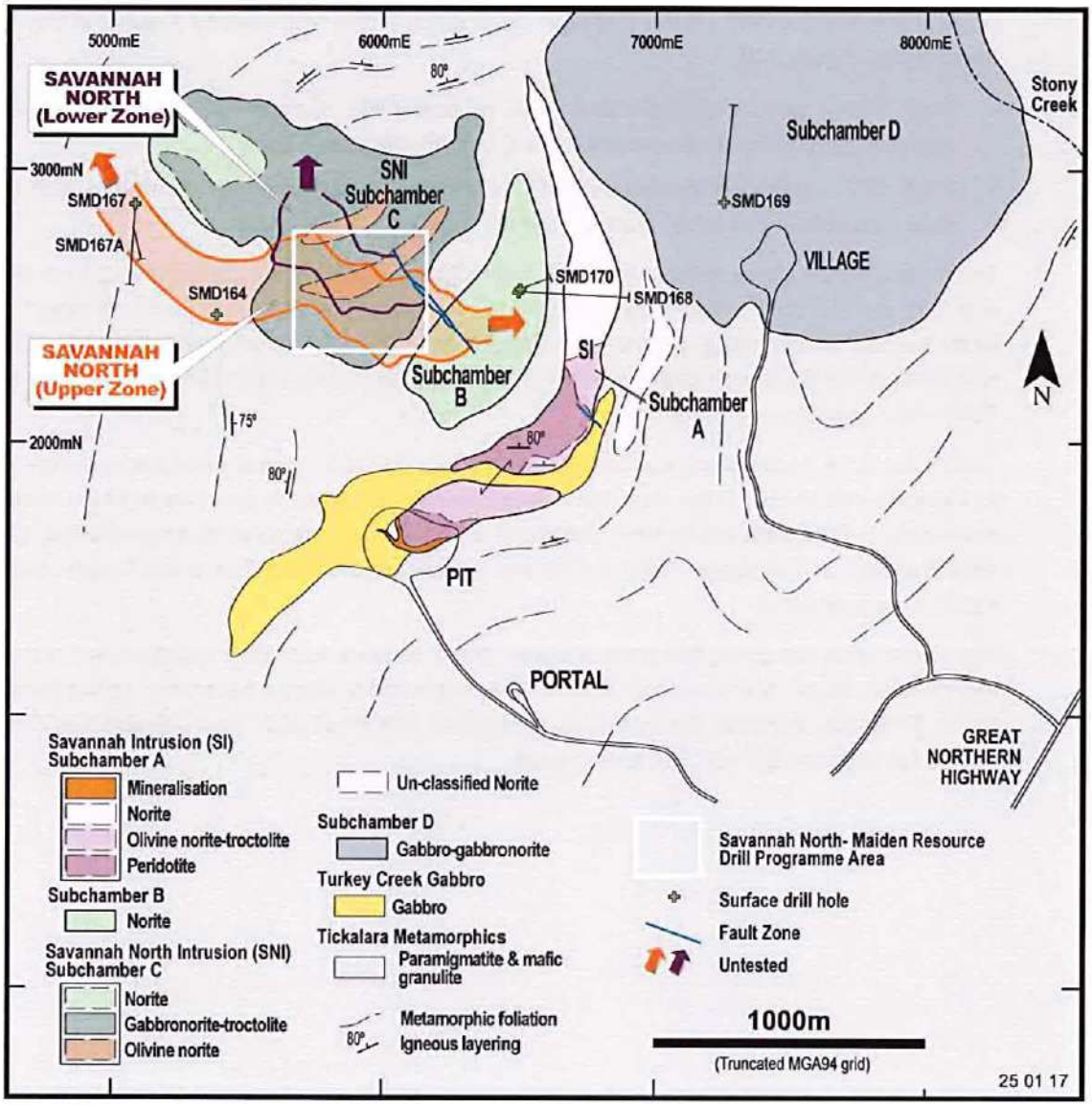


Figure 3-2: Plan view showing location of the Savannah and Savannah North intrusions

Source: Panoramic Management Information

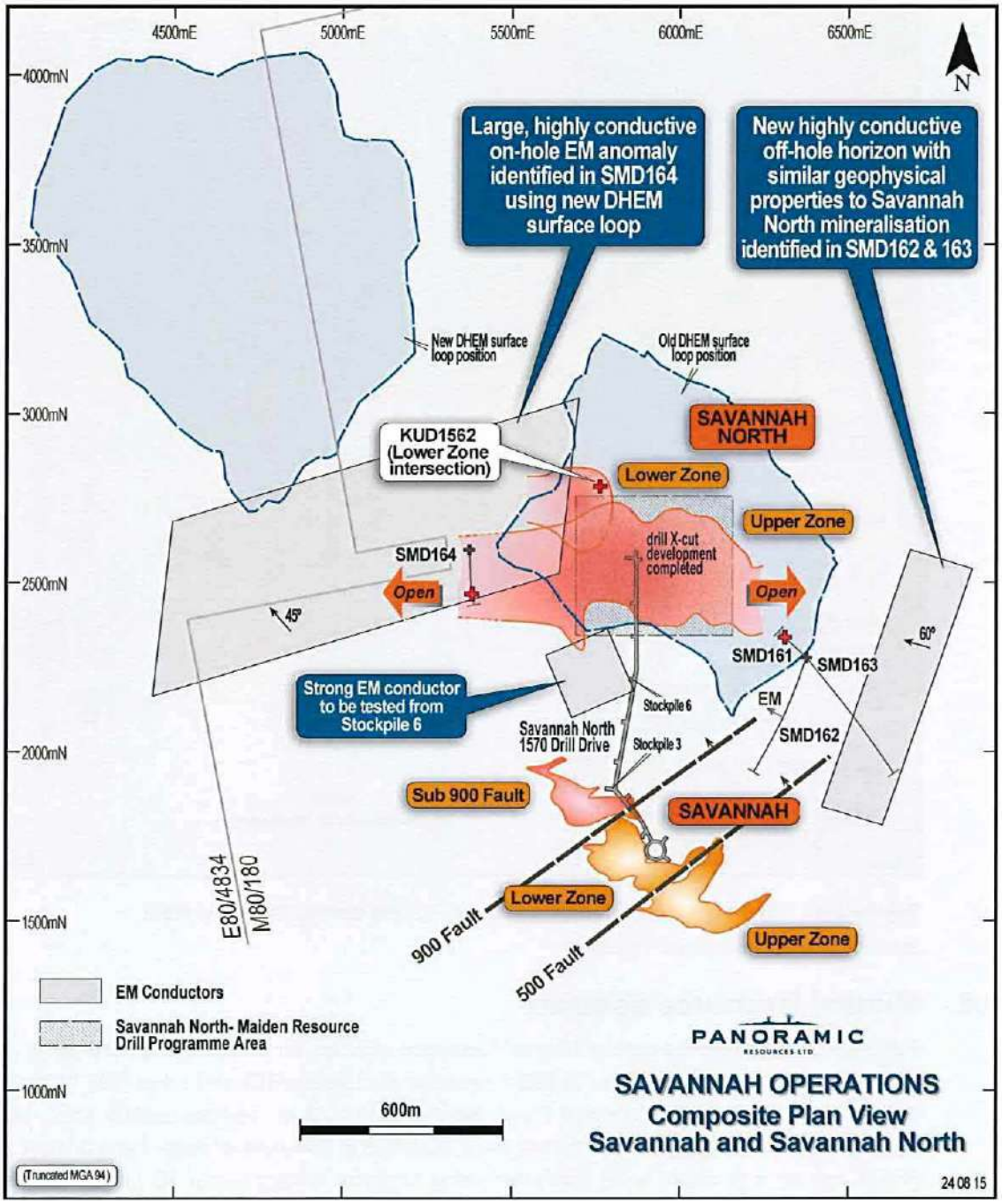


Figure 3-3: Composite plan view of the Savannah and Savannah North deposits

Source: Panoramic Management Information

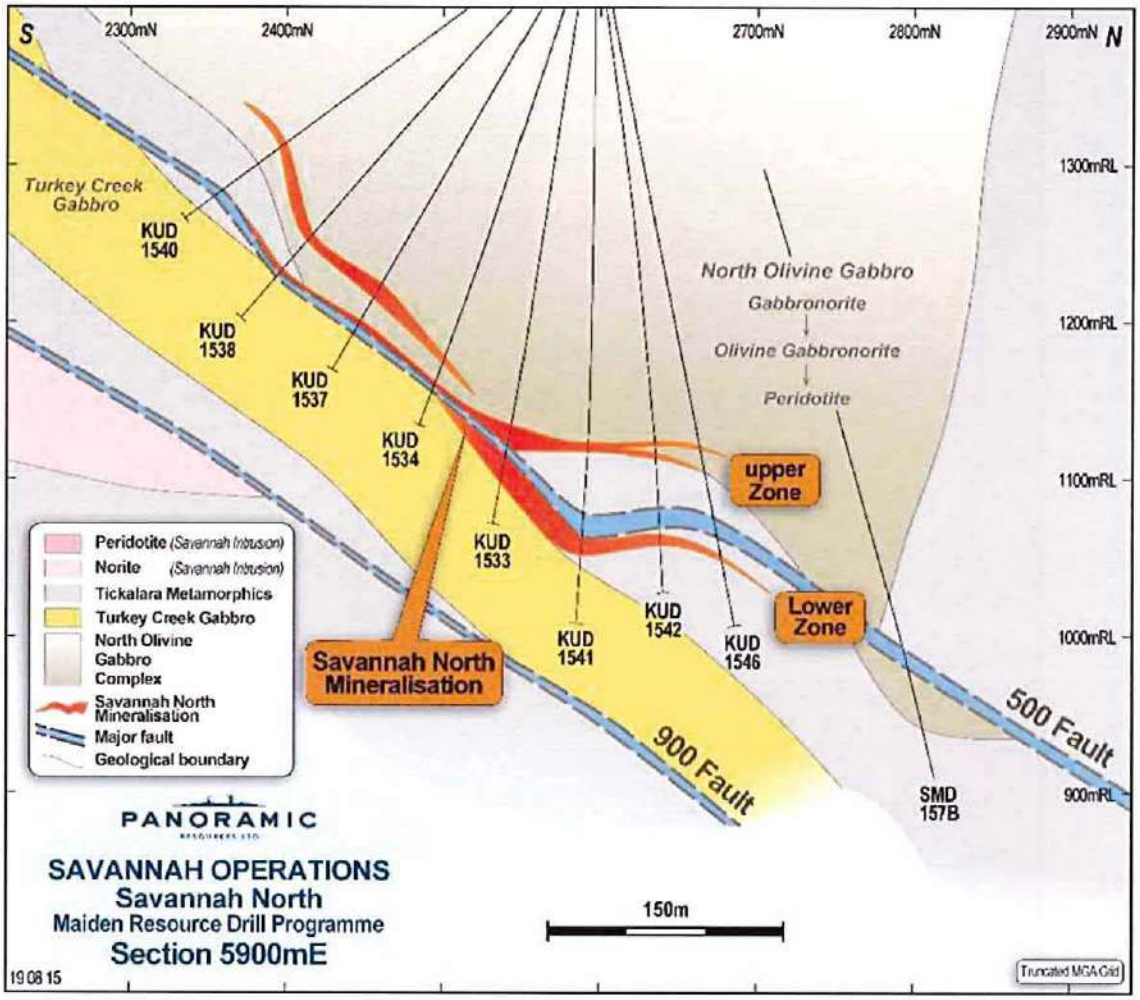


Figure 3-4: Savannah North local geology – cross section looking west

Source: Panoramic Management Information

3.8 Mineral Resource estimate

Panoramic completed the current Mineral Resource estimate for the Savannah deposit in July 2015. The estimate was based on 225 (14,899 m) reverse circulation (RC) and 1,459 (237,027 m) diamond drill holes completed on a nominal 25 m (east–west) by 25 m (vertical) drilling grid. Mineralised domains and the associated fault zones were modelled in three dimensions using a 0.5% Ni cut-off. Nickel, copper and cobalt were estimated using Ordinary Kriging into a 3D block model using the modelled mineralised domains as hard estimation boundaries. Resource classification was based on mine development confirming mineralised extents and continuity (Measured), drill spacing and estimation quality.

The current Mineral Resource estimate for the Savannah North deposit was completed in August 2016 by Cube Consulting Pty Ltd (Cube). The estimate was based on 97 diamond drill holes (59,354 m) completed between 2014 and 2016. Mineralised domains and the associated fault zones were modelled in three dimensions using a 0.5% Ni cut-off. Accumulation variables (interval composite × vertical intersection width × density) were estimated for nickel, copper, cobalt and in situ dry bulk density using ordinary kriging into a 2D block model using the modelled mineralised domains as hard boundaries. Variable grades were then calculated from the estimated accumulation variables and then exported back into 3D space. Mineral Resource classification was based on drill hole data density, confidence in the geological modelling and estimation quality. The updated Savannah North Mineral Resource estimate formed the basis of the Savannah FS completed in December 2017.

Table 3-5: Savannah Nickel Project Mineral Resources as at 30 June 2019

Deposit	Cut-off	Classification	Tonnes	% Ni	% Cu	% Co	Ni Metal (t)	Cu Metal (t)	Co Metal (t)
Savannah	0.5% Ni	Measured	1,178,000	1.40	0.86	0.07			
		Indicated	1,402,000	1.67	1.05	0.09			
		Inferred	125,000	1.72	0.75	0.09			
		Sub-total	**2,705,000**	**1.55**	**0.95**	**0.08**	**42,000**	**25,800**	**2,200**
Savannah North	0.5% Ni	Measured	0	-	-	-			
		Indicated	7,168,000	1.78	0.77	0.13			
		Inferred	3,105,000	1.53	0.62	0.11			
		Sub-total	**10,272,000**	**1.70**	**0.72**	**0.12**	**175,000**	**74,300**	**12,600**
Savannah Project Total	0.5% Ni	Measured	1,178,000	1.40	0.86	0.07			
		Indicated	8,570,000	1.76	0.81	0.12			
		Inferred	3,230,000	1.54	0.62	0.11			
		Total	**12,977,000**	**1.67**	**0.77**	**0.11**	**217,000**	**100,100**	**14,800**

Note: Figures have been rounded and therefore may not be additive.
Source: Panoramic Management Information.

In SRK's opinion, the Savannah Mineral Resource estimates have been prepared to a sufficient quality standard under the guidelines of the JORC Code (2012) and are considered to be reasonable estimates.

The geological datasets are largely composed of modern industry standard drilling, surveying, logging and sampling data. QA/QC (quality assurance and quality control) processes and results for each dataset are not well documented in any of the resource modelling reports and SRK cannot make a reasonableness assessment.

The local geology is well understood, albeit only briefly documented, and the geological models integrate key stratigraphic and structural controls on mineralisation. SRK is of the opinion that the geological models provide reasonable representations of the local geology and mineralised volumes.

The Mineral Resource estimates are a mix of 3D block and 2D accumulation Ordinary Kriged estimates. In SRK's opinion, the 3D block estimates for the Savannah provide reasonable representations of the likely contained nickel-copper-cobalt mineralisation whereas the 2D accumulation estimates for Savannah North may result in over-smoothed and/ or biased grade estimates. The 2D accumulation estimates involve compositing all raw samples from each mineralised drill hole intercept into a single accumulated sample and then weighting the accumulated sample by vertical width of the mineralised horizon and the in situ density to produce an accumulation variable value for each drill hole intercept which is then estimated. In SRK's opinion, the interval length accumulation process can mask inherent grade variability. Additionally, using the vertical intersect width rather than the true width of each mineralised intercept could inadvertently bias the weighting for some accumulation variables. As such, further validation against a 3D check block estimate would allow any over-smoothing or grade bias, which may affect grade control in the operation, to be identified.

3.9 Metallurgical testwork and processing

Metallurgical testwork was undertaken on Savannah North mineralisation as part of the Project restart assessment and the results of the testwork were reported in the updated Savannah FS. The testwork specifically targeted the main ore zones: the Savannah North Upper Zone and Lower Zone. A limited amount of testing on Savannah underground ores was undertaken for a comparability assessment to allow correlation to historical metallurgical behaviours to be undertaken. Intervals from 10 diamond

holes were used for the Savannah North testwork. This testing was undertaken at reputable laboratories that are suitably equipped and experienced to undertake this work.

While a standard testing program, incorporating comprehensive head grade analysis, mineralogical testing, physical (comminution) and flotation testing, was undertaken, it was limited to four main composite samples and testing was only done at a batch scale. The samples were identified as an Upper Zone massive sulphide, two Lower Zone massive sulphide ore samples, and an Upper Zone/ matrix sample. A few variability flotation tests from shorter sections of this core were also done.

The testwork demonstrated that compared to the Savannah ores processed historically, the Savannah North ores have a lower proportion of pentlandite and a higher pyrrhotite to pentlandite ratio. The pyrrhotite contains some (~0.5%) nickel in a non-sulphide solid solution form, most of which reports to the tailings. This explains the modest reduction in recoveries and lower concentrate grades of the new Savannah North ores as the pyrrhotite is the dominant sulphide mineral. The Savannah North ores also benefit from a longer flotation residence time, which results in some of the pyrrhotite reporting to the final product. No mineralogy details of the non-sulphide gangue were available or assessed by SRK.

The comminution testing, using 5 of the 10 drill holes, included standard Bond rod, ball and abrasion tests. Additional drop weight index testing was also completed for the SAG (semi-autogenous grinding) Mill Competency (SMC) assessment. It showed the ores to be similar to the Savannah ores processed historically and did not identify any material issues. The testing was not extensive enough to allow for a deep understanding of the likely behaviours of the Savannah North ores and it does not appear to have been used in comminution modelling to update the circuit design from first principles. Instead, peak monthly historical throughput was used as the basis for forecasting annual production rates.

An independent peer review of the flotation testwork was undertaken by Strategic Metallurgy Pty Ltd in September 2017 (the Strategic Review). This provided SRK with an understanding of the flotation work done, an interpretation of results, and a gap analysis of the testwork program.

While a reasonable number of tests were completed (46 rougher-scavenger tests and 19 cleaner tests), some reliability risks were identified. The results did not replicate the historical plant performance as closely as originally expected. While mineralogical differences could partially explain this, there is a risk that the old drill core used to undertake the testwork was oxidised and site water was not used in the testwork. Additionally, the four composite samples generated from the drill core had grades above those forecast in the LOM, much of the testing was done at a P_{80} grind size of 106 µm rather than 120 µm (lower throughput implications) and the representivity of the samples was not confirmed.

Amongst several findings and recommendations for further work, the Strategic Review concluded that there was a likelihood that the nickel recovery would be lower than historically achieved from processing the Savannah ores, by as much as 4%–5%. At the same time, it was identified that the testwork was not optimised and improvements in testwork recoveries and concentrate grades were likely to be achievable.

In efforts to allow a comparison between the historical Savannah ores and the new Savannah North ores, the Savannah ores were tested under the same conditions as the Savannah North ores. As expected, the recoveries for Savannah ores were superior to those achieved on the North Savannah ores. While the recoveries were lower than historical performance, again possibly due to the oxidation of the drill core sample, the difference in recovery between the two ores is still noteworthy.

The metallurgical testwork program was directed towards verification of previous metallurgical behaviours using the known operating parameters and reagent regimes. The intention was to compare the new behaviours against historically processed ores, rather undertaking a comprehensive

testwork program. The testwork demonstrated a wide variety of flotation challenges and identified a number of opportunities, including regrinding, variations on grind size, reagent types and addition regimes. The testing did not include a comprehensive variability program under optimised conditions, was not undertaken at a pilot scale and did not include locked-cycle testing (although only rougher and scavenger cleaners are incorporated in the flowsheet).

A conventional, flotation-style mineral concentrator is used for mineral processing (Processing Facility) at the Project. The feed comprises massive sulphides predominantly made up of pyrrhotite, pentlandite and chalcopyrite ores in an ultramafic (peridotite) host rock hosting other non-sulphide gangue minerals.

The Processing Facility comprises a single stage jaw crusher, surge bin and emergency stockpile, a single-stage SAG mill in closed circuit with a set of hydrocyclones used to separate the milled discharge at an approximate product size 80% passing 120 µm (P_{80}). This is passed over a trash screen and into a conditioning tank where collector and other reagents required for flotation are added.

The flotation circuit is designed to generate a bulk nickel-copper-cobalt sulphide concentrate. It comprises rougher, scavenger and cleaner circuits to separate the valuable minerals from the gangue. The intent is to selectively float the pentlandite and chalcopyrite from the pyrrhotite using lime to increase the slurry pH to levels sufficiently high to depress the pyrrhotite. It does not incorporate a regrind circuit aimed at further separation of the pyrrhotite.

The bulk concentrate has typically had a combined nickel and copper grade of approximately 12%, of which approximately 7.5%–8% is nickel. The concentrate is dewatered through thickening and filtration and into storage bunkers for final loading and trucking to port. The tailings are also thickened and either pumped to the paste plant or to the tailings storage facility (TSF). A summary flowsheet is provided in Figure 3-5.

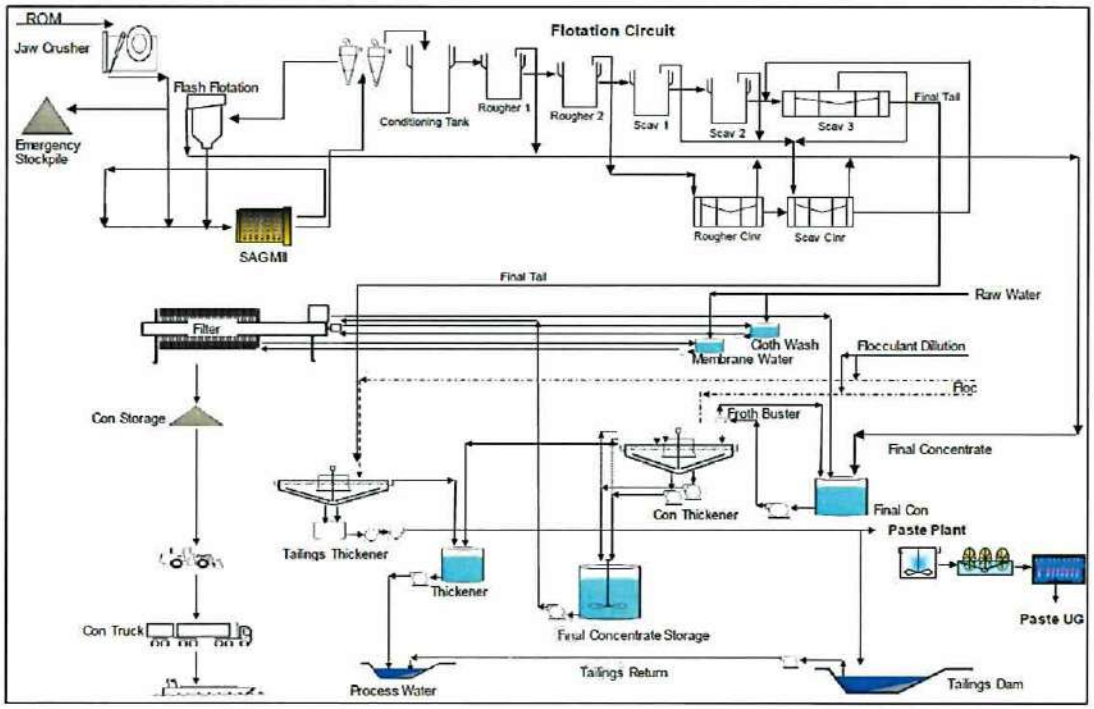


Figure 3-5: Summary processing flowsheet

Source: Panoramic Management Information

Testwork on the Savannah North ores, which was aimed at replicating the existing flowsheet, has shown that the metallurgical behaviours are similar, and that historical plant performance is indicative

of future processing performance. Some future flowsheet opportunities have been identified, including bypassing of the cleaner circuits, the use of fine grinding and/ or production of separate nickel and copper products. Panoramic historically considered hydrometallurgical options to produce separate products and a platinum group metals (PGM) product to improve metal payability.

In SRK's opinion, the flowsheet will continue to be amenable to processing the Project ores considered in the Mine Plan. The Savannah Project has been operated successfully since 2004 and is well demonstrated in its ability to produce a saleable concentrate at high metal recoveries.

3.10 Ore Reserves and Mine Planning

3.10.1 Ore Reserve estimate

The Savannah and Savannah North Ore Reserves as at 30 June 2019 are presented in Table 3-6. In SRK's opinion, the Ore Reserve estimates have been prepared to a sufficient quality standard under the guidelines of the JORC Code (2012) and are considered to be reasonable estimates. SRK notes that there is a slight discrepancy in the copper metal, in that the metal for Savannah North appears overstated by 300 t.

Table 3-6: Savannah and Savannah North Ore Reserves as at 30 June 2019

Area	Ore Reserve Category	Tonnage (t)	Nickel grade (%)	Copper grade (%)	Cobalt grade (%)	Nickel metal (t)	Copper metal (t)	Cobalt metal (t)
Savannah	Proven	1,371,000	1.16	0.75	0.06	15,900	10,300	800
	Probable	0	0.00	0.00	0.00	0	0	0
	Total	**1,371,000**	**1.16**	**0.75**	**0.06**	**15,900**	**10,300**	**800**
Savannah North	Proven	0	0.00	0.00	0.00	0	0	0
	Probable	6,650,000	1.42	0.61	0.10	94,500	40,900	6,700
	Total	**6,650,000**	**1.42**	**0.61**	**0.10**	**94,500**	**40,900**	**6,700**
Total Ore Reserve		**8,021,000**	**1.38**	**0.64**	**0.09**	**110,400**	**51,200**	**7,500**

Notes:
Savannah Ore Reserve has an average cut-off grade of 1.02% Ni equivalent.
Savannah North Ore Reserve has an average cut-off grade of 0.8% Ni equivalent.

3.10.2 Production since operational restart

The principal extraction method at the Project is underground development and longhole stoping with paste-fill. The Savannah North Ore Reserve is accessed by twin declines via the Savannah decline (the 1557 level drill drive and the SNM North decline). Since the recommissioning and refurbishment of the operation in 2018, the peak monthly production was achieved in July 2019 (52,942 dry tonnes milled). Processing has been on remnant Savannah stope ores and on development ores, with processing of the Savannah North ores beginning in the last quarter of 2019. Production figures for the restarted operation are presented in Table 3-7. On a monthly basis, the Processing Facility's capacity has not yet been challenged and the production figures since the restart are not reflective of the likely future throughput once sufficient feed becomes available.

Table 3-7: Current Production Figures, March – November 2019

Year (financial)	Units	Mar-19	Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19
Milled throughput	t	47,469	51,926	48,455	40,425	52,942	41,186	26,644	46,663	43,217
Nickel feed grade	Ni %	1.09%	1.14%	1.32%	1.46%	1.49%	1.23%	1.04%	0.90%	1.08%
Copper feed grade	Cu %	0.55%	0.58%	0.67%	0.68%	0.77%	0.72%	0.80%	0.68%	0.58%
Cobalt feed grade	Co %	0.05%	0.06%	0.07%	0.07%	0.07%	0.06%	0.04%	0.05%	0.05%
Concentrate production	t	5,461	7,484	7,625	6,482	9,204	6,530	0	4,735	5,591
Concentrate grade	Ni %	7.5%	6.6%	7.1%	7.4%	7.1%	0%	0%	8.00%	7.05%

Source: Panoramic Management Information

3.10.3 Mine scheduling

In November 2019, Entech Pty Ltd (Entech) was engaged by Panoramic to prepare an update to the LOM schedule (the Entech Plan) to reflect its current understanding of the ore and operating environment. The updated LOM schedule was completed in December 2019 and used to inform the Model. The key forecast parameters under the Entech Plan are presented in Table 3-8. The Entech Plan assumes a transition to contractor mining, which is anticipated to alleviate some of the personnel shortage and equipment availability issues that the Project has experienced in recent months. Additionally, the Mine Plan has been designed to increase the reliability of backfill supply to the mine.

Table 3-8: Savannah LOM Summary (Entech Plan, December 2019)

Key Output	Units	Updated Savannah LOM including physicals to date (December 2019)	Feasibility Study (October 2017)	Change (as a percentage)
Ore mined and processed	Mt	7.23	7.65	-5%
Average nickel grade	Ni %	1.39	1.42	-2%
Average copper grade	Cu %	0.66	0.68	-2%
Average cobalt grade	Co %	0.09	0.10	-3%
Contained nickel in concentrate	kt	83.7	90.2	-7%
Contained copper in concentrate	kt	46.9	50.7	-7%
Contained cobalt in concentrate	kt	6.1	6.7	-9%

Source: Panoramic Management Information, (Entech Plan, December 2019).

In SRK's opinion, although the ramp-up of production from Savannah North is reliant on successful raiseboring of a ventilation shaft (which is scheduled to be completed by mid-2020), the Mine Plan is based on reasonable assumptions (Table 3-9). The Mineral Resource estimates which inform the Ore Reserve and Mine Plan were prepared using a method that can mask inherent grade variability and inadvertently lead to bias in the grade estimates. SRK therefore recommends robust underground grade control and reconciliation procedures be implemented for future production.

Table 3-9: Savannah LOM assumptions

Key assumption	Value
Minimum stope width	3 m
Minimum footwall angle	50°
Minimum pillar between stope	7 m
Stope recovery	90%
Stope dilution	Footwall stopes 5%, Hangingwall stopes 10%
Development recovery	98%
Development dilution	10%
Paste wall delays	5 days
Paste curing time	7 days
Stope firing delay	3 days
Production drilling	250 m per day
Development	100 m per month
Vertical development	3 m per day

Source: Entech Plan, December 2019

3.10.4 Prospectivity

An infill drilling program targeting the material classed as Inferred Mineral Resource contiguous to the Savannah and Savannah North Ore Reserve may enable some of this material to be converted to the Measured or Indicated Mineral Resource category for potential conversion to Ore Reserves. SRK understand that Entech undertook 'what if' scenario modelling around this conversion as part of its work in November and December 2019. Additionally, the mineralisation remains open in several directions in Savannah North as presented in Figure 3-6. SRK does not have a reasonable basis to make an assessment of the grade and tonnage range of the prospectivity at Savannah and Savannah North given that no formal assessment of the potential volume of the open mineralisation has been made by Panoramic.

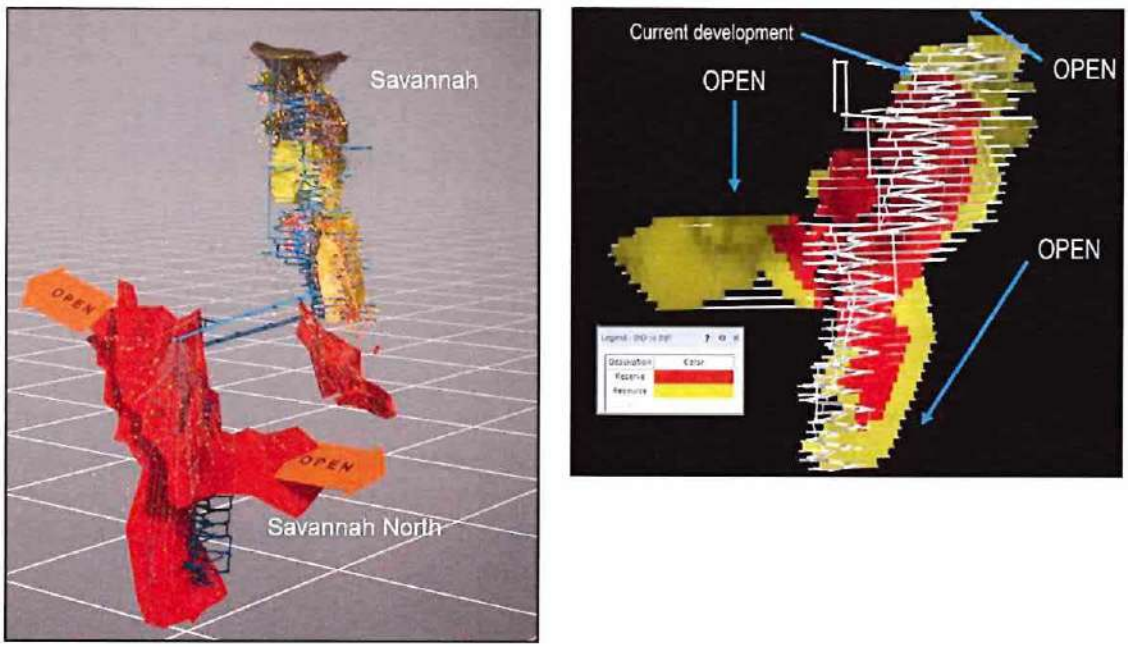


Figure 3-6: Prospectivity overview (not to scale). Source: Panoramic Management Information

3.10.5 Supporting infrastructure

The existing infrastructure at the Project supports the Entech Plan and includes a 12 MW power station (owned by CPM/ Pacific Energy), sufficient tailings storage capacity, water dams and bores, a 200-person village and a paste-fill plant. Additionally, Panoramic owns concentrate storage facilities in the town of Wyndham. SRK understands that seepage issues in relation to the TSF have been identified.

3.11 Environment and Mine Closure

3.11.1 Mine Closure Plan

The revised Savannah Mine Closure Plan (MCP, dated June 2018) was approved on 10 September 2019. While Savannah North is not included in the 2018 MCP, the anticipated surface disturbance is small (1.1 ha) and it is not considered to have a significant impact. The MCP appears to suggest that seepage from the TSF will continue to occur for the long term after closure of the facility. This would require active management. Active management is a risk for a closed site as it incurs an ongoing cost. Several items have also been recognised as knowledge gaps and include the TSF cover design (the cover design may be able to address TSF seepage issue), pit lake closure risks such as geochemistry, and solute transport and fate, and impacts on fauna due to invasive cane toads.

3.11.2 Environmental considerations

Flora, vegetation and fauna

Four baseline flora and vegetation studies have been completed at Savannah between 2002 and 2011 and these have been used to inform the Savannah North impact assessment and management strategies. The studies concluded that no conservation significant species, Threatened Ecological Communities or Priority Ecological Communities (listed under the EPBC Act or the *Wildlife Conservation Act 1950* (WA)) were recorded in the study area. One flora taxon listed as a Priority 1 species (*Sorghum plumosum* var. *teretifolium*) was identified and impacts to it should be avoided. Six introduced species were recorded.

Baseline studies for fauna were undertaken in 2001 and 2002. Three conservation significant fauna species, Rainbow bee-eater, Great Egret and Gouldian Finch, have been recorded in or adjacent to the Savannah Project. These bird species are all considered to be wide ranging.

Since 2011, cane toads have been identified in the East Kimberley region having migrated from the Northern Territory. This invasive species is extremely venomous to native species and must be managed on site.

Potential impacts to aquatic fauna were assessed by field surveys and ecotoxicological assessment. The ecotoxicity of seepage water from the TSF was assessed and it was concluded that the observed toxicity to *Chlorella* sp. and *Moindaphnia macleayi* was due to the combined effect of elevated major ions (potassium, chloride, sodium and calcium) that led to osmotic stress rather than direct toxicity from magnesium or sulphate. Field surveys occurred after high concentrations of sulphate and magnesium were identified in Fletcher Creek in April 2009. The survey concluded that overall the water quality was still within the limits for 95% protection of macroinvertebrate species and was within the limits of seasonal variation. The water quality and aquatic fauna field surveys show that mine seepage is currently having a minor impact on the aquatic fauna of the downstream environment.

Surface and groundwater

Groundwater in the Savannah area is neutral to slightly alkaline. Mounding has occurred below the TSF due to seepage. The Project lies within the Fletcher Creek catchment of the Ord River system. Surface water quality is impacted by groundwater enriched in solutes from TSF seepage discharging

into Mine Creek which feeds into Fletcher Creek. This is mitigated by seepage recovery at two locations.

Mine waste

Numerous geochemical studies have been completed on the waste rock and tailings. Tailings and waste rock have been reported to be predominantly non-acid forming, with only gossan waste rock (estimated to comprise 5% of waste rock) classified as potentially acid forming. Extracted gossan waste rock has been encapsulated in the North Waste Rock Dump. Leachate from Savannah waste rock is likely to be alkaline pH and contain elevated concentrations of aluminium and silicon that will reduce over time due to percolation and rainwater dilution. Other metals have low solubilities (at near neutral) and it is unlikely that leachate will have an impact on groundwater.

Stakeholder engagement

The 2019 Panoramic stakeholder register primarily contains records of engagement in 2019, with some earlier records also included. There were minimal records for engagement with the local aboriginal community. However, other reports including Mining Proposals and MCPs include details of a much more comprehensive stakeholder engagement, and SRK considers that the level of stakeholder engagement is likely to be suitable and the register underrepresents the level of engagement undertaken by Panoramic.

Environmental compliance

Annual Environmental Reports (AERs) and compliance reports are a statutory requirement for mining licenses under the *Mining Act 1978* and Part V of the EP Act. SRK's assessment of compliance is based on the AERs provided by Panoramic. Personnel and manning issues during the care and maintenance period (prior to 2018) appear to be the main cause of non-compliances.

A detailed AER for the Project highlights several non-compliances such as spills and monitoring deficiencies.

A non-compliance was reported to the Department of Water and Environmental Regulation (DWER) due to an exceedance of water storage following high rainfall. However, the excess water was contained with no discharge to the environment and the DWER did not consider this a non-compliance.

3.12 Costs

The Processing Facility has now been refurbished and the restart capital costs are expended (sunk). The restart budget was limited and as a result of this a number of additional refurbishments, debottlenecking and improvement projects have been identified. Specific rectification and upgrade work have been costed and included in the forecast financials. Most of this work is planned to be completed by February 2020.

The mining fleet at the Project is outdated and some productivity issues have arisen as a result of this. Panoramic intends to transition to a contractor mining model in early 2020 to optimise productivity rates and negate the requirement to purchase a new fleet of mining equipment.

Operating costs are highly sensitive to throughput. Some additional costs have been expended throughout the ramp-up phase. The Model assumes the design throughput is achieved around July 2020, which is reasonable.

A review of existing operating cost and sustaining capital levels and forward expectations was undertaken by Panoramic as part of the Operational Review. SRK has benchmarked the actual and forecast operating costs against other operations and considers the estimates to be reasonable at the forecast throughput rates.

The closure cost estimate was updated in June 2019 by Blueprint Environmental Strategies Pty Ltd for Savannah and includes Savannah North. Assumptions are clearly identified, and closure tasks were reviewed by the authors of the 2018 MCP for completeness. The total closure cost estimate is A$21,198,866, including a contingency of 10% of the total closure cost estimate. SRK considers this estimate to be reasonable; however long-term seepage management for the TSF has not been included, which will increase the closure cost. SRK therefore recommends an allocation of A$25,000,000 be made for Project closure.

4 Copernicus Project

4.1 History

The Copernicus deposit was discovered in 1975 by Western Mining Corporation, and at the time named Cabernet.

In April 2006, Thundelarra confirmed that Sally Malay Mining Limited had earned a 60% interest in Copernicus following the meeting of terms agreed to in 2003.

In January 2008, Sally Malay and Thundelarra Exploration NL (Thundelarra) received the Mining Lease for Copernicus. Work continued on the statutory approval of the Project. In the 2008 March quarter, the installation of a guar gum plant at the Sally Malay mill that would improve nickel recoveries from Copernicus ore was commenced. In late May, the Western Australia Department of Industry and Resources approved the Copernicus open pit Mining Proposal and construction of the 23 km haul road from the mine site to the Great Northern Highway soon commenced, allowing ore to be trucked to the Savannah processing plant.

In July 2008, mining of waste rock from within the open pit commenced and first ore was produced in the September quarter.

In January 2009, operations at Copernicus were suspended due to a depressed nickel price.

In late November 2014, mining at Copernicus recommenced as a result of a favourable nickel price environment.

Mining of ore at the open pit was completed in February 2016 and rehabilitation of the site was carried out between March and July 2016.

Under VALMIN Code guidelines, SRK considers the Copernicus project is a Pre-Development project.

4.2 Ownership

The Copernicus project comprises one granted Mining Lease and two granted Miscellaneous Licences (Table 4-1). SRK has received representation from Panoramic that the tenement schedule is to be relied upon and used for the purpose of this Report. SRK has made all reasonable enquires into the status of this tenure as at 18 December 2019.

Table 4-1: Copernicus project – tenement schedule

Name	Type	Status	Granted	Expiry	Area (ha)
M 80/540	Mining Lease	Live	20 December 2007	7 January 2029	140.31
L 80/52	Miscellaneous Licence	Live	20 March2008	18 March 2029	0.04
L 80/86	Miscellaneous Licence	Live	5 June 2015	4 June 2036	128.85

Note: *All tenements registered in the name of Savannah Nickel Mines Pty Ltd

4.3 State royalties

State royalties will be distributed to the Western Australian Government at the rate of 2.5% of the royalty value of any concentrate produced from the Copernicus project. This rate is the *ad valorem* rate that applies to concentrate material as defined under the Mining Regulations 1981 (Regulation 86).

4.4 Native title

SRK understands that all currently defined Mineral Resources are located a single granted Mining Lease which is not subject to any native title claims.

4.5 Environmental liabilities

SRK understands that there are no current environmental liabilities at the Copernicus project.

4.6 Geology and Mineral Resources

The Copernicus nickel-copper-cobalt sulphide mineralisation occurs within a discrete cumulate textured meta-pyroxenite unit located within a layered mafic-ultramafic intrusion of mostly gabbroic composition referred to as the Copernicus Intrusion. The deposit outcrops as a lens shaped body measuring approximately 600 m in length and 100 m in width, and dips moderately to the west and plunges approximately 40° to the north. Sulphide mineralisation includes a matrix, coarse-grained blebs and massive sulphide stringers of pyrrhotite, chalcopyrite, pentlandite and pyrite occurring in zones up to 35 m thick which can be traced continuously down-plunge to a vertical depth of approximately 325 m, where it appears to terminate against a younger pyroxenite intrusion. The Copernicus deposit was mined by Panoramic using open pit mining methods from 2007 until 2016, when the open pit resources were exhausted.

Mineral Resources have not been reported publicly for the Copernicus deposit since 2016, Panoramic provided SRK with the Copernicus Mineral Resource information presented in Table 4-2. Mining operations were put under care and maintenance in 2016 and SRK understands that no further work has been undertaken on the Copernicus project since that time.

Table 4-2: Copernicus project – Mineral Resources

Deposit	Cut-off	Classification	Tonnes	%Ni	%Cu	%Co	Ni Metal (t)	Cu Metal (t)	Co Metal (t)
Copernicus project total	0.5% Ni	Measured	13,200	0.97	0.52	0.03			0
		Indicated	508,000	1.3	0.91	0.05			
		Inferred	24,00	0.98	0.69	0.02			
		Total	**545,000**	**1.28**	**0.89**	**0.04**	**6,970**	**4,870**	**300**

Note: (1) Mineral Resources have not been publicly reported for the Copernicus project since June 2016
(2) Figures have been rounded and therefore may not be additive.
(3) SRK have not checked the Mineral Resources by means of re-calculation.

Source: Panoramic Management Information

The local geology is well understood, albeit only briefly documented, and the geological models integrate key stratigraphic and structural controls on mineralisation. SRK is of the opinion that the geological models provide reasonable representations of the local geology and mineralised volumes.

In SRK's opinion, the Copernicus Mineral Resource estimate has been prepared to a sufficient quality standard under the guidelines of the JORC Code (2012) and is considered to be reasonable for valuation purposes.

5 Panton Project

5.1 History

The Panton project is considered by SRK to be a Pre-Development Project. During the 1980s, drilling by previous owners established an underground resource of 2.2 Mt at 6 g/t Pt and Pd (including minor gold) in the 'A' chromite layer along a strike length of approximately 1,800 m.

In July 2000, a subsidiary of Swiftel Ltd signed an agreement with Helix Resources NL to acquire 100% of the Panton project. A 300 m long exploration decline was developed to reach the Top Reef and test underground mining of the reef commenced to allow bulk metallurgical testwork to be undertaken.

In December 2005, Platinum Australia Ltd signed an agreement with Sally Malay Mining Limited to earn a 50% interest in the first 1.5 Mt of Panton ore produced, and rights to 50% of additional Panton ore to be treated through the Sally Malay processing plant.

In December 2006, the exploration decline at Panton was successfully reopened and refurbished by Sally Malay Mining Limited.

In June 2012, Platinum Australia Ltd appointed an administrator to review and restructure its operations following a trading halt and decreasing commodity prices.

In May 2012, Panoramic completed the purchase of Panton from Platinum Australia Ltd.

5.2 Ownership

The Panton project comprises three granted and conjoined Mining Leases (Table 5-1).

Table 5-1: Panton project – tenement schedule

Name	Type	Status	Granted	Expiry	Area (ha)
M 80/103	Mining Lease	Live	17 March 1986	16 March 2028	859.40
M 80/104	Mining Lease	Live	17 March 1986	16 March 2028	570.30
M 80/105	Mining Lease	Live	17 March 1986	16 March 2028	828.30

Note: *All tenements registered in the name of Panton Sill Pty Ltd.

5.3 State royalties

State royalties will be distributed to the Western Australian Government at the rate of 2.5% of the royalty value of any concentrate produced from the Panton project. This rate is the *ad valorem* rate that applies to concentrate material as defined under the Mining Regulations 1981 (Regulation 86).

5.4 Native title

SRK understands that all currently defined Mineral Resources are located on granted Mining Leases which are not subject to native title claims.

5.5 Environmental liabilities

A closure cost estimate of A$204,000 for the Panton project was prepared by MBS Environmental in 2014 using the Queensland standardised Estimated Rehabilitation Cost (ERC) calculator. Recognising that Queensland standardised costs may not provide the best representation of the Panton project's site-specific closure costs in Western Australia, SRK considers that any differences would not be significant due to the relatively low quantum of the closure cost estimate.

5.6 Geology and Mineral Resources

The Panton project's mineralisation occurs within a layered, differentiated mafic-ultramafic intrusion referred to as the Panton Intrusive. The intrusive has undergone several folding and faulting events that have resulted in a southwest plunging synclinal structure measuring some 10 km in length and 3 km in width. High-grade PGM mineralisation is hosted within two stratiform chromite reefs, referred to as reefs 101 and 201, within the ultramafic sequence.

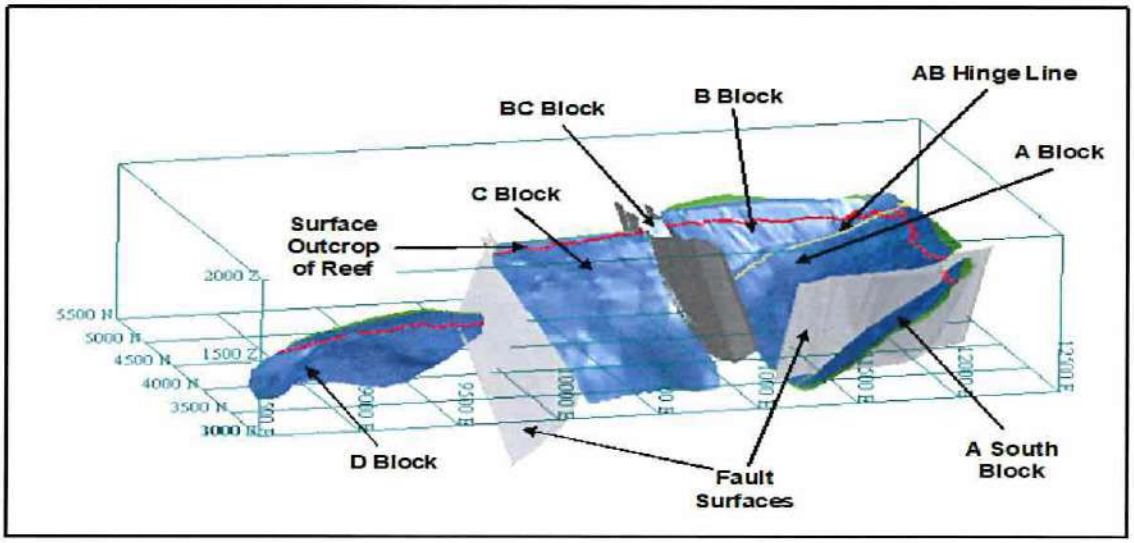


Figure 5-1: Wireframes showing the Panton 101 and 201 reef system

Source: Panoramic Management Information

The current Mineral Resource estimate for the Panton deposit was completed in April 2003 by Cube following a revised geological model completed by ECS Mining Consultants for Platinum Australia Ltd, who owned the Panton project at the time. Cube reviewed the 2003 model and updated the Mineral Resource reporting to be in line with the JORC Code (2012) (Table 5-2).

Table 5-2: Panton project – Mineral Resources as at 30 June 2019

Deposit	Classification	Tonnes	Pt (g/t)	Pd (g/t)	Au (g/t)	Cu (%)	Ni (%)	Pt Metal (t)	Pd Metal (t)
Panton	Measured	6,530,000	2.10	2.26	0.32	0.25	0.06	441,000	475,000
	Indicated	5,630,000	2.42	2.70	0.31	0.28	0.08	438,000	488,000
	Inferred	2,160,000	1.86	1.99	0.28	0.31	0.11	129,000	139,000
	Total	**14,320,000**	**2.19**	**2.39**	**0.31**	**0.27**	**0.08**	**1,008,000**	**1,102,000**

Note:
The Panton Mineral Resources are not reported above a minimum cut-off grade as the modelled mineralisation is a discrete geological unit and it has been assumed that it will be mined at full width without selectivity.

The Mineral Resource estimate was based on historical diamond drilling (30 holes for 9,524.4 m completed prior to 2001) and reverse circulation (RC) (29 holes for 2,366m), more recent diamond drilling (166 holes for 34,410 m) and surface trenching and underground channel samples (1,391 m) conducted by Platinum Australia Ltd between 2001 and 2003. The geological model interpreted the mineralised dunite unit as a southerly plunging synclinal feature. Using this interpretation, two chromite reefs (upper-101 and middle-201) and the associated fault offsets were interpreted and modelled in 3D and used to define six estimation domains. Accumulation variables (interval composite × horizontal intersection width × density) were estimated for platinum, palladium, gold, nickel, chromite, copper, cobalt and dry bulk density using ordinary kriging into a 2D block model using the estimation domains as hard boundaries. Variable grades were then calculated from the estimated accumulation

variables and then exported back into 3D space. Regression formulas were then used to calculate grades for osmium, iridium, rhodium and ruthenium. The Mineral Resource classification was based on geological continuity, minimum number of informing composites, distance to composite data and estimation block variance.

The Panton dataset includes a small proportion of surface trench and underground channel sampling that has been used for both geological modelling and resource estimation, which in SRK's opinion, are less reliable sampling methods. However, the low sample counts used should not adversely affect the global Panton project Mineral Resource estimate. QA/QC processes and results for the dataset are not well documented.

The 2D accumulation resource estimates for the Panton project may result in over-smoothed and/or biased grade estimates. The 2D accumulation estimates involve compositing all of the raw samples from each mineralised drill hole intercept into one accumulated sample and then weighting the accumulated sample by horizontal width of the mineralised horizon and the in situ density to produce an accumulation variable value for each drill hole intercept, which is then estimated. In SRK's opinion, the interval length accumulation process can mask inherent grade variability. Additionally, using the horizontal intersect width rather than the true width of each mineralised intercept could inadvertently bias the weighting for some accumulation variables. Further validation against a 3D check block estimate would allow any over-smoothing or grade bias, which may affect grade control in the operation, to be identified,

In SRK's opinion, the Panton project Mineral Resource estimate has been prepared to a sufficient quality standard under the guidelines of the JORC Code (2012) and is considered to be reasonable for valuation purposes.

5.7 Studies

Since purchasing the Panton project in 2012, Panoramic has investigated several potential processing flowsheets to support the reasonable prospect of eventual economic extraction implied by the reporting of the Mineral Resource estimate. In SRK's opinion, the base case processing flowsheet would most likely be a flotation-style concentrator. The concentrate would then likely need to be sent off site for downstream processing first by a base metal refinery (BMR), followed by a precious metal refinery (PMR). As such, there may be synergies with constructing such as facility at the Savannah site.

An alternative option could be downstream hydrometallurgical processing or an alternative such as the KELL process. SRK has not undertaken further assessment or developed flowsheets and costings from first principles, but considers that based on approximate benchmark recovery assumptions of 80% for the PGMs, copper and nickel recoveries between 75% and 85% (assuming no cobalt recovery payable) and payability of approximately 75% for the PGMs, 65% for the copper and 68% for the nickel, it is realistic to assume there is a 'reasonable future prospect of eventual economic extraction at the resource grade'.

Panoramic sponsors research into alternative direct leaching technologies for smaller chromite-rich PGM deposits.

5.8 Environmental considerations

The Panton project lies within the Ord River system and several drainage lines occur around the mine area. The Panton River flows generally east to discharge into the Ord River and is fed in part by the Rosa Creek and Wild Dog Creek that cross the mining tenure and flow south.

In SRK's opinion, the Panton project is broadly compliant with its environmental commitments. In 2018, the MCP was submitted late for assessment by the Department of Mines, Industry Regulation and Safety (DMIRS), as it was overlooked due to Company restructuring. The existing surface

disturbance from exploration activities is also non-compliant as it is required to rehabilitated within six months of completion.

The Panton MCP (dated November 2019) has not yet been approved. The site has been in care and maintenance since 2007 and all infrastructure, with the exception of three water tanks, has been removed. Surface disturbance is predominantly comprised of exploration activities (tracks, drill pads and the core yard), the underground adit and accommodation camp. A natural regeneration assessment by Oberonia Botanical Services (October 2019) at a drill site and exploration track in the north of the Panton project area was compared to two analogue sites at the Copernicus deposit, 18 km to the north, that were partially affected by fires and concluded that the Panton sites are naturally regenerating.

6 Other Considerations

6.1 Commodity prices

SRK has carried out a limited analysis of the metal markets to provide consideration of the market value. This analysis reflects the prevailing conditions as at the valuation date and is considered reasonable to support the opinions and conclusions presented in this Report.

6.1.1 Nickel

According to the Australian Government's Resources and Energy Quarterly (September 2019 Edition), nickel prices have strengthened considerably in recent months, supported by unexpected production outages and Indonesia's announcement of an export ban to be introduced in 2022. The nickel price averaged US$14,927/t in the September quarter, 11% higher than the same period in 2018.

6.1.2 Copper

After falling in the first half of 2019, copper prices continued to show weakness in the September quarter. Reduced industrial activity in China and concerns around world economic growth pushed the copper price to a low of US$5,585/t at the start of September. Concerns about expanding US tariffs put further pressure on prices.

6.1.3 Cobalt

Prices have fallen back since their highs of 2018 and the current sentiment is depressed.

6.1.4 Platinum group metals

Major drivers for the PGM price are demand for catalytic converters from the automotive industry and demand from the electronics industry.

6.2 Previous Valuations

The VALMIN Code (2015) requires that practitioners should refer to other recent Valuations or Expert Reports undertaken on the mineral properties being assessed. SRK is not aware of any previous Valuations relating to the Savannah, Copernicus and Panton projects.

7 Valuation of Panoramic's Projects

The objective of this section is to provide Panoramic and KPMG with SRK's opinion regarding the reasonableness of the technical inputs to the Model and to provide a market valuation of the Project and the Project's related tenure using market (comparable transactions) and cost-based methods. SRK has not valued Panoramic Resources Limited, this being the corporate entity that is the beneficial owner of the Project.

In determining the appropriate parameters for valuation, SRK has considered the assessments that might be made by a willing, knowledgeable and prudent buyer in assessing the value of Panoramic's Projects. SRK has relied on information provided by Panoramic, as well as information sourced from the public domain, SRK's internal databases and SRK's subscription databases.

The VALMIN Code (2015) outlines three generally accepted valuation approaches:

1. Market Approach
2. Income Approach
3. Cost Approach.

The Market Approach is based primarily on the principle of substitution and is also called the Sales Comparison Approach. The mineral asset being valued is compared with the transaction value of similar mineral assets, transacted in an open market (CIMVAL, 2003). Methods include comparable transactions, metal transaction ratio (MTR) and option or farm-in agreement terms analysis.

The Income Approach is based on the principle of anticipation of economic benefits and includes all methods that are based on the income or cashflow generation potential of the mineral asset (CIMVAL, 2003). Valuation methods that follow this approach include Discounted Cashflow (DCF) modelling, Monte Carlo Analysis, Option Pricing and Probabilistic methods.

The Cost Approach is based on the principle of contribution to value (CIMVAL, 2003). Methods include the appraised value method and multiples of exploration expenditure, where expenditures are analysed for their contribution to the exploration potential of the mineral asset.

The applicability of the various valuation approaches and methods varies depending on the stage of exploration or development of the mineral asset and hence the amount and quality of the information available on the mineral potential of the assets. Table 7-1 presents the various valuation approaches for the valuation of mineral assets at the various stages of exploration and development.

Table 7-1: Suggested valuation approaches according to development status

Valuation Approach	Exploration Projects	Pre-development Projects	Development Projects	Production Projects
Market	Yes	Yes	Yes	Yes
Income	No	In some cases	Yes	Yes
Cost	Yes	In some cases	No	No

Source: VALMIN Code (2015).

The market-based approach to valuation is generally accepted as the most suitable approach for valuation of all projects.

The 'Market Value' is defined in the VALMIN Code (2015) as, in respect of a mineral asset, the amount of money (or the cash equivalent or some other consideration) for which the Mineral Asset should change hands on the Valuation Date between a willing buyer and a willing seller in an arm's length transaction after appropriate marketing wherein the parties each acted knowledgeably, prudently and without compulsion. The term Market Value has the same intended meaning and context as the International Valuation Standards Committee's (IVSC) term of the same name. This has the same meaning as Fair Value in Regulatory Guide (RG) 111. In the 2005 edition of the VALMIN Code this was known as Fair Market Value.

The 'Technical Value' is defined in the VALMIN Code (2015) as an assessment of a Mineral Asset's future net economic benefit at the Valuation Date under a set of assumptions deemed most appropriate by a Practitioner, excluding any premium or discount to account for market considerations. The term Technical Value has an intended meaning that is similar to the IVSC term Investment Value.

7.1 Valuation basis

In estimating the value of Panoramic's projects as at the Valuation Date, SRK has considered various valuation methods within the context of the VALMIN Code (2015). SRK's valuation basis is presented in Table 7-2.

Table 7-2: Valuation basis

Project	Development Stage	Description	Valuation basis
Savannah	Production	Ore Reserves considered within the Model	Income: Cashflow Model
		Mineral Resources not considered within the Model (residual resources)	Market: Comparable Transactions Cost: Yardstick Factors
Copernicus	Pre-Development	Residual resources post-closure	Market: Comparable Transactions Cost: Yardstick Factors
Panton	Pre-Development	Mineral Resource estimates	Market: Comparable Transactions Cost: Yardstick Factors

7.2 Ore Reserves considered within the Model

7.2.1 The Model

Panoramic has developed a cashflow model (the Model) and has provided this to SRK. SRK has assessed technical production and technical cost projections and has advised KPMG of its findings. Table 7-3 presents a summary of SRK's findings and recommendations made to KPMG.

Table 7-3: SRK model findings

Item	Units	Model	SRK recommendation/ comment	SRK's findings
Mine life	Years	7.1	7.1	Reasonable based on SRK's assessment of the available data and its experience working on similar projects in Australia.
Mining Inventory - tonnage	Mt	6.7	6.7	Reasonable based on SRK's assessment of the available data and its experience working on similar projects in Australia.
Mining Inventory - nickel grade	%	1.41	1.41	Reasonable based on SRK's assessment of the available data and its experience working on similar projects in Australia.
Throughput rate	Mtpa	0.96	0.96	Reasonable based on SRK's assessment of the available data and its experience working on similar projects in Australia.
Nickel processing recovery	%	82.8	81.7	Recommend change based on SRK's assessment of the available data and its experience working on similar projects in Australia. The SRK recommended metallurgical recovery values for nickel have been considered in light of the testwork, the recovery recommendations made by Panoramic's consulting metallurgist, the independent peer metallurgical review undertaken by Strategic Metallurgy and historical performance (File reference: RECONC OF SHIPS AND CONC PRODUCTION.xls). The SRK recommendation is made to support the production schedule which is principally focussed on the recovery of Savannah North Ore Refer to Section 3.9 for further information.

Item	Units	Model	SRK recommendation/ comment	SRK's findings
Copper processing recovery	%	98.8	97	Recommend change based on SRK's assessment of the available data and its experience working on similar projects in Australia. The SRK recommended metallurgical recovery values for copper have been considered in light of the testwork, the recovery recommendations made by Panoramic's consulting metallurgist, the independent peer metallurgical review undertaken by Strategic Metallurgy and historical performance (File reference: RECONC OF SHIPS AND CONC PRODUCTION.xls). The SRK recommendation is made to support the production schedule which is principally focussed on the recovery of Savannah North Ore Refer to Section 3.9 for further information.
Cobalt processing recovery	%	92	91.1	Recommend change based on SRK's assessment of the available data and its experience working on similar projects in Australia. The SRK recommended metallurgical recovery values for cobalt have been considered in light of the testwork, the recovery recommendations made by Panoramic's consulting metallurgist, the independent peer metallurgical review undertaken by Strategic Metallurgy and historical performance (File reference: RECONC OF SHIPS AND CONC PRODUCTION.xls). The SRK recommendation is made to support the production schedule which is principally focussed on the recovery of Savannah North Ore Refer to Section 3.9 for further information.
Savannah North paste-fill availability and production delay	Months	0	2	Recommend change based on SRK's assessment of the available data (flow on effect to costs for this period)
Closure and rehabilitation	A$M	0	25	Recommend change based on SRK's assessment of the available data and its experience working on similar projects in Australia. The total closure cost estimate is A$21,198,866, inclusive of a contingency of 10% of the total cost estimate. SRK considers this estimate to be reasonable; however, long-term seepage management for the TSF has not been included, which will increase the closure cost. As such, SRK recommends an allocation of A$25M expended over 5 months from April 2026 to July 2026 and at completion in January 2027.
Operating costs	A$	Variable	Variable	Reasonable based on SRK's assessment of the available data and its experience working on similar projects in Australia.

Item	Units	Model	SRK recommendation/ comment	SRK's findings
				However, SRK notes Panoramic's intention to move to a contractor operating model which will have an effect on the operating cost forecast. The terms of the proposed contract are not finalised. SRK therefore cannot make a reasonableness assessment on the LOM operating cost projections.

7.2.2 Mineral Resources not considered in the Model (residual resources)

SRK used its internal databases and the S&P Global Market Intelligence subscription database to make an assessment of the Market Value of the Mineral Resources not considered in the Model (residual resources) and the Mineral Resources at the Copernicus project.

Five recent transactions were assessed to have been undertaken on comparable projects. Transaction values were normalised to the London Metal Exchange and London Bullion Market spot metal prices on an MTR basis (12 December 2019 prices, Table 7-4)The MTR is the transaction value (on a 100% equity basis) divided by the gross dollar metal content of the reported Mineral Resource and Ore Reserve estimates. The gross dollar metal content cannot be considered as value and is only used for the purpose of deriving the MTR. It does not attempt to estimate or reflect the metal tonnes likely to be recovered as required under JORC Code (2012) reporting guidelines. In SRK's opinion, the MTR valuation approach is consistent with the valuation methodology that would be adopted under the Market Value concept.

Table 7-4: Spot metal prices (12 December 2019)

Metal	Metal Price (A$/t)
Copper	8,929
Nickel	20,451
Cobalt	49,962

Transaction 1

In May 2019, Mincor Resources NL (Mincor) acquired a 100% interest in the Long Operation (Long) and its related assets from Independence. Long is located in the Kambalda region of Western Australia. Mincor issued approximately 7.78 million shares of its common stock and will also pay a A$2 million contingent payment on the production of 2,500 tonnes of contained nickel in ore and a A$4 million contingent payment on the production of 7,500 tonnes of contained nickel in ore. Long was on care and maintenance at the time the transaction was completed. Long was first opened in 1979 by the Western Mining Corporation (WMC) and was put on care and maintenance in 2018.

Transaction 2

In December 2018, Black Mountain Metals LLC (Black Mountain) acquired a 100% interest in the Lanfranchi underground nickel project (Lanfranchi) from Panoramic. Lanfranchi is located in Western Australia. Black Mountain agreed to pay A$13.5 million in cash and A$1.6 million in 12 equal monthly instalments, commencing from the date that is 14 days from the first supply of ore under the processing contract with BHP Nickel West Pty Ltd, the processing of ore in another commercial capacity or 1 January 2021, whichever is earlier. Lanfranchi was on care and maintenance at the time the transaction was completed. Panoramic put Lanfranchi on care and maintenance in 2016 due to the fall in the nickel price after operating the mine from 2005 to 2015.

Transaction 3

In July 2017, Dundas Mining Pty Ltd (Dundas) has acquired a 100% interest in the Avebury nickel mine from MMG Ltd (MMG) for A$25 million. The Avebury nickel mine is located in Tasmania and was on care and maintenance at the time the transaction was completed. Underground mining commenced at Avebury in 2006. The first nickel concentrate was produced in July 2008. Following metallurgical issues and a fall in the nickel price, mining ceased in January 2009 and the concentrator was placed on care and maintenance in March 2009.

Transaction 4

In June 2016, Sweden-based Boliden Mineral AB (Boliden) acquired a 100% interest in the polymetallic Kevitsa mine (Kevitsa) from First Quantum Minerals Ltd (First Quantum) for A$948.5 million. Kevitsa is located in Lappi, Finland, and is mined using open pit methods. Boliden holds a portfolio of nickel mines concentrators, refineries and smelters in Finland.

Transaction 5

In October 2015, Western Areas NL (Western Areas) acquired a 100% interest in the Cosmos nickel complex (Cosmos) from Glencore Plc (Glencore) for A$24.5 million in cash. Cosmos is located in Western Australia. Western Areas granted offtake rights to Glencore for a maximum of 7,000 tonnes of nickel contained in concentrate produced per calendar year with a total cap of up to 50,000 tonnes of nickel in concentrate. Cosmos was on care and maintenance at the time the transaction was completed. Cosmos was care and maintenance in 2013 due to the fall in the nickel price.

Transaction 6

In September 2015, Independence acquired a 100% interest in the Sirius Resources NL via an acquisition scheme of arrangement. The deal was announced in May 2015 when the deal consideration was valued at A$1.8 billion. At deal closure the consideration was reported as A$1.1 billion. The consideration included payment for the Sirius nickel portfolio which included the Nova-Bollinger development project and the Fraser Range exploration portfolio. SRK considers Transaction 6 to be a very high outlier and has not used the MTR% implied by this transaction to inform its valuation range. The summary deal metrics for transactions are presented in Table 7-5.

Table 7-5: Summary deal metrics

Date	Project	Buyer	Seller	Consideration (A$M)	Contained metal (A$M)	MTR (%)	Normalised MTR (%)
May-19	Long	Mincor	Independence	9.5	535	1.8	2.1
Dec-18	Lanfranchi	Black Mountain	Panoramic	15.1	1,354	1.1	1.6
Jul-17	Avebury	Dundas	MMG	25.0	3,031	0.8	1.4
Jun-16	Kevitsa	Boliden	First Quantum	948.5	21,093	4.5	7.9
Oct-15	Cosmos	Western Areas	Glencore	24.5	8,030	0.3	0.4
Sept-15	Sirius Assets	Independence	Sirius	1100.9	8,263	13.3	12.9

Given that four out of the five selected comparable transactions were undertaken on projects which were on care and maintenance, SRK has elected to apply a 50% premium to the MTRs implied by the analysis on these projects. The Kevitsa transaction considered a well-established mining operation with a resource base ten times larger than that at Savannah, but outside of Australia. As such, SRK elected to apply a 25% discount to the MTR implied by the analysis of that transaction (Table 7-6).

Table 7-6: SRK's metal transaction ratio summary

Date	Project	MTR (%)	Normalised MTR (%)	SRK premium applied (%)	SRK discount applied (%)	SRK MTR (%)
May-19	Long	1.8	2.1	50	0	3.15
Dec-18	Lanfranchi	1.1	1.6	50	0	2.40
Jul-17	Avebury	0.8	1.4	50	0	2.10
Jun-16	Kevitsa	4.5	7.9	0	25	5.93
Oct-15	Cosmos	0.3	0.4	50	0	0.6

SRK considers it reasonable to apply the MTR analysis to derive a valuation range for the Mineral Resources not considered in the Model (residual resources).

Further to the application of the premia, SRK has elected to apply the MTR implied by the Lanfranchi transaction as its low MTR (2.40%) and the MTR implied by the Long transaction as its high MTR (3.15%) to derive its valuation range for the Mineral Resources outside those considered in the Model (Table 7-7). The Mineral Resources not considered in the Model are Inferred Mineral Resources. All Measured and Indicated Reserves are assumed to have been optimised as Proven and Probable Ore Reserves, which have been depleted for production up until 1 December 2019. On this basis, using the MTR method on comparable market transactions as applied to the residual resources, the valuation is estimated to lie between A$32.66 M and A$42.87 M with a preferred estimate of A$37.76 M, which is the mid-point of the valuation range.

Table 7-7: MTR calculation – Mineral Resources not considered in the Model (residual resources)

Metal	Tonnes (Mt)	Grade (%)	Metal tonnes	Metal price (A$/t)	Implied metal (A$M)	Low MTR (%)	High MTR (%)	Low Value (A$M)	High Value (A$M)	Preferred Value (A$M)
Nickel	3.2	1.54	49,280	20,451	1007.85	2.40	3.15	32.66	42.87	37.76
Copper	3.2	0.62	19,840	8,929	177.15					
Cobalt	3.2	0.11	3,520	49,962	175.86					

7.2.3 Yardstick method

As a cross-check to the value implied by the MTR-based comparable market transactions method, SRK has considered the Yardstick valuation method for its valuation of the Mineral Resources not considered in the Model. The Yardstick method is not generally considered to be a suitable primary valuation method but is considered to be an acceptable secondary valuation method.

Under the Yardstick method of valuation, specified industry accepted percentages[1] of the spot prices are used to assess the likely value (Table 7-8 to Table 7-10). SRK used the spot prices at 12 December 2019.

[1] Lawrence, MJ. 2001. "An Outline of Market-Based Approaches for Mineral Asset Valuation Best Practice," Mineral Asset Valuation issues for the next millenium. Sydney: Valmin, 2001

Table 7-8: Yardstick assumptions – nickel

Category	Percentage of spot price (A$20,451/t Ni)		A$/contained tonne nickel	
	Low	High	Low	High
Inferred Resources	0.5%	1%	102	205
Indicated Resources	1%	2%	205	409
Measured Resource	2%	5%	409	1,023

Table 7-9: Yardstick assumptions – copper

Category	Percentage of spot price (A$8,929/t Cu)		A$/contained tonne copper	
	Low	High	Low	High
Inferred Resources	0.5%	1%	45	89
Indicated Resources	1%	2%	89	179
Measured Resource	2%	5%	179	446

Table 7-10: Yardstick assumptions – cobalt

Category	Percentage of spot price (A$49,962/t Co)		A$/contained tonne cobalt	
	Low	High	Low	High
Inferred Resources	0.5%	1%	250	500
Indicated Resources	1%	2%	500	999
Measured Resource	2%	5%	999	2,498

On this basis and as outlined in Table 7-11, using the Yardstick method as applied to the residual resources, the valuation is estimated to lie between A$6.80 M and A$13.61 M with a preferred estimate of A$10.21 M, which is the mid-point of the valuation range.

Table 7-11: Yardstick calculation – Mineral Resources not considered in the Model (residual resources)

Contained Metal	Inferred Resources	Low (A$M)	High (A$M)	Preferred (A$M)
Nickel	49,280 t	5.04	10.08	7.56
Copper	19,840 t	0.89	1.77	1.33
Cobalt	3,520 t	0.88	1.76	1.32
Total		**6.80**	**13.61**	**10.21**

Note: Gross dollar metal content = (Contained metal x metal prices).

7.2.1 Residual resources – Valuation summary

The valuation range derived using the Yardstick method is three times lower than the range derived using MTR-based comparable transactions valuation method (noting that as four out of the five comparable transactions were undertaken on projects which were on care and maintenance, SRK elected to apply a 50% premium to the MTRs implied by the analysis) indicating a positive market sentiment for comparable polymetallic projects.

SRK has therefore elected to use the valuation range implied by the comparable transactions analysis in determining its preferred overall market valuation range (Table 7-12).

On this basis, the valuation of the residual resources is estimated to lie between A$32.66 M and A$42.87 M with a preferred estimate of A$37.76 M, which is the mid-point of the valuation range.

Table 7-12: Valuation summary – Mineral Resources not considered in the Model

Method	Low (A$M)	High (A$M)	Preferred (A$M)
Comparable market transactions (MTR basis)	32.66	42.87	37.76
Yardstick method	6.80	13.61	10.21
Selected	**32.66**	**42.87**	**37.76**

7.3 Copernicus project

7.3.1 Comparable market transactions

SRK considers it reasonable to apply MTR analysis used in the calculation of the valuation range for the Copernicus Mineral Resources given that the Copernicus project is classified as a Pre-Development Project on care and maintenance. Further to the application of the premia, SRK has elected to apply the MTR implied by the Lanfranchi transaction as its low MTR (1.4%) and the MTR implied by the Long transaction as its high MTR (1.6%) to derive its valuation range for the Mineral Resources outside those considered in the Model (Table 7-13). This range considers the level of technical uncertainty attributable to Inferred Mineral Resource estimates. SRK has positioned its preferred value as the mid-point of this range.

Table 7-13: MTR calculation – Copernicus Mineral Resource

Metal	Tonnes (Mt)	Grade (%)	Metal tonnes	Metal price (A$/t)	Implied metal (A$M)	Low MTR (%)	High MTR (%)	Low Value (A$M)	High Value (A$M)	Preferred Value (A$M)
Nickel	0.55	1.28	6,970	20,451	142.54	1.40	1.60	2.8	3.2	3.0
Copper	0.55	0.89	4,870	8,929	43.48					
Cobalt	0.55	0.04	300	49,962	14.99					

7.3.1 Yardstick method

As a cross-check to the value implied by the MTR-based comparable market transactions method, SRK has considered the yardstick valuation method for its valuation of the Copernicus Mineral Resources. While the Mineral Resource estimates are classified as Measured, Indicated and Inferred at the Copernicus project, SRK has elected to apply the Yardstick factors for Inferred Mineral Resource estimates (0.5% to 1% of spot metal prices) to arrive at its implied valuation range (Table 7-14). The Mineral Resource estimates at the Copernicus project have not been publicly reported since June 2016 and the site has been rehabilitated.

Table 7-14: Yardstick calculation – Copernicus Mineral Resources

Contained Metal	Resources (t)	Low (A$M)	High (A$M)	Preferred (A$M)
Nickel	6,970	0.7	1.4	1.1
Copper	4,870	0.2	0.4	0.3
Cobalt	300	0.1	0.1	0.1
Total		**1.0**	**2.0**	**1.5**

Note: Gross dollar metal content = (Contained metal x metal prices).

On this basis, using the Yardstick method as applied to the Copernicus Mineral Resources, the valuation is estimated to lie between A$1.0 M and A$2.0 M with a preferred estimate of A$1.5 M, which is the mid-point of the valuation range.

7.3.1 Copernicus project – Valuation summary

The valuation range derived using the Yardstick method is approximately half of the range derived using MTR-based comparable transaction valuation method. As such, SRK has elected to use the valuation range implied by the comparable transactions analysis in determining its preferred overall market valuation range for the Copernicus Mineral Resources as this best represents the implied market value (Table 7-15). On this basis, the valuation of the Copernicus project is estimated to lie between A$2.8 M and A$3.2 M with a preferred estimate of A$3.0M, which is the mid-point of the valuation range.

Table 7-15: Valuation summary – Copernicus Mineral Resources

Method	Low (A$M)	High (A$M)	Preferred (A$M)
Comparable market transactions (MTR basis)	2.8	3.2	3.0
Yardstick method	1.0	2.0	1.5
Selected	**2.8**	**3.2**	**3.0**

7.4 Panton project

7.4.1 Comparable market transactions

SRK used its internal databases and the S&P Global Market Intelligence subscription database to compile and assess comparable market transaction information to make an assessment of the market value of the Mineral Resources at the Panton project using the MTR method as described earlier in this Report.

There is a paucity of recent market comparable market transactions which were undertaken on PGM projects comparable to Panton. Two projects were assessed to have been undertaken on comparable projects. An analysis of the historical Panton transaction between Platinum Australia Ltd and Panoramic was also undertaken. Transaction values were normalised to the London Metal Exchange and London Bullion Market spot metal prices (12 December 2019 prices, Table 7-16) on an MTR basis. The MTR is the transaction value (on a 100% equity basis) divided by the gross dollar metal content of the reported Mineral Resource estimates. The gross dollar metal content cannot be considered as value and is only used for the purpose of deriving the MTR. It does not attempt to estimate or reflect the metal tonnes likely to be recovered as required under JORC Code (2012) reporting guidelines.

In SRK's opinion, the MTR valuation approach is consistent with the valuation methodology that would be adopted under the Market Value concept.

Table 7-16: Spot metal prices (12 December 2019)

Metal	Metal Price (A$/t/oz)
Palladium	2,821
Copper	8,929
Nickel	20,451
Gold	2,135
Rhodium	8,590
Platinum	1,375

Transaction 1 (Panton project acquisition by Panoramic)

In May 2012, Platinum Australia Ltd entered into an agreement with Panoramic to sell its 100% interest in Panton for A$5.25 million in cash plus a net smelter royalty of 0.5%. No material changes to the Mineral Resource estimates have occurred since that time, though several metallurgical testwork campaigns have been undertaken.

SRK has calculated the MTR at the time of the transaction to be 0.41%. Normalised for spot metal price changes since the transaction date, the implied MTR is 1.34% as a result of a significant increase in the palladium price.

Transaction 2

In August 2018, Artemis Resources Ltd (Artemis) acquired a 70% interest in Munni Munni project (Munni Munni) from Platina Resources Ltd (Platina) through an earn-in and joint venture agreement worth A$17 million. The Munni Munni project is located in the West Pilbara region of Australia. The resource base at Munni Munniis comparable to the Panton project in that it is polymetallic with the principal contained metal being palladium The Munni Munni project has a long history of studies and exploration and is considered by SRK to be highly comparable to the Panton project.

The normalised MTR implied by the Munni Munni transaction is 0.29%, based on an implied metal value of A$5,775 million and a transaction consideration of A$17 million.

Transaction 3

In June 2019, Generation Mining Ltd (Generation) agreed to acquire up to an 80% interest in the Marathon project from Sibanye Gold Ltd (Sibanye) through an earn-in and joint venture transaction. The Marathon property is located in Ontario, Canada. Generation paid an initial deposit of C$100,000 in cash. Generation will also pay an additional C$2.90 million in cash and issue 11,053,795 shares of its common stock to acquire an initial interest of 51% in the Marathon project from Sibanye. Generation can earn an additional 29% interest in the property by incurring exploration expenditures of at least C$10.0 million and delivering a preliminary economic assessment. The contingent transaction value as reported is A$6.53 million for 80% equity. The non-contingent transaction value is estimated to be A$5.9 million for 51% equity (C$2.9 million plus the equivalent of C$3 million in shares). SRK considers that the Panton project is more mature than the Marathon project with respect to Mineral Resource estimation and technical studies carried out.

The normalised MTR implied by the Marathon transaction is 0.07%, based on an implied metal value of A$8,144 million and a transaction amount of A$5.9 million.

Table 7-17 presents an overview of the resource base considered in each of the comparable transactions.

Table 7-17: Comparability – PGM project resources

Contained metal	Unit	Munni Munni (70%)	Marathon (51%)	Panton (100%)
Palladium	oz	1,140,000	1,913,138	1,102,000
Nickel	t	21,000	0	11,440
Copper	t	35,100	211,120	38,610
Gold	oz	189,000	0	142,526
Rhodium	oz	76,500	0	0
Platinum	oz	830,000	626,663	100,800

SRK notes the wide range of MTRs implied by the analysis of the comparable transactions and the relative paucity of available data. SRK has elected to adopt the MTR implied by the Munni Munni transaction (0.29%) to inform the low point of the valuation range and a 50% discount to MTR implied by the normalised historical Panton transaction (0.67%) to inform the high point of the valuation range. Table 7-18 presents the Panton project MTR calculation using this range. SRK's preferred value is positioned at the mid-point of the valuation range.

Table 7-18: MTR calculation – Panton Mineral Resources

Metal	Tonnes (Mt)	Grade	Metal tonnes/ ounces	Metal price (A$/t)/ A$/g)	Implied metal (A$M)	Low MTR (%)	High MTR (%)	Low Value (A$M)	High Value (A$M)	Preferred Value (A$M)
Platinum	14.3	2.19g/t	1,008,000	1,375	1,386					
Palladium	14.3	2.39g/t	1,102,000	2,821	3,109					
Gold	14.3	0.31g/t	142,526	2,135	304	0.29	0.67	**12.0**	**27.7**	**19.8**
Nickel	14.3	0.27%	38,610	20,451	790					
Copper	14.3	0.08%	11,440	8,929	102					
Total					**4,131**	**0.29**	**0.67**	**12.0**	**27.7**	**19.8**

7.4.2 Yardstick method

As a cross-check to the value implied by the MTR-based comparable market transactions method, SRK has considered the Yardstick valuation method for its valuation of the Panton Mineral Resources (Table 7-14) and has elected to use the Inferred Yardstick values (0.5% to 1% of spot metal prices) to calculate its valuation range given the Panton study status. Given the challenges around metal

recoveries and reasonable prospects for eventual economic extraction, SRK elected to attribute yardstick value to only the platinum and palladium resources for Panton, as reported by Panoramic.

Table 7-19: Yardstick calculation – Panton Mineral Resources

Contained Metal	Resources (oz)	Low (A$M)	High (A$M)	Preferred (A$M)
Platinum	1,008,000	6.9	13.8	10.4
Palladium	1,102,000	15.5	31.1	23.3
Total		**22.5**	**44.9**	**33.7**

Note: Gross dollar metal content = (Contained metal x metal prices).

On this basis, using the Yardstick method as applied to the Panton Mineral Resources, the valuation is estimated to lie between A$22.5M and A$44.9M with a preferred estimate of A$33.7M, which is the mid-point of the valuation range.

7.4.3 Panton project – Valuation summary

The valuation range derived using the yardstick method is approximately 50% higher than the range implied using MTR-based comparable transaction valuation method implying a weak market sentiment for comparable projects.

SRK reiterates its finding that there is a relative paucity of transactions undertaken on comparable projects in similar jurisdictions. Despite this, SRK has elected to use the valuation range implied by the comparable transactions analysis in determining its preferred overall market valuation range for the Panton Mineral Resources (Table 7-15). SRK has elected to adopt the MTR implied by the Munni Munni transaction (0.29%) to inform the low point of the valuation range and a 50% discount to MTR implied by the normalised historical Panton transaction (0.67%) to inform the high point of the valuation range

On this basis, the valuation of the Panton is estimated to lie between A$12.0M and A$27.7M with a preferred estimate of A$19.8M, which is the mid-point of the valuation range.

Table 7-20: Valuation summary – Panton Mineral Resources

Method	Low (A$M)	High (A$M)	Preferred (A$M)
Comparable market transactions (MTR basis)	12.0	27.7	19.8
Yardstick method	22.5	44.9	33.7
Selected	**12.0**	**27.7**	**19.8**

8 Panoramic's Interest in Horizon Gold Limited

SRK was not supplied with any internal company data pertaining to Horizon Gold Limited (Horizon) and its Gum Creek gold project (Gum Creek). Most of the following information is therefore derived from SRK's assessment of public information and publicly available datasets. SRK has relied heavily on Horizon Gold's 2016 Prospectus, subsequent releases to the ASX (Australian Securities Exchange) and Horizon's corporate website including Mineral Resource updates in 2018 and 2019.

Horizon's principal focus is on the exploration for gold deposits in the Gum Creek greenstone belt of the East Murchison Mineral Field, located some 640 km northeast of Perth. Gold was originally discovered in the region in 1926 and since that time, extensive exploration and intermittent mining has occurred, most recently in the mid-2000s. In that time in excess of 1 Moz of gold have been produced from more than 37 open pits and three underground gold mines, with the main gold-producing areas being Swan-Swift, Kingfisher, Omega and Montague (Horizon Prospectus, 2016). The Gum Creek project is located within a well-endowed gold region that hosts multi-million-ounce deposits including Big Bell, Wiluna, Mount Magnet, Meekatharra and Agnew/Lawlers.

Due to its previous operational status, Gum Creek benefits from substantial legacy infrastructure, including an accommodation village, offices, operational airstrip, TSFs and an extensive road network. There is also a 600,000 tpa processing plant on site, but significant capital investment is required to return the plant to an operating condition.

Within this setting, Horizon's strategy has been to consolidate a large tenement package covering the majority of the greenstone belt and define multiple high-priority drill targets in addition to known Mineral Resources which collectively offer potential for the delineation of additional extensions and new discoveries.

8.1 Location, access and climate

The Gum Creek project is located approximately 640 km northeast of Perth, and 90 km from the nearest town of Sandstone. Access to Sandstone from Perth is via the Great Northern Highway to Mount Magnet, or alternatively from Kalgoorlie via the Goldfields Highway to Leinster.

The Gum Creek project can be accessed by good-quality unsealed roads from either Sandstone, Meekatharra or Wiluna. The closest airports with scheduled commercial services are Wiluna and Meekatharra, located 129 km northwest and 144 km northeast, respectively from Gum Creek.

The Gum Creek area experiences a semi-arid climate with hot summers and mild winters. The annual rainfall of less than 250 mm is irregular and falls mostly in the winter months. Topography in the north and east is characterised by low hills and breakaways separated by gently sloping valleys. The central and southern areas are generally flat and associated with extensive areas of sand and sheetwash cover. A major ephemeral drainage system flows through the centre of the belt and numerous east–west drainage palaeochannels have been identified. There are no material topographic or climatic impediments to exploration and development.

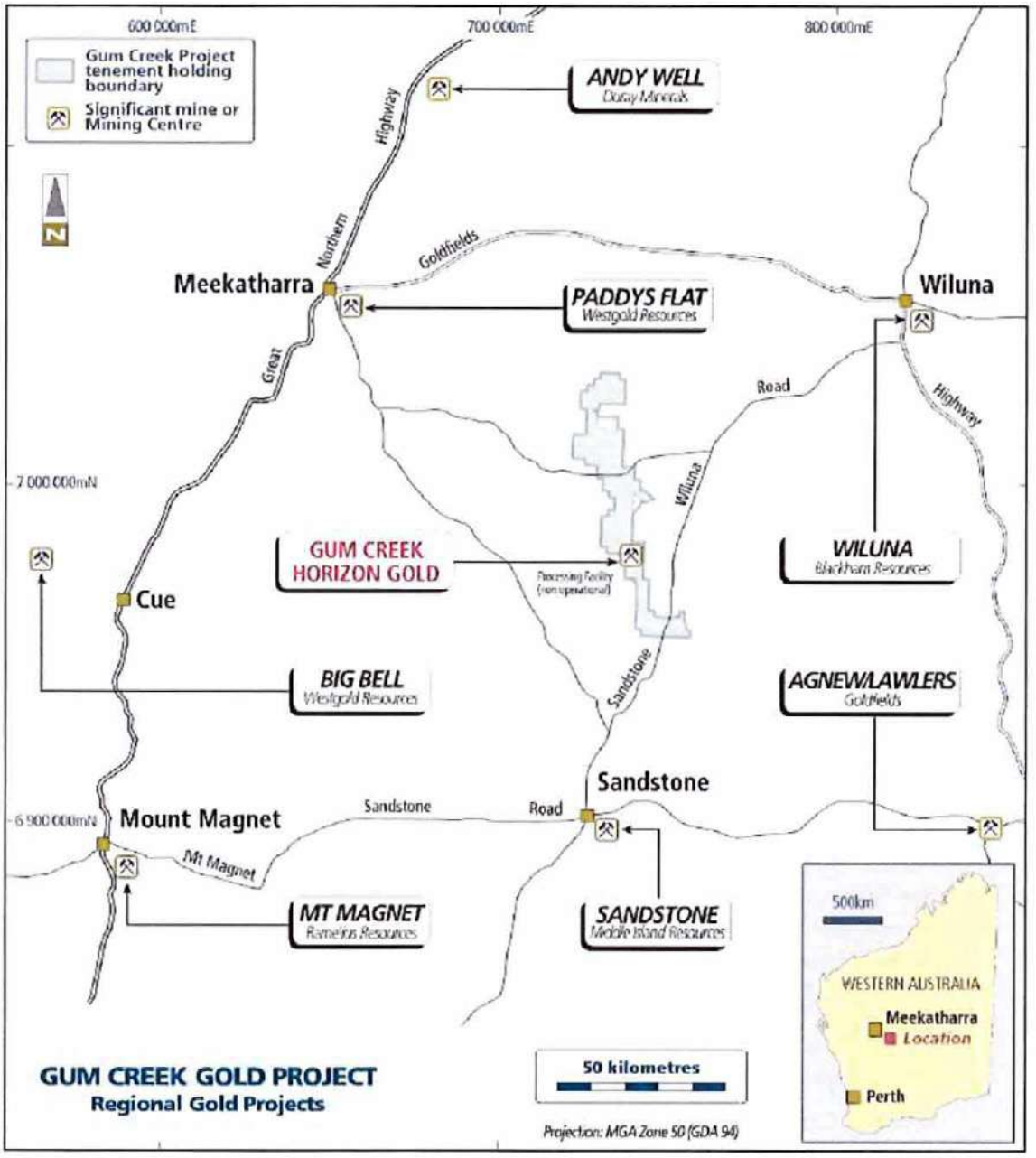


Figure 8-1: Project location map

Source: Horizon website

8.2 Ownership and tenure

The Gum Creek project tenure is a large coherent land package comprising eight granted Exploration Licences, 19 granted Mining Licences, three granted Prospecting Licences and 10 granted Miscellaneous Licences. This tenure holding spans a combined area in excess of 618 km² and stretches over an 80 km strike length of the Gum Creek greenstone belt.

All tenements are held in the name of Horizon's wholly owned subsidiary company, Panoramic Gold Pty Ltd (PanGold). PanGold holds a 100% interest in the tenements.

Table 8-1: Gum Creek project – tenements

Tenure	Interest (%)	Grant	Expiry	Area	Unit	Area (km²)
E 57/1105	100%	02/05/2019	01/05/2024	25	Blocks	0.48
E 51/1844	100%	23/01/2018	22/01/2023	23	Blocks	0.60
E 57/1104	100%	10/06/2019	09/06/2024	12	Blocks	0.05
E 57/1093	100%	15/01/2019	14/01/2024	20	Blocks	70.31
E 53/1955	100%	19/01/2018	18/01/2023	34	Blocks	61.25
E 51/1538	100%	04/02/2014	03/02/2024	35	Blocks	36.52
E 57/1100	100%	22/01/2019	21/01/2024	5	Blocks	59.69
E 53/1725	100%	04/07/2013	03/07/2023	30	Blocks	82.33
M 51/458	100%	09/02/1993	09/02/2035	619.95	ha	104.32
M 53/10	100%	17/11/1983	24/11/2025	9.69	ha	15.25
M 53/988	100%	07/03/2003	12/03/2024	511.55	ha	88.86
M 53/153	100%	26/06/1990	28/06/2032	916.5	ha	6.20
M 51/105	100%	03/05/1989	09/05/2031	117.35	ha	0.10
M 51/185	100%	11/02/1988	18/02/2030	247.55	ha	5.12
M 53/904	100%	21/09/2000	28/09/2021	8.3215	ha	9.17
M 57/635	100%	02/09/2014	01/09/2035	1443	ha	1.17
M 53/716	100%	08/09/1998	07/09/2040	254.1	ha	2.48
M 51/157	100%	02/03/1988	09/03/2030	93.32	ha	0.08
M 53/11	100%	17/11/1983	24/11/2025	9.69	ha	14.43
M 57/634	100%	15/07/2014	14/07/2035	4810.12	ha	2.54
M 53/251	100%	26/08/1992	02/09/2034	170.45	ha	0.93
M 51/290	100%	03/05/1989	09/05/2031	4.86	ha	0.10
M 53/105	100%	21/08/1988	29/08/2030	566.25	ha	48.10
M 51/186	100%	11/02/1988	18/02/2030	364.9	ha	1.70
M 51/104	100%	30/04/1987	11/05/2029	36.805	ha	0.05
M 51/410	100%	04/03/1992	10/03/2034	353.75	ha	5.66
M 53/500	100%	16/05/2000	21/05/2021	390.15	ha	3.65
L 57/44	100%	13/06/2012	12/06/2033	31.7	ha	0.37
L 51/93	100%	25/11/2013	24/11/2034	5.82	ha	3.54
L 57/20	100%	21/06/2002	20/06/2023	6.67	ha	3.90
L 53/116	100%	31/07/2002	30/07/2023	8.9025	ha	0.32
L 53/95	100%	14/12/1998	13/12/2023	71	ha	0.06
L 57/47	100%	14/08/2013	13/08/2034	36	ha	0.07
L 53/96	100%	14/12/1998	13/12/2023	237	ha	0.09
L 53/199	100%	30/07/2015	29/07/2036	23.75	ha	0.71
L 53/46	100%	01/03/1990	28/02/2020	60	ha	0.36
L 53/47	100%	27/09/1990	26/09/2020	24	ha	2.37
P 57/1304	100%	24/08/2012	23/08/2020	47.69	ha	0.24
P 53/1582	100%	05/10/2012	04/10/2020	60.15	ha	0.60
P 53/1577	100%	23/08/2012	22/08/2020	5.03	ha	0.24

Source: WA Tengraph Online: Accessed 12/11/2019 (all tenements registered in the name of Panoramic Gold Pty Ltd).

8.3 State royalties

On any production from the Gum Creek project, state royalties will be distributed to the Western Australian Government at the rate of 5.0% of the royalty value of any gold produced. This rate is the *ad valorem* rate that applies to gold metal as defined under the Mining Regulations 1981 (Regulation 85).

8.4 Third party royalties

There are several royalty agreements affecting different tenements within the Gum Creek project, which were reported by Horizon in its 2016 Prospectus (Table 8-2).

Table 8-2: Horizon Gold – third party royalties

Royalty agreement	Royalty holder	Affected tenements	Key royalty terms
Buttercup Bore	Royal Gold Inc.	M53/716 M53/500 E53/1215 (pt) E53/1144 (pt)	2% interest on all gold produced from the Buttercup Bore Tenements
Mount Townsend	Barrick (PD) Australia Pty Limited and Kundana Gold Pty Ltd	M53/153 M53/252 P53/1582 L53/95 (pt) E53/1215 (pt) E53/1725 (pt) E53/1273 (pt)	Base rate of $2.25/t ore treated up to the first 500,000 tonnes, thereafter $2.75 per tonne treated, multiplied by ratio of gold price divided by $470/oz
Andrewartha	John Andrewartha	M57/634 (pt)	4% net profit interest royalty
Twin Hills	Twin Hills Operations Pty Ltd	M57/634 (pt)	Royalty per tonne calculated by the formula: $R = \frac{P}{500} \times \frac{G}{3} \times \frac{19.6}{49}$ Where: R = royalty rate per tonne of ore treated P = Perth Mint gold price in A$ G = average head grade in g/t Payable quarterly in arrears
Franco-Nevada	Franco-Nevada Australia Pty Ltd	M57/634 (pt) E57/633 (pt) P57/1304 (pt)	Royalty per tonne calculated by the formula: $R = \frac{P}{500} \times \frac{G}{3} \times \frac{29.4}{49}$ Where: R = royalty rate per tonne of ore treated P = Perth Mint gold price in A$ G = average head grade in g/t Payable quarterly in arrears
Murchison Downs	Newsat Limited	M51/104 M51/105 M51/410 E51/1144 E53/1215	Royalty per tonne calculated by the formula: $R = \$2.00 \times \frac{P}{500}$ Where: R = royalty rate per tonne of ore treated P = Perth Mint gold price in A$ Payable quarterly in arrears
Howards	Sandstorm Gold Limited	E57/633 (pt) M57/635	$10 per ounce of gold mined and processed after the first 30,000 ounces
Orion	Sandstorm Gold Limited	M51/458 E51/1538 (pt) E53/1215 (pt)	$10 per ounce of gold mined and processed after the first 30,000 ounces

Source: Horizon Prospectus (October 2016)

8.5 Native title

The majority of the Gum Creek project is not subject to claims under the *Native Title Act*. A registered claim by the Yuunga-Nya People overlaps the northern part of the Gum Creek project area and a registered claim by the Tiwarl Group covers tenements on the eastern side of the Gum Creek project and partly overlaps M 53/153 which holds the Wilsons deposit; however, SRK understands the Mining Lease was granted in 1990 – prior to the *Native Title Act* coming into effect.

SRK understands that all currently defined Mineral Resources are located on granted Mining Leases and are not subject to native title.

8.6 Environmental liabilities

SRK understands that there are current environmental liabilities at the Gum Creek project pertaining to the historical mining activities and areas which are the responsibility of the registered title holder. Horizon estimated the cost to rehabilitate the site is approximately A$10.32M. (Horizon Annual Report, 2019). SRK's valuation does not include a provision for this liability.

8.7 Geological setting

8.7.1 Regional geology and structural setting (Horizon Prospectus, October 2016)

The Project covers the majority of the Gum Creek greenstone belt, situated within the Southern Cross Province of the Youanmi Terrane, a part of the Archaean Yilgarn Craton (Figure 8-2) in Western Australia. The Gum Creek greenstone belt (Figure 8-2) forms a lensoid, broadly sinusoidal structure measuring some 110 km in length and 24 km in width. It is dominated by volcanic and sedimentary sequences and surrounded by intrusive granitoids, which contain rafts of greenstone. The margins of the belt are typically dominated by contact-metamorphosed basalts and banded iron formations (BIFs).

The stratigraphic sequence evident within the Gum Creek greenstone belt is relatively simple, with three broadly continuous major geological units occupying a large north–south synclinorium. The lowest unit consists of a sequence of interbedded BIF and mafic and ultramafic volcanic units overlain by ferruginous shales, shales and thin cherts. The central unit consists of a sequence of basalts and felsic volcanic rocks, contemporaneous dolerites, and lesser ultramafic volcanic rocks and interflow sediments. The central unit has been intruded by differentiated gabbroic sills, which range in composition from ultrabasic through to pyroxenite to gabbro. The uppermost unit consists of shales, black shales, siltstones and minor cherts, with rare conglomerates and dolostones. Late-stage, generally massive, granitoids intrude along the length of the belt.

Late-stage, generally massive, granitoids, including monzonites, intrude along the length of the belt in generally north–south elongated zones and are subject to late brittle deformation. Silicification of country rock is widespread proximal to the margins of these monzonites. Proterozoic dykes are a prominent feature in the northern portion of the belt and are more or less absent elsewhere.

Several early phases of tight to isoclinal folding have affected rocks of the lower domain. Most fold axes now exhibit a general north–south trend. The whole belt has been folded about tight north–northwest axes, producing two synclines separated by a narrow anticline in the central domain. The western syncline appears to be doubly plunging, suggesting late open folding under an east–west stress regime.

Complex faulting is present throughout the Gum Creek greenstone belt, with many lithological units being fault bounded. Prominent deformation also occurs as regional-scale north–northwest trending ductile shear zones. These zones occur in close proximity to gold occurrences at the Bolger Well, Gidgee, Victory Well, Tokay and Wilsons deposits.

The principal structure in the belt is the Gidgee Shear Zone which has been identified over 50 km of strike length in the southern part of the Gum Creek project. The Wilson and Victory/ Tokay shears form broad zones on the eastern side of the greenstone belt and coalesce to the north. Mineralisation associated with the Gidgee Shear occurs in two main areas, the Gidgee Mining Area and the Wyooda-Thangoo area which includes the Heron and Heron South deposits. Mineralisation is developed near the southern end of the Wilson Shear in the Mount Townsend area (Wilsons deposit) and at the Toedter, Kearys and Omega deposits near the northern end of the structure.

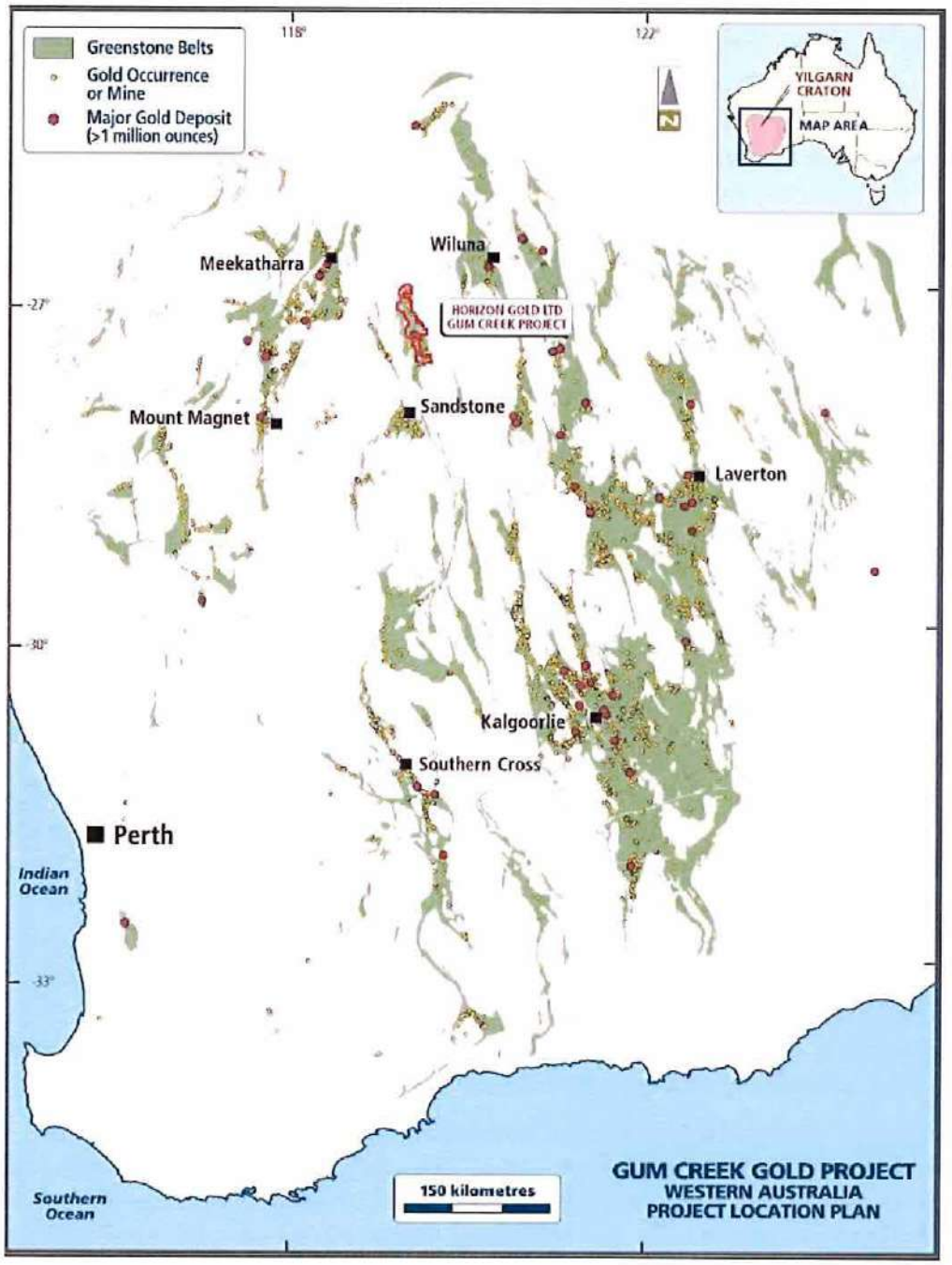


Figure 8-2: Regional setting

Source: Horizon Gold Prospectus (October 2016)

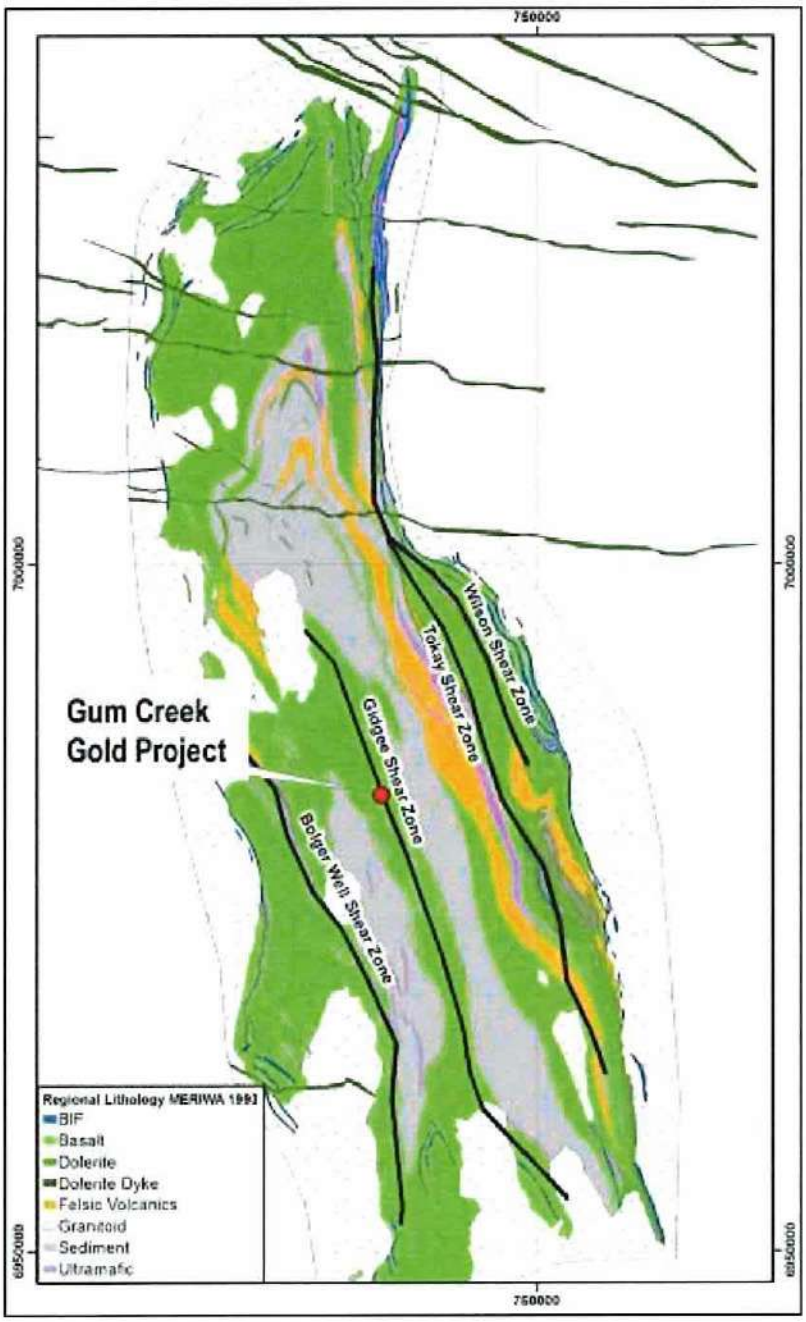


Figure 8-3: Geology, deposits and major structures of the Gum Creek greenstone belt

Source: Horizon presentation (August 2019)

8.7.2 Mineralisation styles

The Gum Creek project is considered prospective for the following mineralisation styles:

- Shear-hosted gold within quartz-carbonate (±pyrite, pyrrhotite, galena and sphalerite) veins. Typically, the gold mineralisation is free milling and locally high grade (>20 g/t Au), forming within complex conjugate vein arrays associated with brittle dilational openings developed along major shear zones within competent mafic host rocks. Carbonate-sulphide wall rock alteration is common about mineralised zones and extensive supergene enrichment often overlies the primary mineralisation zones. Deposits of this type represent the dominant mineralisation type at Gum Creek and include the Swan Bitter, Swift and Kingfisher deposits.
- Quartz veins comprising sulphide-poor sheeted and anastomosing quartz veins and lenses

developed in shear zones straddling granodiorite contacts within the Gum Creek greenstone belt. Grades are typically between 1 g/t Au and 5 g/t Au.

- Ductile shear-hosted gold of two principal types:
  - Arsenopyrite dominant – Fine-grained gold associated with sulphide-rich, intense biotite-sericite altered narrow ductile shear zones. Gold grades are typically in the range between 5 g/t Au and 10 g/t Au. Arsenopyrite and pyrrhotite are the dominant sulphide species with most gold being refractory contained within the arsenopyrite. Examples of this style of mineralisation are the refractory deposits of Wilsons, Shiraz and Heron South.
  - Pyrite dominant – Fine-grained gold associated with sulphide-poor, broad ductile shear zones developed within mafic host rocks. Shearing is typically defined by weak biotite alteration, up to 1% fine pyrite and a sparse network of thin (1–3 mm thick) quartz veins. Gold grades are typically in the range between 0.5 g/t Au and 1.5 g/t Au and the mineralisation is free milling. The Howards deposit is representative of this mineralisation style.
- BIF-hosted mineralisation with quartz-pyrrhotite veining and pyrrhotite replacement of magnetite mesa-bands forming narrow steep-plunging shoots of limited length and width, but extending to depth. This mineralisation style occurs in fold hinges within BIF marginal to major north–south shear zones, and is similar to the Hill 50 mineralisation at Mount Magnet. Grades are typically in the range between 1 g/t Au and 10 g/t Au and the mineralisation is free milling. The Wahoo and PSI prospects are representative of this mineralisation style.
- Volcanogenic massive sulphide (VMS)/ sedimentary exhalative (SEDEX) has only recently been identified at the Altair prospect and comprises broad, copper mineralisation associated with pyritic black shales and intermediate volcanic units, which are intensely chlorite and/ or biotite altered, with lesser silica.

Further details on the deposit-scale geology and mineralisation are given in the following subsections.

8.7.3 Local geology and mineralisation

As previously described, the Gum Creek project covers most of the Gum Creek greenstone belt.

The Gum Creek project hosts numerous historical prospects and deposits, but no significant exploration has been carried out since 2005. Horizon considers that significant potential remains to expand and further define the gold resources associated with the known deposits in the Gum Creek project.

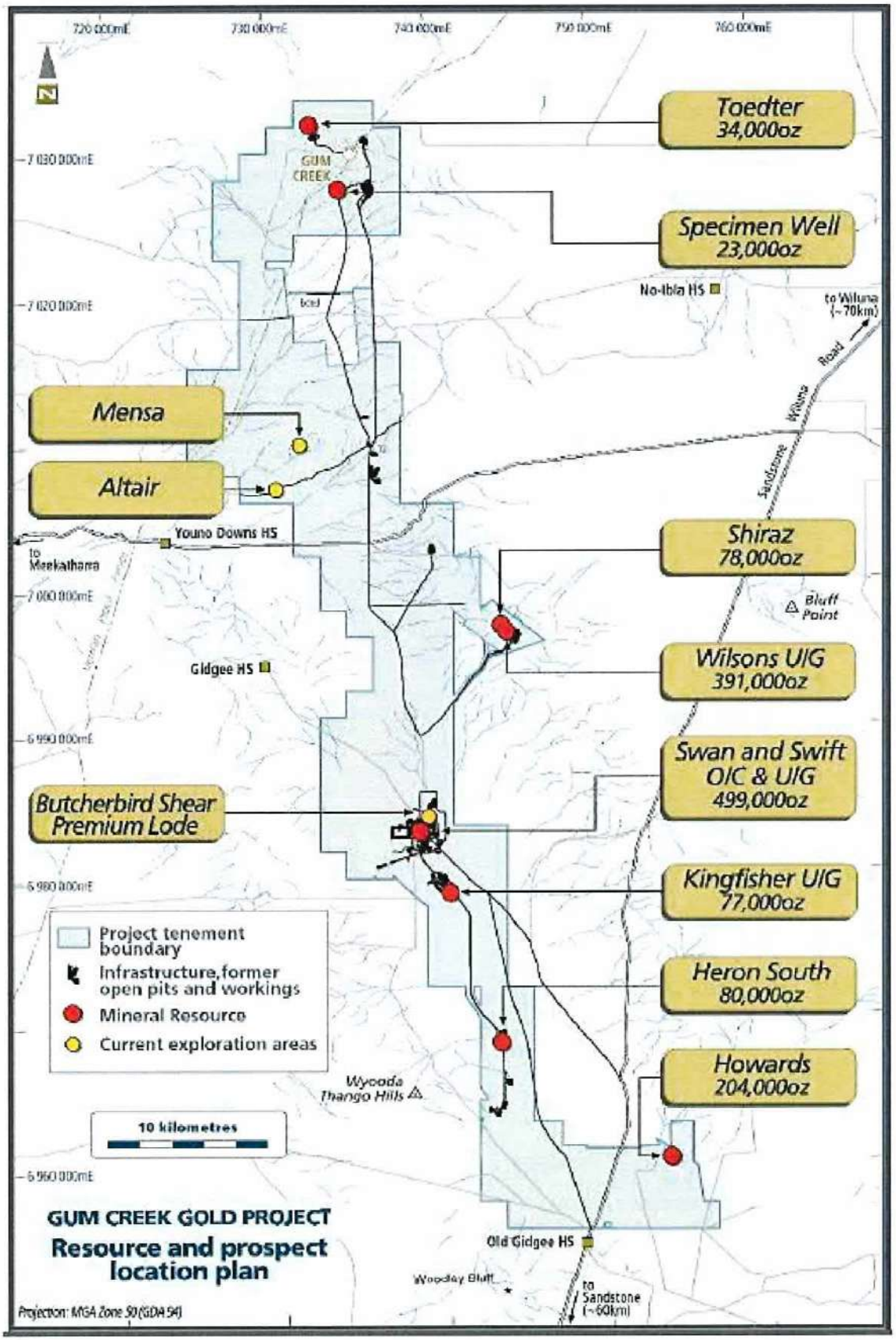


Figure 8-4: Project resource and exploration areas

Source: Horizon presentation (August 2019)

Deposits along the Wilson Shear Zone

Wilsons

The geology of at the Wilsons deposit comprises a metasedimentary package, consisting of mafic conglomerates with clasts of locally sourced quartzite and BIF. Thin intervals of interbedded siltstone and shale and felsic conglomerate occur above the mafic conglomerate, but are typically displaced by the Wilsons Dolerite, which unconformably overlies the sedimentary units. Gold mineralisation and tenor is related to the presence of disseminated arsenopyrite and pyrrhotite, with strongest mineralisation formed in dilational locations along the host shear. An alteration assemblage of biotite-sericite-quartz +/- potassic feldspar and carbonate exists accompanied by strong ductile shearing.

The Wilsons deposit consists of three discrete, tabular, strongly mineralised shoots that dip 50 ° to 70° to the west and plunge steeply to the north (Figure 8-5). The shoots are encompassed by weakly mineralised envelopes and are confined within a regionally persistent shear adjacent to the contact with the overlying Wilsons Dolerite. The shear and enclosing mineralised shoots strike approximately 330°. The shoots are generally 100–150 m in length along strike and range from 1 m to 12 m in thickness. They have been delineated to a depth of around 600 m below surface and are still open down plunge.

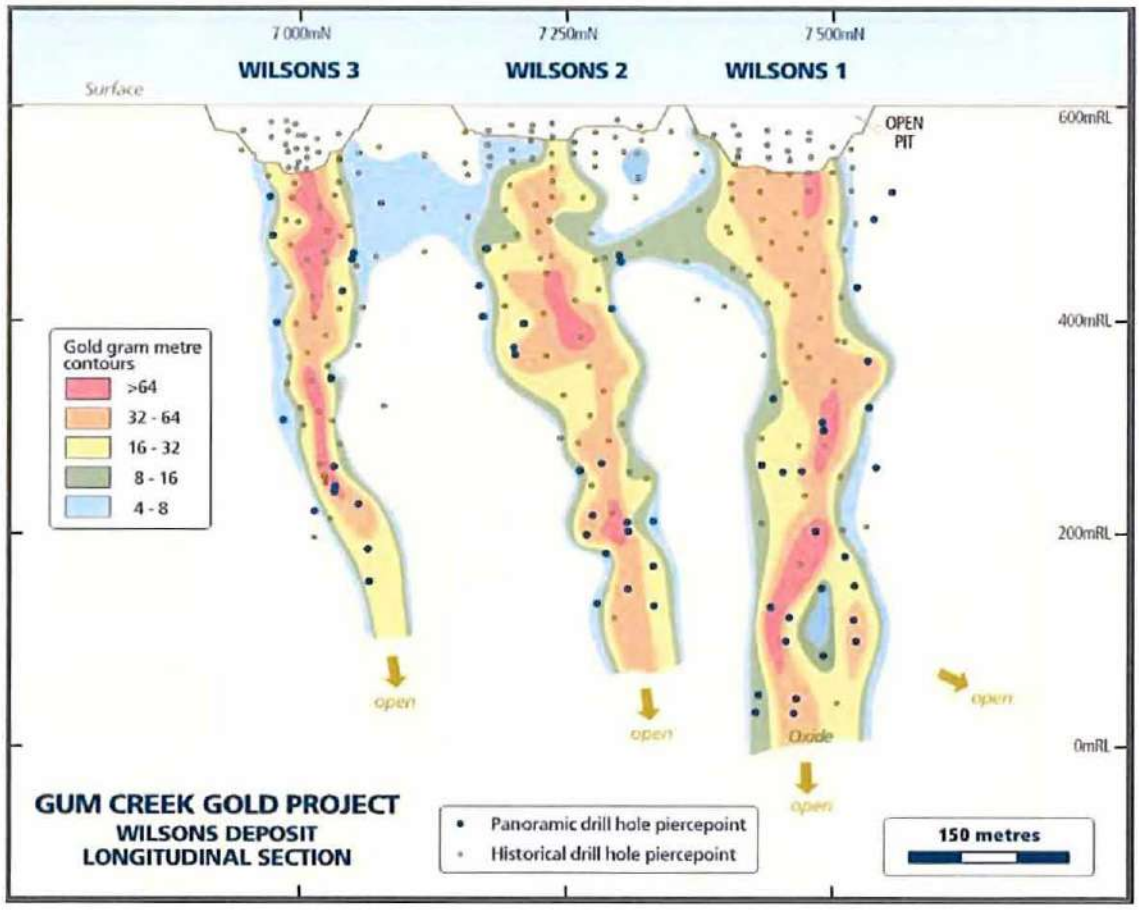


Figure 8-5: Section showing mineralisation and previous workings at the Wilsons deposit

Source: Horizon Gold Prospectus (October 2016)

Shiraz

The Shiraz deposit is an Archaean orogenic shear-hosted gold deposit, measuring approximately 700 m in length and ranging in thickness from 2 m to 60 m, with a typical thickness of around 40 m in

the main mineralised zone. It strikes in a north–northwest orientation (330°) and dips steeply (80°) to the west. Most of the known mineralisation lies within a moderate to steep west dipping shear zone and occurs as a series of quartz-rich shear zones within the Shiraz Dolerite. Mineralisation consists of fine-grained needles of arsenopyrite with disseminated to blebby pyrrhotite and trace pyrite. The mineralisation is refractory; however, a small historical oxide pit was mined to a depth of approximately 25 m below surface.

Howards

The Howards mineralisation is hosted in sheared basalt and quartz-feldspar porphyries. Gold mineralisation is associated with thin quartz-carbonate veining and fine-grained disseminated sulphides. Alteration assemblages consist of biotite and minor albite. The basalt-hosted shear strikes in a north–south orientation and has a near-vertical dip. The deposit measures approximately 1,000 m in length and is up to 50 m wide (Figure 8-6).

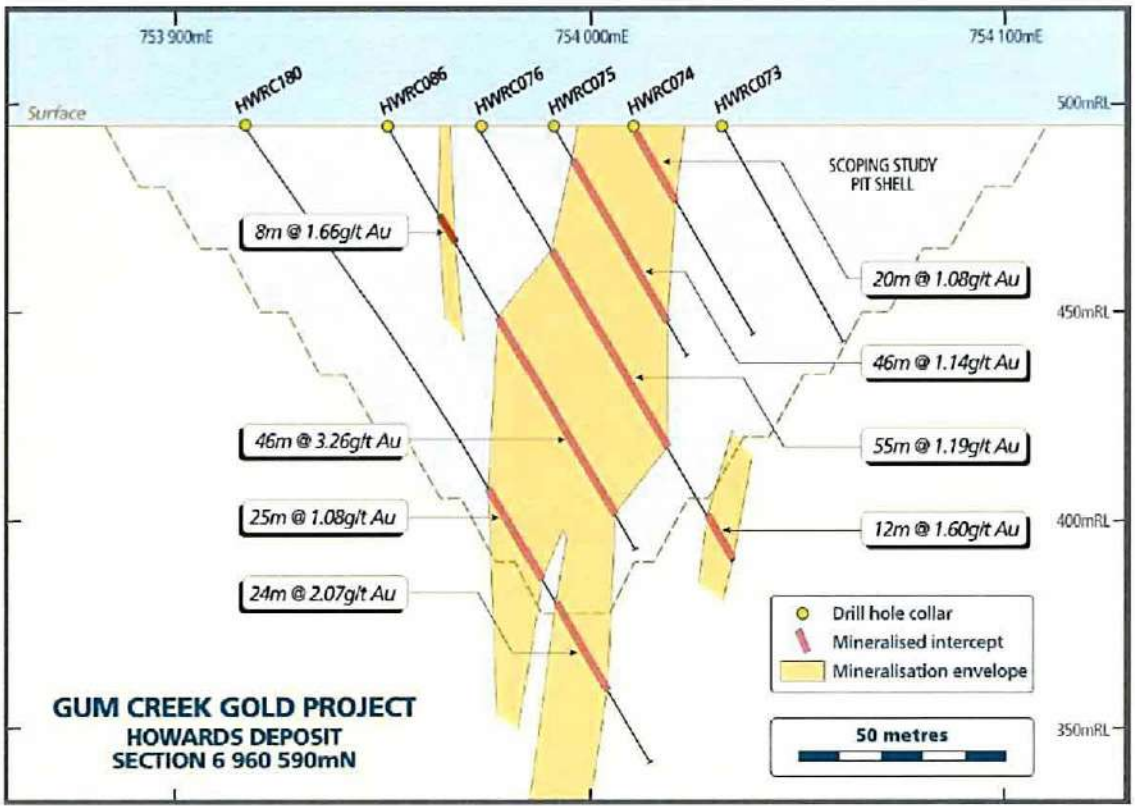


Figure 8-6: Section showing mineralisation and previous workings at the Howards deposit

Source: Horizon Gold Prospectus (October 2016)

Toedter

Mineralisation at Toedter occurs at an amphibolite/ ultramafic contact and is associated with quartz veining in east dipping shears. It strikes north at approximately 355° and dips moderately to the east at approximately 50°. There are 20 individual domains and the total strike length is approximately 240 m. The deposit consists of parallel stacked lodes, which vary in thickness from 1 m to 10 m and are spaced at between 2 m and 15 m.

Historical mining at the Toedter deposit occurred between May 1997 and March 1998. A total of 49,700 tonnes were mined at an average grade of 3.76g/t Au.

Deposits along the Gidgee Shear Zone

Swan and Swift

The Swan (or Swan Bitter), Swan North and Swift deposits form three discrete areas within a larger mineralised area.

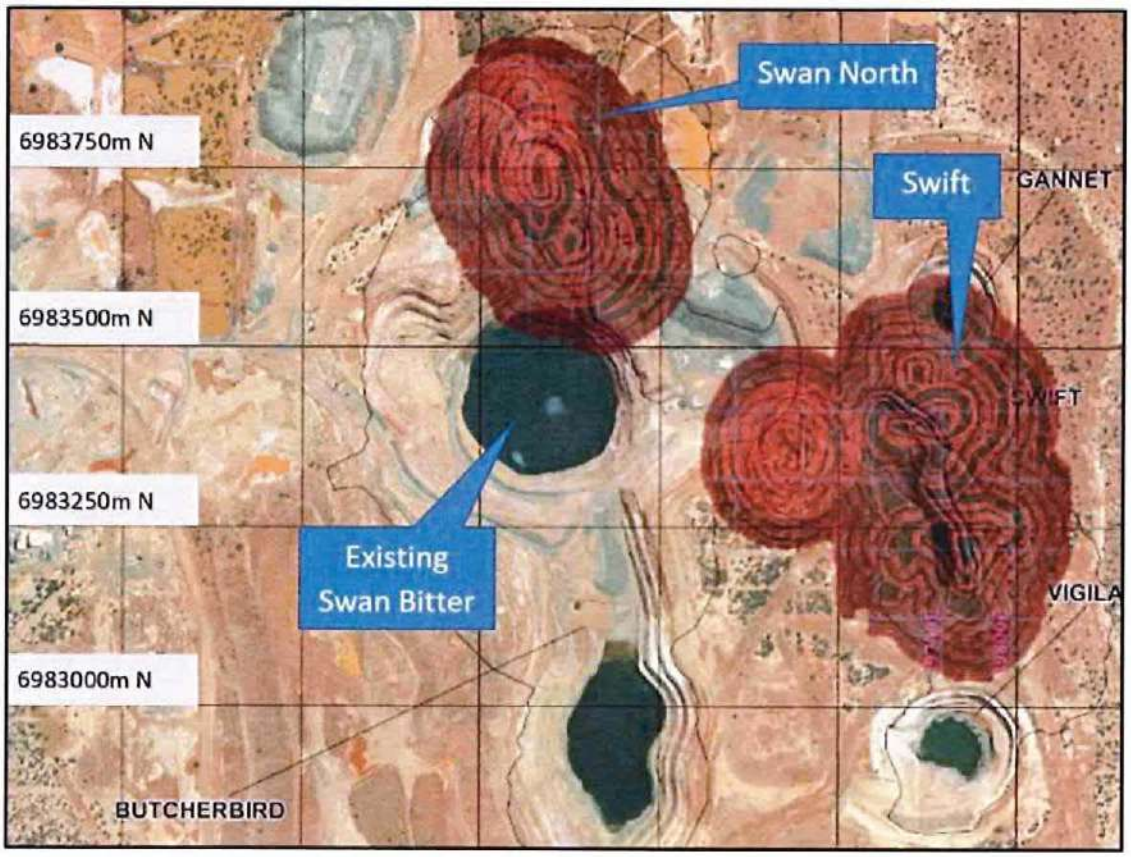


Figure 8-7: Plan view with conceptual open pits

Source: Horizon Gold ASX Announcement (15 October 2019)

The main style of mineralisation at the deposits is quartz-carbonate vein hosted, with the gold mineralisation occurring in complex conjugate vein arrays associated with brittle dilational openings developed along major shears within the competent mafic host rocks. Carbonate-sulphide wall rock alteration is common about mineralised zones and extensive supergene enrichment often overlays primary mineralisation zones.

The Swan Premium Lode is interpreted as a mineralised, north striking, steeply east dipping conjugate vein set emanating from the broader north striking, steeply west dipping Butcherbird Shear. The Butcherbird Shear is located approximately 50-70 m east of existing underground development on the Cascade Lode.

The Swift deposit is interpreted as a flat-lying to shallowly east dipping structure similar in geology and tenor to the Swan deposit shear zones.

The Butcherbird Shear, Swan Premium Lode and the flat-lying to shallowly east dipping Swift structure are not considered to be well-defined structures with sharp edges, but rather zones of silica flooding along poorly-defined, pre-existing structures. Variability in quartz flooding and gold grade within these zones is high, adding to the complexity in the mineralisation.

Kingfisher

The Kingfisher deposit is hosted in sericite-carbonate schist, adjacent to the regional-scale northwest trending, 60° southwest dipping Kingfisher Fault. The hangingwall to the mineralisation contains amygdaloidal basalt with high magnesium content. The footwall comprises interbedded basaltic flows and tuffs. Pyrite is the main sulphide (generally <1%) occurring as fine disseminations and coarse euhedral crystals, although it may constitute nearly 20% of the veins on a local scale. Visible gold is usually associated with the coarse pyrite.

Mineralisation is directly related to quartz veining, the most significant of which are 0.3 m to 4 m thick, with the highest gold grades at the hangingwall contact, while a 15 m wide zone of quartz-ankerite vein stockwork is developed in the footwall. Gold from the primary zone has been remobilised to form a supergene blanket commencing at approximately 30 m depth and extending to the base of extreme weathering at 70 m depth. Below the effects of weathering, high grade mineralisation appears to be controlled by moderate to steep south plunging shoots (Figure 8-8).

The deposit has been previously mined by open pit and underground methods.

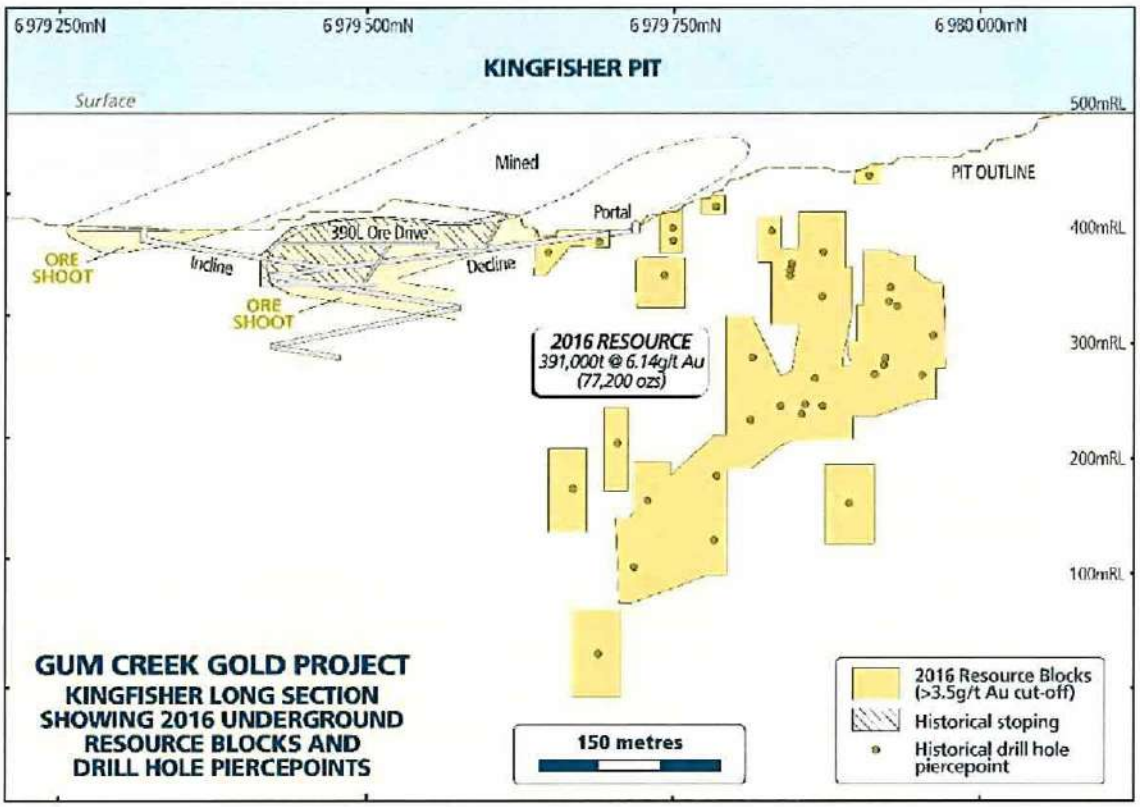


Figure 8-8: Section showing mineralisation and previous workings at the Kingfisher deposit

Source: Horizon Prospectus (October 2016)

Heron South

The Heron South deposit is approximately 650 m in length and ranges in thickness from 2 m to 10 m. Most of the mineralisation occurs in a steep east dipping shear although small pods of flat-lying supergene mineralisation have also been interpreted. An existing pit was mined to a depth of approximately 60 m below surface (Figure 8-9).

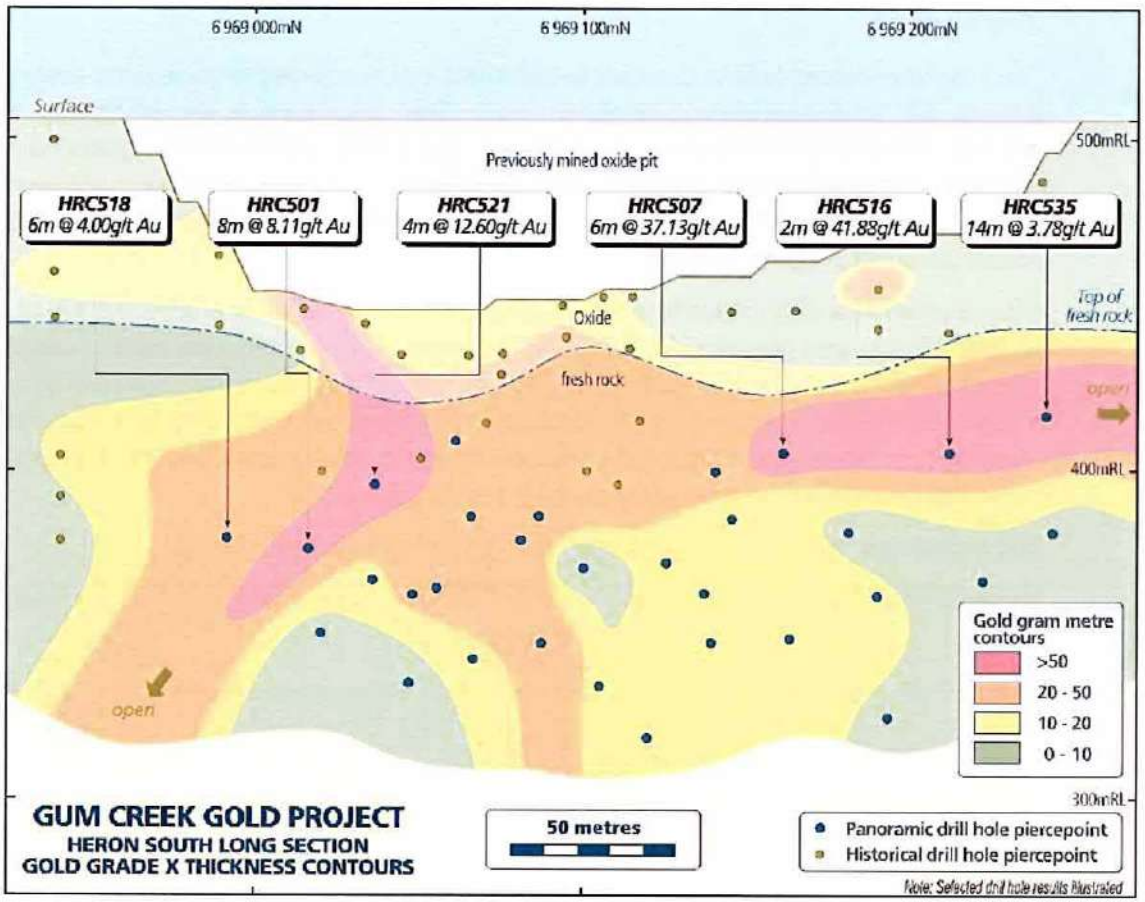


Figure 8-9: Section showing mineralisation and previous workings at the Heron South deposit

Source: Horizon Prospectus (October 2016)

Prospects

Altair and Mensa

The Altair zinc-copper-silver prospect is interpreted to be volcanogenic hosted massive sulphide (VHMS) or sedimentary exhalative (SEDEX) base metals style deposit associated within black shales and intermediate volcanic units. Previous shallow rotary air blast (RAB) and aircore drilling within a sequence of black shales at the Altair prospect in the 1990s intersected a small zone of copper mineralisation, while limited, deeper follow-up drilling at the time failed to find any extension to the copper mineralisation.

Toedter West

The Toedter West prospect consists of a 6 km long (mostly buried) BIF unit, with coincident zones of demagnetisation and electromagnetic conductivity, which are interpreted as being potentially sulphide bearing.

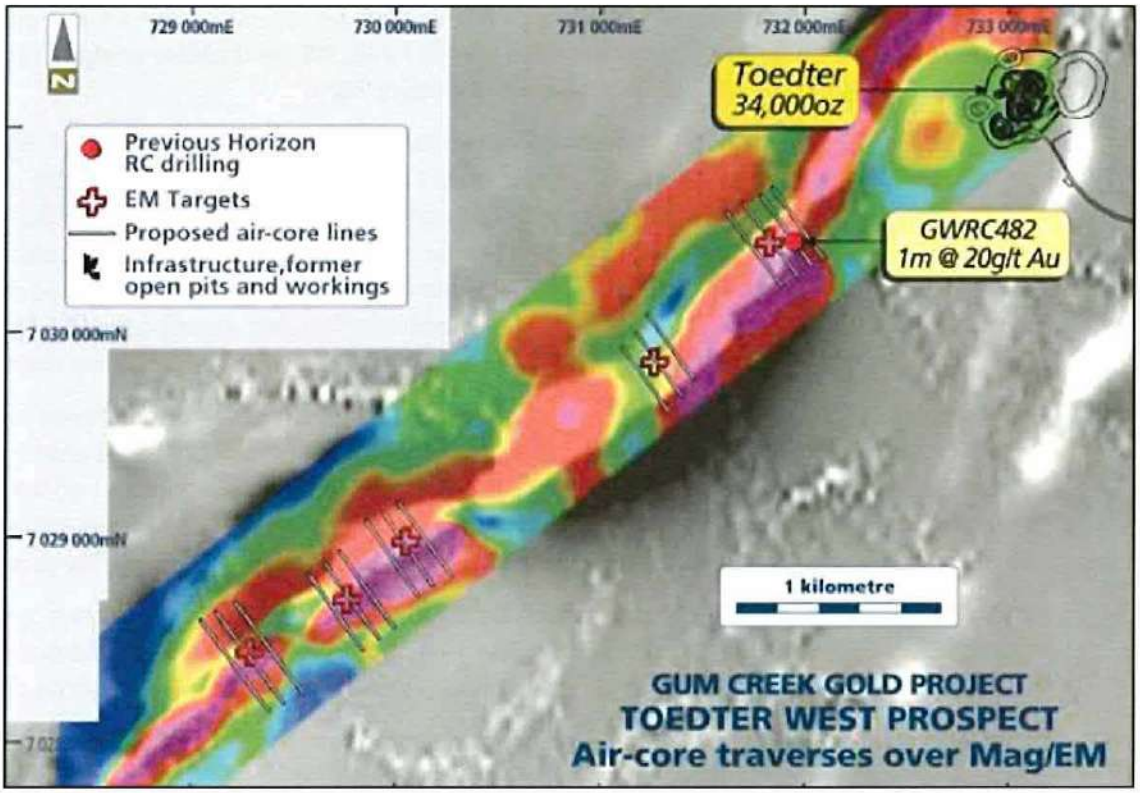


Figure 8-10: Aircore traverses at Toedter West prospect over magnetic and electromagnetic

Source: Horizon Prospectus (Horizon Gold Annual Report 2018)

PSI

The PSI prospect consists of down plunge extensions to high grade structurally controlled BIF-hosted gold. Drilling conducted in 2017 identified that the grade and thicknesses encountered were consistent with historical drilling intercepts and confirmed that mineralisation was confined to a single mineralised structure or shear associated with the BIF. The mineralisation plunges moderately to the south but was flatter than previously thought.

Wahoo East

The target at Wahoo East is a series of structure and surface gold anomalism associated with an interpreted and underlying non-emergent granitic intrusion.

8.8 History

Gold was first discovered near Sandstone in 1895; however, it was not until the 1920s that gold was discovered some 90 km to the north near Gidgee. By 1926, the North End mine and the mining community of Jonesville had been established. About that time, the Swan Bitter deposit was also discovered 300 m northeast of the North End mine. Recorded gold production was around 21,000 oz from 71,000 t of ore before closure of the mines (Otterman, 1990).

More recent exploration between 1983 and 1987 by Amoco Minerals Australia (later Cyprus Minerals Australia) further delineated five deposits – North End, Swan Bitter, Wren, Emu Feather and Eagle. These were reported with combined pre-mining Ore Reserves of 2 Mt grading at 3.38 g/t Au (Otterman, 1990). Production recommenced in April 1987 from the North End and Swan Bitter deposits and recorded production in the first 12 months of operation was 44,761 oz from 421,900 t of ore.

An intermittent history of production and ownership changes ensued (Arimco Mining Pty Ltd, Australian Resources Ltd, Abelle Pty Ltd). Up until closure in March 1999, 37 open pits and three underground

mines had been developed, of which two open pits and one underground mine were in operation at the time of closure. Over the 12-year period, a total of 7,746,348 t of ore were treated at an average grade of 3.6 g/t Au for 851,682 oz Au recovered (Maynard, 2004).

Abelle Limited (Abelle) acquired Gidgee (now known as the Swift, Swan, Kingfisher and Heron South deposits) in October 1999 and resumed production in February 2000. Mining was mainly carried out in the South Woodya, Donkey Well and Wahoo open pits and the Swan Bitter underground operation. At the end of 2002, Abelle ceased mining in open pit operations but continued production from the Swan Bitter underground. In February 2003, Harmony Gold Mining Company Limited (Harmony) launched a take-over offer for Abelle, focused on acquiring Abelle's mining assets in Papua New Guinea. At the end of April 2003, Gidgee briefly became part of Harmony's Australian operations.

In November 2003, Legend Mining Limited (Legend) announced that it had purchased the Gidgee operation and took over the mine on 17 December 2003. At the time, Gidgee had produced over 1 Moz of gold during its lifetime (Legend, 2003). Production at Gidgee was reduced, and the company carried out extensive exploration. Legend placed the mine on care and maintenance in March 2005, citing rising operating costs and a static gold price making the operation less viable (Legend, 2005).

In 2007, Apex Minerals Limited (Apex) purchased the Gidgee Project with a focus on recommencing mining from the Wilsons and Shiraz deposits. Panoramic purchased the Gidgee tenements from Apex in 2011 and the Wilsons project in 2012. No additional mining or processing has occurred since 2005.

In total in excess of 1 Moz of gold were produced from more than 37 deposits and three underground mines, with the main gold-producing areas being Swan-Swift, Kingfisher, Omega and Montague.

8.8.1 Exploration and studies by PanGold from 2011 to 2016

Resource extension drilling programs completed by PanGold during 2011-2012 led to an increase in gold resources of approximately 65%, to 1,048,600 oz. In August 2012, PanGold completed a Scoping Study, which contemplated open pit mining from the Swan Bitter, Swift, Howards, Toedter and Specimen Well deposits, and underground mining of Wilsons.

During 2013, PanGold completed approximately 35 km of RC and diamond core drilling at the Wilsons, Swan-Swift, Howards and Shiraz deposits, leading to an upgrade of Mineral Resources to 1.3 Moz Au, with over 85% of the Mineral Resource in the Indicated category. During FY2013 and FY2014, metallurgical and engineering studies to optimise capital and operating costs, gold recoveries, process flowsheet infrastructure and tailings storage were also progressed. In addition, PanGold completed a number of environmental and heritage baseline studies as part of the mining approvals process.

In 2015, a new exploration initiative commenced, with the acquisition of heliborne electromagnetic and ground gravity geophysical datasets over the Gum Creek project area.

8.8.2 Exploration database as of October 2016

An extensive drilling database is available for the Gum Creek project. The majority of drilling surrounds historical and existing resources. For much of this drilling, gold was the only element analysed. Gold anomalism identified by this drilling was then targeted for closer-spaced follow-up drilling. Most of the project area has been covered by a moderate to high level of drilling. However, just over 65% of the existing drill holes are less than 50 m deep. Much of the regional drilling was to a set depth or to the weathering interface boundary with fresh rock (Figure 8-12). Horizon initially adopted this historical exploration drilling approach but with a strong multi-element, lithogeochemical emphasis to identify vectors to mineralisation. In 2015, a more geophysics-based exploration approach was taken.

The available regional (belt scale) exploration data are summarised below:

- Drilling: A total of 70,125 holes totalling 2,871,000 m are recorded in the project database.

Of these, PanGold drilled 1,220 holes for 124,000 m. The drilling data contains over 1.1 million sample records, of which less than 3% of the samples were analysed for elements other than gold.

- Mapping: PanGold contracted Jigsaw Geoscience to complete 1:10,000 scale mapping of the project area in 2011.
- Geochemical sampling: In addition to drilling, over 81,000 surface samples were collected. The majority of these were soil and rock chip samples (Figure 8-11). In 2014, PanGold contracted Outcrop Exploration Services Pty Ltd (OES) to assess the prospectivity of the project through a combination of structural interpretation and litho-geochemical data compilation and interpretation. A total of 10 target areas were defined.
- Project geophysical data: During 2015, PanGold completed detailed ground gravity and airborne electromagnetic (SkyTEM) geophysical surveys over the entire project area to produce a fully integrated geophysical database of detailed airborne magnetic and radiometric, ground gravity and airborne electromagnetic geophysical data. PanGold employed Newexco Services Pty Ltd (Newexco), independent geophysical consultants, to interrogate the data and define exploration targets.
- Induced polarisation (IP) geophysical survey: During 2016, PanGold engaged Newexco to complete an IP program comprising 10 × 100 m spaced profiles over the Wilsons deposit and a further 13 × 400 m spaced profiles along the interpreted position of the Wilson Shear to the south. This survey demonstrated that the Wilsons mineralisation is clearly detectable using IP and two additional targets for testing were generated.

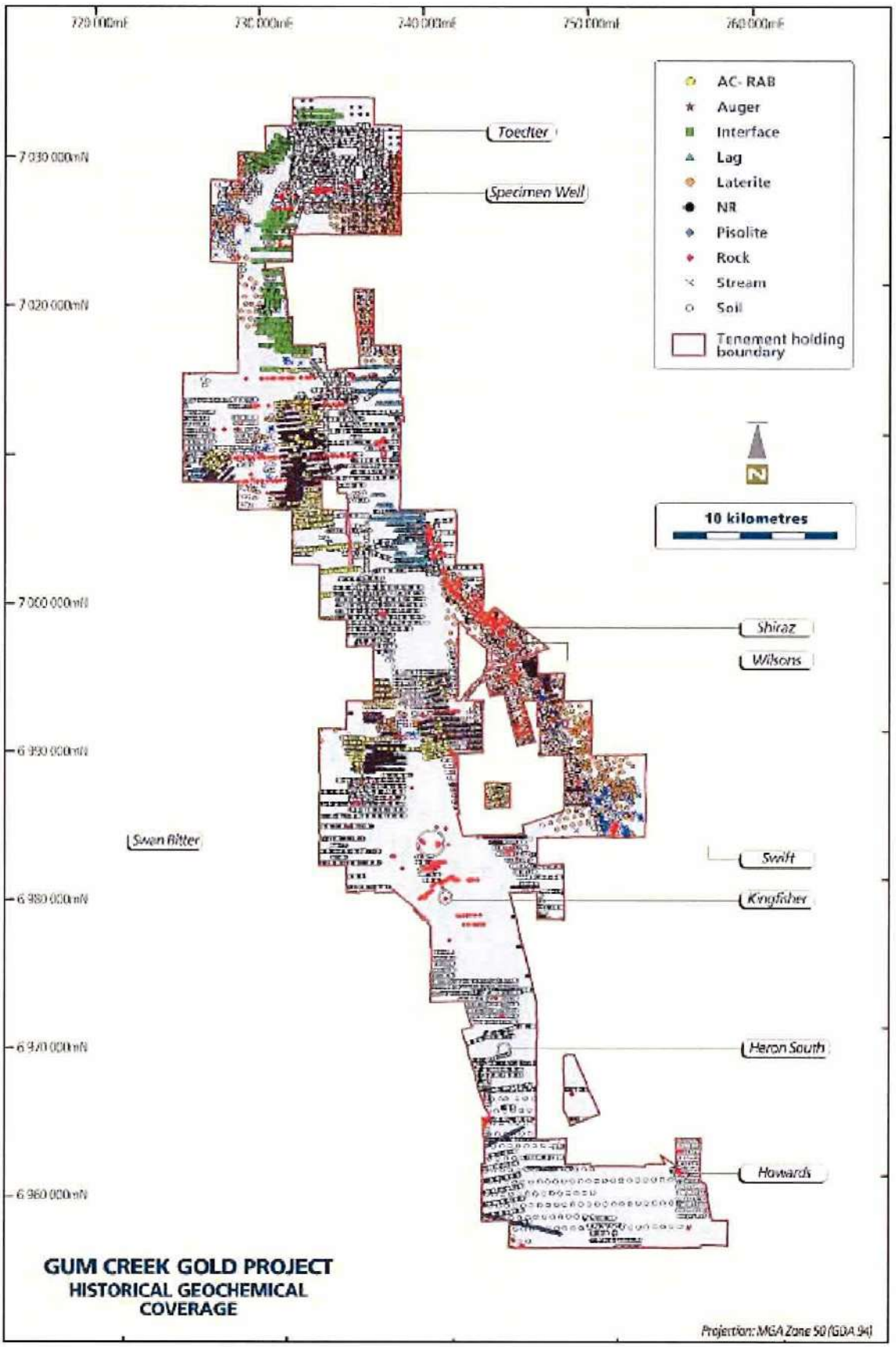


Figure 8-11: Historical geochemical sampling coverage

Source: Horizon Prospectus (October 2016)

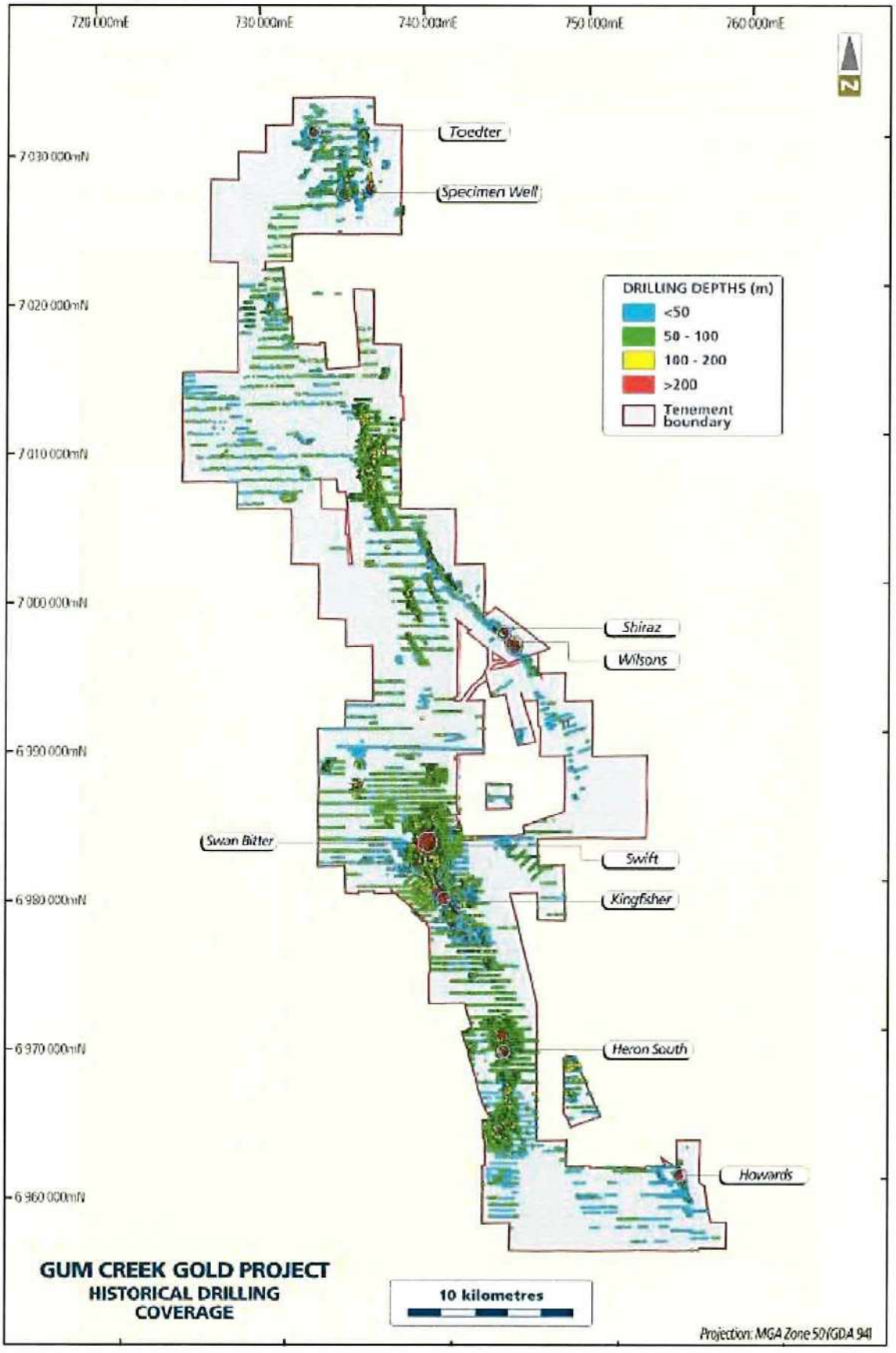


Figure 8-12: Historical drilling coverage

Source: Horizon Prospectus (October 2016)

Geophysical surveys

PanGold completed detailed ground gravity and SkyTEM surveys over the entire project to produce a fully integrated geophysical database of detailed airborne magnetics and radiometrics, ground gravity and airborne electromagnetics.

Magnetic data

Project-wide airborne magnetic data are available over the entire project area as show in Figure 8-13 and Figure 8-14.

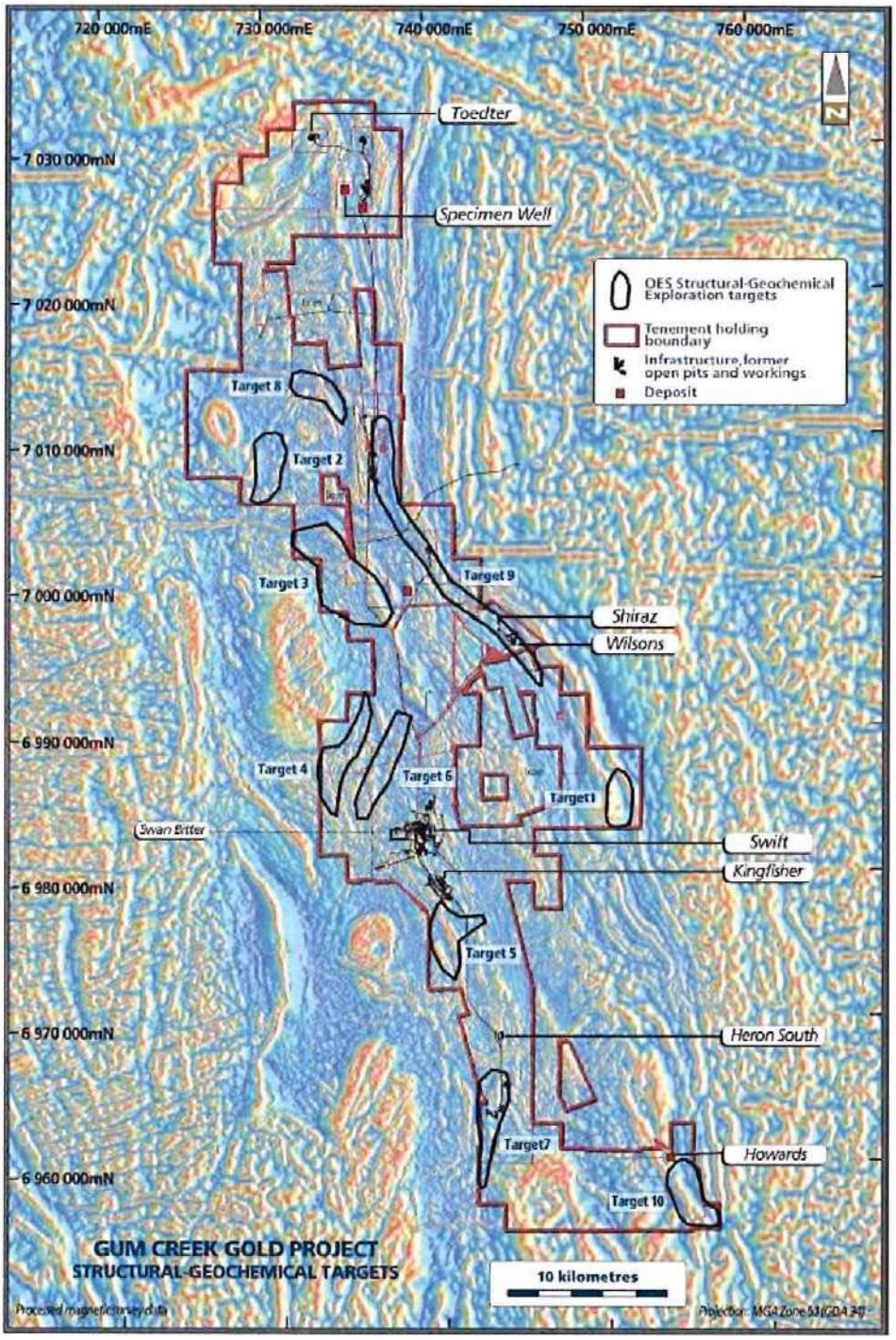


Figure 8-13: Processed magnetic survey

Source: Horizon Gold Prospectus (October 2016)

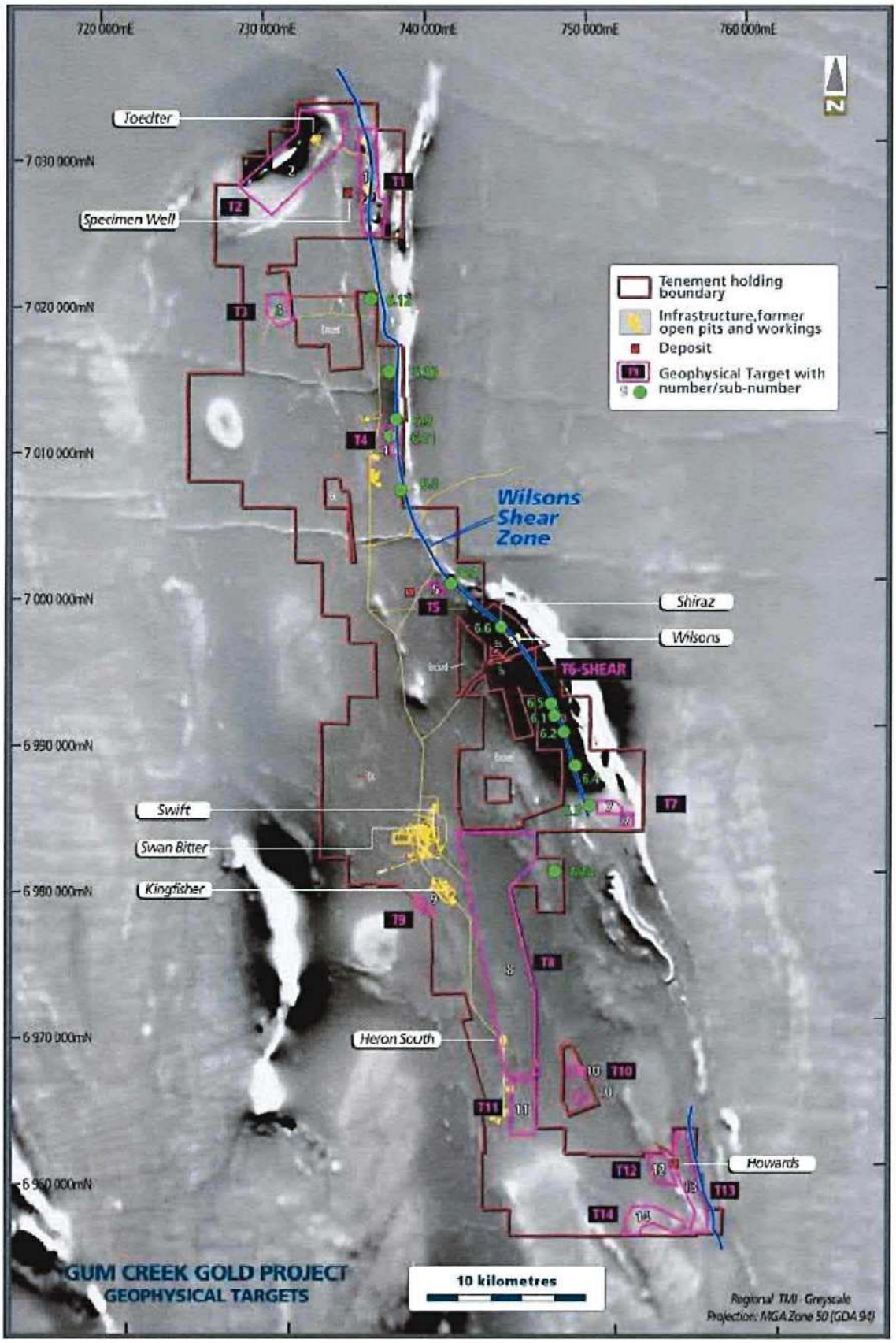


Figure 8-14: Regional total magnetic intensity image and geophysical targets

Source: Horizon Prospectus (October 2016)

Ground gravity

Between May and June 2015, Atlas Geophysics conducted a gravity survey that involved the acquisition and processing of 14,745 gravity stations at a 200 × 400 m grid. The results of the survey along with targets is shown in Figure 8-15.

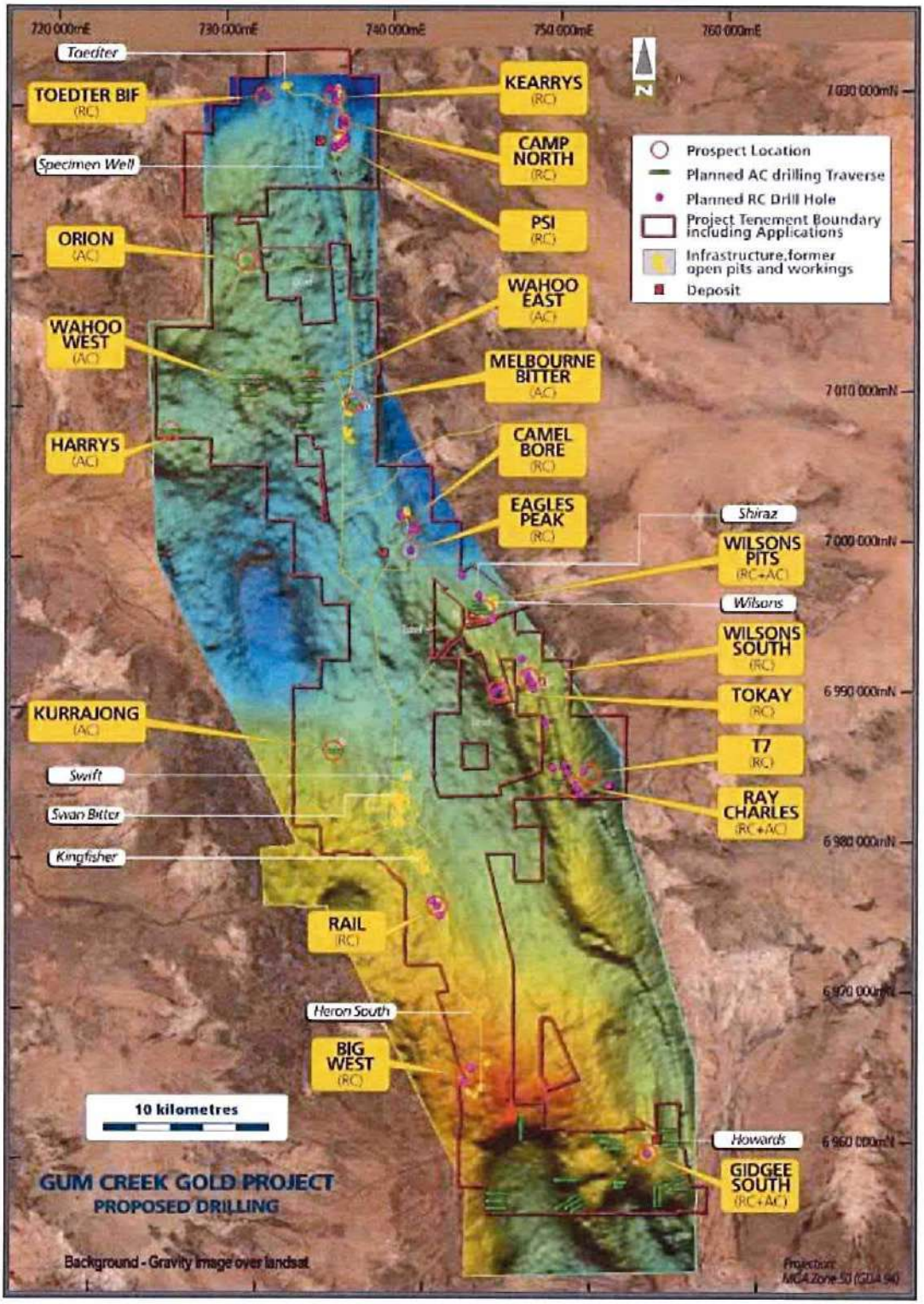


Figure 8-15: Ground gravity over Landsat

Source: Horizon ASX Announcement (21 December 2018)

SkyTEM survey

During April and May 2015, a SkyTEM geophysical survey was conducted consisting of 5060.7 line kilometres. The survey was conducted a nominal flight height of 45 m above ground level and orientated east–west at a 200 m line spacing.

8.8.3 Exploration along the Wilson Shear Zone

Wilsons

Drilling at Wilsons included reverse circulation, aircore and diamond drilling. The Wilsons resource database subset contains a total of 213 RC holes for 19,400 m, 4 aircore holes for 195 m and 162 diamond holes for 53,328 m. Of these totals, PanGold completed 49 diamond holes for 21,571.3 m and 27 RC holes for 4,440 m. All RC and aircore holes were sampled by collecting 1 m samples from a rig-mounted cyclone and riffle splitter.

RC holes were sampled by collecting every 1 m drill sample and splitting these down to an approximate 3 kg assay sample by using either cone or riffle splitters. Diamond holes were typically NQ2 in diameter and were sampled by cutting the core in half over geologically logged intervals that typically ranged between 30 cm and 1.2 m.

All samples were submitted to a contract laboratory for fire assay analysis. No details of historical QA/QC were available; however, sampling and assaying procedures were identical to those used in other Gum Creek deposits which were successfully verified by PanGold.

An initial orientation IP survey was conducted at Wilsons in 2016 by Newexco (Figure 8-16). The IP program comprised 10 × 100 m spaced profiles over the Wilsons deposit and a further 13 × 400 m spaced profiles along the interpreted position of the Wilson Shear to the south. The results of the IP survey identified a clear chargeable source coincident with the known Wilsons mineralisation. Follow-up IP surveys in 2017 by Merlin Geophysical Solutions Pty Ltd extended the IP survey to the north and south of the Wilsons deposit (Figure 8-17) for an additional 51 profiles. The survey used a 100 m dipole-dipole array with a 400 m line spacing for a total survey coverage area of 20 km.

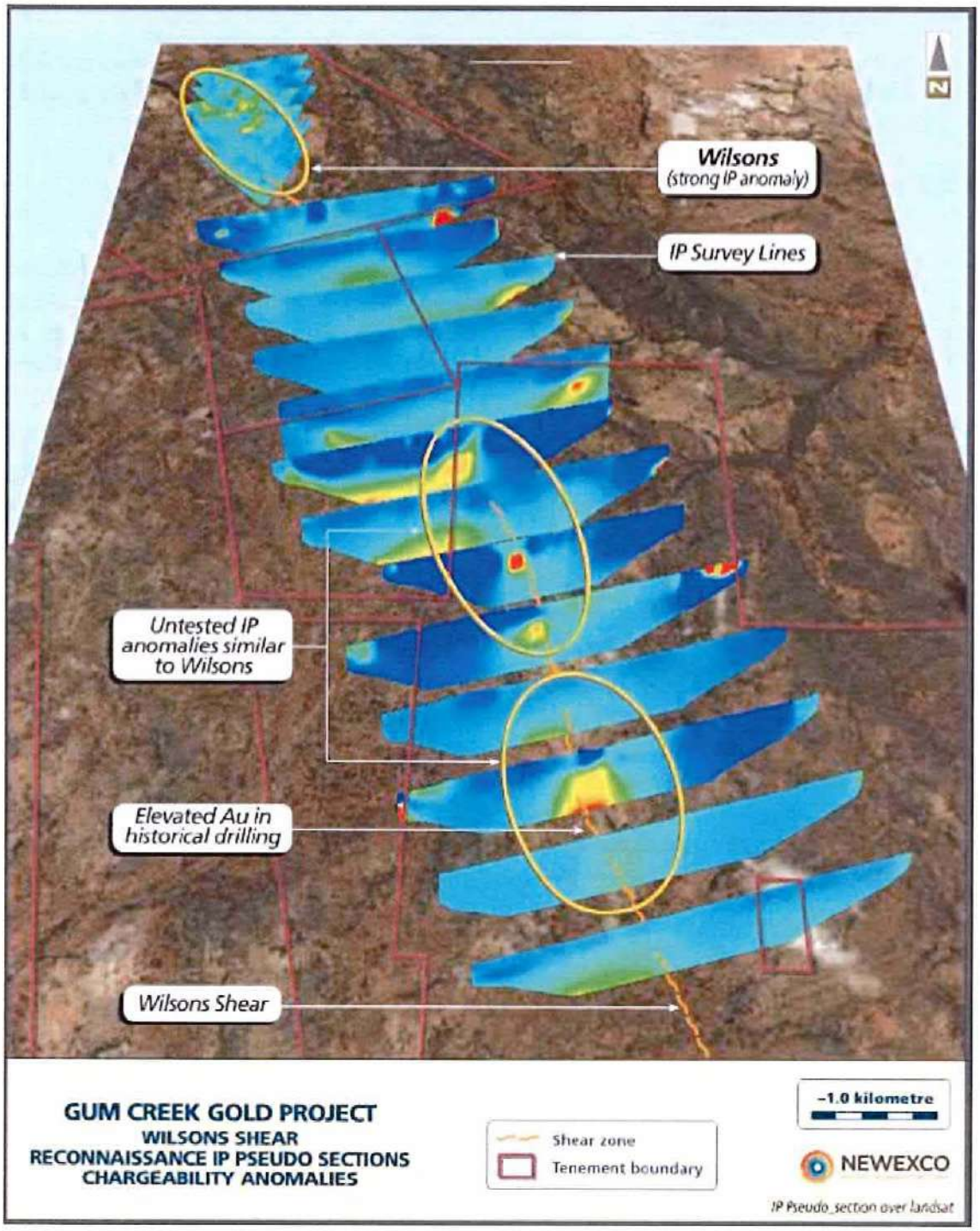


Figure 8-16: IP traverses at the Wilsons deposit over regional gravity imagery – 2016

Source: Horizon Gold Prospectus (October 2016)

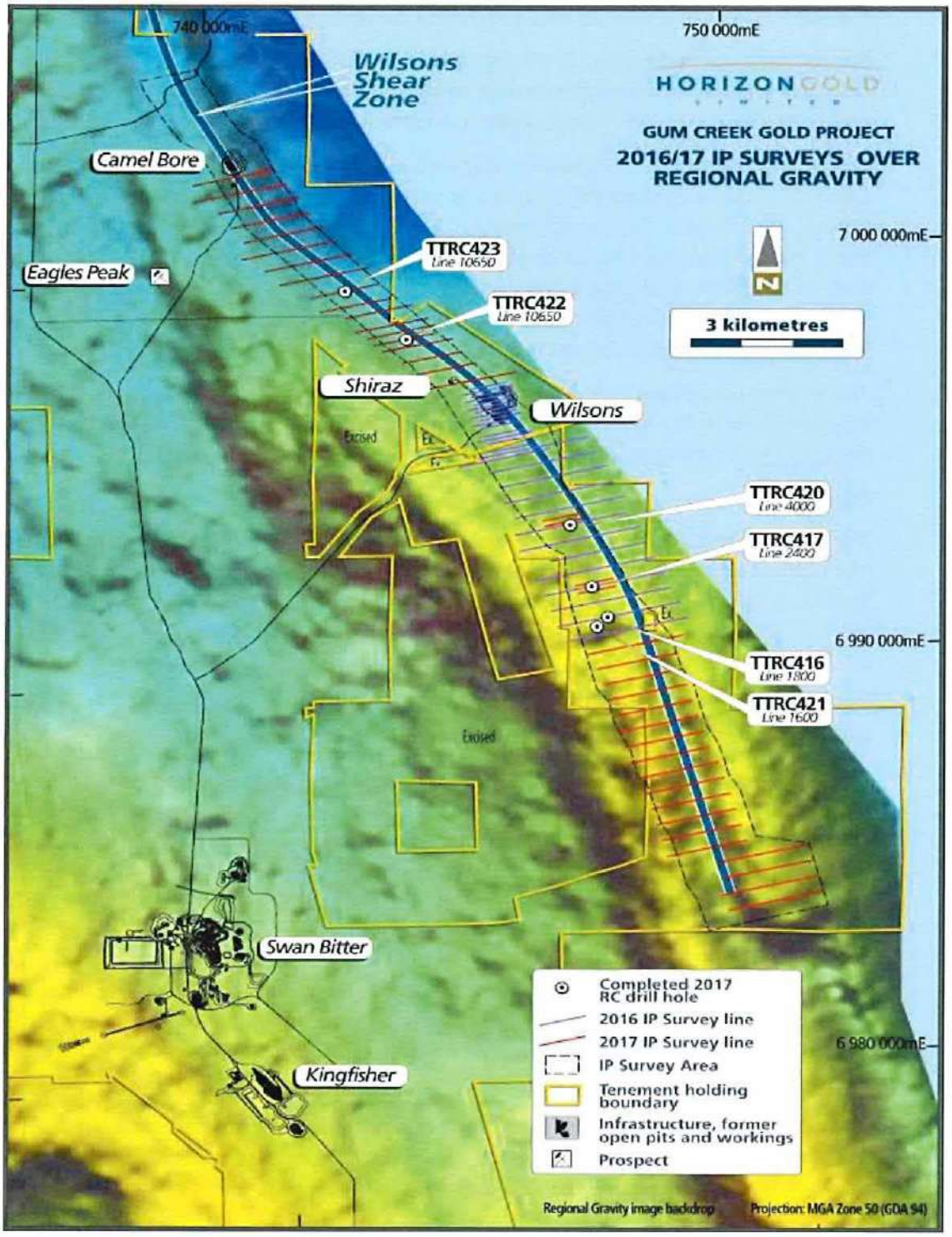


Figure 8-17: IP traverses at the Wilsons deposit over regional gravity imagery – 2017

Source: Horizon Gold Annual Report (2017)

In June 2016, PanGold reported results from new metallurgical testwork completed on Wilsons refractory mineralisation. This identified a potential processing route (designated LOPOX by PanGold) which uses moderate pressure and temperature conditions to oxidise a sulphide flotation concentrate allowing efficient recovery of gold through conventional carbon-in-leach methods. The initial test results were encouraging. The flotation step with a recovery of 90%–93% was followed by a LOPOX recovery of 94%–96%, representing an overall gold recovery of 85% for this initial testwork.

The Mineral Resource estimate was completed by an independent consultancy, BMGS, in 2013.

The estimate was constrained by mineralisation wireframes based on a 0.5 g/t Au interpretation cut-off grade. Data within the wireframes was composited to 1 m intervals and high grade cuts were then applied to the composites. Inverse distance squared interpolation was used for estimation.

Grade estimation of the Wilsons underground deposit was completed using Ordinary Kriging in Surpac™ software. Variogram analysis and modelling was completed using Supervisor™ software. Downhole composites (1 m) were generated from the drill hole database and then tagged according to mineralised (domain) wireframes generated at a 1g/t Au cut-off grade for low grade domains and 2 g/t Au cut-off grade for high grade domains. A minimum 1 m downhole composite and wireframe width was maintained in an attempt to represent a minimum selectable mining width, assuming narrow vein underground mining techniques are to be used.

The wireframe modelling conditions included a minimum downhole mineralised width of 1 m, internal downhole dilution of up to 2 m could be included if the entire intercept graded above 1 g/t Au or 2 g/t Au, respectively. If dilution was greater than 2 m, separate lodes were generated.

Shiraz

The Shiraz Mineral Resource database subset contains 142 RC and two diamond drill holes for a total of 12,656 m. Of this total, 20 RC holes totalling 2,614 m were drilled by PanGold in 2013 as part of a Feasibility Study. In addition, the database contains 196 historical rotary air blast (RAB) holes (totalling 5,676 m which have not been used for resource estimation). The drill hole spacing is typically a 20 × 20 m grid pattern over the extent of the mineralisation.

RC holes were sampled by collecting 1 m samples and splitting these down to a -3 kg assay sample using either automated on-board rig cone splitters or by manual riffle splitting.

PanGold resource assay samples (1,670) were submitted to ALS Laboratories in Perth for gold analysis by FA30 (Fire Assay) technique. Of the 5,871 historical RC and diamond gold assays in the Shiraz database, 3,566 samples (61%) are recorded as having an 'unknown digest, AAS finish', which implies they are also by Fire Assay technique. In addition, results for 1,836 QA/QC samples (24% of the entire analytical database) are recorded in the database.

The Mineral Resources were estimated in 2013 by BMGS.

Grade estimation of Shiraz deposit was completed using Ordinary Kriging in Surpac™ software. Variogram analysis and modelling for the Ordinary Kriging estimate was completed using Supervisor™ software. Composites (2 m) were generated from the drill hole database and then tagged according to mineralised wireframes generated at a 0.4 g/t Au grade cut-off.

The wireframe modelling conditions included a minimum downhole mineralisation width of 2 m, internal dilution of up to 3 m downhole could be included if the entire intercept graded above 0.4 g/t Au. If dilution was greater than 3 m, then separate lodes were generated if geological/ grade continuity was permissible.

Howards

The Howards deposit has been defined by 242 holes for a total length of 19,733 m. Of these, 52 RC holes and 10 diamond holes were completed by PanGold. Drilling was carried out on a 20 × 20 m and 40 × 40 m grid spacing.

The Mineral Resources at the Howards prospect were estimated in 2013 by BMGS.

Specimen Well

The Specimen Well Mineral Resource estimate was completed by BMGS in 2016. The estimate was constrained by mineralisation wireframes based on a 0.5 g/t Au interpretation cut-off grade. Data

within the wireframes was composited to 1 m intervals and high grade cuts were then applied to the composites. Inverse distance squared interpolation was used for estimation.

Toedter

A total of 128 RC holes, 3 diamond holes and a number of RAB holes were considered in the Mineral Resource estimate. Two RC holes were drilled by PanGold, with the remainder completed by previous owners. The drill spacing is nominally 20 × 10 m over the extent of the mineralisation.

The RC holes were sampled by collecting 1 m samples from a rig-mounted cyclone and riffle splitter. diamond holes were sampled at 1 m intervals or to geological boundaries.

All samples were submitted to a contract laboratory for Fire Assay analysis. No details of historical QA/QC were available; however, sampling and assaying procedures were identical to those used in other Gum Creek prospects where recent drilling and QA/QC work by PanGold has verified the historical data.

The Toedter Mineral Resource estimate was completed BMGS in 2016. The estimate was constrained by mineralisation wireframes based on a 0.5 g/t Au interpretation cut-off grade. Data within the wireframes was composited to 1 m intervals and high grade cuts were then applied to the composites. Inverse distance squared interpolation was used for estimation.

8.8.4 Exploration along the Gidgee Shear Zone

Swan and Swift

The Swan or Swan Bitter, Swan North and Swift Mineral Resources have been updated and re-estimated in June 2019 by Mining Plus Pty Ltd (Horizon Gold ASX Announcement, 12 July 2019).

Between November 2011 and May 2013, PanGold drilled a total of 57 RC holes around the Swan and Swift deposits for a total of 9,539 m of drilling and an additional 8 geotechnical diamond holes near the margins of the proposed pit cutbacks.

In August 2018, Horizon completed an additional 12-hole diamond drill program for 4,897 m. An additional 6 diamond holes were drilled in December 2018/ January 2019 for a further 1,800 m to test the Butcherbird Shear and the Premium Lode system located 50–70 m east of the underground development.

The Swan and Swift database contain 5,518 drill holes, consisting of 1,235 diamond drill holes, 2,852 RC drill holes, 18 RC drill holes with diamond tails, 130 aircore drill holes, and 1,283 RAB drill holes. RAB and aircore drill holes have been used to model mineralisation but were excluded from estimation. An additional 187 RAB drill holes in the database contained only maximum assays for the drill hole and have been excluded from mineralisation modelling and estimation.

In total, 1,235 diamond drill holes for 150,108 m, 2,852 RC drill holes for 287,002 m, and 18 RC with diamond tails drill holes for 6,712 m have been used in the Swan and Swift Mineral Resource estimates.

The drill sections are spaced at predominantly 20 m intervals along strike, with drilling within the section plane ranging from 25 m to 50 m. Surface drill sections have been drilled at azimuths of. approximately 90° and 270°. The orientation of the underground drilling is more variable, with the drilling completed at azimuths ranging from 200° to 340°, and dips varying from +60° to -60°.

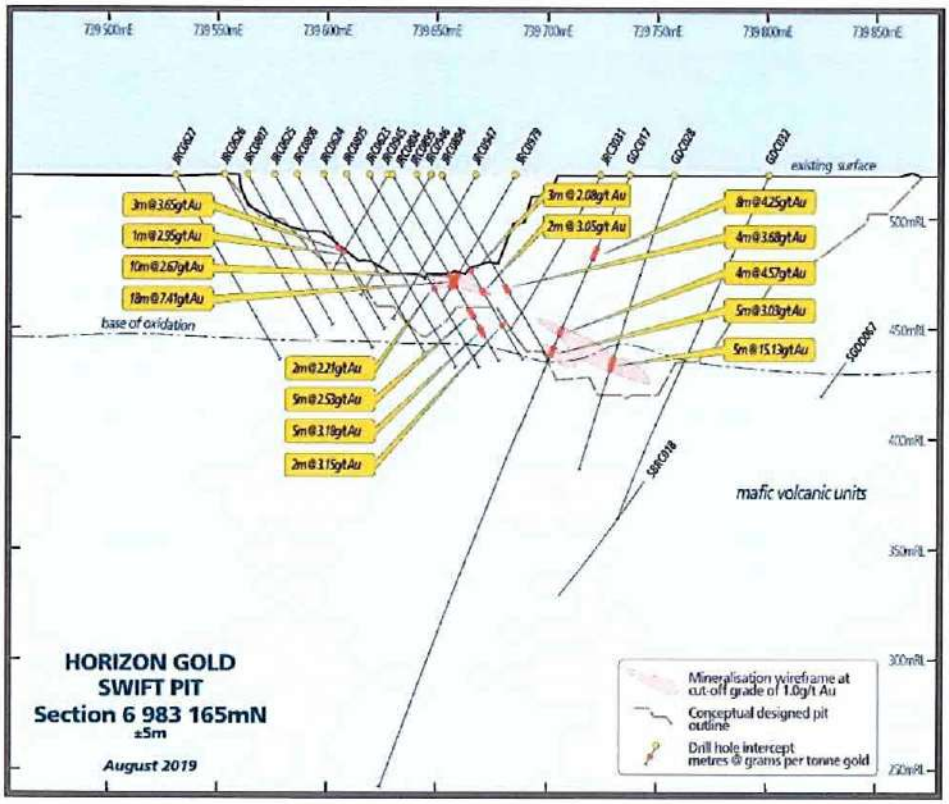


Figure 8-18: Swift existing pit and mineralisation with conceptual pit outline

Source: Horizon Gold ASX Announcement (15 October 2019)

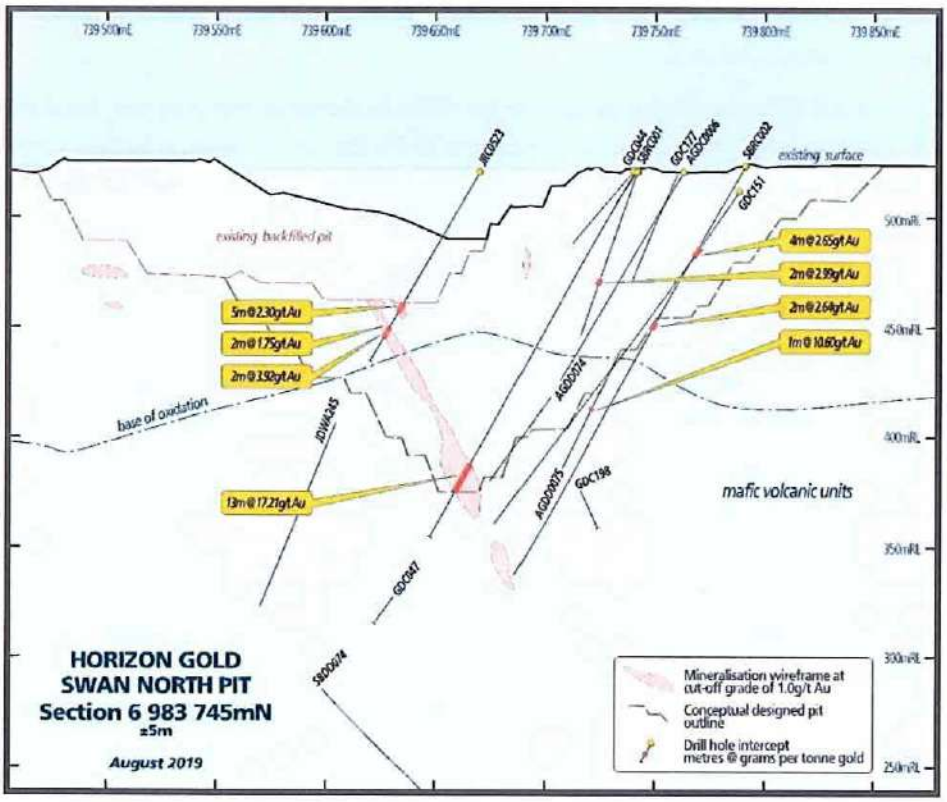


Figure 8-19: Swan North existing pit and mineralisation with conceptual pit outline

Source: Horizon Gold ASX Announcement (15 October 2019)

The Mineral Resource estimate was completed by independent consultancy, Mining Plus Pty Ltd, who was engaged in November 2018, with the updated Mineral Resources being current as of July 2019.

The updated Swan and Swift Mineral Resource estimates represents a significant change in contained tonnes and grade from the previous estimate. These changes are due primarily to the mineralisation being modelled using the implicit modelling functionality of Leapfrog Geo software using identified structural trends to define mineralisation continuity. These more continuous mineralised shapes have enabled different approaches to be applied to the geostatistical analyses and estimation of grade.

The updated in situ, drill-defined, open pit and underground Mineral Resource estimates for the Swan and Swift deposits have been reported at cut-off grades of 0.5 g/t Au within an A$2,000/oz pit shell optimisation and 2.5 g/t Au beneath the pit optimisation.

In 2015, a limited processing study was undertaken at using the Swan Bitter drill core. PanGold undertook the study using a combination of gravity separation and cyanide leaching. The results showed that the material tested was free milling and showed gold recoveries of between 96% and 99%.

In 2014, MBS Environmental Pty Ltd undertook a review of historic tailings in the Gum Creek TSF, which indicated that the tailings are geochemically benign. The material contains an abundance of reactive carbonate minerals and reportedly 98% of the historical tailings samples are non-acid forming.

Kingfisher

A total of 12 RC holes and 18 diamond holes were used in the estimate, with all drilling completed by previous owners between 1990 and 1995. The drill spacing is nominally 40 × 40 m over the extent of the reported Mineral Resource; however, much closer drill spacing is reportedly evident in the previously mined portions of the deposit. In the RC drilling, a face sampling hammer was used with 1 m samples collected via a riffle splitter. Diamond drilling was NQ diameter with core sampling to geological boundaries.

Historical drill samples were reported to be assayed by a Fire Assay technique. While specific QA/QC programs for the Kingfisher drilling were not identified, the extensive open pit and underground production largely verified the magnitude and extent of mineralisation and did not show any assay bias.

The Mineral Resource estimate was completed by an independent consultancy, Carras Mining Pty Ltd. The estimate was constrained by mineralisation wireframes based on a 3.0 g/t Au interpretation cut-off grade with 0.5 m edge dilution added to each side of the lode. Data within the wireframes were composited to 1 m intervals and high grade cuts were then applied to the composites. Inverse distance squared interpolation was used for estimation.

Heron South

The Heron South deposit was drilled using RC, aircore and diamond drilling techniques. A total of 277 RC holes for 23,197 m, 74 aircore holes for 5,536m and 3 diamond holes for 564 m were completed. Of these, 36 holes and 47 aircore holes were drilled by PanGold in 2011 and 2012. The nominal drill spacing is 25 × 10 m.

The Mineral Resources at Heron South are unchanged from those estimated in 2013 by BMGS.

8.8.5 Prospects

Altair and Mensa

In August 2018, Horizon completed drill hole ALDD002 to test the interpreted east dipping black shale/ intermediate volcanic contact below the depth of the historical drilling. ALDD002 returned the following significant zinc-copper base metal intersection (Horizon Annual Report, 2019):

- 55.0 m averaging 3.32% Zn and 0.52% Cu from 184.0 m, including
- 9.0 m averaging 6.69% Zn and 1.00% Cu from 213.0 m.

This result was followed up with two subsequent drill programs between November 2018 and March 2019, which consisted of 12 RC with diamond tailed holes and 4 RC holes (ALDD003 to ALDD022) for a total of 6,382 m.

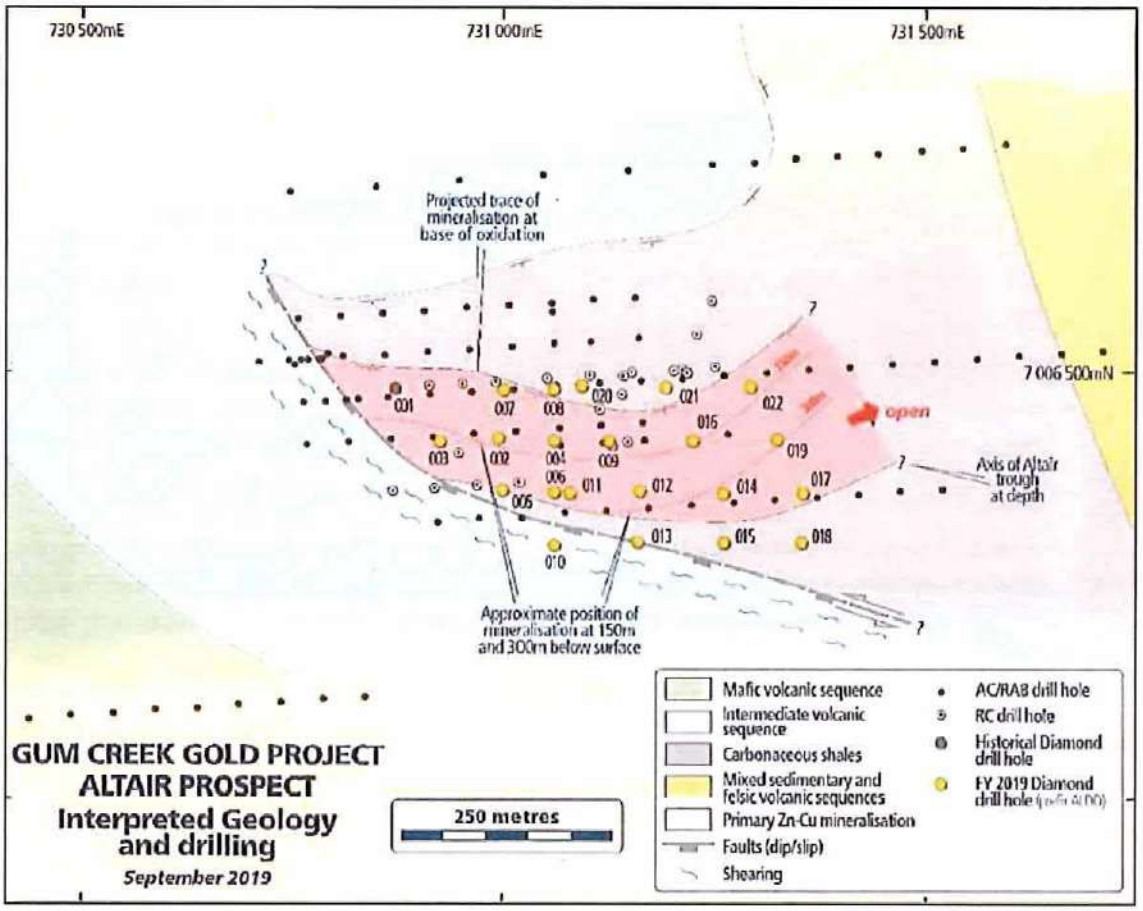


Figure 8-20: Drill plan location map at the Altair prospect

Source: Horizon Annual Report 2019

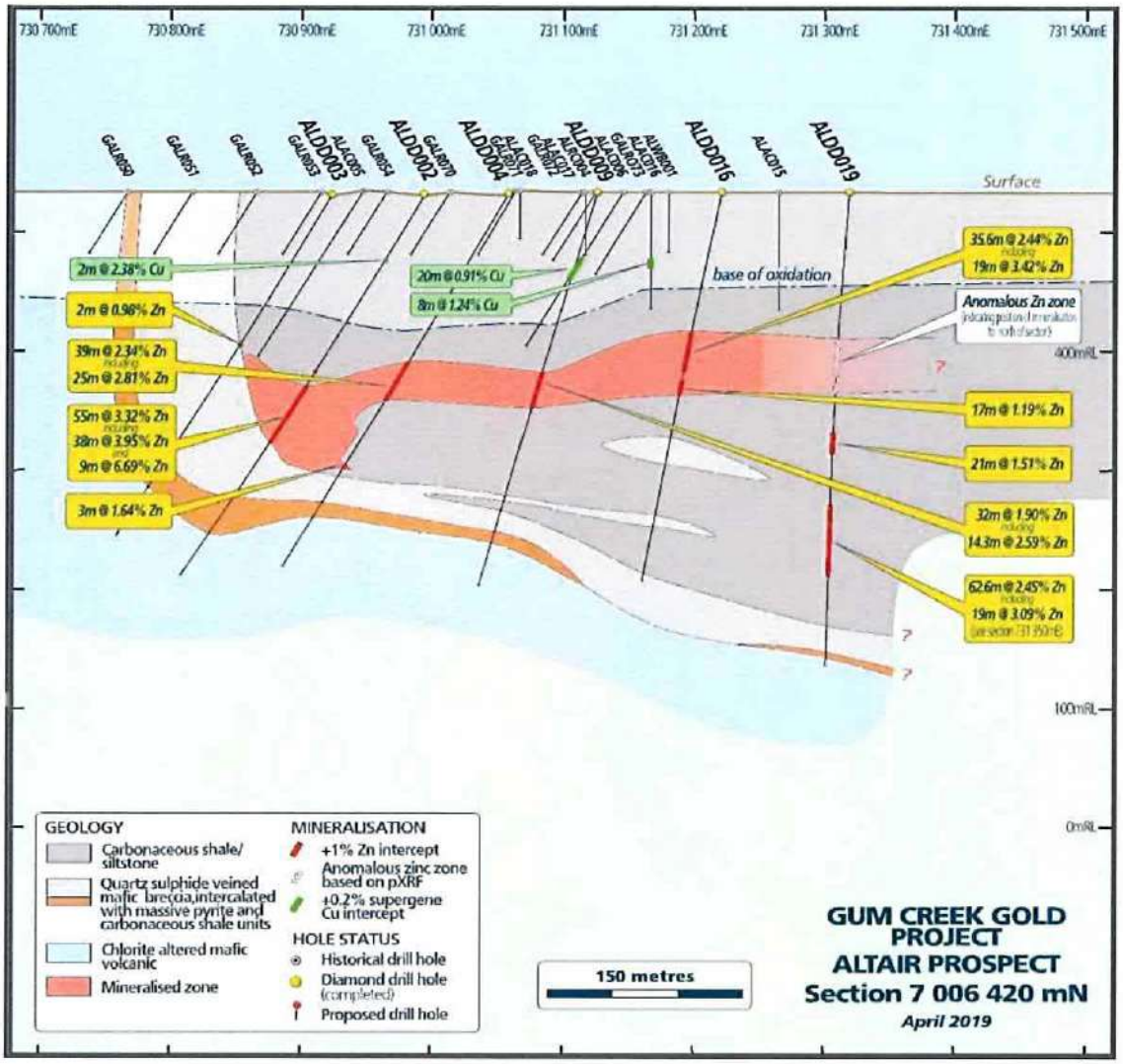


Figure 8-21: Altair prospect – cross section at 7006420 mN (±20 m)

Source: Horizon Annual Report 2019

A downhole electromagnetic survey (DHEM) was carried out by Horizon during the 2019 exploration drilling campaign and showed positive response in holes ALDD002 and ALD009 with a 70 ms exponential decay constant coincident with the mineralised intervals.

In June 2019, a moving loop electromagnetic (MLEM) survey was carried out in at a broad spacing of 200 m by 200 m for a total of 323 survey stations for a total of 43 line kilometres of survey. The program was designed to confirm the electromagnetic response identified by the DHEM and subsequently identify any additional extensions including areas of anomalism highlighted by the 2015 SkyTEM survey at the Mensa prospect to the north and allowing for better modelling and targeting for further drill testing.

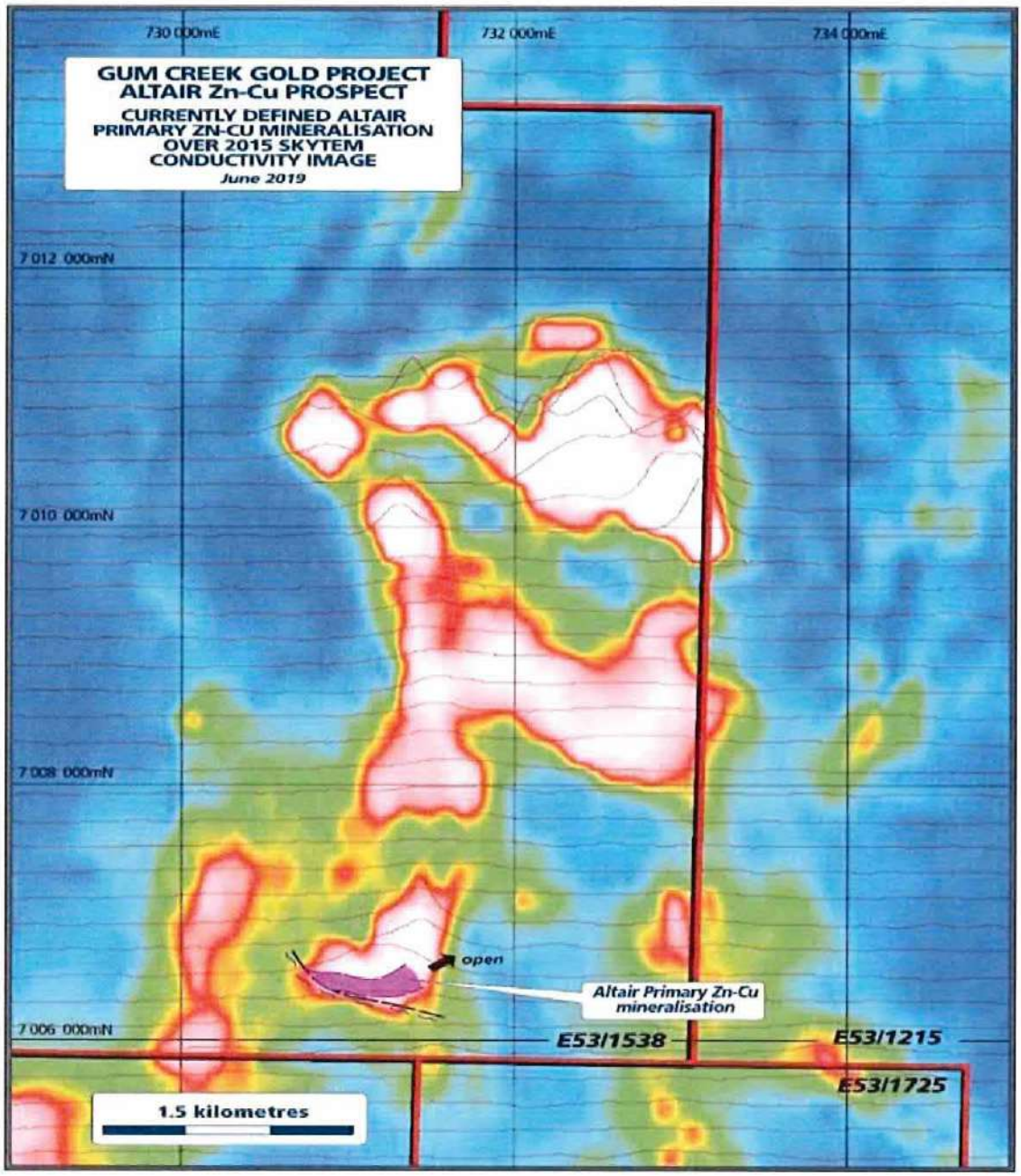


Figure 8-22: SkyTEM conductivity results at the Altair prospect from 2015

Source: Horizon Annual Report 2019

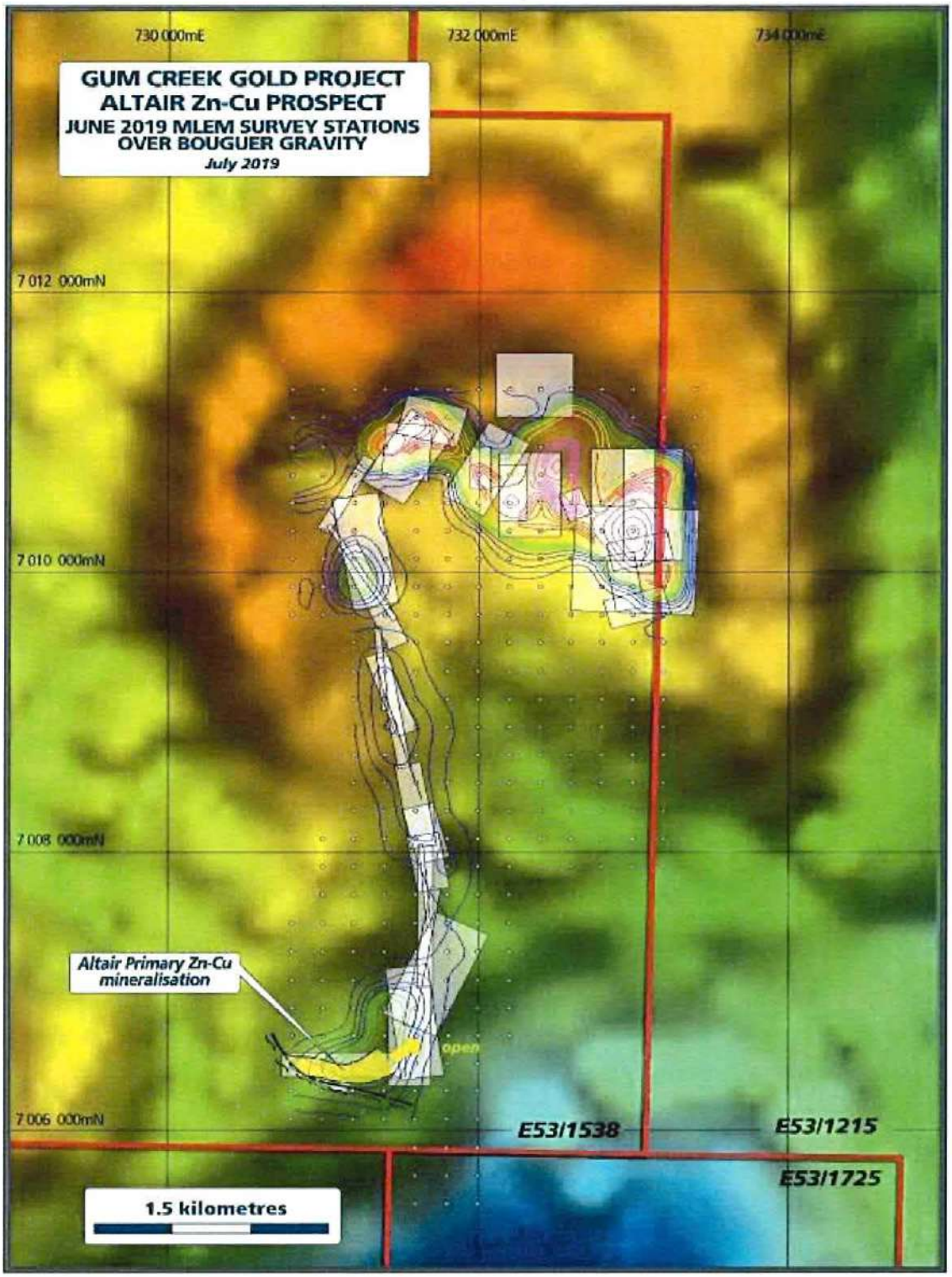


Figure 8-23: MLEM survey results and modelled plates over Bouger gravity

Source: Horizon ASX Announcement 16 July 2019

A program of metallurgical testwork to determine the comminution and flotation performance of the Altair zinc-copper-silver mineralisation has commenced, but results are currently unavailable.

Recent exploration by Horizon has identified a broad continuous lens of zinc-copper-silver mineralisation over a strike length of more than 450 m. The maximum down dip extent and average thickness of the lens are 350 m and 25 m, respectively. Importantly, the mineralised lens remains

open to the north and east. Modelled geophysical conductors suggest potential extensions to this mineralisation could be up to 8 km in strike length.

SRK considers the Altair prospect to offer moderate to high prospectivity. Horizon have not reported an Exploration Target for Altair under JORC (2012) reporting guidelines although SRK understands that geological modelling by the Horizon technical team has defined a target area and prepared an internal volume estimate.

Toedter West

The 2018 Horizon Annual Report notes that, in total, 87 aircore holes were drilled in 2018 for a total of 2,775 m; the best reported result was from hole GPAC1353 which intersected 3.0 m at 0.71 g/t Au from 76 m downhole depth.

An additional 42 aircore holes were drilled at the Toedter West prospect in 2019 for approximately 1,500 drilled metres. Results from this drilling have not yet been reported.

SRK considers the Toedter West prospect to offer low prospectivity.

PSI

The 2018 Horizon Annual Report notes that, in total, 14 holes for 1,369 m were drilled in 2017, with returned results including:

- GWRC462: 7 m at 4.94 g/t Au from 55 m
- GWRC464: 6 m at 4.16 g/t Au from 80 m
- GWRC466: 5 m at 4.415 g/t Au from 68 m
- GWRC467: 5 m at 3.60 g/t Au from 62 m
- GWRC469: 4 m at 5.34 g/t Au from 60 m.

Four additional holes were completed in early 2018 and reported the following results

- 12 m at 1.27 g/t Au from 96 m
- 8 m at 1.45 g/t Au from 100 m
- 8 m at 2.32 g/t Au from 145 m.

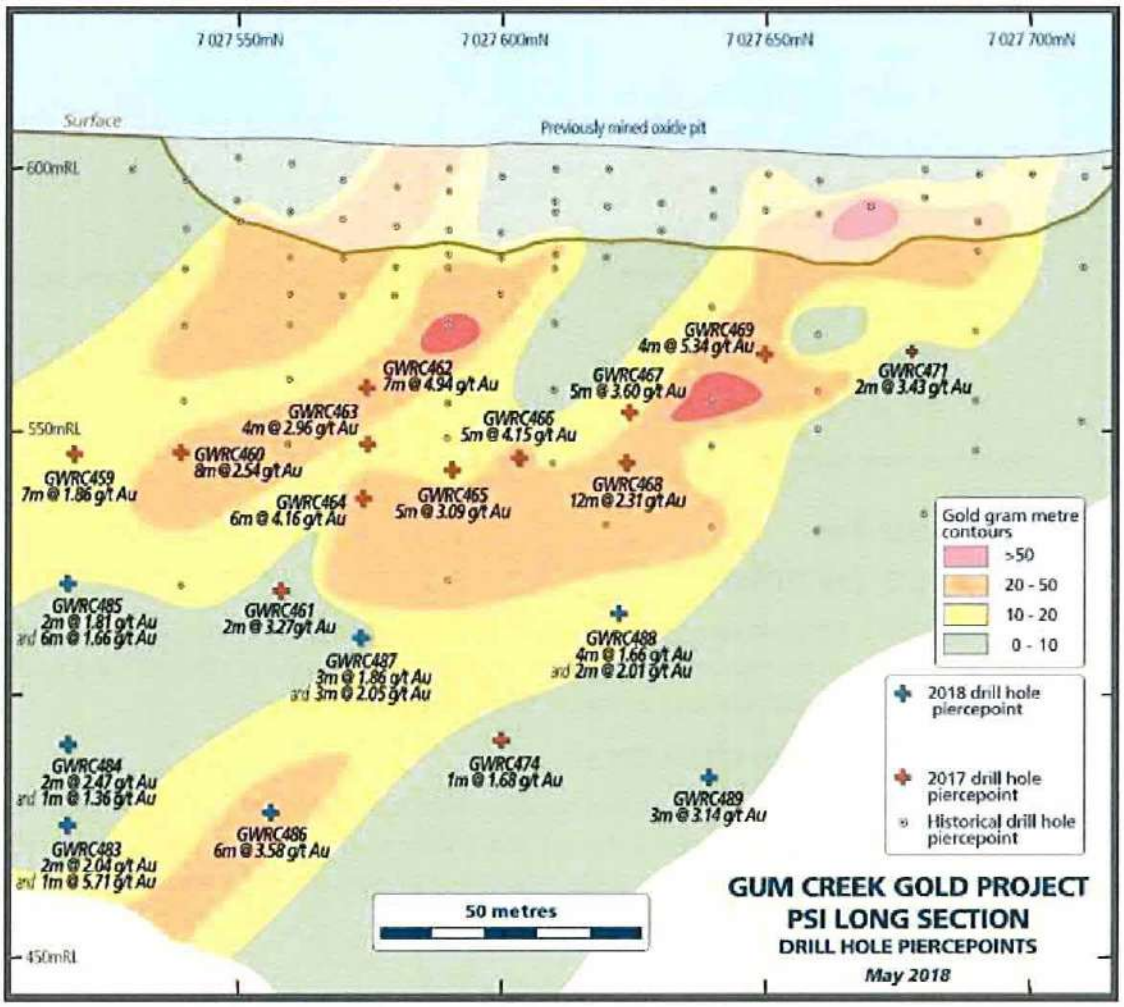


Figure 8-24: Drilling intercepts and cross section of PSA mineralisation

Source: Horizon Annual Report 2018

SRK considers the PSI prospect to be moderately prospective

Wahoo East

A total of 74 aircore holes were drilled at the Wahoo East prospect for approximately 2,900 m in 2019.

Results from this drilling have not yet been reported.

SRK considers the Wahoo East prospect to be low to moderately prospective.

Additional prospects/ targets

A number of additional prospects / targets have been identified or referred to, for which there is limited information available in the public domain information SRK has been able to access.

Limited recent reporting was available at a number of named targets, including:

- Ray Charles: tested with 4 RC holes, no significant gold detected, and no further work planned.
- Rail and Big West: tested with 4 RC holes, no significant gold detected, and no further work planned.
- Camel Bore: tested with 3 RC holes, no significant gold detected in 2 holes and only minor gold anomalism detected in the third hole (4 m at 0.25 g/t Au); no further work planned.

- Melbourne Bitter: tested with 4 aircore holes returning minor to moderate gold anomalism, including:
  - 4 m at 1.62 g/t Au from 96 m
  - 4 m at 1.32 g/t Au from 0 m
  - 4 at 3.38 g/t Au from 76 m
  - 4 at 0.77 g/t Au from 32 m.
- Orion/ Gidgee South: tested with 3 aircore holes returning minor gold anomalism, including:
  - 4 m at 0.83 g/t Au from 32 m
  - 4 m at 1.0 g/t Au from 60 m
  - 4 m at 2.21 g/t Au from 72 m.

No further work planned.

8.8.6 Mining Studies

Scoping Study (2012)

In August 2012, PanGold released the Gidgee Gold Project Scoping Study. The study was based on the mining of open pit resources from the Swan Bitter, Swift, Howards, Toedter, and Specimen Well deposits, as well as the mining of underground resources from Wilsons.

Wilsons only Study (2012-2013)

From December 2013 through to September 2014, PanGold investigated a 'Wilsons only' option, which considered mining and processing the refractory Wilsons deposit to produce a gold-rich sulphide concentrate for direct sale. Subsequently the focus changed to investigate less cash intensive options using toll treatment of the free milling gold.

Mining Proposal (2015)

In 2015, a Mining Proposal was approved for the recommencement of mining operations at Gum Creek. The approval included mine cutbacks to the existing Swift pits, recommencement of mine dewatering and water abstraction, ore haulage, recommencement of processing activities at the existing processing plant, disposal of tailings into the existing TSF and refurbishment of the existing accommodation village.

Free Milling Scoping Study (2016)

In March 2016, PanGold announced the results of the Gum Creek Gold Project Free Milling Scoping Study. The study included open cut resources at the Swan, Swift and Howards projects and details of the results are provided below as detailed in PanGold's ASX Announcement dated 18 March 2016:

- 5.8-year initial mine life
- 12-month construction period
- Annual production of 60,000 oz Au
- A mining inventory of 4.9 Mt at 1.94 g/t Au for 309,000 oz Au at 95% recovery
- Capital costs of A$62M including a new carbon-in-leach processing facility
- All in sustaining costs of A$1,209/oz Au
- Assumed gold price of A$1,700/oz Au
- Pre-tax project NPV of A$37M at an 11% discount rate.

SRK understands that while the study demonstrated that the Gum Creek project had a positive economic outcome, it has not been pursued and has since been superseded by the revised Scoping Study announced on 20 November 2019.

Scoping Study (20 November 2019)

Since the completion of the Mineral Resource estimate in June 2019, Mining Plus was retained by Horizon to assist with the completion of a series of open pit evaluation studies on the Swan and Swift deposits. This work formed the basis of a Scoping Study which contemplated a toll treating operation where material would be processed off site. No results were publicly reported – other than that the results are positive (Horizon ASX Announcement 20 November 2019) and supportive of a Feasibility Study to be prepared in 2020. SRK understands that the results of the study cannot be publicly reported as they are largely based on Inferred Mineral Resources. The current Mineral Resource classification has also prevented Ore Reserves from being reported.

Other studies

The following studies, relating to Swan, Swan North and Swift pits, have been undertaken previously:

- 2011, 2013 - Flora and Vegetation Assessment completed by Maia Environmental Consultancy Pty Ltd
- 2013 - Gidgee Gold Project - Vertebrate Fauna Survey by Western Wildlife Pty Ltd
- 2013 - Gidgee Gold Project Subterranean Fauna Assessment by MBS
- 2013 - Hydrogeological Assessment completed by Groundwater Resource Management Pty Ltd
- 2013 - Waste rock characterisation completed by MBS
- 2013 - Raising of Tailings Storage Facility Design Report by Coffey International Ltd
- 2013 - Geotechnical Assessment of Open Pit mining Swan Bitter by Peter O'Bryan & Associates
- 2017 - Processing Plant Inspection and Refurbishment budget estimate by MACA Interquip Pty Ltd.

8.8.7 Mineral Resources

The current total Mineral Resource at the Gum Creek project is 15.89 Mt at an average grade of 2.7 g/t Au containing 1.39 Moz Au (Table 8-3). In total, some 61% of the contained ounces are free milling, and the remaining 39% at the Wilsons, Shiraz and Heron South deposits are refractory.

All Mineral Resources have been reported in accordance with the JORC Code (2012 Edition) guidelines. In SRK's opinion, the stated Mineral Resources are a reasonable representation of global grades and tonnages available and are suitable for valuation purposes.

8.8.8 Ore Reserves

No Ore Reserves have been reported or estimated at the Gum Creek project.

Table 8-3: Gum Creek Gold Project Mineral Resources as at 12 July 2019

Resource	Resource Date	Cut-off grade (g/t Au)	Mineralisation Type	Indicated		Inferred		Total		Contained Gold (oz)
				Tonnes	Au (g/t)	Tonnes	Au (g/t)	Tonnes	Au (g/t)	
Open Pit Resources										
Swan OC	May-19	0.5	Free Milling	80,000	8.8	880,000	6.8	960,000	7.0	216,000
Swift OC	May 19	0.5	Free Milling	100,000	5.0	740,000	7.5	840,000	7.2	195,000
Heron South	Aug-16	0.5	Refractory	1,140,000	2.2	2,000	1.3	1,140,000	2.2	80,000
Howards	Jul-13	0.4	Free Milling	5,250,000	1.1	720,000	1.0	5,970,000	1.1	204,000
Specimen Well	Aug-16	0.5	Free Milling			360,000	2.0	360,000	2.0	23,000
Toecter	Aug-16	0.5	Free Milling			690,000	1.5	690,000	1.5	34,000
Shiraz	Jul-13	0.4	Refractory	2,480,000	0.8	440,000	0.8	2,920,000	0.8	78,000
Underground Resources										
Swan UG	May-19	2.5	Free Milling	10,000	12.9	280,000	8.4	280,000	8.6	78,000
Swift UG	May-19	2.5	Free Milling			70,000	4.9	70,000	4.9	10,000
Kingfisher UG	Aug-16	3.5	Free Milling			390,000	6.1	390,000	6.1	77,000
Wilsons UG	Jul-13	1.0	Refractory	2,130,000	5.3	140,000	6.0	2,270,000	5.4	391,000
Total				**11,190,000**	**2.0**	**4,700,000**	**4.3**	**15,890,000**	**2.7**	**1,388,000**

Source: Horizon Gold Annual Report October 2019

8.8.9 Infrastructure

The majority of infrastructure at the Gum Creek project is located within 5 km of the existing Swan and Swift open pits and includes:

- Accommodation camp (currently capable of accommodating 50 people) which requires some refurbishment to support mining operations
- Gravel airstrip which has been maintained and recently been used for exploration activities
- Access roads from both the Great Northern Highway to the west and the Goldfield Highway to the east; there is also a Shire access road to Sandstone to the south of the project area
- TSF (with a rock capping) that would require an additional raise prior to use
- Workshop, stores, offices and buildings in varying conditions
- Carbon-in-leach processing plant designed for 500,000 tpa throughput; the plant is not in operation and would require significant refurbishment to return to operation.

8.9 Other considerations

8.9.1 Commodity prices

According to the Australian Government's Resources and Energy Quarterly (September 2019 Edition), the London Bullion Market Association (LBMA) gold price reached a 6-year high of US$1,547/oz on 3 September 2019 due to trade tensions between the US and China. The trade tensions pushed the Australian dollar to an 11-year low of US$0.67 on 2 September. The lower Australian dollar, in combination with higher US dollar gold price pushed the Australian dollar gold price to a record A$2,289/oz on 3 September 2019.

Gold is expected to perform well over the remainder of 2019 and 2020 as the market responds to the trade tensions and geopolitical problems. The Brexit uncertainty has risen following the United Kingdom Parliament's vote to block a 'no deal' Brexit on 4 September 2019. Civil unrest in Hong Kong

is ongoing and the stalled US and North Korea nuclear talks pose a risk to regional (east Asia) and global security. Further, the confrontation between the US and Iran has the potential to escalate. Other uncertainties include a change of government in Italy and the rapid plunge of the Argentine peso after the country's presidential election in August 2019. Reflecting these issues, the US gold price is forecast average US$1,390/oz in 2019, with the Australian gold price forecast to be A$1,980/oz.

The global economy faces a higher recessionary risk as signalled by the inverted yield curve. A correction in global equity markets could potentially result in a flow of funds into gold. Central banks' gold purchases are likely to support gold prices over the next few years, with a forecast increase of 11% in 2019, to 732 tonnes. Purchases are expected to stay above 700 tonnes in 2020. As gold faces higher demand as a safe haven asset, gold prices are expected to lift to an average US$1,470/oz in 2020, before falling to an average US$1,450/oz in 2021. The Australian gold price is forecast to average A$2,040/oz in 2020, before falling to an average of A$1,960/oz in 2021

8.9.1 Previous valuations

The VALMIN Code (2015) requires that practitioners should refer to other recent Valuations or Expert Reports undertaken on the mineral projects being assessed.

SRK is not aware of any publicly disclosed valuations for the Gum Creek project.

In 2018, CSA Global, an independent mining consultancy, completed a valuation for impairment testing purposes by Horizon's auditors with a valuation date of 30 June 2018.

Table 8-4: CSA's Valuation summary of the Gum Creek project as at 30 June 2018

Mineral Asset	Equity (%)	Valuation (A$M)		
		Low	Preferred	High
Mineral Resources	100	10.8	15.4	20.0
Exploration Targets	100	1.0	1.9	2.9
Surrounding Tenure	100	1.3	3.5	5.7
Total	**100**	**13.0**	**20.8**	**28.6**
The valuation has been compiled to an appropriate level of precision, values may not add up due to rounding				

Source: CSA 2018

Since 30 June 2018, there have been minor increases in the declared Mineral Resources at the Gum Creek project. These increases are a result of additional exploration principally at Butcherbird and Premium Lode Shear, which were previously reported as Exploration Targets. These Exploration Targets have both been converted into Mineral Resources and included as part of the Swan and Swift Mineral Resource update in June 2019. The total contained gold ounces valued by CSA in 2018 were 1.25 Moz; the total contained ounces for valuation in 2019 are 1.39 Moz.

SRK notes that at the time of CSA's valuation, the gold price was A$1,691.53/oz compared to the current gold price of A$2,201.71/oz. In SRK's opinion the increase in gold price and subsequently market value of gold assets as a result of improved market sentiment is responsible for the increased value attributed by the current valuation. In preparing this Report, SRK has considered CSA's valuation, where applicable.

8.9.2 Previous transactions

As outlined further below, the Gum Creek project was acquired by PanGold in two separate transactions from Apex Minerals Limited (Apex).

Acquisition of Gidgee Gold Project

On 31 January 2011, PanGold announced the acquisition of a 100% interest in the Gidgee gold project (excluding tenement M 53/153 which covered the Wilsons refractory gold deposit) from Apex for A$15.5M in cash. At the time of the transaction, the Gidgee project contained a reported Mineral Resource of 310,000 oz in the Measured (9 koz), Indicated (155 koz) and Inferred (145 koz) Mineral Resource categories. The implied transaction multiple form this transaction is A$49.98/oz (raw) or A$69.31/oz (normalised).

Acquisition of Wilsons Gold Project

On 23 May 2012, PanGold announced the acquisition of a 100% interest in the Wilsons project from Apex for A$8M in cash. At the time of the transaction, the Wilsons project contained a reported Mineral Resource of 325,000 oz in the Indicated (215 koz) and Inferred (110 koz) Mineral Resource categories. The implied transaction multiple was A$24.65/oz (raw) or A$34.00/oz (normalised).

9 Valuation of Gum Creek Project

9.1 Valuation basis

In estimating the value of the Gum Creek project as at the Valuation Date, SRK has considered various valuation methods within the context of the VALMIN Code (2015). SRK has considered the Mineral Resources as well as the prospectivity outside of these resource areas. SRK's valuation basis is presented in Table 9-1.

Table 9-1: Valuation basis of the Gum Creek Project

Deposit or Prospect	Development Stage	Description	Valuation basis
Swan, Swan North, Swift	Pre-Development	Mineral Resources, with Scoping Studies underway held under Mining Leases	Market: Comparable Transactions (resource multiples) Market: Yardstick
Wilsons, Toedter, Specimen Well, Shiraz, Kingfisher, Heron South, Howards	Advanced Exploration to Pre-Development	Mineral Resources, held under Mining Leases	Market: Comparable Transactions (resource multiples) Cost: Geoscientific Rating
Altair, Mensa, Wahoo East	Advanced Exploration	Exploration Potential held under Mining Leases and Exploration Licences without Resources	Market: Comparable Transactions (area-based multiples) Cost: Geoscientific Rating

SRK notes that the Gum Creek project contains three granted Prospecting Licences, eight granted Exploration Licences and 19 Mining Leases. All of the reported Mieneral Resources are located within Mining Leases. For valuation of the remaining exploration potential outside of the Mineral Resources, SRK has excluded areas that contain Mineral Resources. As SRK was not provided with the surface extents of these resource areas, SRK has estimated the resource areas as a percentage of the tenure and deducted this from the total tenure areas.

9.2 Gum Creek project – deposits with Mineral Resources

9.2.1 Comparable market transactions

SRK reviewed transactions involving Western Australian gold projects occurring between October 2016 and November 2019. SRK identified 38 transactions for which sufficient information was available to calculate a resource multiple. SRK's analysis of the implied resource value multiples is based on the reported Mineral Resources described in Table 9-2 and Table 9-3.

The implied transaction multiple for resources is expressed in A$/oz; it is calculated from the transaction value (at the implied 100% acquisition cost) and the total contained resources of the project.

Importantly, while transaction multiples are widely used in valuation, they rely on the assumption that the reported Mineral Resources have been appropriately reported and can be taken at face value. As such, the method assumes that differences in reporting regimes, between different Competent Persons, resource classification, metal recovery and adopted cut-off grades (which may change between assets and/or companies) do not materially influence the implied multiple. The method implicitly assumes total recoverability of all metal tonnes/ ounces, as reliable and accurate data is generally not disclosed or available around the time of most transactions or for all companies. Importantly, SRK's implied value calculations are for the purposes of its valuation and do not attempt to estimate or reflect the metal likely to be recovered as required under the JORC Code (2012).

SRK notes that the dataset compiled by SRK for analysis occurs over a relatively recent period (2016 to 2019). The transaction multiples have been adjusted by normalising the multiples using the difference between the gold spot price at the time of the transaction and the gold price as at the Valuation Date. Both the raw and normalised values are presented, where adjustments have been made.

SRK notes that there is a clear relationship between the development stage of the assets which host defined Mineral Resources and their implied multiples with the average, median and weighted average values decreasing according to development stage. For example, when considering the weighted average normalised multiples only; projects in operation or construction imply normalised multiples of A$56.22/oz decreasing to A$27.74/oz for projects in care and maintenance through to pre-development, decreasing again to A$11.32/oz.

Table 9-2: Resource based transaction multiple analysis

	Resource Multiple – Raw (A$/oz Au)	Resource Multiple – Normalised (A$/oz Au)
All		
Minimum	0.87	1.22
Median	14.32	19.19
Average	38.80	49.22
Maximum	261.37	356.33
Weighted average	49.87	65.06
Projects in Operation or under Construction		
Minimum	13.50	18.52
Median	59.33	78.57
Average	112.16	149.62
Maximum	261.37	356.33
Weighted average	44.58	56.22
Projects in Care and Maintenance to Pre-Development		
Minimum	1.25	1.61
Median	11.24	15.26
Average	19.61	24.80
Maximum	67.46	82.18
Weighted average	22.61	27.74
Advanced Exploration		
Minimum	0.87	1.22
Median	5.89	7.57
Average	12.20	15.54
Maximum	54.67	67.78
Weighted average	8.68	11.32

Source: SRK analysis

Comparable transactions – Resource multiple valuation

Based on SRK's analysis, SRK has considered the defined Mineral Resources within the Gum Creek project by development stage. Based on the transactions available, SRK considers that the market would pay between A$15/oz Au and A$25/oz Au for the Gum Creek Mineral Resources at the Pre-Development stage based on the average and mean of the transaction analysis. SRK further

considers that the market would pay A$7.50/oz Au and A$15/oz Au for the Gum Creek Mineral Resources at the Advanced to Pre-Development stage based on the average and mean of the transaction analysis.

The implied values of the Gum Creek project on a comparable basis are provided in Table 9-3. SRK has valued the defined Mineral Resources at Swan, Swift and Wilsons (totalling 890,285 troy ounces in Mineral Resources) as pre-development assets. SRK considers the remaining Mineral Resources at the Shiraz, Howards, Specimen Well, Toedter, Kingfisher and Heron South projects (totalling 497,551 troy ounces in Mineral Resources) to be best presented as Advanced to Pre-Development assets.

Table 9-3: Valuation of the Gum Creek Resources – comparable transaction methods

Development Stage	Valuation Methodology	Contained mineral content (troy oz)	Multiple Low (A$/oz)	Multiple High (A$/oz)	Multiple Preferred (A$/oz)	Low (A$ M)	High (A$ M)	Preferred (A$ M)
Pre-Development	Comparable sales (A$/oz Au)	890,285	15.0	25.0	20.0	13.4	22.3	17.8
Advanced Exploration to Pre-Development	Comparable Sales (A$/oz Au)	497,551	7.50	15.0	12.50	3.7	7.5	6.2
					Total	**17.1**	**29.8**	**24.0**

Note: Any discrepancy between tables is due to rounding.

Yardstick valuation

As a cross-check to the values implied by market multiples, SRK has also considered standard industry yardsticks. Under the Yardstick method of valuation, specified percentages of the spot price are used to assess the likely value.

Commonly used Yardstick factors are:

- Measured Resources - 2.0% to 5.0% of the spot price
- Indicated Resources - 1.0% to 2.0% of the spot price
- Inferred Resources - 0.5% to 1.0% of the spot price
- Exploration Target - 0.1% to 0.5% of the spot price.

SRK used the price as at 12 December 2019, being A$2,135/oz.

The implied values of the Gum Creek project on a Yardstick basis only are provided in Table 9-4. Mineral Resources are split by development category to facilitate comparison with the values derived from the comparable transactions method.

Table 9-4: Valuation of the Gum Creek project Mineral Resources – Yardstick method

	Yardstick Factor Low	Yardstick Factor High	Contained Au (troy ounces)	Value Low (A$M)	Value High (A$M)	Value Preferred (A$M)
Value by Category - Pre-Development Resources						
Measured	2.0%	5.0%	-	-	-	
Indicated	1.0%	2.0%	405,806	8.7	17.3	13.0
Inferred	0.5%	1.0%	484,479	5.2	10.3	7.8
Subtotal			**890,285**	**13.8**	**27.7**	**20.8**
Value by Category - Advanced Exploration to Pre-Development Resources						
Measured	2.0%	5.0%	-	-	-	
Indicated	1.0%	2.0%	330,091	7.0	14.1	10.6
Inferred	0.5%	1.0%	167,460	1.8	3.6	2.7
Subtotal			**497,551**	**8.8**	**17.7**	**13.3**
Total				**22.7**	**45.4**	**34.0**

Note: Any discrepancy between tables is due to rounding.

Gum Creek project Mineral Resources – Value summary

SRK has elected to adopt the values implied by the comparable sales method as the basis for the value of the Gum Creek project Mineral Resources, given the current market sentiment and availability of comparable transactions information. On this basis, SRK estimates the value of a 100% interest in the Gum Creek Mineral Resources lies in the range between A$17.1M and A$29.7M, with a preferred value of A$24.0M (Table 9-11).

Table 9-5: Summary valuation – Gum Creek project Mineral Resources

Method	Low (A$M)	High (A$M)	Preferred (A$M)
Comparable market transactions	17.1	29.7	24.0
Yardstick	22.68	45.4	34.0
Selected	17.1	29.7	24.0

9.2.2 Exploration Potential

Comparable transactions - Area multiple analysis

SRK has also reviewed transactions involving early to advanced stage Western Australian gold projects (i.e. without defined gold resources) occurring between September 2016 and November 2019. SRK identified 36 transactions (Appendix A-1) for which sufficient information was available to calculate an area multiple. SRK's analysis of the implied area value multiples based on the reported areal extent of mineral tenure as described in Table 9-6.

The area-based transaction multiple is expressed in A$/km²; it is calculated from the transaction value (at the implied 100% acquisition cost) and the total area of the project tenure acquired.

SRK has considered the dataset in terms of the type of tenure acquired, as highlighted in Table 9-6. There is a clear distinction in the implied price paid for Mining Leases, Exploration Licences and mixed tenure projects. For example, on a normalised basis and considering the weighted average only, Exploration Licences transacted for A$4,297.85/km², while Mining Leases transacted for A$210,270/km². Mixed tenure projects transacted in between, with an implied transaction multiple of A$34,603/km².

SRK notes there is also a clear relationship between the size of tenure acquired and the implied acquisition price per square kilometre. Mining Lease are generally smaller than Exploration Licences and are also generally more advanced and consequently generally attract higher purchase prices. However, the relationship also holds true when these datasets are reviewed exclusively from each other. This is logical because as exploration progresses an explorer relinquishes ground, retaining only the most prospective areas.

Table 9-6: Area-based transaction multiple analysis

	Area Multiple (A$/km²)	Normalised Area Multiple (A$/km²)
All		
Minimum	68.42	90.54
Median	3,603.60	4,009.32
Average	88,440.00	112,331.77
Maximum	1,455,479.45	1,910,047.30
Weighted average	11,169.62	13,109.02
Gold - Projects with only Exploration Licences		
Minimum	68.42	90.54
Median	2,622.83	3,242.33
Average	13,008.89	17,177.69
Maximum	107,142.86	150,010.49
Weighted average	3,467.28	4,297.85
Gold - Projects with only Mining Leases		
Minimum	15,644	21,464
Median	192,308	242,310
Average	601,928	775,945
Maximum	1,455,479	1,910,047
Weighted average	210,270	210,270
Gold - Projects with a mix of Prospecting Licences, Exploration Licences and Mining Leases		
Minimum	1,558	2,082
Median	10,571	12,877
Average	37,742	40,068
Maximum	186,113	184,778
Weighted average	34,603	34,603
Copper/ other – Projects with Exploration Licences		
Minimum	319	424
Median	1,536	2,040
Average	1,569	2,079
Maximum	2,884	3,810
Weighted average	1,744	1,744

Source: SRK analysis

Comparable transactions – Area multiple valuation

Based on SRK's transaction analysis, SRK considered the tenure held within the Gum Creek project according to its size and type. Based on the transactions available (after removing outliers; both low and high), SRK considers that the market would pay between A$20,000/km² and A$100,000/km² for the Mining Leases and A$1,000/km² and A$20,000/km² for the Exploration Licences at the Gum Creek project.

SRK's ranges for the tenure are based on the mixed tenure projects, which are more reflective of the Gum Creek project. In SRK's opinion, applying values based on the ranges indicated by either Exploration Licence or Mining Lease only does not reflect the large and coherent nature of the project tenure and its position relative to the surrounding Mineral Resources (which have been valued separately). SRK has further selected ranges for the Gum Creek tenure based on the size of the tenure and selected its preferred value based on the prospectivity of the tenement.

SRK has not been provided with information detailing the total area covered by the Mineral Resource areas (which have been valued separately). SRK has therefore had to estimate the area covered by the currently stated Mineral Resources. For very small Mining Leases containing Mineral Resources, this has resulted in little or no remaining area; consequently, these have been assigned no value on an area basis.

The implied values of a 100% interest in the Exploration Potential associated with the Gum Creek project using the comparable transaction method are provided in Table 9-7.

Table 9-7: Gum Creek project – Exploration Valuation – comparable transaction method

Tenement	Prospect or deposit	Area (km²)	Area valued (km²)	Multiple Low	Multiple High	Multiple Preferred	Low (A$ M)	High (A$ M)	Preferred (A$ M)
P 57/1304	-	0.48	0.48	20,000	50,000	30,000	0.01	0.02	0.01
P 53/1582	-	0.60	0.60	20,000	50,000	30,000	0.01	0.03	0.02
P 53/1577	-	0.05	0.05	20,000	50,000	30,000	0.00	0.00	0.00
E 57/1105	-	70.31	70.31	2,500	7,500	5,000	0.18	0.53	0.35
E 51/1844	-	61.25	61.25	2,500	7,500	5,000	0.15	0.46	0.31
E 57/1104	Toedter West	36.52	36.52	5,000	10,000	7,500	0.18	0.37	0.27
E 57/1093	-	59.69	59.69	2,500	7,500	5,000	0.15	0.45	0.30
E 53/1955	-	82.33	82.33	2,500	7,500	5,000	0.21	0.62	0.41
E 51/1538	Altair, Mensa	104.32	104.32	2,500	7,500	7,000	0.26	0.78	0.73
E 57/1100	-	15.25	15.25	5,000	10,000	9,000	0.08	0.15	0.14
E 53/1725	-	88.86	88.86	2,500	7,500	7,000	0.22	0.67	0.62
M 51/458	-	6.20	6.20	50,000	100,000	75,000	0.31	0.62	0.46
M 53/10	-	0.10	0.10	50,000	100,000	75,000	0.00	0.01	0.01
M 53/988	-	5.12	5.12	50,000	100,000	75,000	0.26	0.51	0.38
M 53/153	Shiraz, Wilsons	9.17	1.83	50,000	100,000	60,000	0.09	0.18	0.11
M 51/105	-	1.17	1.17	50,000	100,000	75,000	0.06	0.12	0.09
M 51/185	-	2.48	2.48	50,000	100,000	75,000	0.12	0.25	0.19
M 53/904	-	0.08	0.08	50,000	100,000	95,000	0.00	0.01	0.01
M 57/635	Howards	14.43	7.22	50,000	100,000	75,000	0.36	0.72	0.54
M 53/716	-	2.54	2.54	50,000	100,000	95,000	0.13	0.25	0.24
M 51/157	Specimen Well	0.93	-	50,000	100,000	95,000	-	-	-
M 53/11		0.10	0.10	50,000	100,000	75,000	0.00	0.01	0.01
M 57/634	Swan	48.10	38.48	25,000	50,000	45,000	0.96	1.92	1.73

Tenement	Prospect or deposit	Area (km²)	Area valued (km²)	Multiple Low	Multiple High	Multiple Preferred	Low (A$ M)	High (A$ M)	Preferred (A$ M)
	North, Swan, Swift, Kingfisher, Heron South								
M 53/251	-	1.70	1.70	50,000	100,000	85,000	0.09	0.17	0.14
M 51/290	-	0.05	0.05	50,000	100,000	95,000	0.00	0.00	0.00
M 53/105	-	5.66	5.66	50,000	100,000	75,000	0.28	0.57	0.42
M 51/186	PSI	3.65	3.65	50,000	100,000	85,000	0.18	0.36	0.31
M 51/104	-	0.37	0.37	50,000	100,000	95,000	0.02	0.04	0.03
M 51/410	Toedter	3.54	0.71	50,000	100,000	75,000	0.04	0.07	0.05
M 53/500	-	3.90	3.90	50,000	100,000	75,000	0.20	0.39	0.29
Total							**4.55**	**10.29**	**8.20**

Geoscientific Rating method

SRK has also used the Geoscientific Rating method as a secondary valuation method to estimate the Market Value of the exploration tenure and cross check the values implied by comparable sales methods. The Geoscientific Rating or modified Kilburn method of valuation attempts to quantify the relevant technical aspects of a property through appropriate multipliers (factors) applied to an appropriate base (or intrinsic) value and is considered to be a cost-based method of valuation. The intrinsic value is referred to as the Base Acquisition Cost (BAC), which represents the 'average cost to identify, apply for and retain a base unit of area of title' for 1 year.

Multipliers are considered for off-property aspects, on-property aspects, anomaly aspects, and geology aspects. These multipliers are applied sequentially to the BAC to estimate the Technical Value for each tenement. A further market factor is then considered to derive a Market Value. A BAC of A$800/km² has been assumed in this valuation, which incorporates annual rental, administration and application fees in addition to nominal indicative minimum expenditure on acquisition and costs of identification (Table 9-8).

Table 9-8: Base acquisition cost

Cost type	Cost	Cost per km²	Total cost (A$)
Application fee	356.00		356.00
Annual rent for Year 1		58.00	4,060.00
Minimal expenditure		300.00	21,000.00
Costs of identification	15,000.00		15,000.00
Legal costs and negotiations and compensation agreements	20,000.00		20,000.00
Security	5,000.00		5,000.00
		Total cost	**55,416.00**
		Estimated BAC (per km²)	**791.66**

Using the Geoscientific Rating method, SRK considers the market would pay between A$4.23M and A$11.62M, with a preferred value of A$7.92M for a 100% interest in the Exploration Potential outside of the currently defined Mineral Resources at the Gum Creek project.

In assigning its preferred values overall, SRK has selected the average or mid-point of the high and low as the preferred as it has no preference to either end of the range.

Table 9-9: Modified property rating criteria

Rating	Off-property factor	On-property factor	Geological factor	Anomaly factor
0.1			Unfavourable geological setting	No mineralisation identified – area sterilised
0.5	Unfavourable district/ basin	Unfavourable area	Poor geological setting	Extensive previous exploration provided poor results
0.9			Generally favourable geological setting, under cover or complexly deformed or metamorphosed	Poor results to date
1.0	No known mineralisation in district	No known mineralisation on lease	Generally favourable geological setting	No targets outlined
1.5	Minor workings	Minor workings or mineralised zones exposed		Target identified, initial indications positive
2.0	Several old workings in district	Several old workings or exploration targets identified	Multiple exploration models being applied simultaneously	
2.5			Well-defined exploration model applied to new areas	Significant grade intercepts evident but not linked on cross or long sections
3.0	Mine or abundant workings with significant previous production	Mine or abundant workings with significant previous production	Significant mineralised zones exposed in prospective host rock	
3.5				Several economic grade intercepts on adjacent sections
4.0	Along strike from a major deposit	Major mine with significant historical production	Well-understood exploration model, with valid targets in structurally complex area, or under cover	
5.0	Along strike for a world class deposit		Well-understood exploration model, with valid targets in well understood stratigraphy	
6.0			Advanced exploration model constrained by known and well-understood mineralisation	
10.0		World class mine		

Source: Modified after Xstract, 2009 and Agricola Mining Consultants, 2011.

Table 9-10: Geoscientific valuation scorecard – All Tenure (100% basis)

BAC = A$800/km², Market Factor = 1.0				Off-property		On-property		Anomaly		Geology		Technical value		Valuation (A$M)		
Tenement/ sub-block	Area (km²)	Proportion of area to be valued	BAC (A$/km²)	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Preferred
P 57/1304	0.48	100%	381	2	3	1.5	2	1.5	2	3	3.5	0.01	0.02	0.01	0.02	0.01
P 53/1582	0.60	100%	481	2	3	1.5	2	1.5	2	3	3.5	0.01	0.02	0.01	0.02	0.01
P 53/1577	0.05	100%	40	2	3	1.5	2	1.5	2	3	3.5	0.00	0.00	0.00	0.00	0.00
E 57/1105	70.31	100%	56,248	2	2.5	1.5	2	1.5	2	1.5	2	0.38	1.12	0.38	1.12	0.75
E 51/1844	61.25	100%	49,000	2	2.5	1.5	2	1.5	2	1.5	2	0.33	0.98	0.33	0.98	0.66
E 57/1104	36.52	100%	29,216	2	2.5	1.5	2	1.5	2	2	2.5	0.26	0.73	0.26	0.73	0.50
E 57/1093	59.69	100%	47,752	2	2.5	1.5	2	1.5	2	1.5	2	0.32	0.96	0.32	0.96	0.64
E 53/1955	82.33	100%	65,864	2	2.5	1.5	2	1.5	2	1.5	2	0.44	1.32	0.44	1.32	0.88
E 51/1538	104.32	100%	83,456	2	2.5	1.5	2	2	2.5	3	3.5	1.50	3.65	1.50	3.65	2.58
E 57/1100	15.25	100%	12,200	2	2.5	1.5	2	1.5	2	1.5	2	0.08	0.24	0.08	0.24	0.16
E 53/1725	88.86	100%	71,088	2	2.5	1.5	2	1.5	2	1.5	2	0.48	1.42	0.48	1.42	0.95
M 51/458	6.20	100%	4,959.60	2	2.5	2.5	3	1.5	2	1.5	2	0.06	0.15	0.06	0.15	0.10
M 53/10	0.10	100%	77.49	2	2.5	2.5	3	1.5	2	1.5	2	0.00	0.00	0.00	0.00	0.00
M 53/988	5.12	100%	4,092.40	2	2.5	2.5	3	1.5	2	1.5	2	0.05	0.12	0.05	0.12	0.08
M 53/153	9.17	20%	1,466.40	2	2.5	2.5	3.5	1.5	2	1.5	2	0.02	0.05	0.02	0.05	0.03
M 51/105	1.17	100%	938.80	2	2.5	2.5	3	1.5	2	1.5	2	0.01	0.03	0.01	0.03	0.02
M 51/185	2.48	100%	1,980.40	2	2.5	2.5	3	1.5	2	1.5	2	0.02	0.06	0.02	0.06	0.04
M 53/904	0.08	100%	66.57	2	2.5	2.5	3	1.5	2	1.5	2	0.00	0.00	0.00	0.00	0.00
M 57/635	14.43	50%	5,772.00	2	2.5	2.5	3	1.5	2	1.5	2	0.06	0.17	0.06	0.17	0.12
M 53/716	2.54	100%	2,032.80	2	2.5	2.5	3	1.5	2	1.5	2	0.02	0.06	0.02	0.06	0.04
M 51/157	0.93	0%	-	2	2.5	2.5	3	1.5	2	1.5	2	-	-	-	-	-
M 53/11	0.10	100%	77.50	2	2.5	2.5	3	1.5	2	1.5	2	0.00	0.00	0.00	0.00	0.00

BAC = A$800/km², Market Factor = 1.0				Off-property		On-property		Anomaly		Geology		Technical value		Valuation (A$M)		
Tenement/ sub-block	Area (km²)	Proportion of area to be valued	BAC (A$/km²)	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Preferred
M 57/634	48.10	80%	30,784.73	2	2.5	2.5	3.5	1.5	2	1.5	2	0.35	1.08	0.35	1.08	0.71
M 53/251	1.70	100%	1,363.60	2	2.5	2.5	3	1.5	2	1.5	2	0.02	0.04	0.02	0.04	0.03
M 51/290	0.05	100%	38.88	2	2.5	2.5	3	1.5	2	1.5	2	0.00	0.00	0.00	0.00	0.00
M 53/105	5.66	100%	4,530.00	2	2.5	2.5	3	1.5	2	1.5	2	0.05	0.14	0.05	0.14	0.09
M 51/186	3.65	100%	2,919.20	2	2.5	2.5	3	2	2.5	1.5	2	0.04	0.11	0.04	0.11	0.08
M 51/104	0.37	100%	294.44	2	2.5	2.5	3	1.5	2	1.5	2	0.00	0.01	0.00	0.01	0.01
M 51/410	3.54	20%	566.00	2	2.5	2.5	3	1.5	2	1.5	2	0.01	0.02	0.01	0.02	0.01
M 53/500	3.90	100%	3,121.20	2	2.5	2.5	3	1.5	2	1.5	2	0.04	0.09	0.04	0.09	0.06
													Total	**4.56**	**12.60**	8.58

Exploration Potential – Valuation summary

Overall, SRK has elected to use the values implied by the comparable sales method as its preferred values overall for the exploration potential outside of the defined Mineral Resource areas at the Gum Creek project, given the current market sentiment and availability of comparable transactions information. On this basis, SRK estimates the value of a 100% interest in the Exploration Potential outside of the defined Mineral Resources at the Gum Creek project to lie in the range between A$4.6M and A$10.3M, with a preferred estimate of A$8.2M (Table 9-11).

Table 9-11: Summary valuation – Gum Creek Exploration Potential

Method	Low (A$M)	High (A$M)	Preferred (A$M)
Comparable market transactions	4.6	10.3	8.2
Geoscientific rating	4.2	11.6	7.9
Selected	**4.6**	**10.3**	**8.2**

9.2.3 Valuation summary of the Gum Creek project

SRK considers that on a 100% basis the value of the Gum Creek project lies in the range between A$21.6M and A$40.1M, with a preferred estimate of A$28.4M (Table 9-12).

The market value of the Panoramic's 51% interest in the Gum Creek project is estimated to be in the range between A$11.0M and A$20.5M, with a preferred estimate of A$14.5M (Table 9-13).

Table 9-12: Summary valuation – Gum Creek project at 100% equity

Method	Low (A$M)	High (A$M)	Preferred (A$M)
Mineral Resources	17.1	29.7	24.0
Exploration Potential	4.6	10.3	8.2
Total	**21.7**	**40.0**	**30.9**

Table 9-13: Summary valuation – Gum Creek project at 51% equity

Method	Low (A$M)	High (A$M)	Preferred (A$M)
Mineral Resources	8.7	15.1	12.2
Exploration Potential	2.3	5.3	4.2
Total	**11.1**	**20.4**	**15.8**

10 Valuation Summary

Table 10-1 summarises SRK's market value assessment of the Panoramic and Horizon projects.

Table 10-1: Valuation summary

Stage	Equity basis	Low (A$M)	High (A$M)	Preferred (A$M)
Savannah residual resources (not considered in the Model)	100%	32.7	42.9	37.8
Copernicus	100%	2.8	3.2	3.0
Panton	100%	3.2	3.6	3.4
Gum Creek*	51%	12.0	27.7	19.8

Note: Any discrepancies between values in the table are due to rounding.
*Excludes the carrying book value of A$4.3M for plant and equipment noted in the Horizon Annual Report, 2019)

In assigning its valuation range and preferred value, SRK is mindful that the valuation range is also indicative of the uncertainty associated with mineral assets.

The range in value is driven by the confidence limits placed around the size and grade of mineralised occurrences assumed to occur within each project area. Typically, this means that as exploration progresses and a prospect moves from an early to advanced stage prospect, through Inferred, Indicated or Measured Resource categories to Reserve status, there is greater confidence around the likely size and quality of the contained resource and its potential to be extracted profitably.

Table 10-2 presents a general guide of the confidence in targets, resource and reserve estimates, and hence value, referred to in the mining industry.

Table 10-2: General guide regarding confidence for target and Resource/ Reserve estimates

Classification	Estimate range (90% confidence limit)
Proven/ Probable Reserves	±5 to 10%
Measured Resources	±10 to 20%
Indicated Resources	±30 to 50%
Inferred Resources	±50 to 100%
Exploration target	+100%

This level of uncertainty with advancing project stages is presented in Figure 10-1.

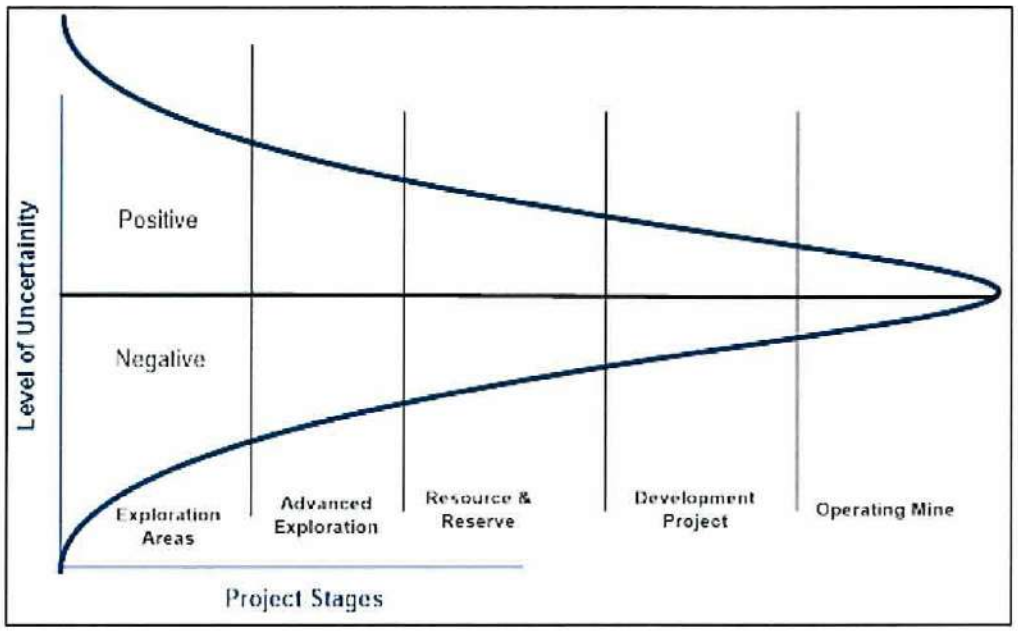


Figure 10-1: Uncertainty by advancing exploration stage

Estimated confidence of +/-60 to 100% or more are not uncommon for exploration areas and are within acceptable bounds, given the level of uncertainty associated with early stage exploration assets. By applying narrower confidence ranges, a greater degree of certainty regarding these assets is being implied than may be the case. Where possible, SRK has endeavoured to narrow its valuation range.

In defining its valuation range, SRK notes that there are always inherent risks involved when deriving any arm's length valuation. These factors can ultimately result in significant differences in valuations over time.

Compiled by

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Principal Consultant

Appendices

Appendix A: Comparable transactions

Table A-1: Comparable transactions with Mineral Resources

Project	Assets	Date	Vendor	Purchaser	Consideration (100% basis) (A$M)	Equity Acquired (%)	Resource (Mt)	Grade Au (g/t) (US$M)	Total Contained troy ounces (Au)	Resource Transaction Multiple (A$/tr oz)	Normalised Resource Transaction Multiple (A$/tr oz)
Sandstone project	Sandstone	Mar-16	Undisclosed sellers	Enterprise Uranium Limited	0.88	100%	14.52	1.52	0.71	1.24	1.64
Millrose project	Millrose	Feb-16	Riedel Resources Limited	Bowlane Nominees (WA) Ltd.	0.95	100%	4.00	2.40	0.31	3.08	4.03
Twin Hills project	Twin Hills	Dec-15	Golden Deeps Limited	Melrose Resources Pty Ltd.	0.05	100%	0.02	20.86	0.01	4.25	6.30
Albury Heath Project	Albury Heath Project	Dec-16	Undisclosed seller	Cervantes Corporation Ltd.	0.01	100%	0.15	2.44	0.01	0.87	1.22
Polar Bear and Norcott projects, together with the Eundynie joint venture	Polar Bear	Feb-18	S2 Resources Limited	Westgold Resources Limited	9.10	100%	6.42	1.71	0.35	25.82	33.65
Mayday North and North Kanowna Star project	Mayday, North Kanowna Star	Sep-19	Strategic Projects Mining Pty Ltd	Bardoc Gold Limited	1.38	100%	2.13	1.64	0.11	12.32	12.23
Murrin Murrin project	Murrin Murrin	Jul-16	Zeta Resources Limited	GME Resources Limited	3.00	50%	0.55	3.12	0.05	54.67	67.78
Trojan project	Trojan	Dec-16	Westgold Resources Limited	Overland Resources Limited	0.95	100%	2.79	1.61	0.14	6.57	9.21
Sandstone project	Sandstone	May-16	Black Oak Minerals Limited	Middle Island Resources Limited	2.50	100%	10.78	1.39	0.48	5.20	6.65
Mt Holland	Mt Holland	Mar-16	Convergent Minerals Limited	Kidman Resources Limited	3.50	100%	15.33	1.65	0.81	4.30	5.68

Project	Assets	Date	Vendor	Purchaser	Consideration (100% basis) (A$M)	Equity Acquired (%)	Resource (Mt)	Grade Au (g/t) (US$M)	Total Contained troy ounces (Au)	Resource Transaction Multiple (A$/tr oz)	Normalised Resource Transaction Multiple (A$/tr oz)
Break of Day and Lena deposits	Moyagee	Jul-17	Silver Lake Resources Limited	Musgrave Minerals Limited	7.50	20%	3.55	3.09	0.35	21.29	29.55
Klondyke gold project	Klondyke	Sep-16	Arcadia Minerals Pty Ltd	Keras Resources Plc	2.52	100%	5.60	2.08	0.37	6.73	8.48
Birthday Gift mine and associated Mining Lease M 15/161	Burbanks	Nov-17	Kidman Resources Limited	Barra Resources Limited	0.12	100%	0.51	5.74	0.10	1.27	1.67
MGK Resources Pty Ltd	Quinns & Mt Ida	Jul-16	MGK Resources Pty Ltd	Latitude Consolidated Ltd	0.64	100%	1.23	2.46	0.10	6.60	8.18
Lake Carey gold project	Lake Carey, Phantom Well, Wilga	Jul-16	Fortitude Gold Pty Ltd	Matsa Resources Limited	1.75	100%	6.29	1.90	0.38	4.56	5.65
Quinns & Mt Ida	Quinns & Mt Ida	Mar-16	Wild Acre Metals Limited	MGK Resources Pty Ltd	0.15	100%	1.23	2.46	0.10	1.55	2.04
Eureka Gold project	Eureka	Dec-17	Central Iron Ore Limited	Tyranna Resources Limited	3.05	100%	0.45	4.40	0.06	47.88	63.67
Tuckabianna assets	Murchison	Jun-17	Silver Lake Resources Limited	Big Bell Gold Operations Pty. Ltd	7.56	100%	7.97	2.03	0.52	14.54	19.19
King of the Hills gold mine	King of the Hills	Aug-17	Saracen Mineral Holdings Limited	Red 5 Limited	16.00	100%	2.71	4.63	0.40	39.68	53.91
Box Well and Deep South mining leases and 18 tenements	Deep South, Yundamindera	Apr-19	Hawthorn Resources Limited	Saracen Mineral Holdings Limited	13.50	100%	-	#DIV/0!	0.20	67.46	82.18
Gnaweeda project	Gnaweeda	Apr-16	Chalice Gold Mines Limited	Doray Minerals Limited	2.99	12%	4.60	1.80	0.27	11.24	15.26

Project	Assets	Date	Vendor	Purchaser	Consideration (100% basis) (A$M)	Equity Acquired (%)	Resource (Mt)	Grade Au (g/t) (US$M)	Total Contained troy ounces (Au)	Resource Transaction Multiple (A$/tr oz)	Normalised Resource Transaction Multiple (A$/tr oz)
Zelica project	Zelica	Nov-18	Anova Metals Limited	Matsa Resources Limited	0.15	100%	0.57	1.62	0.03	5.00	6.53
Plutonic Dome project	Plutonic Dome	May-16	Dampier Gold Limited	Vango Mining Limited	5.50	40%	8.28	3.20	0.85	6.47	8.27
Dalgaranga project	Dalgaranga	Dec-16	Private Investor - Jaime McDowell	Gascoyne Resources Limited	45.05	20%	25.50	1.36	1.12	40.31	56.44
Penny's Find tenements	Penny's Find	Mar-19	Empire Resources Limited	Orminex Limited	0.60	100%	0.25	7.05	0.06	10.68	12.80
Menzies and Goongarrie projects	Goongarrie, Goongarrie Lady, Menzies	Jul-19	Horizon Minerals Limited	Kingwest Resources Limited	8.00	100%	2.42	2.20	0.17	46.75	50.90
Comet gold project	Comet	Nov-15	Silver Lake Resources Limited	Metals X Limited	3.00	100%	3.80	2.89	0.35	8.50	12.30
Trojan project	Trojan	Mar-18	Westgold Resources Limited	Aruma Resources Limited	0.18	100%	2.79	1.61	0.14	1.25	1.61
Red October project	Red October	Sep-17	Saracen Mineral Holdings Limited	Matsa Resources Limited	2.00	100%	0.45	6.92	0.10	20.14	26.91
Western Tanami project	Western Tanami	Oct-17	Tanami Gold NL	Northern Star (Tanami Gold) Pty Limited	4.00	100%	1.71	5.09	0.28	14.32	19.20
Coolgardie project	Coolgardie	Oct-19	Focus Minerals Limited	Horizon Minerals Limited	52.00	100%	27.31	2.42	2.12	24.47	24.47
K2 mine	Marymia	Jan-17	Vango Mining Limited	Dampier Gold Limited	6.00	50%	4.63	2.98	0.44	13.50	18.52

Project	Assets	Date	Vendor	Purchaser	Consideration (100% basis) (A$M)	Equity Acquired (%)	Resource (Mt)	Grade Au (g/t) (US$M)	Total Contained troy ounces (Au)	Resource Transaction Multiple (A$/tr oz)	Normalised Resource Transaction Multiple (A$/tr oz)
Higginsville Gold Operations	Higginsville	May-19	Westgold Resources Limited	RNC Minerals	50.00	100%	29.42	2.01	1.90	26.27	31.31
Plutonic gold mine	Plutonic	Aug-16	Northern Star Resources Limited	2525908 Ontario Inc.	66.20	100%	13.65	3.89	1.71	38.73	48.58
Halls Creek (Nicolsons) project	Halls Creek	May-16	Bulletin Resources Limited	Pantoro Limited	58.50	20%	1.07	6.52	0.22	261.37	334.44
Mining Lease M 24/943	Jackorite open pit	Jan-16	Private investor - Mr. Denzle Norbert Schorer	Excelsior Gold Limited	2.40	5%	0.12	2.50	0.01	253.15	356.33
Darlot mine	Darlot	Aug-17	Gold Fields Limited	Red 5 Limited	18.50	100%	1.20	6.00	0.23	79.92	108.56
Gruyere project	Yamarna	Nov-16	Gold Road Resources Limited	Gold Fields Limited	700.00	50%	153.64	1.34	6.60	106.02	142.27
Package of gold tenements	Duketon, Duketon - Gold	Aug-19	Duketon Mining Limited	Regis Resources Limited	20.00	100%	1.90	1.50	0.09	218.27	216.89

Table A-2: Comparable transactions on an area basis

Project	Assets	Date	Vendor	Purchaser	Consideration (100% basis) (A$M)	Equity Acquired (%)	Area (km²)	Area Multiple (A$/km²)	Normalised Area Multiple (A$/km²)
Abbotts project	Abbotts	Oct-18	Doray Minerals Limited	Thundelarra Limited	0.18	100%	450.00	391.11	503.37
Goongarrie project	Goongarrie	Feb-16	Investor group	Intermin Resources Limited	0.04	100%	10.00	4,200.00	5,493.61
E 59/2237 and E 59/2249	0	Mar-19	Beau Resources Pty Limited	Blaze International Limited	0.13	100%	65.07	1,997.85	2,394.15
E 59/2310 and E 59/2309	0	Mar-19	Iron Clad Prospecting Pty Limited	Blaze International Limited	0.14	100%	132.25	1,058.60	1,268.59
Two Exploration Licences	0	Feb-18	Alloy Resources Limited	Riversgold Limited	0.21	70%	321.57	639.72	833.72
Sentinel Project	0	Feb-18	Crosspick Resources Pty Ltd	Fin Resources Limited	0.10	51%	44.00	2,228.16	2,903.87
Three tenements	0	Sep-18	Newmont Mining Corporation	Nexus Minerals Limited	0.01	100%	190.00	68.42	90.54
Paynes Find project	Paynes Find	Dec-16	European Lithium Limited	Cervantes Corporation Ltd	0.75	100%	7.00	107,142.86	150,010.49
Yuinmery project	0	Aug-19	Legend Resources Pty Ltd.	Golden Mile Resources Limited	0.10	100%	66.00	1,439.39	1,430.28
Lake Rebecca project	0	Jul-19	Matsa Resources Limited	Bulletin Resources Limited	0.16	80%	172.00	908.43	989.13
Kirkalocka project	0	May-18	Bar None Exploration Pty Limited	Blaze International Limited	0.10	100%	33.14	3,017.50	3,835.19
Whiteheads project	Whiteheads	Aug-19	Zebina Minerals Proprietary Limited	Great Boulder Resources Limited	0.67	75%	185.00	3,603.60	3,580.79
E 37/1259 & E 37/1270	0	Nov-17	Undisclosed seller	NTM Gold Limited	0.12	100%	18.08	6,637.17	8,692.03
Fourteen licences	0	Nov-19	Chalice Gold Mines Limited	Golden Mile Resources Limited	0.20	100%	455.85	427.77	427.77

Project	Assets	Date	Vendor	Purchaser	Consideration (100% basis) (A$M)	Equity Acquired (%)	Area (km²)	Area Multiple (A$/km²)	Normalised Area Multiple (A$/km²)
Bronzewing South project	Bronzewing South	Mar-19	Investor group	Hammer Metals Limited	0.55	100%	111.00	4,954.95	5,937.85
E 77/2313	0	Oct-18	Bar None Exploration Pty Ltd	Marindi Metals Limited	0.58	100%	14.48	39,709.94	51,108.20
Bulgera project	Bulgera	Jul-19	Accelerate Resources Limited	Norwest Minerals Limited	0.22	100%	36.80	5,978.26	6,509.34
Hong Kong project	0	Oct-18	Sagon Resources Limited	Pacton Gold Inc.	2.64	70%	40.15	65,824.59	84,718.74
E25/526	Slate Dam	Apr-18	Rare Earth Contracting Pty Limited	Aruma Resources Limited	0.06	100%	19.00	3,157.89	4,009.32
Two tenements	Warrawoona	Mar-18	Gardner Mining Pty Ltd	Keras (Pilbara) Gold Pty Limited	0.08	100%	44.72	1,721.82	2,223.25
Cutler gold prospect	0	Feb-18	Westex Resources Pty Ltd.	Riversgold Limited	0.11	100%	14.70	7,687.07	10,018.24
South Big Bell project	0	Feb-18	Neon Space Pty Ltd	Fin Resources Limited	0.10	51%	49.67	1,973.81	2,572.38
South Yamarna Project	South Yamarna	Feb-18	Sumitomo Metal Mining Company Limited	Gold Road Resources Limited	14.00	50%	2,467.00	5,674.91	7,395.87
Credo Well project	Zuleika	Oct-19	Torian Resources Ltd	Dampier Gold Ltd.	1.00	50%	17.00	58,823.53	58,823.53
Leonora Project	0	Apr-19	CoxsRocks Pty Ltd	Blaze International Limited	0.25	100%	23.65	10,570.82	12,877.43
Lake Lefroy tenements	Lefroy	Jun-18	Lefroy Exploration Limited	St. Ives Gold Mining Company Pty Ltd.	19.61	51%	372.00	52,709.26	67,845.95
Cue Project	Cue Goldfield	Sep-17	Western Mining Pty Ltd	Cue Consolidated Mining Pty Ltd	0.72	100%	462.00	1,558.44	2,081.57
Bardoc project	Bardoc	May-19	Torian Resources Limited	Bardoc Gold Limited	0.15	100%	49.00	3,061.22	3,648.51
Bulong project	Bulong	Jan-18	Bulong Mining Pty Ltd	Black Cat Syndicate Limited	0.75	100%	81.80	9,168.70	12,032.23

Project	Assets	Date	Vendor	Purchaser	Consideration (100% basis) (A$M)	Equity Acquired (%)	Area (km²)	Area Multiple (A$/km²)	Normalised Area Multiple (A$/km²)
Zuleika project	Zuleika	Oct-19	Torian Resources Ltd	Dampier Gold Ltd.	3.33	30%	222.00	15,015.02	15,015.02
Cue Project JV	Lake Austin/ Cue JV	Sep-19	Musgrave Minerals Limited	Evolution Mining Limited	26.00	75%	139.70	186,113.10	184,777.86
Kalgoorlie - Menzies projects	Baden Powell, Bullabulling, Goongarrie Lady, Windanya	Mar-16	Metaliko Resources Limited	Intermin Resources Limited	0.38	100%	141.00	2,659.57	3,513.95
Mt Lucky project	Mon Ami	Jan-18	Valleybrook Investments Pty Ltd	Forte Consolidated Limited	0.85	100%	0.58	1455479.452	1,910,047.30
M29/410 tenement	Menzies	Jan-17	Undisclosed seller	Intermin Resources Limited	0.17	30%	10.65	15,644.31	21,464.33
Klondyke gold project	Haoma	Sep-16	Arcadia Minerals Pty Ltd	Keras Resources Plc	1.25	100%	6.50	192,307.69	242,310.31
Mulwarrie project	Mulwarrie	May-18	Goldfield Argonaut Pty Ltd	Spitfire Materials Limited	2.24	49%	1.80	1,249,456.20	1,588,036.77
Currans Find and Pinchers mining leases	Youanmi	Apr-19	Murchison Earthmoving & Rehabilitation Pty Ltd	Investor group	0.34	90%	3.56	96,754.06	117,866.24
Exploration Licences	Murchison	Jul-17	Zelda Therapeutics Pty Ltd	Enterprise Metals Limited	0.11	100%	87.00	1,252.87	1,738.73
Thundelarra project	0	Dec-17	Investor group	Blaze International Limited	0.02	100%	47.00	319.15	424.39
EL 45/4807	0	Jun-18	Alloy Resources Limited	Rio Tinto Exploration Proprietary Limited	0.77	70%	424.02	1,819.32	2,341.78
Doolgunna project	0	Mar-16	TasEx Geological Services Pty Ltd	DGO Gold Limited	0.20	51%	68.00	2,883.51	3,809.82

SRK Report Client Distribution Record

Project Number: PAN012

Report Title: Independent Specialist Report on the Mineral Assets of Panoramic Resources Limited

Date Issued: 22 December 2019

Name	Company
Victor Rajasooriar	Panoramic Resources Limited
Jason Hughes	KPMG Financial Advisory Services (Australia) Pty Ltd

Rev No.	Date	Revised By	Revision Details
1	20/12/2019	Karen Lloyd	Draft Report to KPMG
1 – PAN	20/12/2019	Karen Lloyd	Redacted Draft Report to Panoramic (factual accuracy check)
2	21/12/2019	Karen Lloyd	Final Report
3	22/12/2019	Karen Lloyd	Updated Final Report

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1	20/12/2019	K Lloyd	Updated Draft Report
1-PAN	20/12/2019	K Lloyd	Updated Draft Report – Redacted Valuation
1a	21/12/2019	K Lloyd	Client Edits after factual accuracy check and
2	21/12/2019	K Lloyd	Final Report
3	22/12/2019	K Lloyd	Scheme Report

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- the services KPMG Corporate Finance and its Authorised Representatives are authorised to provide
- how KPMG Corporate Finance and its Authorised Representatives are paid
- any relevant associations or relationships of KPMG Corporate Finance and its Authorised Representatives
- how complaints are dealt with as well as information about internal and external dispute resolution systems and how you can access them; and the compensation arrangements that KPMG Corporate Finance has in place.

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- securities;
- superannuation;
- carbon units;
- Australian carbon credit units; and
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Address: Australian Financial Complaints Authority Limited, GPO Box 3, Melbourne Victoria 3001
Telephone: 1300 56 55 62
Facsimile: (03) 9613 6399
Email: info@afca.org.au.

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PJD-11

Are there terranes within the Lamboo Complex of the Halls Creek Orogen?

by I. M. Tyler, T. J. Griffin, R. W. Page[1], and R. D. Shaw[1]

Abstract

The Early Proterozoic rocks of the Lamboo Complex of the Halls Creek Orogen can be divided into three zones that are interpreted as separate terranes. The trend of the zone boundaries is interpreted to have been originally to the northwest, and these zone boundaries are thought to have controlled the development of younger fault systems.

The western zone has much in common with the Hooper Complex of the King Leopold Orogen in that it is dominated by 1860–1850 Ma felsic volcanic rocks and associated granitoids that have been intruded into metasedimentary rocks and mafic sills that are between 1870 and 1860 Ma old. The central zone is dominated by the low- to high-grade mafic and metasedimentary rocks of the Tickalara Metamorphics. These were intruded by granitoid sheets at c. 1860 Ma, before being deformed and metamorphosed at c. 1855 Ma. This was followed closely by the intrusion of layered mafic–ultramafic bodies. Felsic volcanic rocks were erupted at c. 1840 Ma. The eastern zone is dominated by the mafic volcanic and metasedimentary rocks of the Halls Creek Group, the upper part of which was still being deposited at c. 1855 Ma. All three zones were intruded by c. 1820 Ma granitoids and gabbroic rocks.

The presence of tectonostratigraphic terranes and the different geophysical nature of the basement on either side of the Halls Creek Orogen are consistent with the operation of plate tectonics during the Early Proterozoic development of northern Australia.

KEYWORDS: Halls Creek Orogen, Lamboo Complex, Proterozoic, terrane analysis, plate tectonics.

The Halls Creek Orogen developed initially during the Early Proterozoic (Page, 1976, 1988) between a postulated Kimberley Craton, underlying the Kimberley Basin to the northwest, and a composite craton that included Archaean rocks within the Pine Creek Geosyncline and possibly within the Granites–Tanami Inlier. Most of this composite craton is now overlain by Middle Proterozoic, Late Proterozoic, and Palaeozoic basins (Fig. 1). The different nature of these two cratons is evident in geophysical data used to produce a basement-elements map of Australia (Shaw et al., 1994). The rocks which were formed during the Early Proterozoic orogenic event are exposed in the Lamboo Complex (Griffin and Grey, 1990), and consist of deformed and metamorphosed plutonic and volcanic igneous rocks and sedimentary rocks.

Hancock and Rutland (1984) put forward a tectonic model for the evolution of Early Proterozoic rocks in the east and west Kimberley in which they identified a style of orogeny that they regarded as distinct from that which typifies Phanerozoic orogenic belts. Rather than being the products of a complete plate-tectonic 'Wilson Cycle' involving the subduction of oceanic crust, the King Leopold and Halls Creek Orogens were regarded to be the result of initial extension where large areas of thinned Archaean crust were formed, followed by convergence. The Halls Creek Group, a sequence of metavolcanic and metasedimentary rocks, was thought to occur throughout both orogenic belts, and this was used as evidence that crustal separation did not take place. The thinned Archaean crust subsequently underwent limited A-subduction (Kröner, 1981, 1983) producing deformation, metamorphism, and igneous activity.

This model was modified by Etheridge et al. (1987) and extended throughout the Early Proterozoic of northern Australia. They envisaged a linked polygonal system of rifts, formed above a series of small-scale mantle-convection cells. Extension resulted from gravitational spreading of the hot, uplifted belts that had been thickened significantly by underplating. Subsequent thermal relaxation and flexural loading produced sag basins overlying the rift stage. Orogeny was driven by lithospheric delamination during cooling and sediment loading. This orogenic event was regarded as essentially synchronous throughout northern Australia between about 1880 and 1850 Ma (Page, 1988; Page and Williams, 1988; Wyborn, 1988), and was referred to as the Barramundi Orogeny.

[1] Australian Geological Survey Organisation

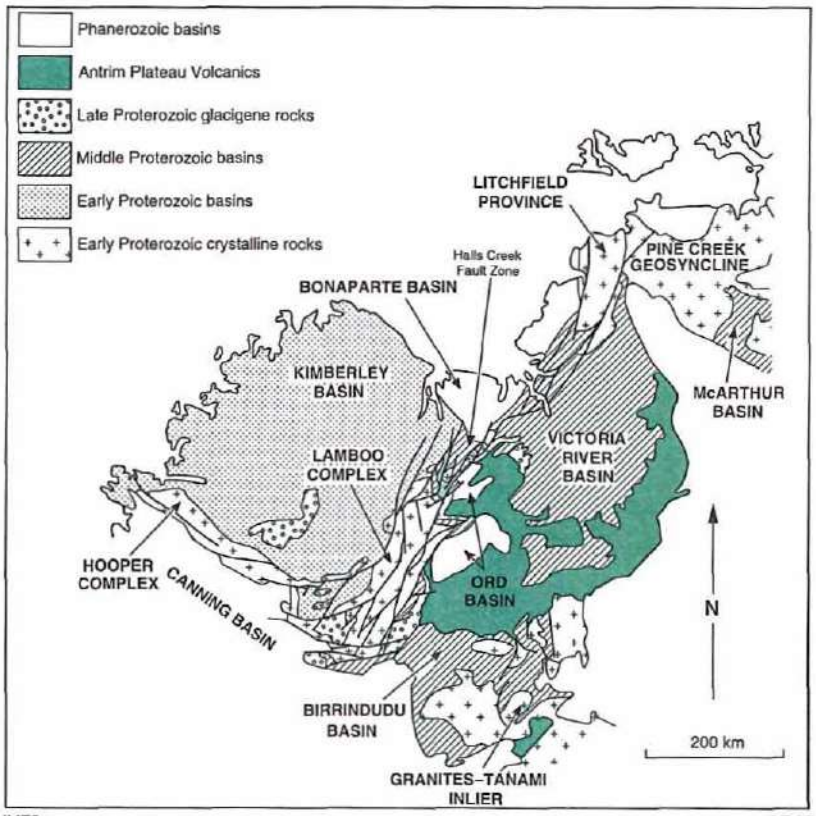


Figure 1. The main tectonic units of the Kimberley region

This intracratonic, essentially 'fixist', view of the Early Proterozoic evolution of Australia contrasts with the more dynamic views of workers on the Early Proterozoic of North America, Europe, and Africa. Recent models, such as those of Hoffman (1988, 1989, 1991) and Windley (1993), envisage the aggregation of Early to Middle Proterozoic continents by plate-tectonic processes similar to those operating in the present. Subsequent Middle and Late Proterozoic events involved the breakup of these continents, followed by the formation of a Late Proterozoic supercontinent (Hoffman, 1991; Dalziel, 1992). Myers (1993) has shown that the Precambrian history of southwest Australia can also be interpreted in a similar way.

Remapping of the King Leopold Orogen was commenced by the Geological Survey of Western Australia (GSWA) in 1986 (Griffin and Myers, 1988; Griffin, 1989; Tyler and Griffin, 1990, 1993; Griffin et al., 1993) and was subsequently extended into the Halls Creek Orogen in 1990. The GSWA Halls Creek Orogen Project is being carried out in conjunction with the Australian Geological Survey Organisation (AGSO) as part of the National Geoscience Mapping Accord Kimberley–Arunta Project (Blake et al., 1991; Griffin and Tyler, 1992a; Blake and Hoatson, 1993; Hoatson, 1993; Hoatson and Tyler, 1993; Griffin and Tyler, 1994; Tyler and Griffin, 1994; Page et al., in prep.). This remapping, together with geochronological, geochemical, petrological, and remote-sensing studies, has allowed reassessment of the tectonic evolution of the King Leopold and Halls Creek Orogens.

The terrane concept

A terrane is defined as 'a fault-bounded body of rock of regional extent, characterized by a geologic history different from that of contiguous terranes' (Bates and Jackson, 1987, p. 679). Discrete terranes have been recognized within the North American Cordillera along the margin between the oceanic Pacific and Juan de Fuca Plates, and the continental North American Plate (Coney et al., 1980). This led to its interpretation as a vast mosaic or collage of discrete allochthonous fragments of oceanic or continental crust that had been added to an active continental margin by accretion during subduction of the oceanic plates beneath the North American continent. Tectonostratigraphic terranes have also been recognized in other Phanerozoic orogenic belts (Hutton, 1987; Coney et al., 1990; Sengor et al., 1993), within Proterozoic orogenic belts (Kröner, 1985; Rivers et al., 1989; Park, 1991), and within the Archaean cratons (Card, 1990; de Witt et al., 1992; Myers, 1993), and in each case plate-tectonic processes have been invoked (Windley, 1993).

Hancock and Rutland (1984) divided the Halls Creek Orogen into four distinct zones, each with particular geological characteristics. Griffin and Tyler (1992a) subsequently reduced the number of zones to three, amalgamating zones II and III of Hancock and Rutland (1984). In this paper we also recognize three zones (Fig. 2), although the boundaries differ from those of the previous workers to take account of new data. The geological histories of these zones (Fig. 3), based on geochronological data and field relationships identified during remapping, can be compared to see whether the conclusions of Hancock and Rutland (1984) are upheld (that geological units, and deformation, metamorphism, and igneous events can be correlated between zones), or whether one or more of the zones actually constitute distinct tectonostratigraphic terranes with independent histories.

The eastern zone

The eastern zone is characterized by the low- to medium-grade meta-sedimentary and metavolcanic rocks of the Halls Creek Group. The oldest rocks within the zone, from which Sensitive High Resolution Ion Microprobe (SHRIMP) U–Pb ages of c. 1910 Ma have been obtained from zircons, are the bimodal volcanic rocks of the Ding Dong Downs Volcanics, and their associated high-

level granitoid intrusions (e.g. the Sophie Downs Granite). The Ding Dong Downs Volcanics were originally included within the Halls Creek Group (Dow and Gemuts, 1969), but the identification of an unconformity between the Sophie Downs Granite and the Saunders Creek Formation at the northern end of the Sophie Downs Dome (Griffin and Tyler, 1992a; Blake et al., in prep.) resulted in the redefinition of the Halls Creek Group by Griffin and Tyler (1992a) to exclude them.

The Halls Creek Group consists of three formations. The lowest unit is the Saunders Creek Formation, which is a thin fluvial sequence of cross-bedded sandstone and conglomerate. It overlies the Ding Dong Downs Volcanics and associated granitoids with minor angular discordance. The Biscay Formation consists of mafic volcanic rocks interbedded with minor felsic igneous rocks (with a SHRIMP U–Pb zircon age of c. 1880 Ma), and siliciclastic and calcareous metasedimentary rocks, and overlies the Saunders Creek Formation. The mafic volcanic rocks include massive and pillowed metabasaltic lava flows, together with fragmental, agglomeratic deposits, and fine-grained volcaniclastic deposits.

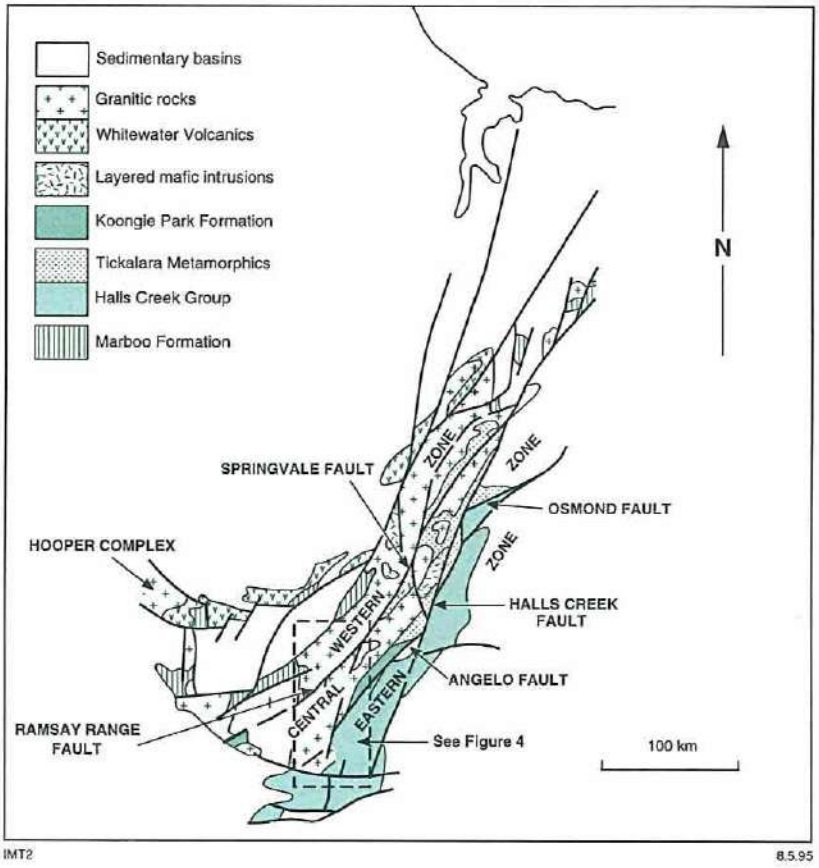


Figure 2. Map showing zones and zone boundaries within the Lamboo Complex of the Halls Creek Orogen

The Biscay Formation is overlain by the uppermost unit of the Halls Creek Group, the Olympio Formation, which consists of a monotonous sequence of turbiditic quartz wacke, greywacke, arkosic sandstone, and quartz sandstone, interbedded with siltstone and mudstone. Provenance and palaeocurrent data obtained by Hancock (1991) indicate that at least part of the unit was derived from a predominantly granitic source to the northwest. A distinctive alkaline volcanic unit, the Butchers Gully Member (Griffin and Tyler, 1992a), occurs in the lower part of the Olympio Formation. This consists of trachyandesite lavas and intrusions, together with associated volcaniclastic deposits (Esselmont, 1990). SHRIMP U–Pb ages on zircons from a mineralized unit at the base of the member give a date of c. 1870 Ma (Taylor et al., in prep.). Remapping to the north of the Sophie Downs Dome (Blake et al., in prep.; Warren and Tyler, in prep.) indicates that the conventional zircon U–Pb age of 1856 ± 5 Ma obtained by Page and Hancock (1988), from what they thought to be the Biscay Formation, actually corresponds to a lava flow within rocks similar to those of the Butchers Gully Member. SHRIMP ages give a similar result. The two ages indicate that the lower Olympio Formation was deposited between 1870 and 1855 Ma.

The Halls Creek Group has been intruded by the Woodward Dolerite, which consists of a number of relatively thin, massive metadolerite sills that are conformable with bedding.

The earliest deformation (D_1) in the eastern zone involved layer-parallel shearing, with the development of mylonitic rocks at the contact between the Saunders Creek Formation and underlying rocks. Warren (1994) described an area where parts of the upper Biscay Formation and lower Olympio Formation stratigraphy are missing, suggesting that this event was produced by extension. Shear criteria within the mylonites indicate that this extension was to the south. Thin phyllonitic zones occur along bedding planes within the Olympio Formation.

The second deformation (D_2) was pervasive, producing upright to moderately inclined folds at all scales, with horizontal to moderately plunging hinges. In the southern part of the zone, deformation was accompanied by medium-grade, low-pressure metamorphism.

To the southwest of Halls Creek the Mount Christine Monzogranite has been intruded into the Halls Creek Group. SHRIMP U–Pb ages from zircons indicate an intrusion age of c. 1810 Ma.

Deformed rocks of the Halls Creek Group are unconformably overlain by the Moola Bulla Formation, a

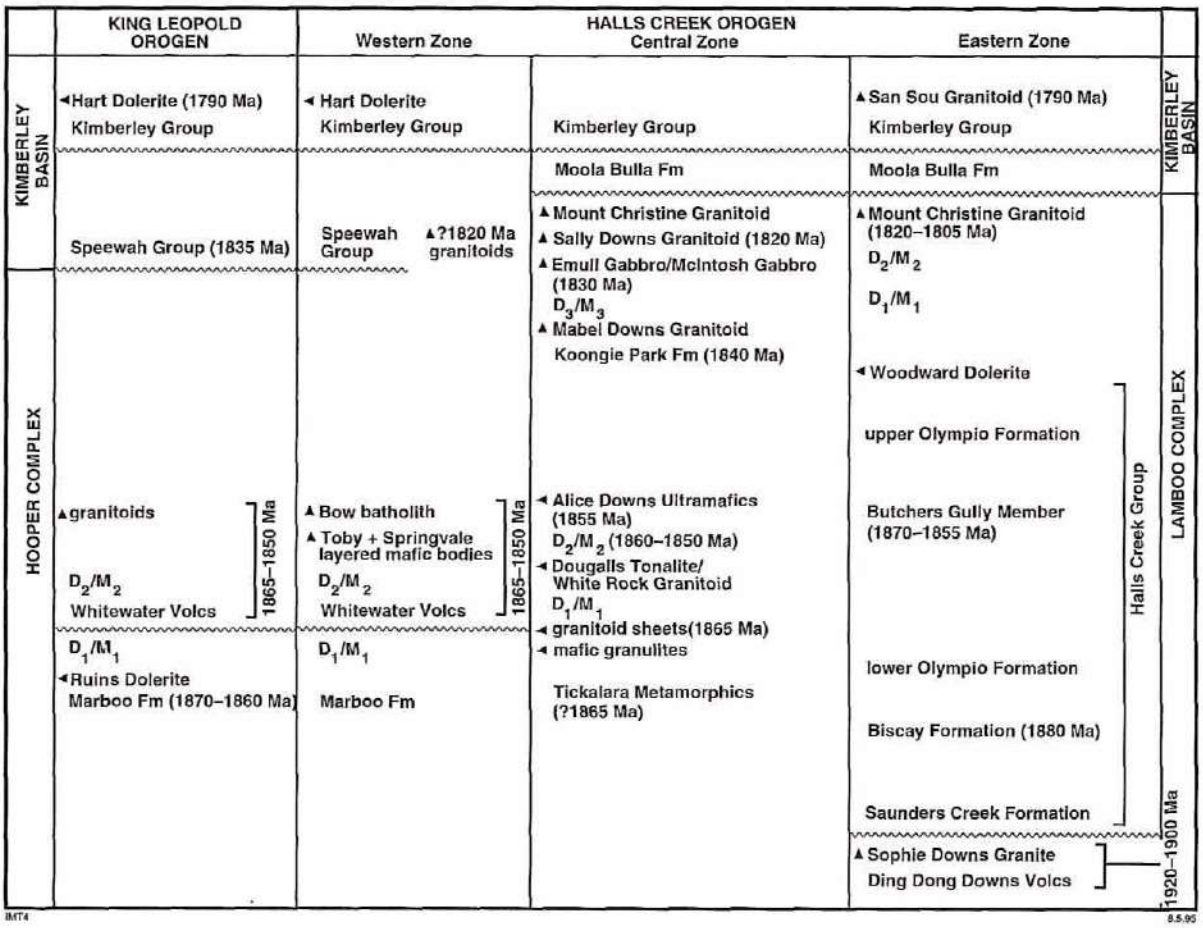


Figure 3. Comparative chart showing the geological histories of the Hooper Complex and zones within the Lamboo Complex

sequence of coarse clastic deposits of fluvial origin. The Moola Bulla Formation is itself overlain with minor angular discordance by the Kimberley Group, a sequence of fluvial and shallow-marine clastic deposits, and mafic volcanic rocks.

Towards the southern end of the eastern zone, the San Sou Monzogranite has been intruded into the Ding Dong Downs Volcanics and associated granitoids, as well as the Halls Creek Group. A SHRIMP U–Pb zircon age of c. 1790 Ma has been obtained from the San Sou Monzogranite.

The central zone

The boundary between the eastern zone and the central zone is taken as a combination of the Angelo Fault, the Halls Creek Fault, and the Osmond Fault (Fig. 2).

The oldest rocks in the central zone are the Tickalara Metamorphics, a deformed sequence of interbedded mafic volcanic rocks, and siliciclastic and calcareous sedimentary rocks, which have undergone low- to high-grade metamorphism. Metamorphic grade increases from southwest to northeast along the zone. In the lower grade areas the mafic volcanic rocks consist of massive, amygdaloidal, and pillowed basaltic lava flows, together with fragmental, agglomeratic deposits, and fine-grained volcaniclastic deposits. The sedimentary rocks consist of interbedded mudstones, siltstones, and sandstones, together with mappable carbonate and calc-silicate units.

The Tickalara Metamorphics have been intruded by a number of phases of both felsic and mafic magmas. Amphibolites and mafic granulites derived from intrusive rocks occur in the higher grade areas. Also present are layer-parallel sheets of granitoid that contain zircons which yield SHRIMP U–Pb ages of c. 1860 Ma. These units are affected by a strong layer-parallel fabric, which was produced during D_1. Although large-scale D_1 folds are not recognized, small-scale, layer-parallel D_1 isoclinal folds occur in the metasedimentary rocks. High-grade metamorphism (M_2) occurred synchronously with the second deformation (D_2), which produced tight to isoclinal, moderately inclined to recumbent folds on all scales. Extensive migmatization of the metasedimentary rocks and the early-formed granitoid sheets occurred during M_2. SHRIMP U–Pb zircon results are consistent with a conventional zircon U–Pb date of

1854 ± 6 Ma obtained by Page and Hancock (1988) from migmatitic rocks in the Tickalara Metamorphics, and this date is regarded as the age of peak metamorphism in the northeastern part of the central zone. Further granitoid sheets were intruded into the metamorphics during and after M_2.

A number of major layered mafic–ultramafic bodies (Groups 1 and 5 of Hoatson, 1993) were intruded into the deformed Tickalara Metamorphics. Contact aureoles around these intrusions post-date D_2 and M_2. A SHRIMP U–Pb zircon age of c. 1855 Ma obtained from an anorthosite within a Group 1 intrusion in the central part of the zone suggests that peak M_2 metamorphism may have been diachronous, occurring earlier in the southwest than the northeast.

The Koongie Park Formation (Griffin and Tyler, 1994), which is a sequence of felsic volcanic rocks and associated high-level intrusions, occurs in the southwestern part of the zone. A SHRIMP U–Pb zircon age of 1843 ± 2 Ma has been obtained from these rocks (Page et al., in prep.). To the northeast, felsic veins probably correspond to this felsic event, and intrude medium-grade rocks of the Tickalara Metamorphics deformed during D_2. Further to the northeast, the Mabel Downs Granodiorite forms a large, linear pluton that also post-dates D_2.

The Group 1 mafic–ultramafic intrusions are folded by tight to isoclinal, upright, moderately to steeply plunging D_3 folds. A well-developed foliation in the Mabel Downs Granodiorite is also attributed to D_3. These units have undergone medium-grade metamorphism, together with the felsic veins thought to correspond to the Koongie Park Formation. This metamorphic event (M_3) has also resulted in retrogression of the high-grade mineral assemblages in the Tickalara Metamorphics.

Extensive intrusion of granitoid rocks into the Tickalara Metamorphics and the Koongie Park Formation occurred throughout the central zone after D_3. Preliminary SHRIMP U–Pb zircon ages for these intrusions (which include the Mount Christine Monzogranite, the Sally Downs Tonalite, and the McHale Monzogranite) range from c. 1830 to 1805 Ma.

Large gabbroic and layered mafic–ultramafic bodies (Groups 2, 3a, and 4 of Hoatson, 1993) were also intruded at about this time. A SHRIMP U–Pb zircon age of c. 1830 Ma has been obtained from migmatitic rocks within a high-grade contact aureole developed at the margin of a Group 3a intrusion, and is interpreted as the age of the adjacent igneous body.

In the southwestern part of the zone, the Koongie Park Formation is unconformably overlain by the Moola Bulla Formation, whereas younger Kimberley Group rocks lie unconformably on rocks of the Koongie Park Formation and on granitoids. To the northeast of Halls Creek the Red Rock beds (Dow and Gemuts, 1969), the lower part of which are probably equivalent to the Moola Bulla Formation, unconformably overlie the Tickalara Metamorphics. The upper part of the Red Rock beds together with the Fish Hole Dolerite, are equivalent to the Kimberley Group (Griffin and Tyler, 1992a).

The western zone

The boundary between the central zone and the western zone is taken to be a combination of the Ramsay Range Fault, the Springvale Fault, and the northern part of the Halls Creek Fault.

The western zone shows many similarities with the geological history of the Hooper Complex in the King Leopold Orogen (Tyler and Griffin, 1990, 1993; Griffin et al., 1993). The oldest rocks in the Hooper Complex are those of the Marboo Formation, which is a sequence of turbiditic quartz wacke, siltstone, and mudstone, and similar rocks occur in the western zone of the Lamboo Complex. Provenance and palaeocurrent data presented by Hancock (1991) indicate that this unit was derived from a continental source to the north-northeast. A maximum age for the Marboo Formation may be indicated by the presence of a suite of ?detrital zircons which give SHRIMP U–Pb ages of c. 1870 Ma.

In the Halls Creek Orogen, the earliest deformation to affect these rocks in the western zone of the Lamboo Complex (D_1) produced large-scale recumbent folds. In the Hooper Complex, high-grade metamorphism of the Marboo Formation post-dates D_1 and occurred at c. 1860 Ma (based on SHRIMP U–Pb zircon ages from the Mount Joseph Migmatite), providing a minimum age for deposition.

The Marboo Formation is unconformably overlain by the felsic volcanic rocks and associated sedimentary rocks of the Whitewater Volcanics. Page and Hancock (1988) reported a conventional U–Pb zircon age of 1850 ± 5 Ma for this unit. A SHRIMP U–Pb zircon age of c. 1855 Ma has been obtained from the Whitewater Volcanics in the Hooper Complex. Both the Whitewater Volcanics and the Marboo Formation have been folded into upright D_2 folds with moderately plunging hinges, and have been intruded by extensive granitoid plutons. In the Hooper Complex, geochemical data indicate that the felsic volcanic rocks and the granitoids are co-magmatic (Griffin and Tyler, 1992b). SHRIMP U–Pb zircon ages from the granitoids cover a range from c. 1865 to 1850 Ma. In the western zone of the Lamboo Complex in the Halls Creek Orogen, preliminary SHRIMP U–Pb zircon ages are similar (c. 1860 to 1855 Ma).

Major layered mafic–ultramafic bodies (Group 3b of Hoatson, 1993) are associated with the c. 1860 Ma plutonic granitoids of the western zone of the Lamboo Complex and give similar SHRIMP U–Pb zircon ages. This is consistent with the broadly coeval intrusion of both felsic and mafic magma (Griffin and Tyler, 1992a; Blake and Hoatson, 1993).

As yet no c. 1820 Ma granitoids have been dated from the western zone, although they may be present (Figs 3 and 4).

The western zone of the Lamboo Complex is unconformably overlain by fluvial and shallow-marine deposits of the Speewah Group, which form the lower part of the Kimberley Basin sequence. A felsic volcanic unit from the Speewah Group has a SHRIMP U–Pb zircon age of 1834 ± 3 Ma. The Kimberley Group unconformably overlies the

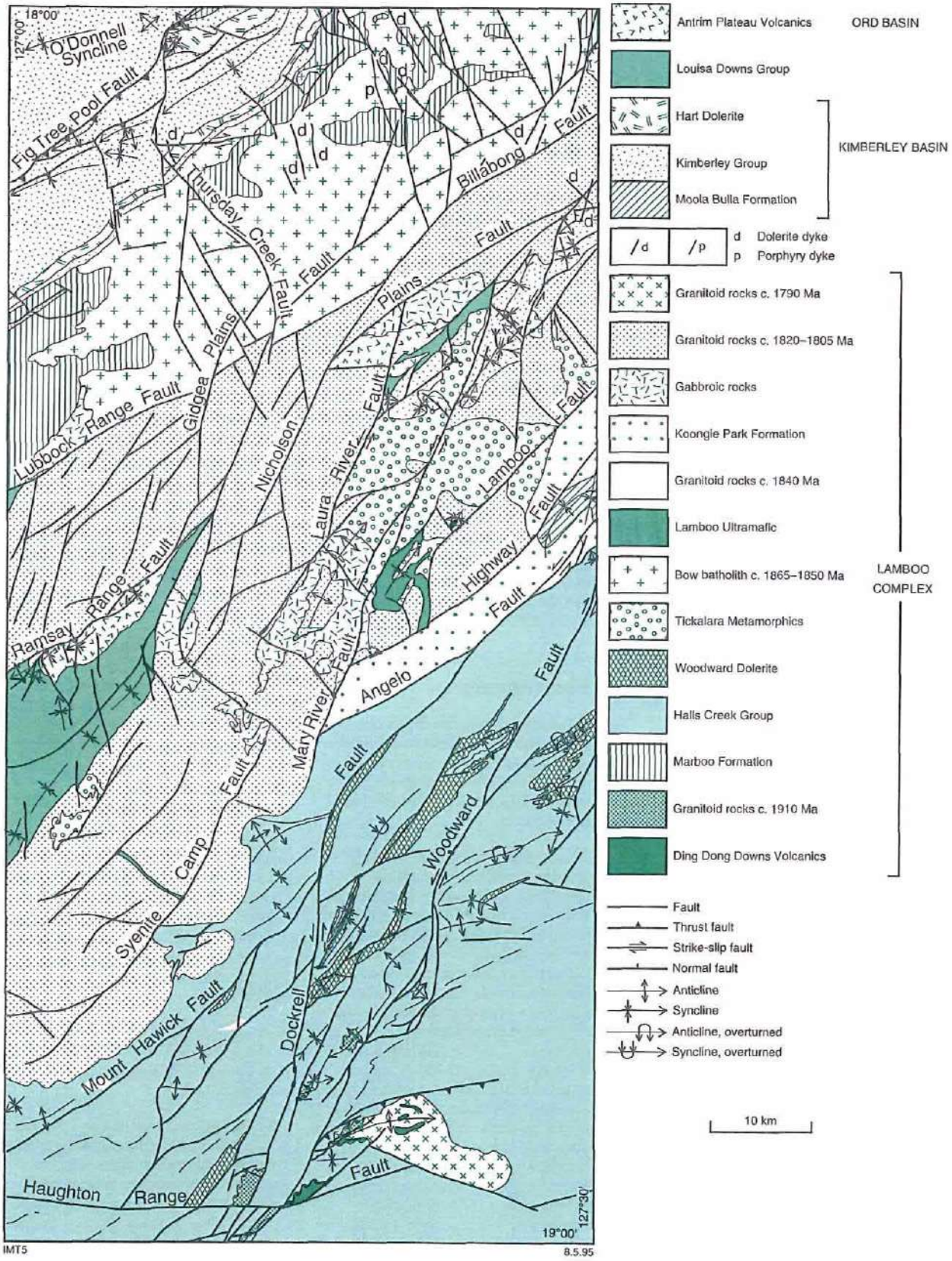


Figure 4. Tectonic sketch of ANGELO *and* DOCKRELL

Speewah Group with only minor angular discordance, and oversteps it onto the Lamboo Complex. The Kimberley Basin sequence is intruded by mafic sills, collectively called the Hart Dolerite, for which SHRIMP U–Pb-zircon ages of c. 1800 Ma have been obtained.

Reactivation of the zone boundaries

A striking feature of the Halls Creek Orogen is the pattern of steeply dipping, north-northwesterly to north-northeasterly trending sinistral faults and easterly to east-northeasterly trending dextral faults (Figs 2 and 4) that cut rocks which are as young as Devonian in age. This pattern can be interpreted as that produced by synthetic and antithetic faults developed during overall sinistral strike-slip movement, controlled by deep-seated, northeasterly trending structures (Wilcox et al., 1973). The faults that define the zone boundaries have a northeasterly trend that has been offset by the later north-northwesterly to north-northeasterly trending sinistral faults. The Halls Creek Fault and associated structures offset the Angelo and Osmond Faults by 90 km. The zone boundaries are interpreted to reflect deeper structures that originated in the Early Proterozoic and which have controlled Middle Proterozoic, and younger, deformations.

Middle Proterozoic deformation (regionally $D_{4/5}$) was initially ductile in nature, and took place under low- to medium-grade metamorphic conditions. This faulting affected rocks of the Kimberley Basin, and mylonites were developed in rocks in both the Halls Creek and Kimberley Groups along the Halls Creek Fault and its associated structures. Oblique, upright, tight folds with an axial-planar crenulation cleavage also developed. This cleavage affects pegmatite dykes that have preliminary SHRIMP U–Pb zircon ages of c. 1740 Ma. Close to the faults the folds become subparallel to them, suggesting a transpressive regime, possibly developed synchronously with the intracratonic, c. 1.3 to 1.0 Ga Yampi Orogeny in the King Leopold Orogen (Tyler and Griffin, 1990). Gold mineralization in the Halls Creek Orogen appears to be controlled initially by this fault system.

Younger, brittle reactivations of the fault zones, again as sinistral strike-slip structures but at low- to very low-grades (D_6 and D_7), affected Late Proterozoic and Cambrian rocks. These reactivated structures are characterized by extensive, locally gold-bearing, quartz veins, and the development of kink-bands and an associated crenulation cleavage. Similar, young reactivations in fault zones in the King Leopold Orogen have K–Ar ages of c. 560 and 500 Ma (Shaw et al., 1992). Faulting and large-scale open folding of Devonian rocks may represent further reactivation due to the effects of the Late Devonian to Carboniferous (c. 300–370 Ma) Alice Springs Orogeny.

Discussion

From the above description of the geological history of each zone (summarized in Fig. 3), it appears that each constituted a discrete terrane early in its history, although the similarities between the Hooper Complex and the western zone of the Lamboo Complex suggest that the two may have originally formed a continuous belt. In the eastern zone the oldest unit is the Ding Dong Downs Volcanics, which was formed at c. 1910 Ma. This does not appear to have an equivalent in either of the other two zones. In the western zone the Marboo Formation has previously been correlated with the Olympio Formation of the Halls Creek Group (Gellatly et al., 1974; Hancock and Rutland, 1984; Hancock, 1991); however, the depositional age of the Marboo Formation must be older than metamorphism at c. 1860 Ma, while the deposition of the Olympio Formation continued after eruption of the Butchers Gully Member at c. 1855 Ma. Hancock and Rutland (1984) speculated that the Biscay Formation of the Halls Creek Group may outcrop within the Hooper Complex on MOUNT RAMSAY*; however, remapping (Tyler et al., in prep.) has shown the mafic rocks in question to be gabbroic intrusions.

There are many similarities between the lower part of the Halls Creek Group in the eastern zone and the Tickalara Metamorphics in the central zone, and it has been assumed that the two are equivalent (Dow and Gemuts, 1969; Hancock and Rutland, 1984; Allen, 1986). The correlation is difficult to resolve, however, given the intrusion of granitoid sheets into the Tickalara Metamorphics at c. 1865 Ma, followed by two deformation events, the second being coincident with high-grade metamorphism at c. 1855 Ma, at a time when the lower part of the Olympio Formation was being deposited in the eastern zone. There is no evidence that deformation and metamorphism affected the Biscay Formation prior to the deposition of the Olympio Formation. In fact, the first deformation to affect the eastern zone must post-date c. 1855 Ma, and must therefore be younger than both D_1 and D_2 in the central zone. The differences in the ages of deformation and metamorphism also appear to rule out the possibility that the central zone is a deeper crustal equivalent of the eastern zone.

The suggestion by Allen (1986) that the Saunders Creek Formation can be recognized within the Tickalara Metamorphics has not been substantiated during recent remapping. The sandstones in question occur as low-strain pods strung out within mylonitic rocks along the Halls Creek Fault and its associated structures, and are most likely to correlate with the Red Rock beds.

In the western zone the earliest deformation pre-dated metamorphism of the Marboo Formation at c. 1860 Ma, and was followed by eruption of the Whitewater Volcanics, deformation, and the intrusion of granitoid plutons between c. 1860 and 1850 Ma. This style of felsic magmatism is not evident in either the central or eastern zones, but occurred at about the same time as the intrusion of granitoid sheets, deformation, high-grade metamorphism, and the intrusion of layered mafic–ultramafic intrusions, in the central zone, and the eruption of the alkaline volcanic rocks of the Butchers Gully Member in the eastern zone. The near synchroneity of these differing magmatic and thermal events within the orogen was recognized by Page and Hancock (1988) and was attributed

* Capitalized names refer to standard map sheets.

to a rapid tectonic transition from sedimentation to orogenesis, and then to cratonization. An alternative view inherent in the terrane concept is that these different events did occur at about the same time, but in geographically separate terranes that were brought into their current juxtaposition by subsequent tectonism.

The zones continued to evolve separately after c. 1850 Ma, with the central zone experiencing the eruption of felsic volcanic rocks, and the intrusion of further granitoids, gabbros, and layered mafic–ultramafic bodies, as well as deformation and metamorphism. Both deformation events that affected the eastern zone occurred after eruption of the Butchers Gully Member at c. 1855 Ma, but before intrusion of the c. 1820 Ma granitoids.

The intrusion of the c. 1820 Ma granitoids appears to be the first event that can be correlated with certainty between the central zone and the eastern zone, with the Mount Christine Monzogranite intruding into the Halls Creek Group. The deposition of the Speewah Group onto the Lamboo Complex of the western zone began before c. 1835 Ma, while granitoids were still being intruded into the central and eastern zones. The deposition of the Kimberley Group appears to be the earliest event that can be correlated between all three zones.

Tectonic implications

The intracratonic models of Hancock and Rutland (1984) and Etheridge et al. (1987) are inadequate to explain the tectonic evolution of the Halls Creek and King Leopold Orogens because they are based on correlations of units and events that are now regarded as invalid. Griffin and Tyler (1992b) have shown that the Early Proterozoic felsic igneous rocks in the Hooper Complex of the King Leopold Orogen have a calc-alkaline trend, and interpreted them to be subduction related, having formed as part of a magmatic arc. The overall evolution of the complex was consistent with a collisional orogeny, albeit involving thinner continental crust and higher heat flows than Phanerozoic collision orogenies.

Any model that seeks to explain the tectonic evolution of the Halls Creek Orogen must account for the differences between the three zones described here. Windley (1993), in a review of Precambrian orogenic belts, mainly from North America, Europe, and Africa, concluded that tectonophysical and geochemical processes that produced oceanic and continental rocks since the early Archaean were not fundamentally different from those that operate in the present. The recognition of tectonostratigraphic terranes within the Halls Creek Orogen, and the different geophysical nature of the basement cratons on either side of it, are consistent with the operation of plate-tectonic processes in the Early Proterozoic.

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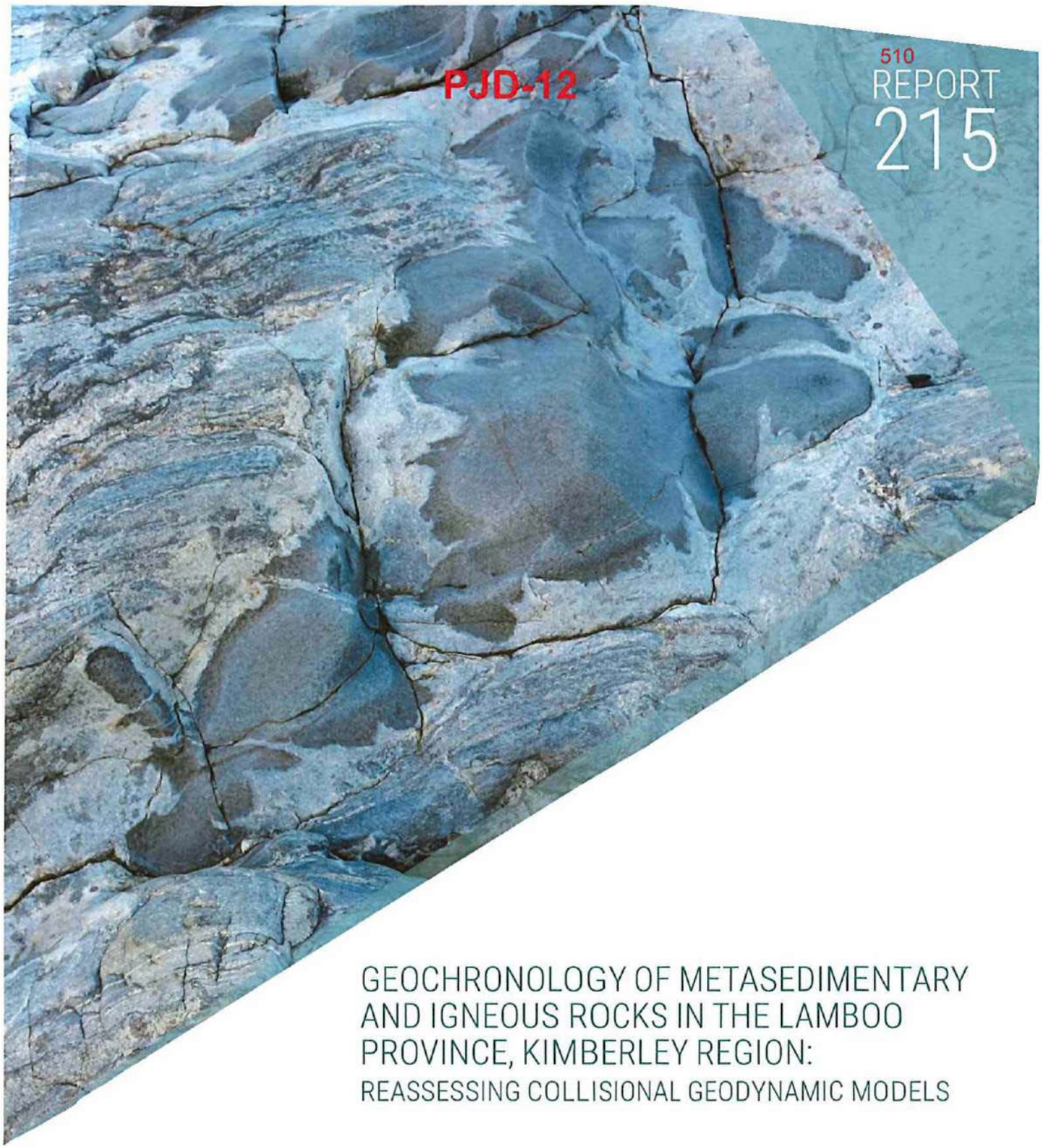
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GEOCHRONOLOGY OF METASEDIMENTARY AND IGNEOUS ROCKS IN THE LAMBOO PROVINCE, KIMBERLEY REGION:

REASSESSING COLLISIONAL GEODYNAMIC MODELS

DW Maidment, Y Lu, C Phillips, FJ Korhonen, IOH Fielding, MTD Wingate, CL Kirkland, R Murphy, R Tilhac, M Poujol and J

Government of **Western Australia**
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REPORT 215

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DW Maidment[1], Y Lu, C Phillips, FJ Korhonen, IOH Fielding, MTD Wingate, CL Kirkland[2], R Murphy[3], R Tilhac[3], M Poujol[4] and J Zhao[5]

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Geological Survey of Western Australia

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Cover photograph: Metadolerite dyke intruding metasedimentary gneiss of the Tickalara Metamorphics, Fletcher Creek Rockholes

Contents

Abstract 1
Introduction 2
Geology of the Lamboo Province 4
Western Zone 5
Central Zone 5
Eastern Zone 7
Mafic–ultramafic layered intrusions (1857–1823 Ma) 7
Halls Creek Orogeny (1837–1808 Ma) 8
Dougalls Suite 8
Sally Downs Supersuite 9
Poonta Suite (1804–1788 Ma) 9
Kimberley Basin (1814–1740 Ma) 9
Yampi Orogeny (900–800 Ma) 9
Wunaamin Miliwundi Orogeny (590–500 Ma) 10
Alice Springs Orogeny (450–295 Ma) 10
Mineralization 10
Geodynamic models 11
Sampling rationale 12
Analytical methods 13
U–Pb geochronology 13
Lu–Hf isotopes 14
Sm–Nd isotopes 14
Geochronology results 14
Western Zone – Wunaamin Miliwundi Orogen 14
GSWA 206102: sandstone, Marboo Formation 14
GSWA 212327: pelitic schist, Marboo Formation 15
GSWA 212335: metagabbro, Ruins Dolerite 15
GSWA 212317: pelitic migmatite, Mount Joseph Migmatite 18
GSWA 212315: pelitic migmatite, Mount Joseph Migmatite 18
GSWA 212344: pelitic schist, Marboo Formation 20
Western Zone – Halls Creek Orogen 20
GSWA 215562: metasandstone, Marboo Formation 20
GSWA 206154: pelitic migmatite, Marboo Formation 20
GSWA 218305: metasiltstone, Marboo Formation 24
GSWA 218330: lithic metasandstone, Marboo Formation 24
GSWA 206173: psammitic schist, Marboo Formation 24
GSWA 206106: pelitic migmatite, Marboo Formation 26
GSWA 218310: metasandstone, Marboo Formation 26
GSWA 206155: porphyritic dacite, Whitewater Volcanics 26
Central Zone 28
GSWA 218315: psammitic gneiss, Tickalara Metamorphics 28
GSWA 206131: migmatitic pelitic gneiss, Tickalara Metamorphics 28
GSWA 218321: pelitic gneiss, Tickalara Metamorphics 28
GSWA 218333: psammitic gneiss, Tickalara Metamorphics 28
GSWA 206128: pelitic schist, Tickalara Metamorphics 30
GSWA 218318: muscovite–chlorite schist, Winnama Formation 30
GSWA 216661: lithic sandstone, Milba Formation 30
GSWA 226523: biotite–muscovite granodiorite gneiss, Rose Bore Granite 34
GSWA 218350: biotite–hornblende metatonalite, Dougalls Tonalite 34
GSWA 218313: metamonzogranite, Violet Valley Tonalite 35
GSWA 218355: biotite–hornblende metatonalite, Mabel Downs Tonalite 36
GSWA 124442: biotite–hornblende syenogranite, Kevins Dam Monzogranite 36
Lu–Hf isotope results 37
Discussion 39
Nature and origin of zircons in metasedimentary rocks 39
Western Zone succession 41
Marboo Formation (Wunaamin Miliwundi Orogen) 41
Hooper Orogeny 43
Marboo Formation (Halls Creek Orogen) 43
Central Zone succession 44
Tickalara Metamorphics 44
Milba Formation 45
Winnama Formation 46
Rose Bore Granite 46
Halls Creek Orogeny metamorphism 46

Western–Central Zone boundary in the northern Halls Creek Orogen 47
Comparison of provenance signatures across the Lamboo Province 48
Detrital zircon age spectra 49
Lu–Hf isotope constraints on provenance 49
Potential stratigraphic correlations 51
Potential sediment source regions 52
Successions older than c. 1870 Ma 52
1870–1835 Ma successions (Detrital P provenance) 54
Regional correlations 56
Igneous geochemistry and isotope constraints 60
c. 1873 Ma Ruins Dolerite 60
1867–1849 Ma bimodal magmatic rocks 60
1845–1840 Ma bimodal magmatic rocks 64
Central Zone an ensialic rift, not an oceanic arc? 65
Burial of the Tickalara Metamorphics 65
1850–1847 Ma (c. 1838 Ma?) Dougalls Suite 66
1837–1808 Ma Sally Downs Supersuite 70
Proposed geodynamic evolution of the Lamboo Province 70
1912–1904 Ma – intraplate extension 71
1904–1870 Ma – intraplate (back-arc?) extension 71
1870–1855 Ma – intraplate (back-arc?) extension, c. 1865 Ma Hooper Orogeny 71
1855–1840 Ma – Central Zone rift, Savannah Event 73
1838–1808 Ma – rift inversion, Halls Creek Orogeny 73
1808–1740 Ma – regional extension and subsidence, Kimberley Basin 73
Neoproterozoic–Paleozoic deformation – Yampi, Wunaamin Miliwundi, Alice Springs Orogenies 73
Geodynamic context of mineral systems 73
Conclusions 74
References 75

Appendices

Available with the PDF online as an accompanying digital resource

1. Lu–Hf isotope data
2. Sm–Nd isotope data
3. Whole-rock geochemical data for mafic rocks

Figures

1. Location of the Kimberley region 2
2. Generalized geology of the Kimberley region 3
3. Space–time plot for the Kimberley region 4
4. Previous interpretations of the evolution of the Lamboo Province 13
5. Location of geochronology samples from the Wunaamin Miliwundi Orogen 15
6. Geochronology results for Unit 1 of the Marboo Formation and Ruins Dolerite 16
7. Field photographs of geochronology samples, Wunaamin Miliwundi Orogen 17
8. Geochronology results for metasedimentary rocks in the Wunaamin Miliwundi Orogen 19
9. Field photographs of Marboo Formation sample sites (Wunaamin Miliwundi and Halls Creek Orogens) 21
10. Location of geochronology samples in the Halls Creek Orogen 22
11. Geochronology results for the Marboo Formation, Halls Creek Orogen 23
12. Geochronology results and CL image for the Marboo Formation and Whitewater Volcanics, Halls Creek Orogen 25
13. Field photographs of samples from the Western and Central Zones, Halls Creek Orogen 27
14. Geochronology results for the Tickalara Metamorphics 29
15. Field photographs of samples of the Tickalara Metamorphics 31
16. Field photographs of geochronology sample sites, Central Zone 32
17. Geochronology results for metasedimentary rocks in the Central Zone 33
18. Field photographs of granitic and quartzofeldspathic rocks, Central Zone 35
19. CL images and concordia plots for granitic and quartzofeldspathic rocks, Central Zone 36
20. Field and sample photographs of granitic rocks, Central Zone 37
21. CL images and concordia plots for granitic rocks, Central Zone 38
22. Initial $^{176}Hf/^{177}Hf$ evolution plot for detrital and igneous zircons, Western and Central Zones 39
23. Detrital zircon probability density diagrams for metasedimentary rocks, Western and Central Zones 42
24. Locations of geochronology samples, northern Halls Creek Orogen 48
25. Representative detrital zircon probability density diagrams for the Lamboo Province 50
26. Compilation of detrital zircon dates for Lamboo Province units with Detrital P provenance 51
27. Compilation of detrital zircon dates for units in the North Australian Craton underlying Detrital P units 52
28. Initial $^{176}Hf/^{177}Hf$ evolution plots for detrital zircons from metasedimentary rocks 53
29. Initial $^{176}Hf/^{177}Hf$ evolution plot for 2000–1800 Ma detrital zircons 54
30. Compilation of geochronology of igneous rocks pre-dating the Halls Creek Orogeny 55
31. Radiometric images of the Kimberley region 57

32. Compilation of detrital zircon dates for units of the North Australian Craton with the Detrital P signature 58
33. Possible geodynamic setting for the development of the North Australian Craton 1885–1855 Ma 59
34. Bouguer gravity image of the Kimberley region 61
35. Textures of mafic and felsic rocks in the Halls Creek Orogen 62
36. Th/Yb vs Nb/Yb for 1860–1845 Ma mafic extrusive and intrusive rocks, Central Zone 63
37. Distribution of 1870–1855 Ma tectonism and sedimentation in the North Australian Craton 64
38. Time–event chart for the Central Zone, 1865–1815 Ma 66
39. ε_{Nd} vs K_2O/Na_2O for granitic rocks of the 1838–1808 Ma Sally Downs Supersuite 67
40. Bouguer gravity image of the Halls Creek Orogen 68
41. Distribution of 1860–1830 Ma felsic and mafic magmatic rocks, Halls Creek Orogen 69
42. Schematic evolution of the Lamboo Province 72

Tables

1. Ages and igneous associations of intrusive units referred to in this Report 6
2. Summary of isotopic ages obtained for metasedimentary and igneous rocks 40

Geochronology of metasedimentary and igneous rocks in the Lamboo Province, Kimberley region: reassessing collisional geodynamic models

DW Maidment[1], Y Lu, C Phillips, FJ Korhonen, IOH Fielding, MTD Wingate, CL Kirkland[2], R Murphy[3], R Tilhac[3], M Poujol[4] and J Zhao[5]

Abstract

U–Pb and Lu–Hf isotope data for detrital zircons from metasedimentary rocks of the 1912–1788 Ma Lamboo Province provide a test of collisional and intraplate geodynamic models for the Paleoproterozoic development of the region. Metasedimentary rocks deposited between c. 1885 and 1870 Ma are dominated by variable proportions of Archean to early Paleoproterozoic detritus, possibly derived from local basement sources, which include a common c. 2500 Ma age component. Conformably overlying turbiditic metasedimentary rocks deposited across the Western, Central and Eastern Zones between c. 1870 and 1840 Ma have remarkably consistent detrital zircon age signatures, with a dominant 1875–1860 Ma age component and a subsidiary c. 2500 Ma age component. These age components have similar Lu–Hf isotope values across all three zones, consistent with a common source for the sedimentary protoliths. The close similarities in provenance suggest that all three zones of the Lamboo Province developed in a continental intraplate setting prior to the 1837–1808 Ma Halls Creek Orogeny, which has previously been considered to represent a collision between an exotic Kimberley Craton and the proto-North Australian Craton. Comparable provenance signatures of coeval metasedimentary rocks across the broader North Australian Craton suggest that assembly of the main craton elements was complete prior to c. 1885 Ma.

Deposition of 1885–1840 Ma metasedimentary protoliths is interpreted to have occurred as a result of prolonged intraplate extension and subsidence, possibly within a back-arc basin related to subduction north of the Lamboo Province. Voluminous felsic and mafic rocks of the 1867–1849 Ma Paperbark Supersuite are interpreted to be a consequence of this extension, which was interrupted in the southwest by the c. 1865 Ma Hooper Orogeny. Granitic rocks of the Paperbark Supersuite dated at 1854–1852 Ma intrude across the boundary between the Western and Central Zones, indicating that these terranes were adjacent at this time. Extension was subsequently focused into the Central Zone, culminating in the 1852–1840 Ma Savannah Event, which was associated with bimodal magmatism and high-T, low-P metamorphism in the lower parts of an inferred intraplate rift. Intraplate deformation during the 1837–1808 Ma Halls Creek Orogeny was partitioned into this rift, resulting in the generation of a range of granitic rocks sourced from differing proportions of juvenile mafic underplate and Archean and Paleoproterozoic crust.

KEYWORDS: detrital zircon geochronology, geodynamics, Halls Creek Orogeny, Hooper Orogeny, Kimberley, Lamboo Province, Savannah Event

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Introduction

The Lamboo Province in the Kimberley region of Western Australia consists of a multiply deformed assemblage of Paleoproterozoic metasedimentary and meta-igneous rocks in the northwestern part of the North Australian Craton (Figs 1, 2). Previous studies have established a well-constrained event framework that involves several phases of sedimentation, magmatism, deformation and metamorphism between c. 1912 and 1788 Ma (Fig. 3; Gemuts, 1971; Hancock and Rutland, 1984; Tyler et al., 1995, 1999, 2012; Bodorkos et al., 1999, 2000b; Sheppard et al., 1999b, 2001; Griffin et al., 2000a; Page et al., 2001; Phillips et al., 2016; Mole et al., 2018). The Lamboo Province has been divided into three largely fault-bound tectonostratigraphic terranes: the Western, Central and Eastern Zones (Fig. 2). Differences between the geological histories of the three zones have been interpreted in the context of subduction and collision between an inferred exotic terrane and the proto-North Australian Craton (Tyler et al., 1995; Sheppard et al., 1999b, 2001; Griffin et al., 2000a). This model has been widely accepted in subsequent studies of the province (e.g. Hollis et al., 2015; Occhipinti et al., 2016; Lindsay et al., 2016; Kohanpour et al., 2017, 2018, 2019a; Mole et al., 2018; Stachel et al., 2018), and has in turn been incorporated in geodynamic models for the Proterozoic assembly of Australia (Betts et al., 2002, 2016; Wingate and Evans, 2003; Fraser et al., 2007; Cawood and Korsch, 2008; de Vries et al., 2008; Payne et al., 2009; Huston et al., 2012; Johnson, 2013; Aitken et al., 2018).

Two variants of this collisional model have been proposed, both of which consider the Western Zone to be part of an exotic terrane (the Kimberley Craton) that collided with the Eastern Zone (proto-North Australian Craton) during the 1837–1808 Ma Halls Creek Orogeny (Griffin et al., 2000a). The Central Zone is considered to have developed either as an oceanic arc that accreted to the Western Zone before collision, or an ensialic marginal basin developed on the eastern margin of the Kimberley Craton. Features consistent with this model include differences in the geological histories of the three zones prior to the Halls Creek Orogeny (Tyler et al., 1995), differences in detrital zircon age spectra of some pre-collision metasedimentary rocks (Tyler et al., 1999) and the geochemistry of felsic and mafic rocks in the Central Zone, which include components comparable to those found in Phanerozoic subduction zone settings (Ogasawara, 1988; Sheppard et al., 1999b, 2001; Mole et al., 2018).

Although some aspects of the geology are consistent with subduction and collision, other features are more difficult to place in this setting, or may be explained by other processes. These include the overall bimodal character of magmatic rocks, which have a paucity of intermediate compositions typical of magmatic arcs (Wyborn and Blake, 2000), and detrital zircon age data for the Central and Western Zones, some of which show similarities with units in the Eastern Zone and broader North Australian Craton (Page, 1996a,b; Bodorkos et al., 1999; Tyler et al., 1999; Page and Hoatson, 2000; Mole et al., 2018).

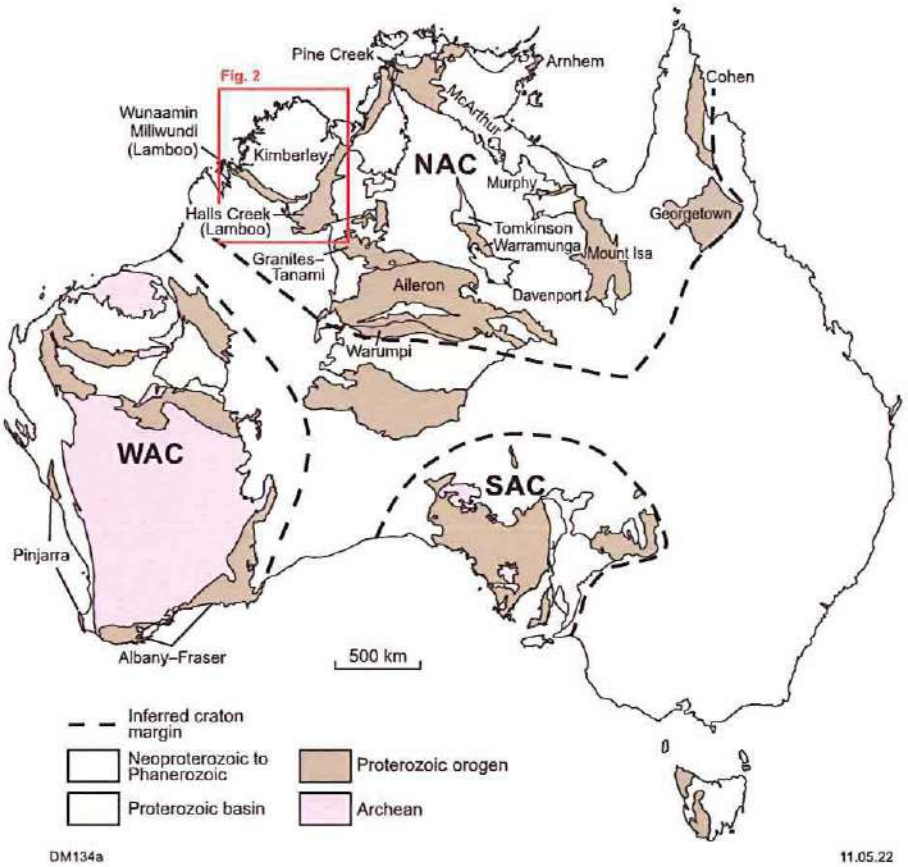


Figure 1. Location of the Kimberley region within the North Australian Craton

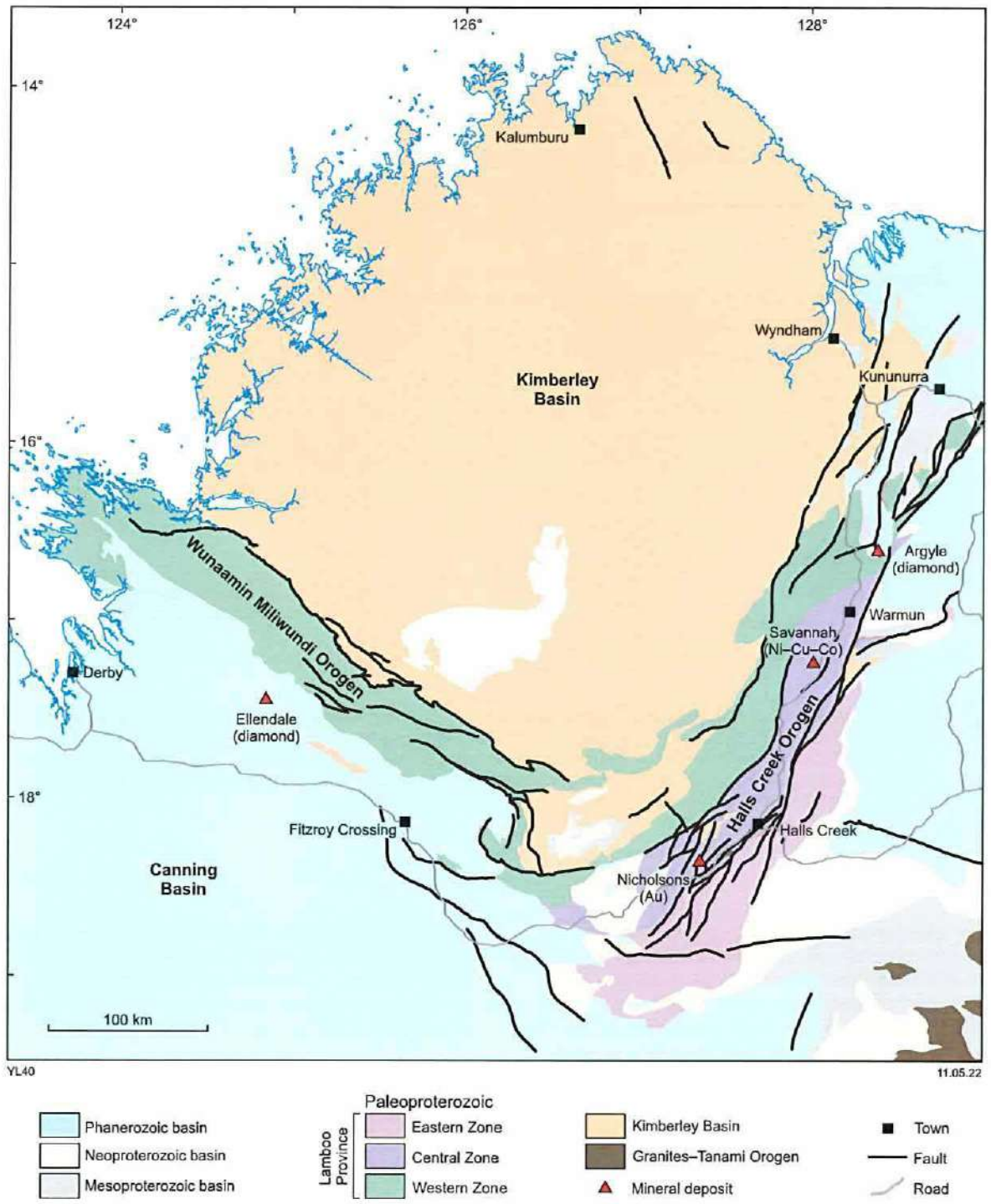


Figure 2. Generalized geology of the Kimberley region, showing the locations of the Western, Central and Eastern Zones of the Lamboo Province

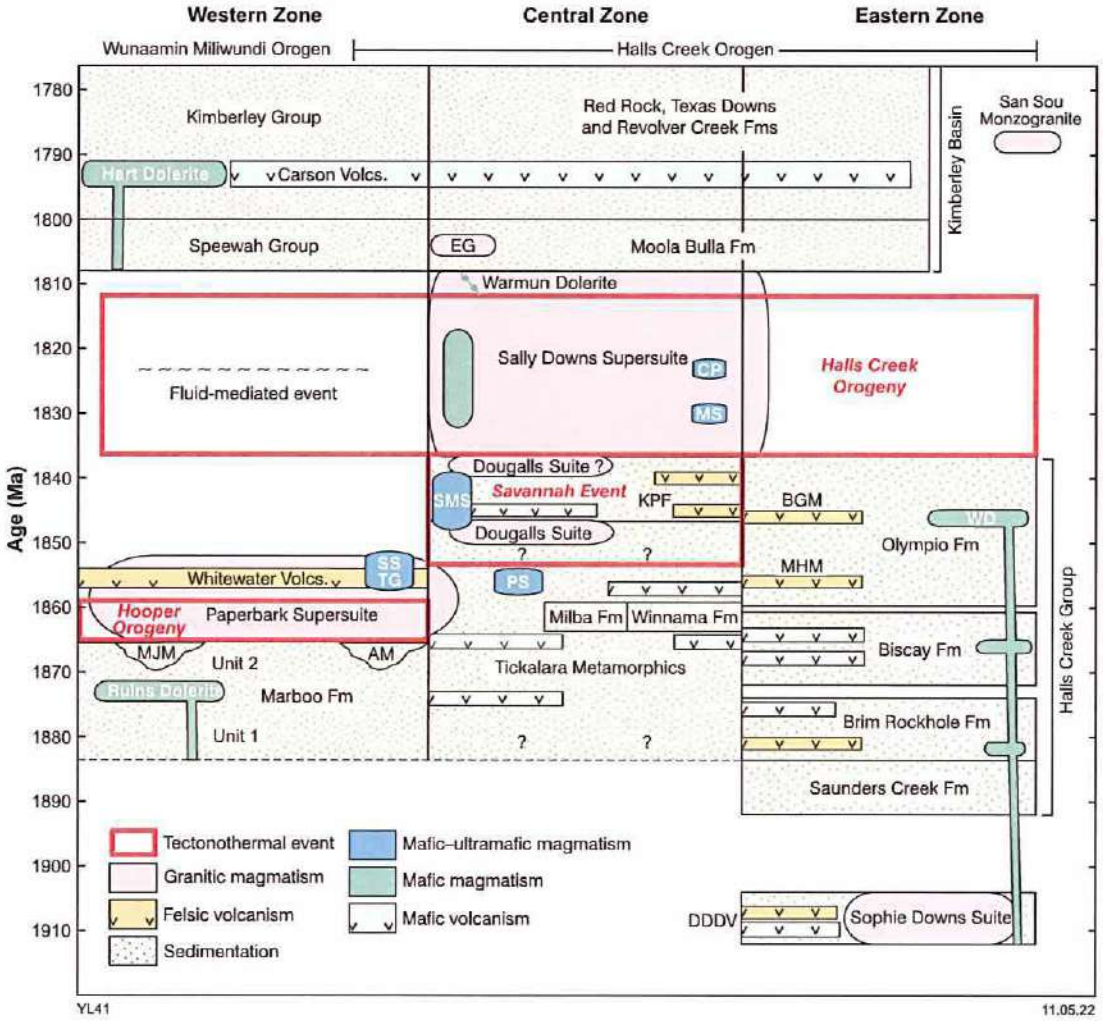


Figure 3. Time–space plot for the Kimberley region. Abbreviations: AM, Amhurst Metamorphics; BGM, Butchers Gully Member; CP, Copernicus pyroxenite; EG, Eastman Granite; DDDV, Ding Dong Downs Volcanics; KPF, Koongie Park Formation; MHM, Maude Headley Member; MJM, Mount Joseph Migmatite; MS, McIntosh Suite; PS, Panton Suite; SMS, Sally Malay Suite; SS, Springvale Suite; TG, Toby Gabbro; WD, Woodward Dolerite. Note that the representation of mafic volcanic units in the Lamboo Province is schematic and these rocks have not been directly dated

Other aspects include the presence of layered mafic/ultramafic intrusions, which are more commonly associated with intraplate extensional settings (Hoatson, 2000b), a lack of granitic rocks with arc-like compositions prior to c. 1850 Ma, the presence of mafic and felsic igneous rocks in the Halls Creek Orogen that are not diagnostic of subduction – though able to be placed in a post-collisional setting (Sheppard et al., 2001) – and Sm–Nd isotope evidence for significant evolved crustal material in the Central Zone (Sun and Hoatson, 2000; Sheppard et al., 2001), contrasting with the dominantly juvenile signatures expected in oceanic arcs.

In this study, detrital zircons from metasedimentary rocks of the Western and Central Zones of the Lamboo Province were dated to better constrain the age and provenance of successions deposited prior to the Halls Creek Orogeny. Representative Lu–Hf isotope data for detrital zircons were also collected for some samples, which can be used to provide further constraints on interpretations of sediment provenance and stratigraphic correlations (e.g. Howard et al., 2009). The results are compared with data from the Eastern Zone (Phillips et al., 2016) and the broader region (e.g. Maidment et al., 2020) to assess whether the Western and Central Zones represent exotic terranes or are autochthonous with respect to the proto-North Australian Craton.

Geology of the Lamboo Province

The 1912–1788 Ma Lamboo Province is exposed in two linear orogens along the structural margins of the overlying 1814–1740 Ma Kimberley Basin (Fig. 2; Tyler et al., 2012). In the east, the Lamboo Province is exposed in the north-northeasterly trending Halls Creek Orogen, whereas, in the west, it is exposed in the west-northwesterly trending Wunaamin Miliwundi Orogen (previously known as the King Leopold Orogen). The nature of basement beneath the Kimberley Basin is not well constrained, but it appears to contain a significant proportion of granitic rock (Gunn and

Meixner, 1998) and it is possible that the Lamboo Province extends beneath most or all of the basin. Basement to the Lamboo Province is not exposed, though Archean basement rocks have been inferred from the Sm–Nd and Lu–Hf isotope characteristics of granitic rocks and xenoliths in kimberlite, the abundance of Archean detrital zircons in overlying sedimentary successions, Re–Os whole-rock and mineral isotope data for lamproite and kimberlite, and the seismic velocity structure of the crust (Hollis et al., 2015, and references therein).

The geological terminology for the province has changed with time, with the term 'Lamboo Complex' previously applied to rocks exposed in the Halls Creek Orogen, and 'Hooper Orogen' used to refer to the rocks exposed in the Wunaamin Miliwundi Orogen (e.g. Griffin et al., 2000a; Page et al., 2001). This terminology was subsequently modified to the 'Lamboo and Hooper Provinces' (Tyler et al., 2012), and current Geological Survey of Western Australia terminology places all these rocks within a single 'Lamboo Province' (e.g. Phillips et al., 2016), recognizing that the rocks exposed in the Wunaamin Miliwundi Orogen are likely correlatives of those exposed in the western Halls Creek Orogen. The Lamboo Province is divided into three tectonostratigraphic terranes: the Western, Central and Eastern Zones (Figs 2, 3). This reflects reduction from four domains defined by Hancock and Rutland (1984) to three domains by Griffin and Tyler (1992), and subsequent revision of the boundaries between the zones by Tyler et al. (1995). The Western Zone is exposed in the Wunaamin Miliwundi Orogen and the western part of the Halls Creek Orogen, whereas the Central and Eastern Zones are exposed only in the Halls Creek Orogen. The Lamboo Province extends beneath younger sedimentary cover to the southeast, where it may be transitional with the Granites–Tanami Orogen (Phillips et al., 2016; Iaccheri et al., 2018; Maidment et al., 2020). In many areas, the boundaries between zones coincide with steeply dipping, north-northeasterly trending faults, which disrupted zonal boundaries that originally trended northeast–southwest to east-northeast–south-southwest (Tyler et al., 1995). The present pattern of exposure of the Lamboo Province is a result of exhumation during several Paleoproterozoic to Paleozoic deformational events in the Halls Creek and Wunaamin Miliwundi Orogens.

Numerous individual intrusive bodies and volcanic units within the Lamboo Province have been named, with many, but not all, of these assigned to igneous suites. The igneous associations and ages of units discussed in this report are listed in Table 1, and more complete information about the current nomenclature and description of units is available in the GSWA Explanatory Notes System (ENS), accessible through **GeoVIEW.WA**. The **Australian Stratigraphic Units Database**, managed by Geoscience Australia, includes information about obsolete or superseded unit nomenclature.

Western Zone

The Western Zone consists of siliciclastic metasedimentary rocks of the Marboo Formation, which are intruded by voluminous felsic and mafic rocks of the 1867–1849 Ma Paperbark Supersuite and mafic sills of the Ruins Dolerite (Tyler et al., 1999; Griffin et al., 2000a; Page et al., 2001; Lu et al., 2017a,e–g). These rocks are overlain by felsic volcanic rocks of the Whitewater Volcanics, which form a younger extrusive component of the Paperbark Supersuite (Griffin et al., 2000a). The Marboo Formation consists of turbiditic feldspathic quartz sandstone, siltstone and mudstone, with minor graphitic schist (Hancock, 1991; Tyler et al., 1999). In the Wunaamin Miliwundi Orogen, the Marboo Formation has informally been divided (Hancock, 1991) into a ~3000 m-thick lower package (Unit 1) and an overlying package up to ~3500 m thick (Unit 2). Unit 1 consists of metamorphosed turbiditic quartz–feldspar wacke and siltstone, with significant thicknesses of laminated metasiltstone. A package containing carbonaceous metapelitic schist intruded by the Ruins Dolerite has been assigned to the base of Unit 2, which is overlain by a compositionally and texturally immature package of quartz–feldspar–muscovite±biotite schist with a greater felsic component than Unit 1. U–Pb zircon dating of a sample of Unit 1 yielded a range of detrital ages between c. 2500 and 1903 Ma, whereas dating of a metamorphosed equivalent of Unit 2, the Mount Joseph Migmatite, yielded a youngest detrital age component at 1872 ± 9 Ma (Tyler et al., 1999).

The Marboo Formation and Ruins Dolerite were overprinted by a layer-parallel foliation (local S_1) and locally metamorphosed in low- to moderate-pressure (low- to moderate-*P*), high-temperature (high-*T*) conditions (Korhonen et al., 2022), with S_1 deformed by upright northwesterly trending folds (local F_2) (Tyler and Griffin, 1990). The D_1 and D_2 events are collectively referred to as the Hooper Orogeny, which overlapped with the emplacement of the Paperbark Supersuite. Metamorphic zircon rims in the Mount Joseph Migmatite dated at 1861 ± 5 Ma were developed during this tectonism (Tyler et al., 1999), whereas monazite associated with peak metamorphism yields slightly younger ages of c. 1855 Ma (e.g. Fielding et al., 2019c). Although metamorphic grades can locally be relatively high, particularly near granitic rocks, much of the Marboo Formation has not been metamorphosed above greenschist facies.

Felsic volcanic rocks of the 2000–3000 m-thick Whitewater Volcanics unconformably overlie the Marboo Formation and have yielded U–Pb zircon dates of 1857 ± 4 and 1854 ± 5 Ma in the Kimberley region (Griffin et al., 2000a), and 1849 ± 6 Ma for an inferred correlative in the Northern Territory (Worden et al., 2008).

Central Zone

The boundary between the Central and Western Zones is taken to be a combination of several faults – the Ramsay Range and Springvale Faults and northern part of the Halls Creek Fault – whereas the boundary between the Central Zone and Eastern Zone is taken to be a combination of the Angelo, Halls Creek and Osmond Faults (Tyler et al., 1995).

The oldest rocks exposed in the Central Zone are the Tickalara Metamorphics, a deformed and metamorphosed succession of pelitic and psammitic sedimentary rocks, lesser tholeiitic mafic volcanic rocks, and minor carbonate, calc-silicate rock, chert, graphitic schist, quartzite and banded iron-formation (Dow and Gemuts, 1969; Gemuts, 1971; Tyler et al., 1995). In some areas of lower strain, mafic units within the Tickalara Metamorphics are demonstrably volcanic, preserving relict pillow textures (Blake et al., 2000; Tyler, 2004).

Table 1. **Ages and igneous associations of intrusive units referred to in this Report**

Supersuite	*Suite*	*Unit*	*Zone*	*Dominant composition*	*Inferred age (Ma)*
	Poonta Suite	San Sou Monzogranite	Eastern	Felsic	c. 1788
		Warmun Dolerite	Western/Central	Mafic	1829–1814
Sally Downs Supersuite	Kevins Dam Suite	Mount Christine Granite	Central/Eastern	Felsic	c. 1808
"	Mabel Downs Suite	Sally Downs Tonalite	Central	Felsic	c. 1821
"	"	Mabel Downs Tonalite	Central	Felsic	1837–1829
"	"	McHale Granite	Central	Felsic	c. 1827
"	"	Loadstone Monzogranite	Central	Felsic	c. 1827
"		Emull Gabbro	Central	Mafic	1832–1808
	McIntosh Suite		Central	Mafic–ultramafic	c. 1830
	Sally Malay Suite		Central	Mafic–ultramafic	1848–1839
		Woodward Dolerite	Eastern	Mafic	1904–1846 (c. 1846?)
		Rose Bore Granite	Central	Felsic/ metasedimentary?	1863–1822
		Fletcher Creek Granite	Central	Felsic	c. 1850/1838?
	Dougalls Suite	Dougalls Tonalite	Central	Felsic	1849–1847, 1838?
	Panton Suite		Central	Mafic–ultramafic	c. 1856
Paperbark Supersuite		Whitewater Volcanics	Western	Felsic	1857–1854
"		Violet Valley Tonalite	Western/Central	Felsic	c. 1852
"		Kevins Dam Monzogranite	Western/Central	Felsic	c. 1854
"		Greenvale Porphyry	Western	Felsic	c. 1855
"		Toby Gabbro	Western	Mafic	c. 1855
"		Springvale Suite	Western	Mafic	c. 1857
"		Mount Nyulas Granite	Western	Felsic	c. 1859
"		Neville Granodiorite	Western	Felsic	c. 1860
"		Crooked Creek Granite	Western	Felsic	1864–1854
"		Dinner Creek Tonalite	Western	Felsic	1864–1859
"		Lennard Granite	Western	Felsic	1864–1862
		Ruins Dolerite	Western	Mafic	c. 1873