# PERSEUS MINING LIMITED
# TECHNICAL REPORT

## NYANZAGA GOLD PROJECT FEASIBILITY STUDY – TANZANIA


**Qualified Persons**

| Name | Professional Association | Company |
|---|---|---|
| Adrian Ralph | FAusIMM | Perseus Mining Limited |
| Daniel Saunders | FAusIMM | Perseus Mining Limited |
| Benjamin Strong | FAusIMM | Perseus Mining Limited |



**Effective Date:** **April 28, 2025**

**Issue Date:** **June 10, 2025**

# DATE AND SIGNATURE PAGE

The Qualified Persons for the purposes of this report:

Technical Report, Nyanzaga Gold Project Feasibility Study – Tanzania
with an effective date of April 28, 2025

are:

| Name | Company | Signature | Date |
|---|---|---|---|
| Adrian Ralph | Perseus Mining Limited |  | June 10, 2025 |
| Daniel Saunders | Perseus Mining Limited |  | June 10, 2025 |
| Benjamin Strong | Perseus Mining Limited |  | June 10, 2025 |

# CERTIFICATE OF QUALIFIED PERSON – ADRIAN RALPH

I, Adrian Ralph, FAusIMM, as an author of the report entitled "Technical Report, Nyanzaga Gold Project Feasibility Study – Tanzania" (the "Report") prepared for Perseus Mining Limited ("Perseus") and with an effective date of April 28, 2025, do hereby state:

a) I am employed as General Manager Technical Services and Studies by Perseus of Level 2, 437 Roberts Road, Subiaco, Western Australia.

b) I graduated with a Bachelor of Engineering in Mining Engineering from the Western Australian School of Mines in 2001. I completed a Master of Science in Mineral Economics from the Western Australian School of Mines in 2011.

c) I am a registered Fellow of the Australasian Institute of Mining and Metallurgy (#301892). I have worked as a mining engineer, in the mining industry for a total of 24 years since my graduation. My relevant experience for the purpose of the Report is prior experience as a Project Manager and Mining Manager for both Open Pit and Underground Operations, and as a Study Manager, Principal Consultant and General Manager of Technical Services and Studies for mining projects in Australia, Africa, South America and Asia.

d) I have read the definition of "qualified person" set out in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument") and certify that by reason of my education, affiliation with a professional association (as defined in the Instrument) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of the Instrument.

e) I have visited Nyanzaga Gold Project site in May 2024. The purpose of the visits was as manager of the Nyanzaga Gold Project Feasibility Study in my roles as General Manager Technical Services and Studies, as an employee of Perseus Mining.

f) I am responsible for Sections 1.1, 1.11-1.12, 1.16, 1.19-1.20, 15-16, 20 and 23-27 of the Report.

g) I am not independent of Perseus pursuant to Section 1.5 of the Instrument.

h) I have read the Instrument and the sections of the Report for which I am responsible and which have been prepared in compliance with the Instrument.

i) My involvement with the Nyanzaga Gold Project is limited to my work as an employee of Perseus, commencing August 2021.

j) At the effective date of the Report, to the best of my knowledge, information and belief, the sections of the Report I am responsible for contain all scientific and technical information that is required to be disclosed to make the Report not misleading.

Dated this 10th day of June 2025 at Perth, Western Australia.



Adrian Ralph, BEng (Mining), MSc (Mineral Economics), FAusIMM

# CERTIFICATE OF QUALIFIED PERSON – DANIEL SAUNDERS

I, Daniel Richard Saunders, FAusIMM, as an author of the report entitled "Technical Report, Nyanzaga Gold Project Feasibility Study – Tanzania" (the "Report") prepared for Perseus Mining Limited ("Perseus") and with an effective date of April 28, 2025, do hereby state:

a) I am employed as Group Resource Geologist Business Growth by Perseus of Level 2, 437 Roberts Road, Subiaco, Western Australia.

b) I graduated with a Bachelor of Science in Mineral Exploration and Mining Geology from the Western Australian School of Mines in 1999. I completed a Graduate Certificate in Mine Planning and Design at Curtin University, Western Australia in 2009, and a Graduate Certificate in Geostatistics at Edith Cowan University, Western Australia in 2014.

c) I am a registered Fellow of the Australasian Institute of Mining and Metallurgy (#220021). I have been practicing my profession continuously since 1999 and my experience covers 26 years in the mining industry involving exploration, development, production, resource evaluation, geological consulting and corporate technical roles working on projects in Australia, Africa, South America, North America and Asia.

d) I have read the definition of "qualified person" set out in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument") and certify that by reason of my education, affiliation with a professional association (as defined in the Instrument) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of the Instrument.

e) I visited the Nyanzaga Gold Project in May 2024, during September and October 2024, and in March 2025. The purpose of the visit was to review drilling and sampling practices, data collection and validation, analytical laboratory assessment, and review of the project geology in my role as Group Geologist – Business Growth.

f) I am responsible for Sections 1.2-1.8, 1.10, 2-12, and 14 of the Report.

g) I am not independent of Perseus pursuant to Section 1.5 of the Instrument.

h) I have read the Instrument and the sections of the Report for which I am responsible and which have been prepared in compliance with the Instrument.

i) My involvement with the Nyanzaga Gold Project is limited to my work as an employee of Perseus, commencing August 2023.

j) At the effective date of the Report, to the best of my knowledge, information and belief, the sections of the Report I am responsible for contain all scientific and technical information that is required to be disclosed to make the Report not misleading.

Dated this 10th day of June 2025 at Perth, Western Australia.



Daniel Saunders, BSc, FAusIMM

# CERTIFICATE OF QUALIFIED PERSON – BENJAMIN STRONG

I, Benjamin David Strong, FAusIMM, as an author of the report entitled "Technical Report, Nyanzaga Gold Project Feasibility Study – Tanzania" (the "Report") prepared for Perseus Mining Limited ("Perseus") and with an effective date of April 28, 2025, do hereby state:

a) I am employed as Group Manager Processing, Infrastructure and Tailings by Perseus of Level 2, 437 Roberts Road, Subiaco, Western Australia.

b) I graduated with a Bachelor of Science in Extractive Metallurgy from the Western Australian School of Mines (Curtin University of Technology) in 2008.

c) I am a registered Fellow of the Australasian Institute of Mining and Metallurgy (#208858). I have worked as a metallurgist and process engineer in the mining industry for a total of 16 years since my graduation. My relevant experience in the mining industry involving roles in process plant operations, process plant commissioning, extractive metallurgy, test work program management, process engineering and plant design, study management, business management, financial modelling and corporate technical coordination and management, predominantly related to gold processing plants. This experience covers operations and projects in Africa, Australia, Asia, North America and South America.

d) I have read the definition of "qualified person" set out in National Instrument 43-101 (Standards of Disclosure for Mineral Projects) (the "Instrument") and certify that by reason of my education, affiliation with a professional association (as defined in the Instrument) and past relevant work experience, I fulfil the requirements to be a "qualified person" for the purposes of the Instrument.

e) I have visited the Nyanzaga Gold Project site from March 15 to March 20, 2025. The purpose of the visit was to provide support to and conduct activities as part of the Nyanzaga Gold Project Feasibility Study in my role as Group Manager Processing, Infrastructure and Tailings, as an employee of Perseus Mining.

f) I am responsible for Sections 1.9, 1.13-1.15, 1.17-1.18, 13, 17-19 and 21-22 of the Report.

g) I am not independent of Perseus pursuant to Section 1.5 of the Instrument.

h) I have read the Instrument and the sections of the Report for which I am responsible and which have been prepared in compliance with the Instrument.

i) My involvement with the Nyanzaga Gold Project is limited to my work as an employee of Perseus, commencing February 2023.

j) At the effective date of the Report, to the best of my knowledge, information and belief, the sections of the Report I am responsible for contain all scientific and technical information that is required to be disclosed to make the Report not misleading.

Dated this 10th day of June 2025 at Perth, Western Australia.



Benjamin Strong, BSc (Extractive Metallurgy), FAusIMM

# TABLE OF CONTENTS


| | | |
|---|---|---|
| **DATE AND SIGNATURE PAGE** | | **I** |
| **CERTIFICATE OF QUALIFIED PERSON – ADRIAN RALPH** | | **II** |
| **CERTIFICATE OF QUALIFIED PERSON – DANIEL SAUNDERS** | | **III** |
| **CERTIFICATE OF QUALIFIED PERSON – BENJAMIN STRONG** | | **IV** |
| **TABLE OF CONTENTS** | | **V** |
| **FIGURES** | | **XIII** |
| **TABLES** | | **XVIII** |
| **1.** | **SUMMARY** | **1** |
| 1.1 | Introduction, Location and Ownership | 1 |
| 1.2 | History | 1 |
| 1.3 | Geological Setting and Mineralisation | 1 |
| 1.4 | Deposit Types | 2 |
| 1.5 | Exploration | 3 |
| 1.6 | Drilling | 3 |
| 1.7 | Sample Preparation, Analysis and Security | 4 |
| 1.8 | Data Verification | 5 |
| 1.9 | Mineral Processing and Metallurgical Testing | 6 |
| 1.10 | Mineral Resource Estimates | 7 |
| 1.11 | Mineral Reserve Estimates | 9 |
| 1.12 | Mining Methods | 9 |
| 1.13 | Recovery Methods | 10 |
| 1.14 | Project Infrastructure | 14 |
| 1.15 | Market Studies and Contracts | 15 |
| 1.16 | Environmental Studies, Permitting and Social or Community Impact | 16 |
| 1.17 | Capital and Operating Costs | 17 |
| 1.18 | Economic Analysis | 18 |
| 1.19 | Interpretation and Conclusions | 19 |
| 1.20 | Recommendations | 20 |
| **2.** | **INTRODUCTION** | **22** |
| 2.1 | Terms of Reference | 22 |
| 2.2 | Qualified Person Responsibilities and Site Visits | 22 |
| 2.3 | Currency, Units of Measure, and Abbreviations | 23 |
| 2.4 | Data Sources | 33 |
| 2.5 | Acknowledgements | 33 |
| **3.** | **RELIANCE ON OTHER EXPERTS** | **34** |
| 3.1 | Other Experts | 34 |
| **4.** | **PROPERTY DESCRIPTION AND LOCATION** | **35** |
| 4.1 | Location | 35 |

4.2 Property Description 36
4.3 Ownership and Title 36
4.4 Mineral Rights and Legal Obligations 41
4.4.1 Mining Act 41
4.4.2 Tenure 41
4.4.3 Mine Development and Production 42
4.4.4 Method of operations 42
4.4.5 Beneficiation 42
4.4.6 Environmental Management 42
4.4.7 Local Content 43
4.4.8 Corporate Social Responsibility 43
4.4.9 Integrity pledge 43
4.4.10 Other Permits 43
4.5 Land Access and Compensation 45
4.6 Environmental Liabilities 47
4.7 Permits and Approvals 47
4.8 Other Factors 48
**5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY 49**
5.1 Accessibility 49
5.2 Physiography 49
5.3 Climate 50
5.4 Seismicity 51
5.5 Infrastructure 52
5.6 Labour Availability 52
5.7 Local Economy 53
**6. HISTORY 54**
6.1 Pre-OreCorp Exploration 54
6.2 OreCorp Exploration 54
6.3 Historical Mineral Resource Estimates 54
6.3.1 Pre-2012 Mineral Resource Estimates 55
6.3.2 2012 Mineral Resource Estimate 55
6.3.3 2017 Mineral Resource Estimate 55
6.3.4 2022 Kilimani Mineral Resource Estimate 55
**7. GEOLOGICAL SETTING AND MINERALISATION 57**
7.1 Regional Geology 57
7.2 Local Geology 59
7.3 Structure 63
7.3.1 Regional 63
7.3.2 Local 65
7.4 Alteration and Mineralisation 65
7.5 Comments on Geological Setting and Mineralisation 67
**8. DEPOSIT TYPES 68**
**9. EXPLORATION 70**
9.1 Overview 70

9.2 Coordinates, Survey Controls and Topographic Surveys 70
9.3 Exploration Activity and Results 70
**10. DRILLING 72**
10.1 Pre-OreCorp Drilling 72
10.1.1 Drilling Summary 72
10.1.2 Collar Surveys 75
10.1.3 Downhole Surveys 75
10.1.4 Geological Logging 75
10.1.5 RC Sampling 76
10.1.6 Diamond Core Sampling and Core Recoveries 77
10.2 Orecorp Drilling 78
10.2.1 Drilling Summary 78
10.2.2 Collar Surveys 81
10.2.3 Downhole Surveys 81
10.2.4 Geological Logging 81
10.2.5 RC Sampling 81
10.2.6 Diamond Core Sampling and Core Recoveries 84
**11. SAMPLE PREPARATION, ANALYSIS AND SECURITY 85**
11.1 Pre-Orecorp Drilling 85
11.1.1 Sample Preparation and Assay Laboratories 85
11.1.2 QAQC 85
11.1.3 Assay Methods 97
11.2 OreCorp Drilling 97
11.2.1 Sample Preparation and Assay Laboratories 97
11.2.2 QAQC 97
11.2.3 Assay Methods 106
11.3 Chain of Custody and Security 106
11.4 QAQC Conclusions 106
**12. DATA VERIFICATION 107**
12.1 Summary 107
12.2 Pre-2010 107
12.3 OreCorp 107
12.4 Perseus 108
**13. MINERAL PROCESSING AND METALLURGICAL TESTING 111**
13.1 Historical Metallurgical Test Work 111
13.2 Nyanzaga Deposit Test Work 112
13.2.1 Sample Selection 113
13.2.2 Head Grade and Specific Gravity 134
13.2.3 Comminution Test Work 138
13.2.4 Flotation 142
13.2.5 BLEG Test Work 151
13.2.6 Gravity Recovery and Cyanidation 152
13.2.7 Mineralogical Investigations 177
13.2.8 Carbon Adsorption Kinetics 180
13.2.9 Oxygen Uptake Rate 181

13.2.10 Cyanide Detoxification 182
13.2.11 Arsenic Preciptation 184
13.2.12 Viscosity 184
13.2.13 Thickening and Settling Rate 185
13.2.14 Tailings Testing 187
13.2.15 Processing Route Selection 187
13.3 Kilimani Deposit Test Work 188
13.3.1 Overview 188
13.3.2 Sample Selection 188
13.3.3 Head Grade and Specific Gravity 193
13.3.4 Comminution Test Work 194
13.3.5 Intensive Cyanidation Test Work 195
13.3.6 Gravity Recovery and Cyanidation 196
13.3.7 Viscosity 198
13.3.8 Thickening and Settling Rate 198
13.4 Site Raw Water Analysis 200
13.5 Predicted Metallurgical Performance 202
13.5.1 Ore Treatment Rate 202
13.5.2 Metal Recovery 203
13.5.3 Reagent Addition 205
13.6 Deleterious Elements 206
**14. MINERAL RESOURCE ESTIMATES 207**
14.1 Overview 207
14.2 Methods Summary 207
14.3 Data 207
14.3.1 Drilling Database 207
14.3.2 Topographic Surveys 208
14.4 Geological Interpretation and Modelling 209
14.4.1 Lithology Interpretation 209
14.4.2 Structural Modelling 210
14.4.3 Mineralisation Modelling 211
14.5 Bulk Densities 216
14.6 Statistical Analysis, Compositing and Grade Capping 218
14.7 Variography 223
14.7.1 Gold Estimate 223
14.7.2 Bulk Density Estimate 225
14.8 Block Model Parameters 227
14.9 Grade Estimation 229
14.9.1 Gold Estimates 229
14.9.2 Bulk Density Estimate 229
14.10 Validation 230
14.10.1 Visual Validation 231
14.10.2 Global Statistics 232
14.10.3 Trend Plots 233
14.11 Classification of Mineral Resources 235

14.12 Reasonable Prospects of Eventual Economic Extraction 237
14.13 Mineral Resource Statement 238
**15. MINERAL RESERVE ESTIMATES 239**
15.1 Introduction 239
15.2 Mineral Reserve Statement 239
15.3 Open Pit 240
15.3.1 Mineral Reserve Cut-off Grades 240
15.3.2 Mineral Reserve Dilution and Ore Loss 240
15.3.3 Mineral Reserve Modifying Factors 240
15.4 Economic Modelling 242
15.5 Factors Affecting Mineral Reserve Estimates 243
**16. MINING METHODS 244**
16.1 Open Pit 244
16.1.1 Introduction 244
16.1.2 Mine Design 244
16.1.3 Mining Method 249
16.1.4 Mining Schedule 249
16.1.5 Open Pit Mining Operations 250
**17. RECOVERY METHODS 251**
17.1 Introduction 251
17.2 Site Location and Layout 251
17.3 Design Criteria Development 254
17.4 Process Flowsheet 256
17.5 Process and Plant Description 259
17.5.1 Control System 259
17.5.2 ROM Pad 260
17.5.3 Crushing Circuit 261
17.5.4 Coarse Ore Stockpile and Reclaim 261
17.5.5 Grinding and Classification Circuit 261
17.5.6 Gravity Circuit 262
17.5.7 Trash Screening 262
17.5.8 Leach Feed Sampling and Pre-Leach Thickening 262
17.5.9 Leach and Adsorption Circuit 263
17.5.10 Acid Wash, Elution and Carbon Regeneration 264
17.5.11 Gold Recovery 264
17.5.12 Mercury Handling 265
17.5.13 Tailings Sampling, Thickening, Treatment and Disposal 266
17.5.14 Reagents and Consumables 267
17.5.15 Services 269
17.6 Predicted Metallurgical Performance 271
17.7 Power Requirements 272
17.8 Water Requirements 272
**18. PROJECT INFRASTRUCTURE 274**
18.1 Transportation and Logistics 276
18.1.1 Off-Site Transportation Infrastructure 276

| | | | |
|---|---|---|---|
| | 18.1.2 | Site Transportation Infrastructure | 277 |
| 18.2 | | Security and Fencing | 277 |
| 18.3 | | Operational Buildings | 278 |
| | 18.3.1 | Process Plant | 278 |
| | 18.3.2 | Administration | 279 |
| | 18.3.3 | Mine Services | 279 |
| | 18.3.4 | Other Facilities | 279 |
| 18.4 | | Workforce Accommodation | 279 |
| | 18.4.1 | Permanent Accommodation | 279 |
| | 18.4.2 | Construction Accommodation | 282 |
| 18.5 | | Mine Services | 282 |
| | 18.5.1 | Fuel and Lubricant Supply | 283 |
| | 18.5.2 | Explosive Storage | 283 |
| | 18.5.3 | Waste Dumps and Stockpiles | 283 |
| 18.6 | | Power Supply | 283 |
| | 18.6.1 | Grid Power Supply | 284 |
| | 18.6.2 | Power Quality Considerations | 284 |
| | 18.6.3 | Power Factor Correction | 285 |
| | 18.6.4 | Nyanzaga Substation | 285 |
| | 18.6.5 | Electrical Distribution | 285 |
| | 18.6.6 | Emergency Power Generation | 285 |
| | 18.6.7 | Electrical Buildings | 286 |
| 18.7 | | Communications | 286 |
| | 18.7.1 | Network Topology | 286 |
| | 18.7.2 | External Connectivity | 286 |
| | 18.7.1 | Radio | 287 |
| 18.8 | | Water Supply | 287 |
| | 18.8.1 | Raw Water | 287 |
| | 18.8.2 | Potable Water | 288 |
| 18.9 | | Tailings Storage Facility | 288 |
| | 18.9.1 | Tailings Characterisation | 291 |
| | 18.9.2 | Geotechnical Investigations | 291 |
| | 18.9.3 | Tailings Storage Facility Design | 291 |
| | 18.9.4 | TSF Dam Breach Assessment | 292 |
| | 18.9.5 | Monitoring and Surveillance | 293 |
| | 18.9.6 | Closure | 293 |
| 18.10 | | Surface Water and Sediment Management | 293 |
| **19.** | **MARKET STUDIES AND CONTRACTS** | | **295** |
| 19.1 | | Markets | 295 |
| 19.2 | | Gold Price | 295 |
| 19.3 | | Bullion Transport | 295 |
| 19.4 | | Contracts | 295 |
| **20.** | **ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT** | | **296** |
| 20.1 | | Introduction | 296 |
| 20.2 | | Environmental Studies | 297 |

| | | | |
|---|---|---|---|
| | 20.2.1 | Introduction | 297 |
| | 20.2.2 | Biodiversity | 299 |
| 20.3 | | Environmental Monitoring | 300 |
| | 20.3.1 | Climate and Meteorology | 300 |
| | 20.3.2 | Air Quality | 300 |
| | 20.3.3 | Noise Level Monitoring | 300 |
| | 20.3.4 | Ground Vibration | 301 |
| 20.4 | | Water Management | 301 |
| | 20.4.1 | Surface Water | 301 |
| | 20.4.2 | Groundwater | 301 |
| 20.5 | | Traffic and Transportation | 302 |
| 20.6 | | Soil and Land Capability | 302 |
| 20.7 | | Waste Management | 303 |
| | 20.7.1 | Pit Waste Rock | 303 |
| | 20.7.2 | Tailings Storage Facility | 303 |
| | 20.7.3 | General Waste | 303 |
| 20.8 | | Emissions and Energy | 303 |
| 20.9 | | Mine Rehabilitation and Closure | 304 |
| 20.10 | | Resettlement | 305 |
| | 20.10.1 | Resettlement Action Plan (RAP) | 305 |
| | 20.10.2 | Resettlement Program | 305 |
| 20.11 | | Environmental and Social Management | 305 |
| | 20.11.1 | Environmental and Social Management Plan | 306 |
| 20.12 | | Social Development | 306 |
| | 20.12.1 | Social Development Aspects | 306 |
| | 20.12.2 | Stakeholder Engagement Program | 307 |
| | 20.12.3 | Livelihood Restoration Program | 307 |
| | 20.12.4 | Social Development Program | 308 |
| | 20.12.5 | Local Recruitment Plan | 309 |
| | 20.12.6 | Artisanal and Illegal Mining | 309 |
| **21.** | **CAPITAL AND OPERATING COSTS** | | **311** |
| 21.1 | | Capital Costs | 311 |
| | 21.1.1 | Estimate Currency and Base Rate | 311 |
| | 21.1.2 | Development and Pre-Production Capital | 312 |
| | 21.1.3 | Sustaining Capital | 322 |
| | 21.1.4 | Rehabilitation and Mine Closure | 323 |
| 21.2 | | Operating Costs | 324 |
| | 21.2.1 | Mining | 324 |
| | 21.2.2 | Processing | 328 |
| | 21.2.3 | General and Admininstration | 335 |
| | 21.2.4 | Revenue Costs | 336 |
| | 21.2.5 | Qualifications | 336 |
| **22.** | **ECONOMIC ANALYSIS** | | **337** |
| **23.** | **ADJACENT PROPERTIES** | | **340** |
| **24.** | **OTHER RELEVANT DATA AND INFORMATION** | | **341** |

| | | | |
|---|---|---|---|
| **25.** | **INTERPRETATION AND CONCLUSIONS** | | **342** |
| | 25.1 | Mineral Resources | 342 |
| | 25.2 | Mineral Reserves | 342 |
| | 25.3 | Mining Methods | 343 |
| | 25.4 | Mineral Processing and Metallurgical Testing | 343 |
| | 25.5 | Recovery Methods | 343 |
| | 25.6 | Project Infrastructure | 344 |
| | 25.7 | Environment, Social Impact and Permitting | 344 |
| | 25.8 | Economic Analysis | 344 |
| **26.** | **RECOMMENDATIONS** | | **345** |
| | 26.1 | Mineral Resources | 345 |
| | 26.2 | Mineral Reserves | 345 |
| | 26.3 | Mining Methods | 345 |
| | 26.4 | Mineral Processing and Metallurgical Testing | 345 |
| | 26.5 | Recovery Methods | 346 |
| | 26.6 | Project Infrastructure | 346 |
| | 26.7 | Environment, Social Impact and Permitting | 346 |
| **27.** | **REFERENCES** | | **348** |

# FIGURES

Figure 1-1: LOM mining production schedule (Source: Perseus, 2025) ..... 10
Figure 1-2: LOM processing production schedule (Source: Perseus,2025) ..... 12
Figure 1-3: Project gold production profile (Source: Perseus,2025) ..... 19
Figure 4-1: Nyanzaga Gold Project location plan (Source: Perseus, 2025) ..... 35
Figure 4-2: Nyanzaga Gold Project tenement location plan (Source: Perseus, 2025) ..... 38
Figure 4-3: Suswa Springs location plan (Source: Perseus, 2025) ..... 46
Figure 5-1: Aerial view of the project site (looking west) (Source: OreCorp, 2023) ..... 50
Figure 5-2: Wind rose diagram for the Nyanzaga Gold Project (Source: (Lycopodium, 2024a)) ..... 51
Figure 5-3: Earthquakes occurring within 500 km of the Nyanzaga Gold Project site (Source: (Knight Piésold, 2021b)) ..... 52
Figure 7-1: Nyanzaga Regional Geology (Source: Perseus, 2025) ..... 58
Figure 7-2: Nyanzaga deposit interpreted geology – plan view (Source: OreCorp, 2023) ..... 60
Figure 7-3: Interpreted stratigraphic sequence of the Nyanzaga Gold Project (Source: OreCorp, 2024) ..... 61
Figure 7-4: Nyanzaga member groups example images (Source: OreCorp, 2024) ..... 62
Figure 7-5: Nyanzaga diagrammatic cross section – 9,672,420 mN looking north showing members and interpreted position of major faults (Source: Perseus, 2025) ..... 63
Figure 7-6: Nyanzaga Magnetics – First vertical derivative (1VD) with structural interpretation (Source: Perseus, 2025) ..... 64
Figure 7-7: Cross section 9,672,280mN showing members and positions of interpreted faults (Source: Perseus, 2025) ..... 65
Figure 7-8: Identified vein types at Nyanzaga (Source: OreCorp, 2023) ..... 67
Figure 8-1: Tectonic settings of gold-rich epigenetic mineral deposits. Vertical scale is exaggerated to allow schematic depths of formation of various deposit styles to be shown. Adapted from Groves et al (1998). Abbreviations: VHMS = volcanic hosted massive sulfide. ..... 68
Figure 9-1: Nyanzaga surface sampling location plan – 2017 onwards (Source: Perseus, 2025) ..... 71
Figure 10-1: Nyanzaga drilling by year prior to 2016 (Source: Perseus, 2025) ..... 73
Figure 10-2: Nyanzaga drilling by type prior to 2016 (Source: Perseus, 2025) ..... 74
Figure 10-3: Nyanzaga drilling by year from 2016 onwards (Source: Perseus, 2025) ..... 79
Figure 10-4: Nyanzaga drilling by type from 2016 onwards (Source: Perseus, 2025) ..... 80
Figure 10-5: RC sample weight distribution by year – Dry samples only (Source: Perseus, 2025) ..... 82
Figure 10-6: RC sample weight distribution by year – Moist samples only (Source: Perseus, 2025) ..... 83
Figure 10-7: RC sample weight distribution by year – Wet samples only (Source: Perseus, 2025) ..... 83
Figure 10-8: Diamond core recovery by year and depth (Source: Perseus, 2025) ..... 84
Figure 11-1: Control chart – OxE42 – SGS Mwanza (Source: Perseus, 2025) ..... 87
Figure 11-2: Control chart – OxE42 – ALS (Source: Perseus, 2025) ..... 88
Figure 11-3: Control chart – OxH37 – ALS (Source: Perseus, 2025) ..... 88
Figure 11-4: Control chart – OxH37 – SGS Mwanza (Source: Perseus, 2025) ..... 89
Figure 11-5: Control chart – OxI23 – ALS (Source: Perseus, 2025) ..... 89
Figure 11-6: Control chart – OxI23 – SGS Mwanza (Source: Perseus, 2025) ..... 90
Figure 11-7: Control chart – Blank BBG – ALS (Source: Perseus, 2025) ..... 90
Figure 11-8: Control chart – Blank BBG – SGS Mwanza (Source: Perseus, 2025) ..... 91

Figure 11-9: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) RC samples – ALS (Source: Perseus, 2025) ....95
Figure 11-10: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) RC samples – SGS Mwanza (Source: Perseus, 2025) ....95
Figure 11-11: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) DD half core samples – ALS (Source: Perseus, 2025)....96
Figure 11-12: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) DD core samples – SGS Mwanza (Source: Perseus, 2025)....96
Figure 11-13: Control chart – G314-6 – Nesch Mintech (Source: Perseus, 2025)....99
Figure 11-14: Control chart – OxI23 – SGS Mwanza (Source: Perseus, 2025) ....99
Figure 11-15: Control chart – SN16 – SGS Mwanza (Source: Perseus, 2025) ....100
Figure 11-16: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) RC samples – Nesch Mintech (Source: Perseus, 2025)....104
Figure 11-17: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) DD core samples – Nesch Mintech (Source: Perseus, 2025) ....104
Figure 11-18: Umpire analysis scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) RC samples – ALS vs. SGS (Source: Perseus, 2025)....105
Figure 11-19: Umpire analysis scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) DD coarse rejects – ALS vs. SGS (Source: Perseus, 2025) ....106
Figure 12-1: Scatterplot of verification samples – Original (SGS) versus Check (MSA) (Source: Perseus, 2025) ....109
Figure 12-2: Scatterplot of verification samples – MSALABS (CPA) versus SGS (FA) (Source: Perseus, 2025) ....110
Figure 13-1: Location of Nyanzaga comminution samples, plan view (Source: Perseus, 2025) ....115
Figure 13-2: Location of Nyanzaga comminution samples, perspective view looking northeast (Source: Perseus, 2025)....115
Figure 13-3: Location of Nyanzaga UCS samples, plan view (Source: Perseus, 2025) ....117
Figure 13-4: Location of Nyanzaga UCS samples, perspective view looking northeast (Source: Perseus, 2025) ....117
Figure 13-5: Location of Nyanzaga BLEG samples, plan view (Source: Perseus, 2025) ....119
Figure 13-6: Location of Nyanzaga BLEG samples, perspective view looking northeast (Source: Perseus, 2025) ....119
Figure 13-7: Location of Nyanzaga metallurgical variability samples, plan view (Source: Perseus, 2025) 121
Figure 13-8: Location of Nyanzaga metallurgical variability samples, perspective view looking northeast (Source: Perseus, 2025) ....121
Figure 13-9: Location of intervals selected for Nyanzaga oxide ore type composite, plan view (Source: Perseus, 2025)....122
Figure 13-10: Location of intervals selected for Nyanzaga oxide ore type composite, perspective view looking northeast (Source: Perseus, 2025)....123
Figure 13-11: Location of intervals selected for Nyanzaga mudstone ore type composite, plan view (Source: Perseus, 2025) ....124
Figure 13-12: Location of intervals selected for Nyanzaga mudstone ore type composite, perspective view looking northeast (Source: Perseus, 2025) ....124
Figure 13-13: Location of intervals selected for Nyanzaga sandstone ore type composite, plan view (Source: Perseus, 2025) ....126

Figure 13-14: Location of intervals selected for Nyanzaga sandstone ore type composite, perspective view looking northeast (Source: Perseus, 2025) ....126
Figure 13-15: Location of intervals selected for Nyanzaga chert ore type composite, plan view (Source: Perseus, 2025)....128
Figure 13-16: Location of intervals selected for Nyanzaga chert ore type composite, perspective view looking northeast (Source: Perseus, 2025)....128
Figure 13-17: Location of intervals selected for Nyanzaga oxide ore engineering composite, plan view (Source: Perseus, 2025) ....130
Figure 13-18: Location of intervals selected for Nyanzaga oxide ore engineering composite, perspective view looking northeast (Source: Perseus, 2025) ....130
Figure 13-19: Location of intervals selected for Nyanzaga fresh ore engineering composite, plan view (Source: Perseus, 2025) ....131
Figure 13-20: Location of intervals selected for Nyanzaga fresh ore engineering composite, perspective view looking northeast (Source: Perseus, 2025) ....132
Figure 13-21: Location of intervals selected for Nyanzaga master composite, plan view (Source: Perseus, 2025) ....133
Figure 13-22: Location of intervals selected for Nyanzaga master composite, perspective view looking northeast (Source: Perseus, 2025)....133
Figure 13-23: Flotation tailings mass distribution by size fraction for Nyanzaga ore type composite samples (Source: Perseus, 2025) ....146
Figure 13-24: Flotation tailings gold distribution by size fraction for Nyanzaga ore type composite samples (Source: Perseus, 2025) ....146
Figure 13-25: Flotation tailings silver distribution by size fraction for Nyanzaga ore type composite samples (Source: Perseus, 2025) ....147
Figure 13-26: Flotation tailings sulfide sulfur distribution by size fraction for Nyanzaga ore type composite samples (Source: Perseus, 2025) ....147
Figure 13-27: Sequential triple contact CIP leach test work results for Nyanzaga master composite ....181
Figure 13-28: Oxygen uptake rate for Nyanzaga ore type composite samples, and for process plant design ....182
Figure 13-29: Settling rates of Nyanzaga oxide bulk engineering composite at 10% w/w solids in static cylinder tests (Source: (Outotec, 2017)) ....186
Figure 13-30: Location of Kilimani comminution samples, plan view (Source: Perseus, 2025) ....189
Figure 13-31: Location of Kilimani comminution samples, perspective view looking northeast (Source: Perseus, 2025)....190
Figure 13-32: Location of Kilimani metallurgical variability samples, plan view (Source: Perseus, 2025).191
Figure 13-33: Location of Kilimani metallurgical variability samples, perspective view looking northeast (Source: Perseus, 2025) ....191
Figure 13-34: Location of intervals selected for Kilimani master composite, plan view (Source: Perseus, 2025) ....192
Figure 13-35: Location of intervals selected for Kilimani master composite, perspective view looking northeast (Source: Perseus, 2025)....193
Figure 13-36: Settling rates of Kilimani master composite at 10% w/w solids in static cylinder tests (Source: (Metso Outotec, 2022)) ....199
Figure 13-37: Relationship between calculated gold head grade and residue grade for recovery estimation ....204

Figure 14-1: Location and spatial distribution of drill hole collars at Nyanzaga Gold Project with SML boundary (Source: Perseus, 2025) ..... 208
Figure 14-2: Topographic surface applied at Nyanzaga Gold Project with SML boundary (Source: Perseus, 2024) ..... 209
Figure 14-3: Cross-section 9,672,440 mN (±20 m) looking north showing drill holes coded by member (Source: Perseus, 2024) ..... 210
Figure 14-4: Oblique view from above looking northwest showing Perseus faults relative to drilling (Source: Perseus, 2025) ..... 211
Figure 14-5: Log probability plot for all Nyanzaga assays showing inflection point at ~0.3 g/t Au (Source: Perseus, 2025) ..... 212
Figure 14-6: Cross-section 9,672,440 mN (±20 m) looking north showing economic composite categories (Source: Perseus, 2024) ..... 213
Figure 14-7: Cross-section 9,672,440 mN (±20 m) looking north showing Nyanzaga mineralisation envelope (Source: Perseus, 2025) ..... 214
Figure 14-8: Oblique-section looking northwest showing Kilimani sectional interpretation and structural discs (Source: Perseus, 2025) ..... 215
Figure 14-9: Oblique-section looking northwest showing Kilimani mineralisation domain (Source: Perseus, 2025) ..... 216
Figure 14-10: Plan view of Nyanzaga and Kilimani bulk density measurements (Source: Perseus, 2025) 217
Figure 14-11: Frequency histogram showing gold grade (left) and sample length (right) – Nyanzaga deposit (Source: Perseus, 2025) ..... 218
Figure 14-12: Frequency histogram showing gold grade (left) and sample length (right) – Kilimani deposit (Source: Perseus, 2025) ..... 219
Figure 14-13: Contact plots for unmineralised and mineralised chert (SCT) member (left) and the unmineralised and mineralised sandstone (SST) member (right) within fault block 3 (Source: Perseus, 2025) ..... 220
Figure 14-14: Contact plots for unmineralised and mineralised chert (SCT) member (left) and the unmineralised and mineralised sandstone (SST) member (right) within fault block 6 (Source: Perseus, 2025) ..... 220
Figure 14-15: Contact plots for mineralised lower volcanics (LVS) and chert (SCT) (left), and the chert (SCT) and sandstone (SST) member (right) within fault block 6 (Source: Perseus, 2025) ..... 221
Figure 14-16: Contact plots for mineralised sandstone (SST) and mudstone (SMS) (left), and the mudstone (SMS) and upper volcanics (UVS) member (right) within fault block 6 (Source: Perseus, 2025) ..... 221
Figure 14-17: Frequency histogram (left) and log probability plot (right) for Nyanzaga deposit (Source: Perseus, 2025) ..... 222
Figure 14-18: Frequency histogram (left) and log probability plot (right) for Kilimani deposit (Source: Perseus, 2025) ..... 222
Figure 14-19: Nyanzaga variogram models and back transform (Source: Perseus, 2025) ..... 224
Figure 14-20: Kilimani variogram models and back transform (Source: Perseus, 2025) ..... 225
Figure 14-21: Variogram models and back transform – Density – Oxide (Source: Perseus, 2025) ..... 226
Figure 14-22: Variogram models and back transform – Density – Fresh (Source: Perseus, 2025) ..... 227
Figure 14-23: Filled proportions by weathering and ore type - Density (Source: Perseus, 2025) ..... 230
Figure 14-24: Cross section 9,672,400 mN (±20 m) looking north with block grades and composites - Nyanzaga (Source: Perseus, 2025) ..... 231

Figure 14-25: Oblique section looking northwest with block grades and composites - Kilimani (Source: Perseus, 2025).....232
Figure 14-26: Trend Plot by Easting (top), Northing (middle) and RL (bottom) - Composites (red) versus declustered composites (blue) versus Blocks (black) – Nyanzaga mineralisation (Source: Perseus, 2025).....233
Figure 14-27: Trend Plot by Easting (top), Northing (middle) and RL (bottom) - Composites (red) versus declustered composites (blue) versus Blocks (black) – Kilimani mineralisation (Source: Perseus, 2025).....234
Figure 14-28: Trend Plot by Easting (top), Northing (middle) and RL (bottom) - Composites (red) versus Blocks (black) – Density - Fresh (Source: Perseus, 2025).....235
Figure 14-29: Average distance to samples by classification – Nyanzaga mineralisation (Source: Perseus, 2025).....236
Figure 14-30: Average distance to samples by classification –Kilimani mineralisation (Source: Perseus, 2025).....237
Figure 16-1: Nyanzaga optimisation stage shells – plan view (Source: Perseus, 2025).....246
Figure 16-2: Nyanzaga optimisation stage shells - oblique section looking northwest (Source: Perseus, 2025).....247
Figure 16-3: Nyanzaga pit design stages – plan view (Source: Perseus, 2025).....248
Figure 16-4: Nyanzaga pit design stages – oblique section looking northwest (Source: Perseus, 2025) ..248
Figure 16-5: LOM mining production schedule (Source: Perseus, 2025).....250
Figure 17-1: Nyanzaga site layout plan, with single centre of key operations located close to the process plant (Source: (Lycopodium, 2025b)).....253
Figure 17-2: Simplified processing plant flowsheet (Source: Lycopodium 2024).....258
Figure 17-3: LOM processing production schedule (Source: Perseus, 2025).....271
Figure 18-1: Nyanzaga overall site layout plan (Source: (Lycopodium, 2025d)).....275
Figure 18-2: Road transportation routes identified between Port of Dar es Salaam and Nyanzaga Gold Project (Mainline Carriers Ltd and Freight Forwarders Tanzania Ltd, 2022).....276
Figure 18-3: Conceptual layout of the permanent accommodation camp (Source: (Lycopodium, 2025g)).....281
Figure 18-4: Existing exploration camp, with north to the top of the photograph (Source: OreCorp, 2022).....282
Figure 18-5: Bulyanhulu to Nyanzaga power connection (Source: ECG Engineering, 2024).....284
Figure 18-6: Communications tower under construction (Source: Perseus, 2025).....287
Figure 18-7: Cleared area for water abstraction intake, looking WNW (Source: Perseus, 2025).....288
Figure 18-8: Conceptual Nyanzaga TSF at final stage, in plan view (Source: (Knight Piésold, 2025d)).....290
Figure 20-1: Principal area of interest for environmental studies (Source: Perseus, 2025).....298
Figure 21-1: Sources of development capital cost pricing.....316
Figure 21-2: LOM mining operating cost breakdown by cost element (Source: Perseus, 2025).....325
Figure 21-3: LOM processing operating cost breakdown by cost element (Source: Perseus, 2025).....329
Figure 22-1: Project gold production profile (Source: Perseus, 2025).....338
Figure 22-2: Project pre-tax net cumulative cashflow (Source: Perseus, 2025).....338
Figure 22-3: Key sensitivities to Project pre-tax NPV (Source: Perseus, 2025).....339

# TABLES

Table 1-1: Nyanzaga Gold Project Measured and Indicated Mineral Resource effective as at October 1, 2024[4,5,6] ....8
Table 1-2: Nyanzaga Gold Project Inferred Mineral Resource effective as at October 1, 2024[4,5,6] ....8
Table 1-3: Nyanzaga Gold Project Mineral Reserve Statement[1,2,3,4,5,6] ....9
Table 1-4: Summary of key process design and operating criteria ....12
Table 1-5: Project electrical power demand ....13
Table 1-6: Capital cost estimate summary (Q4 CY2024, -10% 15%) ....17
Table 1-7: Project LOM operating cost estimate (Q4 CY2024, ±15%) ....18
Table 1-8: Outcomes of economic analysis for the Nyanzaga Gold Project (100% basis) ....18
Table 2-1: Summary of Qualified Persons ....22
Table 2-2: Summary of abbreviations ....23
Table 3-1: Other experts ....34
Table 4-1: Royalty and licence conditions ....36
Table 4-2: Nyanzaga Gold Project tenement summary ....37
Table 4-3: Nyanzaga Gold Project tenement coordinates ....39
Table 4-4: Nyanzaga Gold Project summary of key permits ....44
Table 6-1: Summary of historical exploration at the Nyanzaga Gold Project ....54
Table 6-2: Summary of SMCL exploration at the Nyanzaga Gold Project ....54
Table 6-3: April 2012 Tusker (Nyanzaga) MRE – reported at 0.4 g/t Au ....55
Table 6-4: April 2012 Kilimani MRE – reported at 0.4 g/t Au ....55
Table 6-5: 2017 Nyanzaga and Kilimani MRE – reported at 1.5 g/t Au cut-off ....55
Table 6-6: 2022 Kilimani MRE – reported at 0.4 g/t Au cutoff ....56
Table 9-1: Nyanzaga survey datum ....70
Table 9-2: Nyanzaga surface sampling statistics ....70
Table 10-1: Nyanzaga Gold Project drilling summary pre-SMCL ....72
Table 10-2: Nyanzaga Gold Project drilling summary - OreCorp ....78
Table 10-3: RC sample weights by condition and year ....82
Table 11-1: Number of CRM and blank analyses – 2005 - 2012 ....86
Table 11-2: Summary of CRM performance by laboratory and standard – 2005-2012 ....92
Table 11-3: Summary of Blank performance by laboratory and standard – 2005-2012 ....93
Table 11-4: Summary of field duplicates by laboratory and type – 2005-2012 ....94
Table 11-5: Field duplicates summary performance by laboratory and type – 2005-2012 ....94
Table 11-6: Number of CRM and blank analysis – 2016 - 2022 ....97
Table 11-7: Summary of CRM performance by laboratory and standard – 2016-2023 ....101
Table 11-8: Summary of Blank performance by laboratory and standard – 2016-2023 ....102
Table 11-9: Summary of field duplicates by laboratory and standard – 2016-2023 ....103
Table 11-10: Field duplicates summary performance by laboratory and type – 2016-2023 ....103
Table 11-11: Umpire analysis summary performance by laboratory and type – 2016-2023 ....105
Table 12-1: Samples selected for verification analysis ....108
Table 13-1: Nyanzaga deposit comminution variability samples ....114

Table 13-2: Nyanzaga deposit UCS variability samples ..... 116
Table 13-3: Nyanzaga deposit BLEG variability samples ..... 118
Table 13-4: Nyanzaga deposit metallurgical variability samples ..... 120
Table 13-5: Nyanzaga oxide ore type composite sample intervals ..... 122
Table 13-6: Nyanzaga mudstone ore type composite sample intervals ..... 123
Table 13-7: Nyanzaga sandstone ore type composite sample intervals ..... 125
Table 13-8: Nyanzaga chert ore type composite sample intervals ..... 127
Table 13-9: Nyanzaga oxide bulk engineering composite sample intervals ..... 129
Table 13-10: Nyanzaga fresh bulk engineering composite composition ..... 131
Table 13-11: Nyanzaga fresh bulk engineering paste fill feed composite composition ..... 132
Table 13-12: Head assays (select analytes) for Nyanzaga deposit test work composites and metallurgical variability samples ..... 135
Table 13-13: Gold head assays for Nyanzaga deposit test work BLEG variability samples ..... 136
Table 13-14: True SG for Nyanzaga deposit test work composites and metallurgical variability samples 137
Table 13-15: CWi for Nyanzaga deposit comminution variability samples ..... 138
Table 13-16: Ore competency classification ..... 138
Table 13-17: SMC Test® results for Nyanzaga deposit comminution variability samples ..... 139
Table 13-18: Ore grindability/hardness classification ..... 139
Table 13-19: BWi for Nyanzaga deposit comminution variability samples ..... 140
Table 13-20: RWi for Nyanzaga deposit comminution variability samples ..... 140
Table 13-21: Ore abrasion classification ..... 141
Table 13-22: Ai for Nyanzaga deposit comminution variability samples ..... 141
Table 13-23: UCS classification ..... 142
Table 13-24: UCS values for Nyanzaga deposit UCS variability samples ..... 142
Table 13-25: Gravity and flotation test results for Nyanzaga deposit ore type composite samples ..... 145
Table 13-26: Test results for cyanidation of Nyanzaga deposit ore type composite flotation concentrate and tails samples ..... 150
Table 13-27: BLEG results for Nyanzaga deposit BLEG variability samples ..... 152
Table 13-28: Test results comparing direct leach and CIL for Nyanzaga deposit ore type composite samples ..... 156
Table 13-29: Test results for grind size optimisation and inclusion of gravity recovery for Nyanzaga deposit oxide and mudstone ore type composite samples ..... 159
Table 13-30: Test results for grind size optimisation and inclusion of gravity recovery for Nyanzaga deposit sandstone and chert ore type composite samples ..... 160
Table 13-31: Cyanidation slurry density optimisation test results for Nyanzaga deposit fresh ore type composite samples ..... 162
Table 13-32: Oxidant evaluation test results for Nyanzaga deposit oxide and mudstone ore type composite samples ..... 164
Table 13-33: Oxidant evaluation test results for Nyanzaga deposit sandstone and chert ore type composite samples ..... 165
Table 13-34: Test results for cyanide dosage optimisation for Nyanzaga deposit ore type composite samples ..... 167
Table 13-35: Demonstration test results for Nyanzaga deposit ore type composite samples ..... 169
Table 13-36: Demonstration test results for the Nyanzaga deposit master composite ..... 170

Table 13-37: Bulk leach test results for Nyanzaga deposit composite samples ....172
Table 13-38: Summary of gravity/cyanidation metallurgical variability results....173
Table 13-39: Gravity/cyanidation test results at optimised conditions for Nyanzaga deposit metallurgical variability samples V-CH-FR-2 to V-MS-FR-17 ....175
Table 13-40: Gravity/cyanidation test results at optimised conditions for Nyanzaga deposit metallurgical variability samples V-MS-FR-18 to V-OX-OX-32....176
Table 13-41: Diagnostic leach test results for Nyanzaga fresh ore type composite samples ....178
Table 13-42: Mineral abundance of cyanidation leach residue of the bulk engineering paste fill feed composite ....179
Table 13-43: Magnetic content of Nyanzaga deposit comminution variability samples....180
Table 13-44: Fleming adsorption constants and cumulative carbon loading from sequential triple contact CIP leach test work conducted on Nyanzaga master composite....181
Table 13-45: Final loaded carbon assays from sequential triple contact CIP leach test work conducted on Nyanzaga master composite....181
Table 13-46: Semi-continuous $SO_2$/air cyanide detoxification test results on Nyanzaga master composite cyanidation tailings slurry ....183
Table 13-47: Arsenic precipitation test results on Nyanzaga master composite cyanide detoxification tailings slurry....184
Table 13-48: Viscosity results for Nyanzaga oxide bulk engineering composite and Nyanzaga master composite samples ....185
Table 13-49: Dynamic thickening test work results for the Nyanzaga oxide bulk engineering composite ....186
Table 13-50: Dynamic thickening test work results for the Nyanzaga fresh bulk engineering composite 187
Table 13-51: Kilimani deposit comminution variability samples ....189
Table 13-52: Kilimani deposit metallurgical variability samples ....190
Table 13-53: Kilimani master composite composition....192
Table 13-54: Head assays (select analytes) for Kilimani deposit test work composite and metallurgical variability samples ....193
Table 13-55: SMC Test® results for Kilimani deposit comminution variability samples ....194
Table 13-56: BWi for Kilimani deposit comminution variability samples ....194
Table 13-57: RWi for Nyanzaga deposit comminution variability samples....195
Table 13-58: Ai for Kilimani deposit comminution variability samples....195
Table 13-59: Intensive cyanidation results for Kilimani deposit metallurgical variability samples ....196
Table 13-60: Gravity/cyanidation test results for Kilimani deposit metallurgical variability samples....197
Table 13-61: Viscosity results for Kilimani master composite sample....198
Table 13-62: Dynamic thickening test work results for the Kilimani master composite ....200
Table 13-63: Lake Victoria raw water analysis ....201
Table 13-64: 85$^{th}$ percentile and average ore parameters for Nyanzaga Gold Project ore types (Orway Mineral Consultants, 2024)....202
Table 13-65: Nyanzaga deposit metallurgical variability samples excluded from gold recovery analysis.203
Table 13-66: Nyanzaga plant gold recovery model equations....204
Table 13-67: Estimated Nyanzaga gold recoveries at various gold head grades ....205
Table 13-68: Estimated CIL plant reagent addition rates by ore type ....205
Table 14-1: Nyanzaga Gold Project drilling summary ....208

Table 14-2: Nyanzaga Gold Project bulk density measurements by weathering type .....217
Table 14-3: Explanation of domain coding.....218
Table 14-4: Nyanzaga Gold Project raw sample statistics by deposit.....219
Table 14-5: Nyanzaga Gold Project composited sample statistics by deposit .....219
Table 14-6: Nyanzaga Gold Project capped composite statistics by deposit.....222
Table 14-7: Distance restriction applied to composite data .....223
Table 14-8: Variogram model parameters – Gold (Vulcan rotations).....223
Table 14-9: Variogram model parameters – Bulk density (Vulcan rotations).....225
Table 14-10: Block model dimensions.....227
Table 14-11: Block model variables.....228
Table 14-12: Block model coding constraints .....228
Table 14-13: Block model search parameters – gold estimates .....229
Table 14-14: Block model search parameters – density estimate .....229
Table 14-15: Global statistics comparisons – blocks versus composites .....232
Table 14-16: RPEEE optimisation summary parameters.....237
Table 14-17: Nyanzaga Gold Project Measured and Indicated Mineral Resource effective as at 1 October 2024[4,5,6] .....238
Table 14-18: Nyanzaga Gold Project Inferred Mineral Resource effective as at 1 October 2024[4,5,6] .....238
Table 15-1: Nyanzaga Gold Project Mineral Reserve Statement[1,2,3,4,5,6] .....239
Table 15-2: Nyanzaga open pit Mineral Reserve cut-off grades .....240
Table 15-3: Geotechnical slope design recommendations – Low consequence risk acceptance criteria .242
Table 16-1: Pit optimisation and design slope angles by weathering domain.....244
Table 16-2: Pit optimisation processing recovery by rock type .....245
Table 16-3: Mining costs by stage .....245
Table 16-4: Drill and blast costs by type.....245
Table 16-5: Base case optimisation results .....246
Table 16-6: Pit design criteria by weathering domain .....247
Table 17-1: Ore types and life of mine (LOM) blend.....254
Table 17-2: Summary of key process design and operating criteria .....256
Table 17-3: Summary of major process equipment.....259
Table 17-4: Project electrical power demand .....272
Table 20-1: Energy emissions predictions for the Nyanzaga Gold Project.....304
Table 21-1: Capital cost estimate summary (Q4 CY2024, -10% 15%) .....311
Table 21-2: Foreign currency exchange rates used for Nyanzaga Gold Project cost estimates .....312
Table 21-3: Development and pre-production capital cost summary (Q4 CY2024, -10% 15%) .....312
Table 21-4: Development capital cost estimate basis.....313
Table 21-5: Development capital cost estimate methodology .....314
Table 21-6: Derivation of quantities.....315
Table 21-7: Sources of pricing .....316
Table 21-8: Process plant capital cost breakdown.....317
Table 21-9: Reagents and services capital cost breakdown.....318
Table 21-10: Infrastructure capital cost breakdown.....319

Table 21-11: Mining services and mining contractor establishment capital cost breakdown.....319
Table 21-12: Construction distributables cost breakdown .....319
Table 21-13: EPCM management cost breakdown .....320
Table 21-14: Owner's project costs.....320
Table 21-15: Processing pre-production capital cost breakdown.....321
Table 21-16: LOM sustaining capital cost estimate.....323
Table 21-17: Rehabilitation and closure capital cost estimate .....323
Table 21-18: Project LOM operating cost estimate (Q4 CY2024, ±15%).....324
Table 21-19: LOM mining operating cost estimate (Q4 CY2024, ±15%) .....325
Table 21-20: Mining operating cost key assumptions.....325
Table 21-21: Perseus mining personnel .....326
Table 21-22: Mining LOM operating cost estimate by financial year ($M, Q4 CY2024, ±15%) .....327
Table 21-23: LOM processing cost summary (Q4 CY2024, ±15%).....328
Table 21-24: Processing LOM operating cost estimate by financial year ($M, Q4 CY2024, ±15%) .....330
Table 21-25: Process plant personnel and labour cost .....331
Table 21-26: TANESCO T3 HV Power Tariffs.....331
Table 21-27: Project annual electrical energy consumption and cost .....332
Table 21-28: Maintenance cost summary.....333
Table 21-29: Reagents and consumables cost summary .....334
Table 21-30: Plant laboratory cost summary .....334
Table 21-31: LOM G&A cost summary (Q4 CY2024, ±15%) .....335
Table 21-32: Perseus G&A personnel.....336
Table 21-33: Revenue realisation cost basis and LOM cost summary (Q4 CY2024, ±15%) .....336
Table 22-1: Key economic assumptions for evaluation of the Nyanzaga Gold Project.....337
Table 22-2: Outcomes of economic analysis for the Nyanzaga Gold Project (100% basis) .....337

# 1. SUMMARY

## 1.1 INTRODUCTION, LOCATION AND OWNERSHIP

This report, entitled the "Technical Report, Nyanzaga Gold Project Feasibility Study – Tanzania" (the Report), was prepared by Perseus Mining Limited (Perseus or the Company). Perseus is a Producing Issuer, as defined in the Canadian Securities Administrator's National Instrument 43-101 - Standards of Disclosure for Mineral Projects (NI 43-101). The Report complies with the requirements of NI 43-101.

The Report was prepared to align with the Company's continuous disclosure of exploration results, Mineral Resources and Mineral Reserves in accordance with NI 43-101 and the 2012 Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code). The effective date of this Report is April 28, 2025 (the Effective Date).

Specifically, the objective of this Report is to summarise the results of the Nyanzaga Gold Project Feasibility Study (the Feasibility Study) to demonstrate the technical and economic viability of developing an open pit mining operation at the Nyanzaga Gold Project.

The Nyanzaga Gold Project (the Project) is located in north-western Tanzania, south of Lake Victoria within the Sengerema District of the Mwanza Region. The Project is approximately 60 km southwest of Mwanza (Tanzania's second largest city) and 7 km southeast of Ngoma.

Perseus acquired the Project in the second quarter of 2024 via the acquisition of OreCorp Limited (OreCorp). The Project comprises a single 23.36 $km^2$ Special Mining Lease (SML 653/2021) that covers the proposed development area, nine granted prospecting licences and one prospecting licence application covering an additional 163.93 $km^2$.

The Company's interest in SML 653/2021 is held via 80% owned Tanzanian subsidiary Nyanzaga Mining Corporation Limited (NMCL). The remaining 20% of NMCL is owned by the Government of Tanzania.

## 1.2 HISTORY

The exploration history of the Nyanzaga gold deposit dates to the colonial period when gossan outcrops were identified on Tusker Hill in 1937. Modern exploration commenced in 1996 involving mapping, soil sampling, rock chip sampling, geophysical surveys, and drilling programs. These activities were conducted by various companies until 2015 when OreCorp entered the Project via a joint venture with Acacia Mining plc.

OreCorp commenced a systematic relogging program of existing drilling to build a consistent reference for subsequent geological and structural interpretations, along with a range of other exploration and resource definition activities.

A Mineral Resource Estimate (MRE) for Nyanzaga and the adjacent satellite deposit Kilimani was completed by CSA Global in March 2017 and updated in September 2017. The September 2017 MRE for Nyanzaga was used as the basis for the OreCorp Definitive Feasibility Study (DFS) released in August 2022.

Following acquisition of the Project in 2024 Perseus initiated various studies aimed at updating the DFS reported by OreCorp with consideration of a change in operating methodology from a small open pit and underground operation (proposed by OreCorp) to a larger open pit only scenario.

## 1.3 GEOLOGICAL SETTING AND MINERALISATION

The Nyanzaga Project is located on the north-eastern flank of the Sukumaland Greenstone Belt, representing one of the six greenstone belts within the Tanzanian portion of the Lake Victoria Goldfield. The greenstone belts contain a diverse sequence of volcanic and sedimentary rocks of mostly greenschist metamorphic grade, which host numerous gold prospects and active mines (e.g., Bulyanhulu, Geita, and North Mara). The greenstone sequences within these belts have been divided into the Nyanzian Supergroup (Nyanzian) and Kavirondian Supergroup (Kavirondian).

Further division of the Nyanzian has been proposed into a “Lower Series” of mafic-intermediate volcanic (minor ultramafic) with subordinate iron formations and clastic sediments, and an “Upper Series” of felsic to intermediate volcanics, volcaniclastics, iron formations, chert, mudstone, and sandstones. The Kavirondian, which unconformably overlies the Nyanzian, is dominated by coarse clastic sediments (sandstones and conglomerates).

The Project is situated on the north-eastern flank of the Sukumaland Greenstone Belt. Rock sequences comprise Nyanzian-aged sequences of mafic volcanics in the far south-west and banded-iron-formation, tuffs, mudstone, sandstone and epiclastics of general volcanogenic origin and massive sulfide lenses and volcanics of rhyodacitic to andesitic composition. The sequences are tightly folded and strike generally west-northwest.

In the central part of the project, the Nyanzaga and Kilimani groups are defined. The Nyanzaga Group is divided into a sequence of three broad mappable units from drill core and outcrop mapping. These units are folded into the north-northwest plunging Nyanzaga Anticline. These sequences are in turn overlain by the Kilimani Group which appears to be tectonically dislocated from the underlying Nyanzaga Group by faulting and potential earlier thrusts.

The Kilimani deposit, located 450 m northeast of Nyanzaga, is developed in the fold hinge of an interpreted double plunging anticline. The bulk of the defined deposit occurs in the heavily weathered, upper 140 m from surface.

A series of different faulting sets has been recognised across the Nyanzaga project area. These include observed outcrop positions with suggested sinistral movement; others with inferred dextral movement; a series of steep faults sub-parallel to bedding; and several low angle thrust faults. Additionally, east-west trending normal faults with minor displacement have been identified.

The Nyanzaga and Kilimani mineralisation systems show similar alteration and mineralisation styles, though the Kilimani deposit is interpreted to have been emplaced at shallower levels than at Nyanzaga. Typical alteration features include pervasive carbonate alteration, varying from distal ferroan-calcite to proximal ankerite - sericite dominated and quartz-pyrite alteration.

The current interpretation indicates that there is a distinct lithological control and most of the gold appears to be hosted by iron rich sediments in the form of an extensive stock-work of carbonate, quartz veins, and quartz-carbonate breccias. Preferential grade enhancement occurs in selected altered units such as the thick cherts, silica-dolomite altered medium grained sandstones, brecciated silica-carbonate altered mudstones; or in the late quartz veins as free gold. High-gold grades occur in narrow 5 to 20 mm wide tensional quartz veins that developed as conjugate sets and dip moderately to the southwest and southeast. Evidence suggests these veins may have developed along the axis of plunging parasitic folds in the area of the cherts; or with an apparent preference for developing in dolomitised and silicified, medium to coarse grained sandstone host rocks.

## 1.4 DEPOSIT TYPES

The Lake Victoria Gold Field hosts numerous small-scale and several large-scale orogenic gold deposits. The orogenic deposits are found in regionally metamorphosed terrains of volcanic or sedimentary rocks, of all ages from the mid Archaean to the Tertiary. At the broadest scale the deposits were formed during compressional or transpressional deformation processes at convergent plate margins in accretionary and collisional orogenic events, which are typified by the emplacement of abundant granitoid plutons and batholiths. In both tectonic regimes, hydrated marine sedimentary sequences are added to continental margins. Subduction related thermal events then drive extensive hydrothermal fluid systems resulting in the emplacement of gold bearing quartz veins from depths of 15 km-20 km to surface.

Orogenic deposits may be subdivided into epizonal (<6 km), mesozonal (6-12 km), and hypozonal (>12 km) subtypes based on pressure-temperature conditions of ore formation. Most orogenic gold deposits contain 2 to 5 percent sulfide minerals and have gold/silver ratios from 5 to 10 and gold fineness >900. Pyrite and arsenopyrite are the dominant sulfide minerals, whereas pyrrhotite is more important in higher temperature

ores and base metals are not highly anomalous. Alteration intensity, width, and assemblage vary with the host rock, but carbonates, sulfides, muscovite, chlorite, K-feldspar, biotite, tourmaline, and albite are generally present. Ore fluids were, in most cases, near-neutral pH, slightly reduced, dominated by sulfide complexes and $CO_2$ rich, with low to moderate salinities.

The Nyanzaga mineralisation is a member of the orogenic clan of gold deposits. It is hosted by a sequence of chemical and clastic sediments (chert/sandstone/siltstone), and it displays the typical alteration features of an orogenic deposit, such as pervasive carbonate alteration, going from distal ferroan calcite dominated to proximal ankerite and sericite dominated and quartz-pyrite alteration. There is a distinct lithological control; the majority of the gold is hosted by Fe-rich sediments in form of an extensive stock work (crustiform carbonate veins, quartz veins, quartz carbonate breccias). The brittle deformation style allows the mineralisation to be classified as epizonal.

## 1.5 EXPLORATION

Exploration activities that have been conducted across the Project area include:

- Mapping, soil sampling, rock chips, and geophysics during 1996 by Sub Sahara Resources in joint venture with Maiden Gold.
- Soil sampling, rock chips, trenching, and geophysics during 1997 and 1998 by Sub Sahara Resources in joint venture with AvGold.
- Soil sampling, rock chips, trenching, geophysics, and drilling during 1999 to 2001 by Sub Sahara Resources in joint venture with Anglovaal Mining Ltd.
- Rock chip sampling and drilling by Sub Sahara Resources during 2003.
- Mapping, soil sampling, geophysics, drilling, and petrography during 2004 to 2009 by Sub Sahara Resources in joint venture with Barrick Exploration Africa Ltd (BEAL).
- Drilling campaigns during 2009 to 2010 by BEAL in joint venture with Western Metals/Indago Resources.
- Drilling by African Barrick Gold Exploration Ltd during the period 2010 to 2015.
- Various activities by OreCorp via subsidiary Sotta Mining Corporation Limited (SMCL) during the period 2015 to 2017 including data validation, collation of geological mapping, relogging of historical drilling, geological interpretation, topography surveys, geological mapping, reprocessing of geophysical data, surface geochemistry, spoil sampling, and drilling.

## 1.6 DRILLING

Drilling on the various tenements that comprised the Project commenced in 1997. In the period until OreCorp acquired the Project in 2015, drilling available to support Mineral Resource estimations included 877 holes for approximately 201,580 m. In the period since OreCorp have managed the project, a total of 280 holes for approximately 37,980 m have been completed across the Nyanzaga and Kilimani areas. All drill hole collars have been surveyed in UTM grid (Arc 1960 datum) and locations are considered reliable to ±0.5 m in each of x, y and z directions.

A combination of poor ground conditions, weathering characteristics and in some instances driller practices (i.e., removal of stabiliser rod in coincident clay and high waterflow areas to reduce chances of bogging) have influenced the down-hole trajectories in certain areas of the project.

Deviation caused by strongly magnetic mudstones and pyrrhotite has also been an observed issue in older surveys undertaken with a downhole survey probe based on magnetic readings. Gyroscopic tool readings in these strata produce a more reliable hole trace, and as such have superseded the magnetic down-hole survey probe data where undertaken and have been updated in the database.

Reverse circulation samples were collected at 1 m intervals in plastic bags and their weight (25 – 35 kg) was recorded in a logbook. Wet samples were collected in polythene bags and allowed to air dry before splitting.

Prior to September 2005, the samples were combined into 3 m composites by taking a 300 g scoop from 10 – 15 kg 1 m interval, then mixing it with 300 g scoops from each of two adjacent samples. The 1 kg composite sample was then submitted for preparation and analysis. Magnetic susceptibility readings were taken every metre.

From 2015 onwards, depending on the drill rig, the sample was split at the cyclone, or the bulk sample was passed through a standalone riffle splitter at the drill site to generate the subsample for analysis. A record was made at the drill site of the sample identity numbers and corresponding intervals, and cross checked against the pre-drilling sample sheet.

Diamond core holes collared from surface were normally drilled in HQ diameter to the top of fresh rock and the core diameter then reduced to NQ or NQ2, depending on the drilling contractor. Pre-collared holes were normally drilled NQ or NQ2 diameter from the commencement of coring.

The core is marked up for orientation and a cutline is marked offset by approximately 2 cm clockwise of the bottom of hole orientation line, with the orientation line preserved on the un-sampled half-core and retained in the tray.

The entire hole is sampled with samples collected nominally at 1 m or at geological contacts. Sampling of diamond core was completed using a simple brick saw to cut core into equal halves; one half of the core was collected for each nominal 1 m interval making sure that the same half was consistently sampled down the hole. No sample interval was less than 20 cm or exceed 1.5 m.

RC sample recoveries were measured by weighing of the entire recovered sample for each metre drilled. Drill core recoveries were logged linearly by drill run. Average core recoveries are typically above 90% for all but the upper 10 m of the drill holes.

## 1.7 SAMPLE PREPARATION, ANALYSIS AND SECURITY

All samples have been assayed for gold by 50 g fire assay (FA), primarily SGS Mwanza, with additional assaying completed at ALS Mwanza. Both laboratories are accredited and considered independent of the Company.

All drilling campaigns followed routine monitoring of assay quality through the insertion of QAQC samples (standards, blanks and duplicates), and immediate re-assaying where results reported for client-submitted standards or blanks casted doubts on the accuracy and quality of the analytical process.

Sample preparation procedures for both core and RC samples analysed by FA have been consistent for all drilling that informs the resource estimate:

- dry at 95°C ± 5°C for 24 h
- crush the entire sample to -2 mm
- split to approximately 800-1,000 g
- pulverise, normally using LM2 disc pulverisers, to 90% passing 75 µm
- mat roll and dip approximately 300 g subsample into a kraft packet.

RC sample splitting is undertaken at drill sites under the supervision of Company geologists. Sub-samples are methodically bagged and transported to a secure location prior to be dispatched for analysis. Core is logged and sampled at the Nyanzaga exploration compound, located in the same secure area.

Half core samples or RC sample splits that are sent for preparation by commercial laboratories are securely packed and transported to Mwanza by laboratory personnel. A sample submission form, detailing sample number sequences and number of samples, accompanies each shipment of RC samples or core which is transported to the commercial assay laboratory.

Digital assay reports and electronic certificates are emailed by the laboratories to a pre-set list of Company recipients.

In the QP's opinion, sample security is not considered a significant risk to the reliability of Mineral Resource estimates at Nyanzaga.

A consistent QAQC regime has been maintained during drilling by African Barrick Gold and OreCorp:

- Certified reference materials (CRMs) were inserted as 150-200 g sachets nominally at a ratio of 1:20 samples of both RC chips and diamond core despatched for assay. CRMs were sourced from a range of suppliers and over various grade ranges across the drilling history of the Project.
- Blank samples, comprising approximately 3 kg of barren granite sourced from a commercial quarry, were submitted at a ratio of 1:20 samples despatched.
- Field duplicates for RC samples were generated from a riffle split of the bulk reject. Diamond core duplicates were submitted using either half or quarter core, or from samples from the coarse rejects following crushing.

Quality control samples were inserted in the sample streams prior to sample despatch.

Assays reported for CRMs and blank samples were routinely checked against tolerance limits when importing assays from digital laboratory reports into the acQuire database. Re-assays were requested for entire laboratory batches for which more than one CRM or blank failure arose.

The performances of CRMs and blank samples have been examined in detail. The precision indicated by assays of CRMs indicate relatively poor precision, typical of assaying for gold by commercial laboratories. CRM assays are spread fairly symmetrically about expected grades, indicating no significant bias.

Blank samples indicate no significant cross-contamination in samples preparation and assaying processes.

In the opinion of the QP, the available quality control data are considered sufficient to establish that the assay data are free of any biases or other factors that would materially affect confidence in estimates of Mineral Resources.

## 1.8 DATA VERIFICATION

Verification checks undertaken by the QP to confirm the validity of the Nyanzaga drilling database compiled for the current study include the following:

- Checking for internal consistency between and within database tables
- Comparison of assay values between nearby holes
- Comparisons between assay results from different sampling phases
- Comparison of assay entries with laboratory source files
- Checks that surveyed locations of drill hole collars are within tolerance of proposed locations and locations recorded on field logging sheets
- Sense checks of down-hole surveys
- Checks for missing sample intervals, overlapping sample intervals and duplicate sample numbers
- Comparisons of gold assays to visually logged intervals of alteration and mineralisation
- Visual comparisons, in cross-section and plan views, of gold grades and logged geology in neighbouring drill holes.

These checks were undertaken using the compiled acQuire database implemented by Perseus. The QP's database checks showed no significant inconsistencies.

In addition to these checks, a series of key mineralised intervals across the Nyanzaga mineralisation were collected and submitted for verification analysis. In total 139 samples were recovered and submitted for

analysis using MSALABS Chrysos Photon Assay (CPA). Results were compared via scatterplot which showed a poor correlation between the original and verification results.

Given the verification samples were comprised of material from the remaining half core in the trays, there was a possibility that the wide spread of results observed between the original and verification analysis was due to variability between each half of the core (i.e., nugget effect) and not actually reflective of a potential issue in analytical quality.

To test this the coarse crushed material analysed in the sample pots via CPA was submitted to SGS for fire assay and the results compared. The pulverisation of the 2 mm coarse crush material from the CPA process will result in improved homogeneity of the sample.

The SGS results were compared to the CPA analysis via scatterplot. The chart showed a significant improvement in correlation between samples, although with a number of outliers present as expected.

The available information indicates that the drilling database has been carefully compiled and validated, and in the QP's opinion forms an appropriately reliable basis for resource estimation.

## 1.9 MINERAL PROCESSING AND METALLURGICAL TESTING

Metallurgical testing of Nyanzaga Gold Project ore samples has occurred across a range of test work programs between 2005 and 2022. Key test work programs were conducted in 2017 and 2022 to select the most suitable processing route, determine the plant operating parameters by ore type for the selected processing route, and to define key engineering parameters for process plant design.

Comminution testing determined that oxide ores are between very low competency to competent, are between very soft and hard, and are between non-abrasive and abrasive; and fresh ores are between low competency to very competent, are medium hard to very hard, and are between slightly abrasive and abrasive. An SAB comminution circuit (SAG milling with pebble recycle and ball milling in closed circuit with hydrocyclones) was selected for the Nyanzaga processing plant to accommodate the spectrum of material hardness and competency observed from test work. Grind sensitivity test work indicates that Nyanzaga Gold Project ores are grind sensitive with gold extraction increasing with fineness of grind. Grind optimisation evaluations determined an optimum grind size $P_{80}$ of 75 µm.

Flowsheet definition and optimisation test work and techno-economic evaluations determined that Nyanzaga gold project ores are amenable to gravity recovery and cyanidation, and that a gravity recovery/cyanidation flowsheet achieves optimum results.

Test work programs indicated that the gravity recovery stage added marginal benefit to the final gold extraction for most ore types. A gravity circuit has been included in the Nyanzaga process plant flowsheet to reduce reagent consumption in the CIL circuit; to reduce the impact of coarse free gold on cyanidation performance and regulate plant feed grade; to allow for potentially improved leaching of gold associated with semi-refractory sulfide minerals that may report to the gravity concentrate stream; and to reduce the amount of coarse gold that may accumulate in gravity traps across the comminution circuit, which improves gold accountability and security outcomes.

Gravity/cyanidation variability test work at optimised flowsheet conditions determined that average gold extractions by ore type ranged between 82.3% and 96.1%, and average silver extractions by ore type ranged between 26.5% and 66.1%. Gold leach kinetics were rapid, with most gold leaching occurring within four to eight hours. Silver leach kinetics were slower, with silver leaching being largely complete within 12 h, but continuing through to 24 h for some samples. 24 h leach time was selected for plant design.

Tests on Nyanzaga deposit oxide, sandstone and chert ores, and Kilimani deposit oxide ores indicated that negligible preg-robbing or preg-borrowing occurs. Tests on Nyanzaga deposit mudstone ores identified preg-borrowing characteristics, but it was noted that the activity of the carbon from CIL tests was sufficient to compete with the observed effects. Head assays and mineralogical investigations suggest that the preg-borrowing characteristics of the mudstone ore may be due to organic carbon, or fine-grained iron oxides or clay minerals (due to surface adsorption).

Pulp density optimisation tests noted that gold extraction was unaffected by cyanidation slurry solids concentrations across the range tested, and 50% w/w solids concentration was selected for process plant design. Tests identified improved gold extraction occurred with a pre-oxidation stage before cyanidation, and elevated DO levels in cyanidation of 20 ppm through the addition of oxygen gas. Low to moderate rates of oxygen demand were observed, with higher gold grade samples showing a tendency to have slightly higher demands for oxygen. It is hypothesised that this observation is due to the association of gold with oxygen consuming sulfide minerals (pyrrhotite, arsenopyrite and pyrite) that are present in the Nyanzaga deposit fresh ores. A pre-oxidation step and elevated DO levels in cyanidation of 20 ppm through the addition of oxygen gas were selected for plant design.

Low to moderate sodium cyanide and lime consumptions have been observed through test work. Estimated average plant CIL reagent additions have been estimated to range between 0.25 kg/t and 0.31 kg/t NaCN and 0.45 kg/t and 0.85 kg/t quicklime (90% w/w CaO) for oxide ores, and between 0.20 kg/t and 0.38 kg/t NaCN and 0.24 kg/t and 0.97 kg/t quicklime for fresh ores.

It was noted that the Nyanzaga and Kilimani deposit ores contain elevated concentrations of mercury, arsenic and antimony. The process design includes a mercury handling circuit to mitigate the health hazards associated with mercury exposure. Test work and modelling indicates that soluble arsenic and soluble antimony will not have a significant effect on potential economic recovery of gold in CIL and that soluble arsenic and soluble antimony will be contained within the tailings and process water systems. Provision has been made in sustaining capital for a water treatment plant should arsenic or antimony present operational challenges in the future. pH control is included in the process control design to mitigate gold passivation that can occur at high pH due to elevated antimony levels.

Test work demonstrated that $SO_2$/air cyanide detoxification can achieve residual $CN_{WAD}$ levels <50 mg/L at low stoichiometric ratios of $SO_2$ to $CN_{WAD}$, which aligns with industry guidelines for TSFs such as Standard of Practice 4.4 of International Cyanide Management Institute's *Mining Operations Verification Protocol* (2021). $SO_2$/air cyanide detoxification was selected for process plant design.

Rheology test work highlighted that slurry streams containing solely Nyanzaga oxide ore and/or Kilimani deposit oxide ore should operate at a pulp density lower than 60% w/w solids to avoid viscosity related issues or be blended with fresh ores to operate at higher pulp densities. All ore types were demonstrated to be amenable to high-rate thickening with the selected flocculant, though Kilimani oxide ores only experienced minor carryover of solids to thickener overflow. The thickening and flocculant dosing parameters for Kilimani oxide ores indicated the highest duty and were therefore as the basis for sizing thickeners and the flocculant mixing plant.

It is the opinion of the QP that metallurgical test work programs conducted are of sufficient scope and quality to support the proposed process plant design and production planning.

## 1.10 MINERAL RESOURCE ESTIMATES

The Nyanzaga Gold Project Mineral Resource estimate consists of two discrete but adjacent deposits: Nyanzaga and Kilimani. The data cut-off date for this latest resource update is September 1, 2024. Mineral Resources are inclusive of Mineral Reserves.

Mineral Resources reported herein have been estimated using a geostatistical block modelling approach, informed from gold assay data obtained from predominantly core and RC drill chips sampling data. The geological wireframes consider structural and lithological interpretations of the gold mineralisation.

The Nyanzaga Mineral Resource estimate used Seequent Leapfrog Geo software for the geological and mineralisation interpretation and associated drill hole coding, while Maptek Vulcan software was used for block model creation, editing and reporting. The grade interpolation of the Nyanzaga component of the resource model was completed in Isatis, with the ordinary kriged estimates for Kilimani completed in Vulcan.

The evaluation of the Nyanzaga Mineral Resource involved the following procedures:

- Database compilation and verification.

- Generation and verification of three-dimensional geological models.
- Data conditioning (including compositing and grade capping), statistical analysis and variography.
- Selection of estimation strategies and estimation parameters.
- Block model generation, grade estimation and validation.
- Mineral Resource classification.
- Preparation of the Mineral Resource estimate and reporting.

The statement of Mineral Resources for the Nyanzaga Gold Project is presented in Table 1-1 and Table 1-2.

The Nyanzaga Gold Project Mineral Resources are reported in-situ and reflect global estimates for the Nyanzaga and Kilimani deposits. All open-pit Mineral Resources are reported at a 0.3 g/t gold cut-off and constrained to a $2,000/oz pit optimisation shell using appropriate cost and revenue factors. Mineral Resources reported herein are therefore considered to have met reasonable prospects for eventual economic extraction. There are currently no Measured Mineral Resources at the Project.

***Table 1-1: Nyanzaga Gold Project Measured and Indicated Mineral Resource effective as at October 1, 2024[4,5,6]***

| DEPOSIT | DEPOSIT TYPE | MEASURED | | | INDICATED | | | MEASURED & INDICATED | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Mt | g/t Au | '000 oz Au | Mt | g/t Au | '000 oz Au | Mt | g/t Au | '000 oz Au |
| Nyanzaga[1,2,3] | Open Pit | - | - | - | 71.1 | 1.34 | 3,061 | 71.1 | 1.34 | 3,061 |
| Kilimani[1,2,3] | Open Pit | - | - | - | 3.1 | 1.00 | 101 | 3.1 | 1.00 | 101 |
| **TOTAL** | | **-** | **-** | **-** | **74.2** | **1.33** | **3,162** | **74.2** | **1.33** | **3,162** |

***Table 1-2: Nyanzaga Gold Project Inferred Mineral Resource effective as at October 1, 2024[4,5,6]***

| DEPOSIT | DEPOSIT TYPE | INFERRED | | |
|---|---|---|---|---|
| | | Mt | g/t Au | '000 oz Au |
| Nyanzaga[1,2,3] | Open Pit | 14.6 | 1.2 | 571 |
| Kilimani[1,2,3] | Open Pit | 0.4 | 1.2 | 13 |
| **Total** | | **15.0** | **1.2** | **584** |

Notes for Table 1-1 and Table 1-2:

1. Based on October 2024 Mineral Resource estimate.
2. 0.3 g/t gold cut-off applied to in-situ open pit material.
3. In situ open pit resources are constrained to $2,000/oz pit shells.
4. Rounding of numbers to appropriate precision may result in summary inconsistencies.
5. Mineral Resources are reported inclusive of Mineral Reserves.
6. Mineral Resources are reported on a 100% basis.

Mineral Resources are prepared using the CIM 2014 Definition Standards and CIM Guidelines.

Reported Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no guarantee that all or part, of a Mineral Resource will be converted into a Mineral Reserve.

The QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate. In the QP's opinion, the estimates of Measured and Indicated Mineral Resources are sufficiently reliable to support estimation of Mineral Reserves.

## 1.11 MINERAL RESERVE ESTIMATES

The Nyanzaga Mineral Reserve is supported by the Nyanzaga Gold Project Feasibility Study which establishes the technical and economic viability of the Nyanzaga Gold Project. Studies undertaken by Perseus include metallurgical, geotechnical and hydrogeological test work and confirmatory drilling, as well as individual analysis and investigations in relation to the impact of changes to the project size and scope on capital and operating cost estimates. Studies have been undertaken by Perseus technical staff and expert consultants.

All Mineral Reserves are reported in accordance with the CIM Definition Standards and are reported by category, deposit and type, above cut-off grades and calculated after applying modifying factors. The classification categories of Proven and Probable Mineral Reserves under the CIM Definition Standards are equivalent to the JORC Code Proved Ore Reserves and Probable Ore Reserves respectively.

The statement of Mineral Reserves for the Nyanzaga Gold Project is presented in Table 1-3.The QP is of the opinion that Mineral Reserves were estimated using industry-accepted practices and conform to the CIM Definition Standards and the JORC Code. Mineral Reserves stated in this report are based on open pit mining methods. The Mineral Reserves are acceptable to support mine planning.

***Table 1-3: Nyanzaga Gold Project Mineral Reserve Statement[1,2,3,4,5,6]***

| PROJECT | PROVEN | | | PROBABLE | | | PROVED AND PROBABLE | | |
|---|---|---|---|---|---|---|---|---|---|
| | QUANTITY Mt | GRADE g/t Au | GOLD '000 oz | QUANTITY Mt | GRADE g/t Au | GOLD '000 oz | QUANTITY Mt | GRADE g/t Au | GOLD '000 oz |
| Nyanzaga | - | - | - | 49.4 | 1.42 | 2,255 | 49.4 | 1.42 | 2,255 |
| Kilimani | - | - | - | 2.6 | 1.02 | 86 | 2.6 | 1.02 | 86 |
| **Total** | **-** | **-** | **-** | **52.0** | **1.40** | **2,342** | **52.0** | **1.40** | **2,342** |

Notes for Table 1-3:

1. Based on October 2024 Mineral Resource estimate
2. Based on April 2025 Mineral Reserve estimate
3. Pit designs are based on US$1,700/oz gold metal price
4. Variable gold grade cut-offs for each material type, ranging from 0.33 g/t to 0.6 g/t
5. Inferred Mineral Resource is considered as waste for optimisation purposes
6. Rounding of numbers to appropriate precision may have resulted in apparent inconsistencies

Mineral Reserves are prepared using the CIM Definition Standards and CIM Guidelines.

There are no other environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors known to the QP and not discussed in this report that would materially affect the estimation of Mineral Reserves.

## 1.12 MINING METHODS

The Nyanzaga Gold Project is proposed to be mined by open pit mining methods. Such mining methods are well established in Tanzania, and across other African operations owned and managed by Perseus Mining Limited.

The Nyanzaga Gold Project (NGP) open pits will use a conventional hydraulic excavator and rigid off-highway rear dump truck fleet, with drill and blast where required in oxide, transitional and fresh rock material. Open pit mining will be undertaken with medium to large scale off-highway equipment, including 180 t – 350 t class excavators and 90 t – 150 t class dump trucks.

Mining costs are based on contactor pricing supplied by Majesso Consulting and benchmarked against Perseus existing operations. The NGP open pit mining operation will have a proposed mining rate of approximately 50 Mt/a total material movement. Mining activities are proposed to be completed by a mining contractor, whose activities would include stripping free dig material such as topsoil, clays and highly weathered rock near surface.

Trucks will haul ore to surface ore stockpiles, with waste being hauled to, and disposed in, waste rock dumps. Stockpile rehandle will be by front-end loader. Mining bench heights are 10 m with 2.5 m flitches for selective mining to minimise ore loss and waste rock dilution. Bulk waste mining will also be completed on 10 m benches.

Detailed mine designs, including several internal pit stages have been included in the overall open pit and processing schedule. The NGP mining schedule is shown in Figure 1-1 below. Open pit detailed designs are based on open pit optimisation shells run in Whittle mining software.

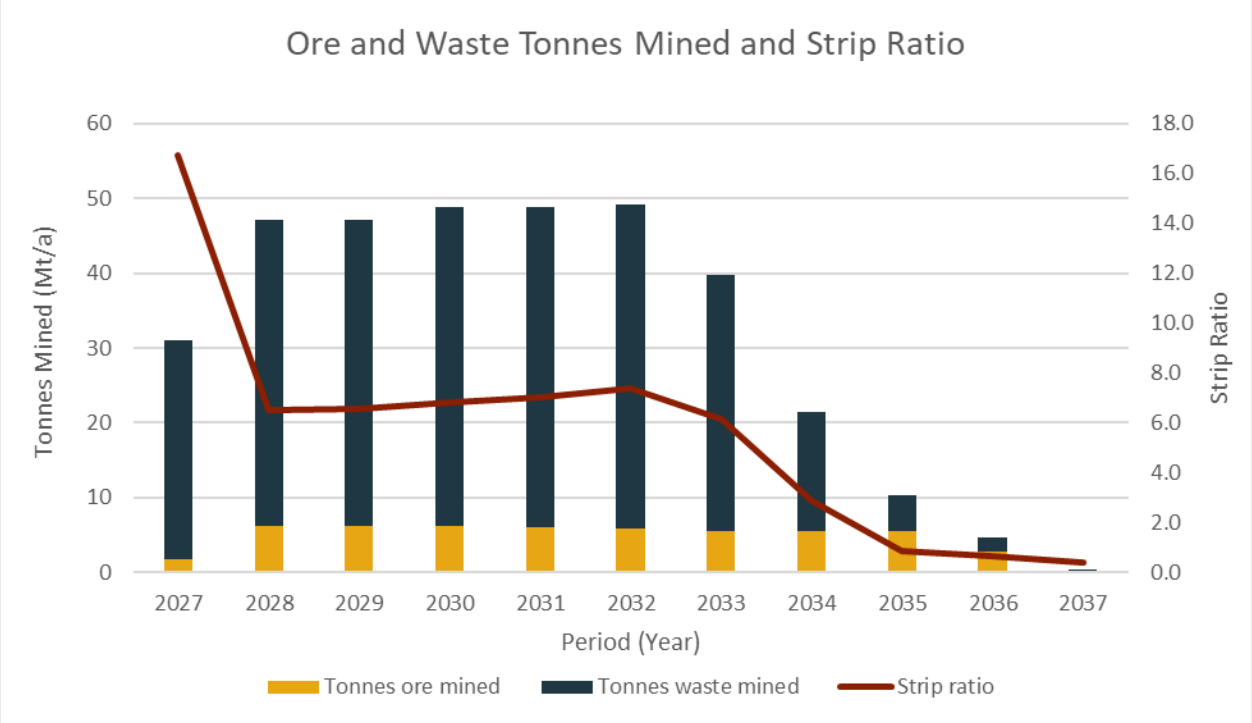



***Figure 1-1: LOM mining production schedule (Source: Perseus, 2025)***

The pit design inter ramp slope angle varied depending on the degree of weathering of the material. A slope angle of 38.1° was applied for oxide and transitional material; and slope angles ranging from 45.7° to 52.2° were applied in the fresh materials, depending on lithology and wall orientation.

Based on the size and selectivity of the proposed mining equipment, the block size in the resource model was considered suitable for the mining model and no re-blocking was required, with no additional ore loss or dilution applied. A variable processing rate by material type and weathering were used for detailed mine scheduling.

To balance waste stripping and ore grades, the pits are mined to the ultimate boundary limit using cutbacks. Access to the pit is by 26 m wide haul roads and ramps, incorporating a 10% gradient, with windrows and drains. Twin dual lane ramps are incorporated from the surface to 160 m from the base of the Pit. One dual lane ramp is incorporated from 160 m to 60 m to the base of the pit and single lane ramps, 16 m wide, are included for the final 60 m of the pit, as required towards the end of pit life to maximise ore recovery and minimise waste mining. Rock is hauled to the surface, with ore placed on stockpiles at the ROM pad and waste dumped to waste rock dumps.

## 1.13 RECOVERY METHODS

The Nyanzaga Gold Project flowsheet will consist of the following unit processes:

- Primary crushing with a single gyratory crusher to produce a coarse crushed product.

- A live stockpile from which ore is reclaimed to feed the milling circuit.
- SAG milling with pebble recycle and ball milling in closed circuit with hydrocyclones (SAB comminution) to produce a grind size of 80% passing ($P_{80}$) of 75 µm.
- Gravity concentration and removal of coarse gold from the circulating load within the milling circuit, and treatment of gravity concentrate by intensive cyanidation and electrowinning.
- Trash screening of the cyclone overflow stream, to remove wood and plastic trash or oversize material prior to cyanidation.
- Pre-leach thickening of the trash screen underflow to increase the slurry density feeding the carbon-in-leach (CIL) circuit and optimise water recycle within the process.
- A pre-oxidation/CIL circuit to leach and adsorb gold and silver from the milled ore onto activated carbon. This circuit consists of one pre-oxidation tank, and six CIL tanks, providing a total of 24 hours leach and adsorption time.
- A split AARL elution circuit for recovery of precious metals from loaded CIL carbon.
- Electrowinning.
- Carbon regeneration.
- Smelting of electrowinning sludge, producing doré for sale
- Mercury recovery from electrowinning sludge, and electrowinning cell, smelting furnace and carbon reactivation kiln off gases.
- Thickening of CIL tailings to produce a higher solids concentration slurry for tailings storage facility (TSF) deposition and optimise water recycle within the process.
- $SO_2$/air detoxification of cyanide in tailings thickener underflow slurry.
- Pumping of cyanide detoxification tailings to the TSF.
- Return of TSF decant water for process use.

The process plant design is based on a robust metallurgical flowsheet designed for optimum recovery with minimal operating costs. The flowsheet is based on unit operations that are well proven in industry. Table 1-4 summarises key process design and operating criteria for the Nyanzaga processing plant.

*Table 1-4: Summary of key process design and operating criteria*

| CRITERIA | UNITS | VALUE |
|---|---|---|
| Plant throughput – nameplate | t/a | 5,000,000 |
| Plant throughput - ore specific range | t/a | 4,760,000 to 6,000,000 |
| Head grade – design | g/t Au | 2.00 |
| | g/t Ag | 2.50 |
| | g/t Hg | 1.10 |
| Recovery – design | % Au | 86.0 |
| | % Ag | 60.0 |
| Extraction – design | % Hg | 20.0 |
| Crushing plant run time | % | 80.0 |
| Grinding/process plant run time | % | 91.3 |
| Grind size $P_{80}$ | µm | 75 |
| Number of pre-oxidation tanks | - | 1 |
| Pre-oxidation tank volume | $m^3$/tank | 3,250 |
| Number of CIL tanks | - | 6 |
| CIL tank volume | $m^3$/tank | 3,250 |
| CIL residence time | h | 24 |
| CIL solution loss | mg/L Au | 0.015 |
| | mg/L Ag | 0.030 |
| Elution circuit type | - | Split AARL |
| Elution circuit – mass of carbon batch | t | 16.0 |
| Frequency of elution | strips/week | 6 |
| TSF supernatant $CN_{WAD}$ concentration | mg/L | <50 |

The life of mine modelled processing production schedule is presented in Figure 1-2 and is based on Mineral Reserves only.

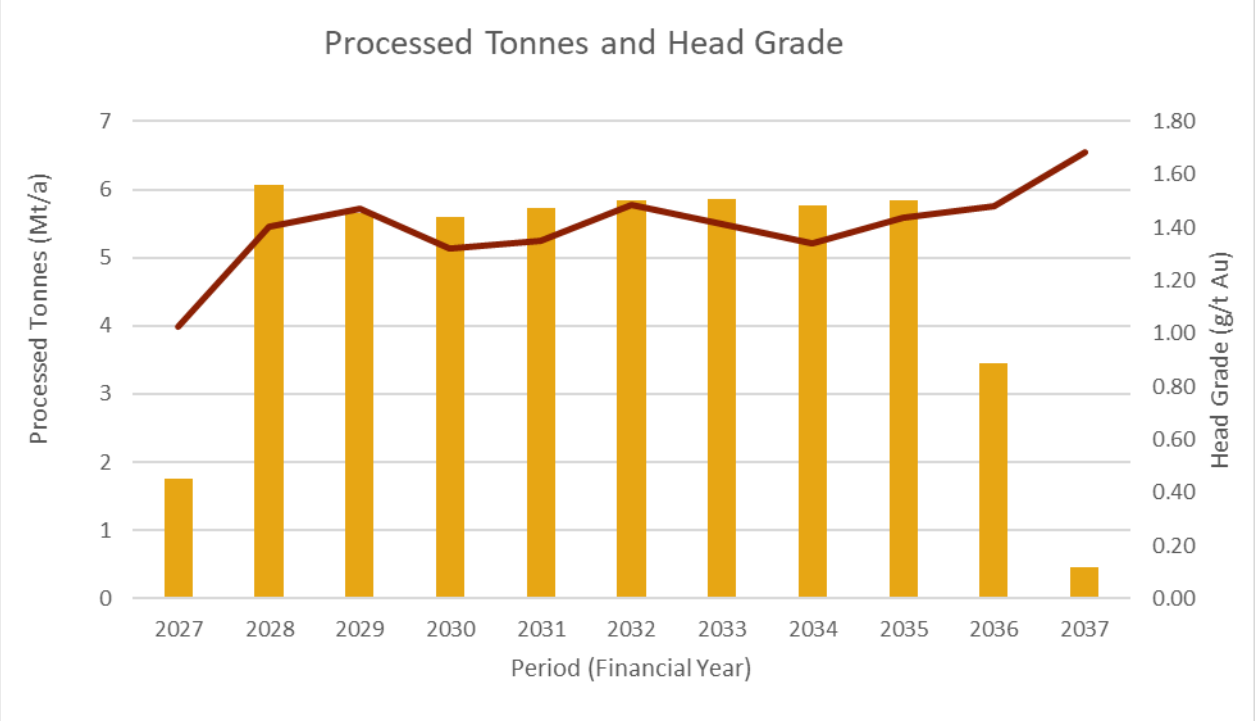



*Figure 1-2: LOM processing production schedule (Source: Perseus,2025)*

The site-wide electrical power requirement, covering the processing plant, mining and site infrastructure has been calculated based on equipment sizing and demand. The connected load, average draw and average annual electrical energy consumption for the Project is summarised in Table 1-5.

***Table 1-5: Project electrical power demand***

| AREA | INSTALLED kW | AVERAGE DRAW kW | ANNUAL CONSUMPTION GWh/a |
|---|---|---|---|
| Crushing | 1,468 | 1,030 | 9.0 |
| Stockpile and reclaim | 841 | 617 | 5.4 |
| SAG and ball mill | 21,000 | 18,100 | 158.6 |
| Grinding and classification | 3,307 | 1,603 | 14.0 |
| Gravity and intensive cyanidation | 593 | 307 | 2.7 |
| Pebble recycling | 864 | 44 | 0.4 |
| Trash screening/pre-leach thickening | 494 | 254 | 2.2 |
| CIL | 1,622 | 1,157 | 10.1 |
| Elution, gold room, mercury handling | 945 | 580 | 5.1 |
| Tailings thickening and treatment | 498 | 439 | 3.8 |
| Tails pumping | 500 | 431 | 3.8 |
| Reagents | 119 | 48 | 0.4 |
| Service – water | 1,078 | 574 | 5.0 |
| Services – air, oxygen | 1,327 | 1,000 | 8.7 |
| TSF, decant return | 414 | 200 | 1.8 |
| Lake water extraction | 576 | 332 | 2.9 |
| Plant, mining and admin buildings | 1,448 | 1,322 | 11.6 |
| Camp | 1,200 | 600 | 5.3 |
| **TOTAL** | **38,294** | **28,638** | **250.8** |

The Nyanzaga processing plant will use water sourced from Lake Victoria or recycled water. Water will be recycled from the TSF supernatant pond via the TSF decant, as well as from pre-leach thickener overflow and tailings thickener overflow. Water that is in excess of operating requirements within mining operations (from pit runoff or open pit dewatering) may also be directed to the process water pond.

Mass balance modelling indicates that raw water abstraction requirements from Lake Victoria will range from 50 $m^3$/h to 350 $m^3$/h once TSF decant return water flow has been established, which is equivalent to between 0.08 $m^3$/t and 0.56 $m^3$/t ore treated. In the first approximately five months of operation, before TSF decant return water flow has been established, raw water abstraction requirements from Lake Victoria will be approximately 550 $m^3$/h (equivalent of 0.88 $m^3$/t ore treated).

In consideration of variable water demands by ore type, variable ore treatment rates by ore type, downtime required for pump and pipeline maintenance, and design margin, installed lake abstraction pumping capacity will be 600 $m^3$/h.

Within the process plant, the process water pond will have an installed capacity of 18,000 $m^3$ and the raw water pond will have an installed capacity of 10,000 $m^3$.

Potable water treatment plants will be predominantly supplied by filtered raw water (reclaimed from Lake Victoria) but may also be supplemented by dedicated ground water bores during construction.

Mine water requirements are estimated to be in the range of 50 $m^3$/h to 200 $m^3$/h, depending on mining operations and the season. Pit runoff and dewatering will be used for the mining water dust suppression requirements. If there is insufficient water within the mining operations, this will be supplemented by raw water from the process plant.

## 1.14 PROJECT INFRASTRUCTURE

Road access between Dar es Salaam and Mwanza is just over 1,100 km, with access to the Project from Mwanza by the sealed Mwanza – Geita Highway, crossing Smith Sound (an arm of Lake Victoria) via ferry or the recently constructed Kigongo – Busisi Bridge (John Pombe Magufuli Bridge), and then travelling on the unsealed regional road network for 35 km from Sengerema to Ngoma. The Project area is approximately 9 km southeast of Ngoma, and an unsealed road is currently under construction to bypass Ngoma township and reach the Nyanzaga site. This road construction is key enabling infrastructure for Project delivery and operations.

Roads within the Project SML will enable access to all operational areas and infrastructure. Roads will be fit for purpose and will comprise haul roads for mining use, full width gravel roads for frequent traffic by site light and heavy vehicles, and basic access tracks for infrequent access by light vehicles to more remote site infrastructure.

The SML boundary will be enclosed by a 2 m high chain link fence to discourage casual entry to the SML. The process plant will be further enclosed by a double line of security fencing monitored by closed circuit cameras.

Key operational buildings and facilities for the site will include:

- Security gatehouses.
- Administration offices across operating departments.
- Medical clinic/HSE/ERT building.
- Training rooms.
- Maintenance workshops for the process plant, light vehicles and heavy vehicles.
- Staff mess facilities in operational areas.
- Ablution facilities in operational areas.
- Warehouses.
- Storage sheds for reagents, lubricants and other consumables.
- Laboratory.
- Various electrical switch room buildings.
- Nursery.
- Waste management facility.

The open pit mining contractor will be provided with a mine services area to enable mine fleet operations planning, servicing and maintenance. Additional infrastructure installed on site that supports to support mining operations will include a fuel and lubricant storage and dispensing facility and an explosives magazine.

Staff, contractors and visitors that require accommodation will stay at the 400-bed on-site accommodation camp, with footprint and services expansion considered for up to 500 beds. The existing exploration camp will be used for pioneer accommodation pending early completion of elements of the permanent camp and the preparation of a suitable site for construction contractors to establish their workforce accommodation. At the conclusion of construction activities, the existing exploration camp will be refurbished and used as a permanent base for the exploration geology team.

Power supply to Nyanzaga Gold Project will be sourced from the TANESCO national grid. The 220 kV supply will be fed from the existing 220 kV Bulyanhulu substation. Electrical infrastructure required includes an additional 220 kV feeder bay at the Bulyanhulu substation, approximately 53 km of 220 kV single circuit transmission line, and a substation at the Nyanzaga receiving end. The receiving end substation at Nyanzaga will step down the voltage from 220 kV to the 11 kV site distribution voltage. Emergency generation capacity

will be installed consisting of a series of 2,000 kVA (standby rated) high speed diesel generators connected at the plant 11 kV switchboard.

A local microwave ground station will be installed at a site communications tower, to provide global satellite voice and data connection; and a local telecommunications provider will be contracted to upgrade infrastructure to provide connection to the local, national and international telecommunications network. Internal communications and IT services will be via a site wide fibre optic network. A site-wide private mobile radio system will also be installed.

Raw water will be drawn from the southwest tip of Smith Sound, the southern inlet of Lake Victoria, using a turret intake system (a floating water intake device on the end of a hose that avoids drawing in sediment or floating material) and will be delivered by two self-priming pump sets to a 13.5 km delivery pipeline to the Project site. The pipeline will be buried outside of the SML to reduce the risk of unauthorised water use. The pipeline located inside the SML will not be buried.

The TSF will be located south of the open pit and will be constructed as a single cell storage facility consisting of a multi-zoned earthfill downstream constructed embankment designed to store the LOM processing production profile of tailings. The total footprint area (including the basin area) will be approximately 130 ha for Stage 1 of the TSF, increasing to approximately 225 ha for the final stage of the TSF. The facility will be constructed as a paddock type storage facility utilising natural ridges to reduce the volume of embankment fill, and the waste dump to buttress the northern embankment. The TSF will be raised annually using the downstream method of construction.

Tailings will be discharged into the TSF by sub-aerial deposition methods, using multiple spigots at regular intervals along the southern perimeter. Tailings will be deposited following the deposition plan, developed to locate the supernatant pond towards the decant area in the northern part of the facility and away from the embankments. Supernatant water will be removed from the TSF by a decant pumping system with a turret intake and returned to the process plant.

Preliminary design of surface water and sediment control facilities has been completed and includes separate diversion channels and sediment control dams to handle runoff depending on the area that the water collection has occurred and the contained level of sediment and other contamination. The design of these facilities will be finalised in parallel with the broader site infrastructure design.

## 1.15 MARKET STUDIES AND CONTRACTS

Gold is a commodity freely traded on the world market for which there is a steady demand from numerous buyers. It is also possible to sell gold for delivery at a fixed price at a future date (forward sale).

Tanzania permits export of gold bullion. Perseus intends to enter in a contract for refining doré produced at Nyanzaga. Under the intended contract, the refiner will arrange transport for the doré bars to its refinery, where it will refine the gold to the purity accepted in international markets (generally 99.8% to 99.95%). The refined gold will be credited to the Company's gold account with its bank, to enable it to be sold on international markets or delivered into forward sales contracts. The refiner will invoice Perseus for costs relating to transportation, insurance, refining and other charges.

The gold price for cut-off calculations for Mineral Reserves is $1,700/oz. Financial evaluations of the mining schedule have been undertaken at $2,100/oz. A gold price of $2,000/oz was used for shells to limit Mineral Resource estimates, and a gold price of $2,100/oz has been used as the revenue price for the economic analysis of the Project.

Perseus is proposing the following key contracts for the development of the Nyanzaga Gold Project:

- Engineering, Procurement, Construction and Management (EPCM) contract for the process plant and supporting infrastructure.
- Major equipment supply contracts.
- Bulk materials supply contracts.

- TSF engineering and construction supervision contract.
- Powerline engineering and construction supervision contract.
- 220 kV Power Services Agreement.

Perseus is proposing a large number of service and supply contracts to support the Nyanzaga Gold Project during the operational phase, including:

- Open pit mining services.
- Explosives supply.
- Fuel supply.
- Camp catering and maintenance.
- Doré transport and refining.

## 1.16 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

An Environmental and Social Impact Assessment (ESIA) was undertaken and submitted to the National Environment Management Council (NEMC) for approval in late 2017. The ESIA comprises several management plans which describe how project activities might impact on the natural environment in which it occurs and set out clear commitments from the company taking the action on how those impacts will be avoided, minimised and managed.

Since 2018, additional studies and engineering works have been undertaken on the Project. As a result of changes in the Site layout, SMCL submitted an updated Environmental and Social Management Plan to NEMC in July 2023. Another update will be prepared by Perseus and resubmitted to the NEMC with the changes to production scale and site layout related to this Study that have been finalised in 2024.

A conceptual mine closure plan (MCP) was prepared and submitted as part of the ESIA. A detail MCP will be submitted to the Ministry of Minerals for approval within one year of commencing operations and subsequently updated at least every three years.

The Nyanzaga Gold Project will cause both physical and economic displacement in the villages of Sotta and Nyabila. A Resettlement Action Plan (RAP) is being implemented to support those affected. The RAP aims to ensure affected people are compensated fairly and supported to restore or improve their livelihoods and living standards, and follows Tanzanian law (Land Act 1999, Mining Act 2017) and international standards (IFC Performance Standard 5) to ensure fair and transparent resettlement and compensation. All affected households, whether physically or economically displaced, can participate in a livelihood restoration program tailored to their level of impact.

Surveys and studies to support the RAP were completed in February 2023. The Project has since advanced the RAP with compensation payments completed for over 93% of the project affected persons. A housing relocation construction program is underway, and the scheduling of house builds will be sequenced to ensure that areas of the SML are available to achieve Project development scope and schedule.

Although a number of environmental and social impacts have been identified, it is expected that these will be successfully abated through implementation of a range of mitigations and management measures. At the same time there will be many positive impacts expected, including improved housing, community infrastructure, community contributions to improve services, livelihood developments and employment opportunities for local community members.

## 1.17 CAPITAL AND OPERATING COSTS

Capital cost estimates have been compiled by Perseus and Lycopodium, with inputs from Lycopodium (process plant, infrastructure, construction distributables, EPCM management costs, and spares), ECG (electrical), Majesso Consulting (mine contractor mobilisation and establishment, mine services area, and mine contractor demobilisation), Knight Piésold (site access road, surface water management, Lake Victoria raw water abstraction, TSF, and TSF closure), Mine Earth (closure) and Perseus (earthworks, mine services area, owner's costs, pre-production, sustaining capital, and retrenchment).

The capital cost estimate, summarised in Table 1-6, includes development and pre-production capital, sustaining capital, and rehabilitation and mine closure costs for the Nyanzaga Gold Project. The capital cost estimates are presented in USD ($), with costs effective Q4 CY2024. Overall, the capital cost estimates are considered to have an accuracy of -10% +15%. There is no allowance for project escalation, project sunk costs, or exchange rate variations in the capital cost estimate other than that which would normally be covered by the project contingency.

***Table 1-6: Capital cost estimate summary (Q4 CY2024, -10% 15%)***

| ITEM | $M |
|---|---|
| Development and pre-production capital | 523.1 |
| Sustaining capital | 97.1 |
| Rehabilitation and mine closure | 58.8 |
| **TOTAL** | **679.1** |

The development and pre-production capital cost includes costs incurred post-FID (final investment decision) up to first gold pour. The development capital cost includes mine contractor mobilisation and establishment, construction of the processing plant and project infrastructure, construction distributables, EPCM management costs, owner's costs, commissioning spares, the initial stage of the TSF, taxes (withholding and duties) and contingency. The pre-production capital cost includes operational readiness labour and programs, and capitalised pre-production costs for mining, processing and general and administrative (G&A).

The sustaining capital cost includes expenditure required during the life of the Project to maintain production at the specified design capacity.

Rehabilitation and mine closure costs capture expenditure for all activities related to progressive and final rehabilitation of affected land and watercourses to an approved end of Project land use condition and mine site closure. This includes costs related to environmental monitoring in the period between operations ceasing and formal closure, mining contractor demobilisation, and provision of statutory benefits to Perseus staff at the end of the Project.

Operating cost estimates have been compiled by Perseus, with input from Majesso Consulting (mining costs), Lycopodium (processing costs), and Perseus (mining schedule, processing schedule, general and administration costs, revenue costs, organisational charts, project labour rates and on-costs).

The operating cost estimate includes:

- Mining – costs related to drilling, blasting, loading and haulage of ore (to the crusher dump pocket, and ROM pad and other ore stockpiles) and waste (to waste rock dumps). Costs were developed for a contractor-based mining strategy, with management by Perseus's technical and supervision team.
- Processing – costs related to crushing, grinding, gravity gold recovery, pre-oxidation/CIL, elution, electrowinning, smelting, cyanide detoxification, tailings deposition, water abstraction and other infrastructure services. These include both fixed and variable costs.
- G&A – all other costs related to SMCL that are not mining or processing costs.
- Revenue Costs – doré transportation and refining, royalties, inspection fees and service levy.

The Nyanzaga Gold Project operating cost estimates are presented in USD ($), with costs effective Q4 CY2024. The operating cost estimates are considered to have an overall accuracy of ±15%. The overall Nyanzaga Gold Project LOM operating cost estimate is summarised in Table 1-7.

***Table 1-7: Project LOM operating cost estimate (Q4 CY2024, ±15%)***

| COST CENTRE | LOM COST ($M) | UNIT COST ($/t ORE) | UNIT COST ($/oz) |
|---|---|---|---|
| Mining | 1,179.0 | 22.66 | 586 |
| Processing | 667.1 | 12.82 | 332 |
| G&A | 235.9 | 4.53 | 117 |
| Revenue costs | 319.7 | 6.08 | 157 |
| **TOTAL** | **2,401.8** | **46.10** | **1,192** |

The mining cost of $22.66/t of ore is equivalent to $3.41/t of material (ore + waste) mined.

## 1.18 ECONOMIC ANALYSIS

An economic analysis has been completed on a 100% project basis for the Nyanzaga Gold Project using a gold price of $2,100/oz. Key outcomes of the economic analysis for the Project are presented in Table 1-8, with Project payback period determined to be 5.8 years from first production, on a discounted post-tax basis (10%). The life of mine gold production profile is shown in Figure 1-3.

***Table 1-8: Outcomes of economic analysis for the Nyanzaga Gold Project (100% basis)***

| CATEGORY | ITEM | UNIT | VALUE |
|---|---|---|---|
| Revenue | | $M | 4,285 |
| Capital | Development and pre-production | $M | 523 |
| | Sustaining | $M | 97 |
| | Rehabilitation and closure | $M | 59 |
| Net Project Cash Flow | Pre-tax | $M | 1,133 |
| | Post-tax | $M | 706 |
| $NPV_{10\%}$ | Pre-tax | $M | 404 |
| | Post-tax | $M | 202 |
| IRR | Pre-tax | % | 25.6 |
| | Post-tax | % | 19.0 |
| Payback period (from first production) | Post-tax, discounted$_{10\%}$ | years | 5.8 |

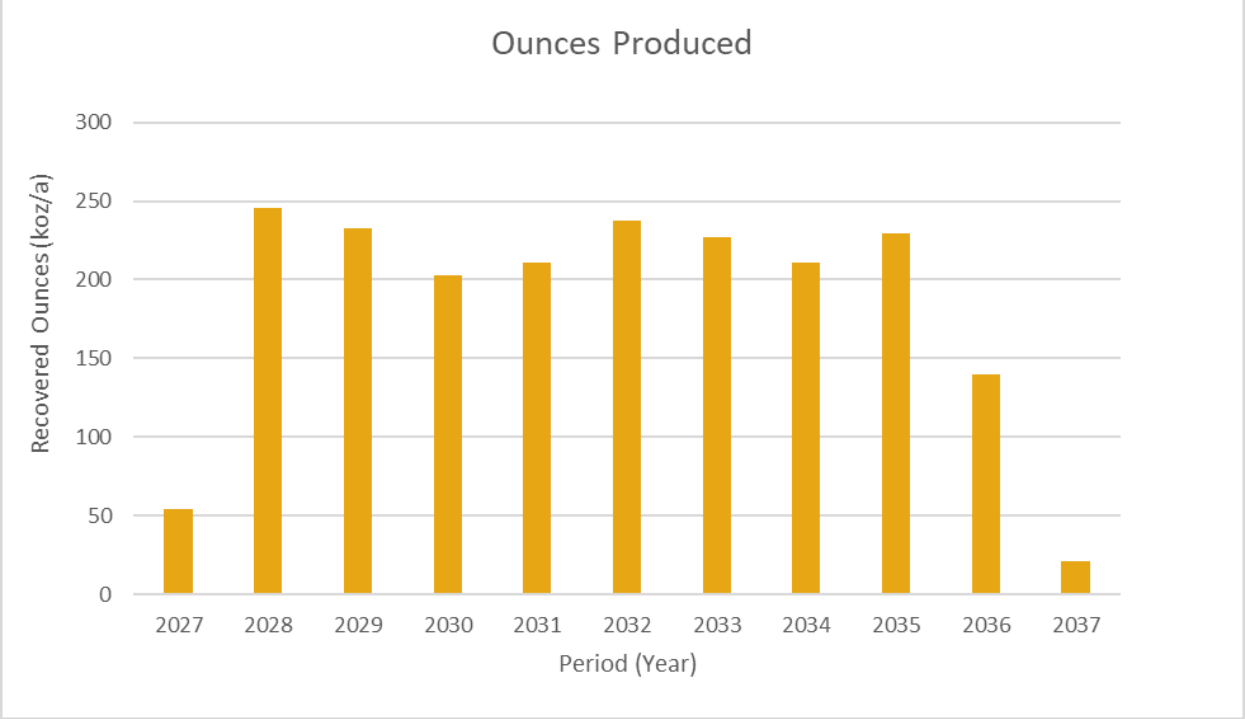



***Figure 1-3: Project gold production profile (Source: Perseus,2025)***

The financial metrics presented confirm positive Project economics and positive cashflow that supports the Mineral Reserve estimate. The Project pre-tax NPV is most sensitive to variations in gold price.

## 1.19 INTERPRETATION AND CONCLUSIONS

This Report summarises the results of an updated Feasibility Study for the Nyanzaga Gold Project, which demonstrates the technical and economic viability of a large open pit mining operation on the Nyanzaga and Kilimani orebodies.

Data that inform the resource estimate are considered to be representative and free of any biases or other factors that may materially impact the reliability of the sampling or significantly affect confidence in estimated resources. Checks to confirm the validity of the drilling database indicate that it forms a sufficiently reliable basis for resource estimation. Drilling activities are ongoing at the Nyanzaga Gold Project with a focus on infill and depth extensions at the Nyanzaga and Kilimani deposits, as well as early-stage exploration on granted tenure.

Perseus has performed an economic analysis related to the Nyanzaga Gold Project to Feasibility Study level of accuracy at the forecasted metal prices, production rates, metal recoveries, and capital and operating costs estimated in this Report. Perseus confirms that the positive economic outcome supports the Mineral Reserve estimate.

The QP is of the opinion that Mineral Reserves were estimated using industry-accepted practices and conform to the CIM Definition Standards and the JORC Code. Mineral Reserves stated in this report are based on open pit mining methods. The Mineral Reserves are acceptable to support mine planning.

Open pit mining of the Nyanzaga Gold Project is considered reasonable and technically viable based on the parameters and assumptions contained within this report and based on Perseus' extensive open pit mining experience in other African jurisdictions.

The results of comminution and metallurgical test work conducted across the Nyanzaga and Kilimani deposits are considered by the QP to be of sufficient scope and quality to support the proposed process plant design and production planning. The single stage crushing and SAB comminution circuit selected can accommodate

the spectrum of material hardness and competency observed from test work, and can achieve the target plant throughput and grind size. It has been demonstrated that the Nyanzaga and Kilimani deposits are 'free-milling' and amenable to gold recovery by a standard gravity and CIL flowsheet.

Infrastructure for the process plant, and the Project more widely, has been considered and defined to Feasibility Study level. Key enabling infrastructure for the Project includes the Ngoma bypass road, 220 kV connection to the TANESCO grid, external communications, water abstraction system from Lake Victoria, TSF, MSA, permanent accommodation camp, and other operational buildings.

Environmental permitting for the Nyanzaga Gold Project mine is up to date, and Perseus has a positive and constructive relationship with the government, and with other stakeholders and the local community. Ongoing application and renewal of licenses and agreements with the Government of Tanzania and other stakeholders, including local communities, is well managed and understood, and there are not expected to be any delays or impediments to project development or operation.

## 1.20 RECOMMENDATIONS

Based upon the Nyanzaga Gold Project Feasibility Study, the following key recommendations are identified:

- Pursue the current planned drilling programs within the Nyanzaga area, which aim to add to reported Mineral Resources. The work program will involve additional drilling as both infill and at depth for each of Nyanzaga and Kilimani.
- Complete additional geotechnical drilling, test work and analysis to improve confidence and precision of pit and waste dump geotechnical parameters.
- Complete metallurgical test work and analysis to further improve understanding of ore variability and improve confidence and precision of operating and cost parameters used for ongoing business planning processes.
- Once the additional drilling, geotechnical work, and metallurgical test work referred to above has been completed, Mineral Reserves should be updated based on any additions to Mineral Resources and any changes to geotechnical and ore processing parameters, and the results of such work should be publicly released.
- The contractor mining tender process for the Nyanzaga Gold Project should continue in order to test the market for real-world mining costs and enable mobilisation of a suitable open pit mining contractor in time for the pre-strip of the Nyanzaga Gold Project.
- Increase knowledge regarding PAF waste distribution, and develop detailed plans for waste dump design that includes encapsulation.
- Proceed with detailed design of the mineral processing plant and Project enabling infrastructure.
- Complete a study considering a full-capacity power station located adjacent to the Project 220 kV switchyard. Renewable generation options are to be considered.
- Applications for Permits required for the Project should be made in a timely manner in order to support the development and execution of the Nyanzaga Gold Project.
- Due to changes between the previous OreCorp DFS and the layouts proposed in this Study by Perseus, an updated Environmental and Social Management Plan will be required for resubmission to the NEMC. Perseus to complete necessary updates and studies required to update the ESMP.
- Progress updates to the closure cost estimate to reflect the most recent level of understanding of the Project.
- Conduct further studies on the Project hydrogeology, including updating models with the latest structural interpretation of the open pit, conducting pit void water balance modelling, and modelling of the pit lake water quality at mine closure.

A summary of the cost for these programs and additional recommendations can be found in Section 26.

Note that as of April 28, 2025, Perseus has announced FID and confirmed its intention to proceed with development of the Nyanzaga Gold Project (Perseus Mining, 2025).

# 2. INTRODUCTION

## 2.1 TERMS OF REFERENCE

This Report was prepared for and by Perseus Mining Limited (Perseus) Qualified Persons on the Nyanzaga Gold Project, Tanzania (the Project). Perseus is an Australian-based gold producer, developer, and explorer with a strategic focus on Africa. Perseus is a Producing Issuer, as defined in the Canadian Securities Administrator's National Instrument 43-101 - Standards of Disclosure for Mineral Projects (NI 43-101). Perseus is dual listed on the Australian Stock Exchange (ASX:PRU) and the Toronto Stock Exchange (TSX:PRU).

The Report complies with the requirements of NI 43-101 for reports filed under Canadian jurisdiction, for the Effective Date of the Exploration Results, Mineral Resource and Mineral Reserve estimates.

This Report was prepared for the purposes of updating statutory reporting after the Perseus takeover of OreCorp Limited in May 2024 to align with the Company's continuous disclosure of Exploration Results, Mineral Resources and Mineral Reserves in accordance NI 43-101 and the JORC Code (2012)

The classification categories of Measured, Indicated and Inferred under the JORC Code are equivalent to the CIM categories of the same names (CIM, 2014). Proved and Probable Ore Reserves under the JORC Code are equivalent to Proven and Probable Mineral Reserve categories defined in CIM. For the avoidance of doubt, the term Mineral Reserves will be used for Ore Reserves and Mineral Reserves in this report. Classifications will be referred to according to the CIM nomenclature.

The Effective Date of this Report is April 28, 2025.

## 2.2 QUALIFIED PERSON RESPONSIBILITIES AND SITE VISITS

A summary of the QPs responsible for the information contained in this report is provided in Table 2-1. Perseus is a Producing Issuer according to the definition in NI 43-101 and therefore an independence test for QPs is not required.

***Table 2-1: Summary of Qualified Persons***

| ITEM | REPORT SECTION | SUB-SECTIONS | QUALIFIED PERSON | COMPANY |
|---|---|---|---|---|
| 1 | Summary | 1.1, 1.11-1.12, 1.16, 1.19-1.20 | Adrian Ralph | Perseus |
| | | 1.2-1.8, 1.10 | Daniel Saunders | Perseus |
| | | 1.9, 1.13-1.15, 1.17-1.18 | Benjamin Strong | Perseus |
| 2 | Introduction | All | Daniel Saunders | Perseus |
| 3 | Reliance on Other Experts | All | Daniel Saunders | Perseus |
| 4 | Property Location and Description | All | Daniel Saunders | Perseus |
| 5 | Accessibility, Climate, Local Resources, Infrastructure and Physiography | All | Daniel Saunders | Perseus |
| 6 | History | All | Daniel Saunders | Perseus |
| 7 | Geological Setting and Mineralisation | All | Daniel Saunders | Perseus |
| 8 | Deposit Types | All | Daniel Saunders | Perseus |
| 9 | Exploration | All | Daniel Saunders | Perseus |
| 10 | Drilling | All | Daniel Saunders | Perseus |
| 11 | Sample Preparation, Analyses and Security | All | Daniel Saunders | Perseus |
| 12 | Data Verification | All | Daniel Saunders | Perseus |
| 13 | Mineral Processing and Metallurgical Testing | All | Benjamin Strong | Perseus |
| 14 | Mineral Resource Estimates | All | Daniel Saunders | Perseus |
| 15 | Mineral Reserve Estimates | All | Adrian Ralph | Perseus |
| 16 | Mining Methods | All | Adrian Ralph | Perseus |
| 17 | Recovery Methods | All | Benjamin Strong | Perseus |
| 18 | Project Infrastructure | All | Benjamin Strong | Perseus |

| ITEM | REPORT SECTION | SUB-SECTIONS | QUALIFIED PERSON | COMPANY |
|---|---|---|---|---|
| **19** | Marketing Studies and Contracts | All | Benjamin Strong | Perseus |
| **20** | Environmental Studies, Permitting and Social or Community Impact | All | Adrian Ralph | Perseus |
| **21** | Capital and Operating Costs | All | Benjamin Strong | Perseus |
| **22** | Economic Analysis | All | Benjamin Strong | Perseus |
| **23** | Adjacent Properties | All | Adrian Ralph | Perseus |
| **24** | Other Relevant Data and Information | All | Adrian Ralph | Perseus |
| **25** | Interpretation and Conclusions | All | Adrian Ralph | Perseus |
| **26** | Recommendations | All | Adrian Ralph | Perseus |
| **27** | References | - | Adrian Ralph | Perseus |

Mr Adrian Ralph (FAusIMM) visited the Property in May 2024. The purpose of Mr Ralph's visit was as the manager of the Feasibility Study in his role as General Manager Technical Services and Studies, and as an employee of Perseus.

Mr Daniel Saunders (FAusIMM) visited the Property in May 2024, during September and October 2024, and in March 2025. The purpose of Mr Saunders' visits was to review drilling and sampling practices, data collection and validation, analytical laboratory assessment, and review of the Project geology in his role as Group Resource Geologist Business Growth, and as an employee of Perseus.

Mr Benjamin Strong (FAusIMM) visited the Property in March 2025. The purpose of the visit was to provide support to and conduct activities as part of the Feasibility Study in his role as Group Manager Processing, Infrastructure and Tailings, and as an employee of Perseus.

## 2.3 CURRENCY, UNITS OF MEASURE, AND ABBREVIATIONS

In this Report, all currency amounts are US dollars (US$) unless otherwise stated. Quantities are generally stated in Système international d'unités (SI) metric units, including metric tonnes (tonnes, t) for mass, and kilometres (km) or metres (m) for distance. The abbreviations provided in Table 2-2 are used in this Report.

***Table 2-2: Summary of abbreviations***

| ABBREVIATION | DESCRIPTION |
|---|---|
| ’ | Minutes of latitude or longitude |
| ” | Seconds of latitude or longitude |
| µm | Micrometre, micron |
| µS | Microsiemens |
| µS/cm | Microsiemens per centimetre |
| $ | Dollar |
| $/bcm | Dollar per bank cubic metre |
| $/kWh | Dollar per kilowatt-hour |
| $/L | Dollar per litre |
| $/oz | Dollar per troy ounce |
| $/t | Dollar per metric tonne |
| $k/a | Thousand dollars per year |
| $M | Million dollars |
| $M/a | Million dollars per year |
| /a | Per year |
| % | Percent |
| % w/v | Percent weight by volume |
| % w/w | Percent weight by weight |
| ° | Degree |
| °C | Degree Celsius |
| # | Number |

| ABBREVIATION | DESCRIPTION |
|---|---|
| 1VD | First vertical derivative |
| 2SD | Two standard deviations |
| 3D | Three-dimensional |
| 3SD | Three standard deviations |
| > | Greater than |
| ≥ | Greater than or equal to |
| < | Less than |
| ≤ | Less than or equal to |
| ± | Plus or minus |
| a | Year (annum) |
| A | Ampere |
| A×b | Parameter derived from SMC Test® |
| AARL | Anglo American Research Laboratories |
| AAS | Atomic absorption spectroscopy |
| ABG | African Barrick Gold |
| abs. | Absolute |
| AC | Aircore drilling |
| AF | Axial fault |
| AFP | Acid forming potential |
| Ag | Silver |
| Ai | Bond abrasion index |
| Al | Aluminium |
| ANCOLD | Australian National Committee on Large Dams |
| App. | Appendix |
| APP. | Approved |
| app'd | Approved |
| ARD | Acid rock drainage |
| ARD | Apparent relative density |
| ARI | Average recurrence interval |
| As | Arsenic |
| ASX | Australian Securities Exchange |
| Au | Gold |
| AUD | Australian dollar |
| Aug. | August |
| Avg | Average |
| AX | Axial fault |
| bcm | Bank cubic metre |
| BEAL | Barrick Exploration Africa Limited |
| BEng | Bachelor of Engineering |
| BFA | Batter face angle |
| BLEG | Bulk leach extractable gold |
| bn | Billion |
| BOCO | Base of complete oxidation |
| BOD | Biochemical oxygen demand |
| BOO | Build-own-operate |
| BOOT | Build-own-operate-transfer |
| BQR | Budget quotation request |
| BSc | Bachelor of Science |
| BWi | Bond ball mill work index |
| Ca | Calcium |
| $CaCO_3$ | Calcium carbonate |
| CAD | Canadian dollar |

| ABBREVIATION | DESCRIPTION |
|---|---|
| calc. | Calculated |
| CaO | Calcium oxide |
| CAP | Chapter |
| CCE | Closure cost estimate |
| CCTV | Closed circuit television |
| Cd | Cadmium |
| CFU | Colony forming units |
| CH | Chert |
| $CH_4$ | Methane |
| CHF | Chert/fault |
| CIL | Carbon-in-leach |
| CIM | Canadian Institute of Mining, Metallurgy and Petroleum |
| CIP | Carbon-in-pulp |
| CKD | Checked |
| cm | Centimetre |
| $cm^3$ | Cubic centimetre |
| CN | Cyanide |
| $CN_{free}$ | Free cyanide |
| $CN_{total}$ | Total cyanide |
| $CN_{WAD}$ | Weak acid dissociable cyanide |
| Co | Cobalt |
| CO | Colorado |
| $CO_2$ | Carbon dioxide |
| Comp. | Composite |
| con. | Concentrate |
| conc. | Concentration |
| $C_{organic}$ | Organic carbon |
| COS | Coarse ore stockpile |
| cP | Centipoise |
| CPA | Chrysos PhotonAssay™ |
| Cr | Chromium |
| CR | Critically endangered |
| CRM | Certified reference material |
| CSL | Compacted soil liner |
| csv | Comma-separated values |
| Cu | Copper |
| $CuSO_4.5H_2O$ | Copper sulfate pentahydrate |
| CV | Coefficient of variation |
| CWi | Bond impact crushing work index |
| CWD | Clean water diversion |
| CY | Calendar year |
| d | Day |
| dBA | A-weighted decibel |
| DC | District of Columbia |
| DD | Diamond core drilling |
| Dec. | December |
| DFS | Definitive Feasibility Study |
| DGPS | Differential global positioning system |
| diff. | Difference |
| DO | Dissolved oxygen |
| DRG | Drawing |
| DRN | Drawn |

| ABBREVIATION | DESCRIPTION |
|---|---|
| DTM | Digital terrain model |
| Dup. | Duplicate |
| DWI | Drop-weight index |
| E | East |
| e/a | Emissions per year |
| e/oz | Emissions per troy ounce of gold |
| ea. | Each |
| EAR | East African Rift |
| EC | Environmental Certificate |
| ed. | Edition |
| Ed. | Editor |
| Eds. | Editors |
| e.g. | Exempli gratia (for example) |
| EGL | Effective grinding length |
| EHS | Environment, health and safety |
| EIA | Environmental Impact Assessment |
| EN | Endangered |
| ENE | East-northeast |
| Eng. | Engineer; Engineered |
| EPCM | Engineering, procurement and construction management |
| EPs | Equator Principles |
| EPSG | European Petroleum Survey Group |
| ERT | Emergency response team |
| ESE | East-southeast |
| ESIA | Environmental and Social Impact Assessment |
| ESMP | Environmental and Social Management Plan |
| ESMS | Environmental and Social Management System |
| est. | Estimated |
| etc. | Et cetera |
| EUR | Euro |
| EWURA | Energy and Water Utilities Regulatory Authority |
| FA | Fire assay |
| FAusIMM | Fellow of the Australasian Institute of Mining and Metallurgy |
| Fe | Iron |
| Fe(III) | Iron (III); Ferric |
| $Fe_2(SO_4)_3$ | Iron (III) sulfate; Ferric sulfate |
| Feb. | February |
| FEED | Front-End Engineering and Design |
| FEF | Fast east fault |
| FEL | Front end loader |
| FF1 | Far east fault |
| FID | Final investment decision |
| flot. | Flotation |
| FR | Fresh |
| FS | Feasibility Study |
| FSC | Fixed series compensator |
| FY | Financial year |
| g | Gram |
| G | Gauss |
| $g/cm^3$ | Gram per cubic centimetre |
| g/g | Gram per gram |
| g/L | Gram per litre |

| ABBREVIATION | DESCRIPTION |
|---|---|
| g/t | Gram per metric tonne |
| G&A | General and administrative |
| GBP | Great British pound |
| $gcm^{-3}$ | Gram per cubic centimetre |
| GEF | Grid emission factor |
| GHG | Greenhouse gas |
| GIIP | Good International Industry Practice |
| GISTM | Global Industry Standard on Tailings Management |
| GL | Gigalitre |
| GL/a | Gigalitre per year |
| GoT | Government of Tanzania |
| grav. | Gravity |
| GWh | Gigawatt-hour |
| GWh/a | Gigawatt-hour per year |
| h | Hour |
| $h^{-1}$ | Per hour |
| h/a | Hour per year |
| $H_2O_2$ | Hydrogen peroxide |
| $H_2S$ | Hydrogen sulfide |
| $H_2SO_4$ | Sulfuric acid |
| ha | Hectare |
| HCl | Hydrochloric acid |
| HCN | Hydrogen cyanide |
| HDPE | High density polyethylene |
| Hg | Mercury |
| $HNO_3$ | Nitric acid |
| HQ | Drill core size |
| HR | Human resources |
| HSE | Health, safety and environment |
| HV | Heavy vehicle |
| HV | High voltage |
| Hz | Hertz |
| I/O | Input/output |
| IBC | Intermediate bulk container |
| ID | Identification |
| i.e. | Id est (that is) |
| IEC | International Electrotechnical Commission |
| IFC | International Finance Corporation |
| IGES | Institute for Global Environmental Strategies |
| IPCC | Intergovernmental Panel on Climate Change |
| IRA | Inter-ramp angle |
| IRR | Internal rate of return |
| ISO | International Organisation for Standardisation |
| ISRM | International Society for Rock Mechanics and Rock Engineering |
| IT | Information technology |
| IT | Integrated tool (carrier) |
| IUCN | International Union for Conservation of Nature |
| JORC | Joint Ore Reserves Committee |
| Jun. | June |
| JV | Joint venture |
| K | Potassium |
| kg | Kilogram |

| ABBREVIATION | DESCRIPTION |
|---|---|
| kg/h | Kilogram per hour |
| kg/kWh | Kilogram per kilowatt-hour |
| kg/$m^3$ | Kilogram per cubic metre |
| kg/t | Kilogram per metric tonne |
| KIL | Kilimani |
| kL | Kilolitre |
| kL/d | Kilolitre per day |
| km | Kilometre |
| $km^2$ | Square kilometre |
| kN | Kilonewton |
| $KNO_3$ | Potassium nitrate; nitre |
| koz | Thousand troy ounces |
| koz/a | Thousand troy ounces per year |
| kPa | Kilopascal |
| kV | Kilovolt |
| kVA | Kilovolt-ampere |
| kW | Kilowatt |
| kWh | Kilowatt-hour |
| kWh/$m^2$/d | Kilowatt-hour per square metre per day |
| kWh/$m^3$ | Kilowatt-hour per cubic metre |
| kWh/t | Kilowatt-hour per metric tonne |
| L | Litre |
| L/min | Litre per minute |
| L/min/L | Litre per minute per litre |
| (L/s)/(rad/s) | Litre per second per radian per second |
| LBMA | London Bullion Market Association |
| LCRS | Leakage collection and recovery system |
| LiDAR | Laser imaging detection and ranging survey |
| LOM | Life of mine |
| LRFP | Livelihood Restoration Framework Program |
| LRP | Land Replacement Plan |
| Ltd | Limited |
| LUC | Localised uniform conditioning |
| LV | Light vehicle |
| LVS | Lower volcanics |
| m | Metre |
| m/a | Metre per year |
| m/h | Metre per hour |
| m/s | Metre per second |
| $m^2$ | Square metre |
| $m^3$ | Cubic metre |
| $m^3$/h | Cubic metre per hour |
| $m^3$/t | Cubic metre per metric tonne |
| M | Million |
| maj. | Major |
| Mar. | March |
| max. | Maximum |
| mbgl | Metres below ground level |
| MCC | Motor control centre |
| MCP | Mine Closure Plan |
| mE | Metres east |
| mg | Milligram |

| ABBREVIATION | DESCRIPTION |
|---|---|
| mg/L | Milligram per litre |
| Mg | Magnesium |
| MGT | MineGeoTech - Geotechnical Engineering Consultants |
| M&I | Measured and Indicated |
| $M_{ia}$ | Coarse ore work index (for tumbling mills, from SMC Test®) |
| $M_{ic}$ | Crushing ore work index (for conventional reciprocating crushers, from SMC Test®) |
| min | Minute |
| min. | Minimum |
| min. | Minor |
| mL | Millilitre |
| ML | Megalitre |
| ML/a | Megalitre per year |
| mm | Millimetre |
| mm/s | Millimetre per second |
| MMS | Mwanza Meteorological Station |
| mN | Metres north |
| Mn | Manganese |
| Mo | Molybdenum |
| MoU | Memorandum of Understanding |
| Moz | Million troy ounces |
| MPa | Megapascal |
| MRE | Mineral Resource Estimate |
| mRL | Metres reduced level |
| MRMR | Mining rock mass rating |
| MS | Mudstone |
| MSA | Mine services area |
| MSc | Master of Science |
| Mt | Million metric tonnes |
| Mt/a | Million metric tonnes per year |
| Mtpa | Million metric tonnes per year |
| MVA | Megavolt-ampere |
| MW | Megawatt |
| MWD | Mine waste diversion |
| mX | Metres on x-axis (typically east) |
| mY | Metres on y-axis (typically north) |
| mZ | Metres on z-axis (typically reduced level) |
| n/a | Not applicable |
| N | North |
| $N_2O$ | Nitrous oxide |
| Na | Sodium |
| $Na_2B_4O_7$ | Sodium tetraborate; borax (anhydrous) |
| $Na_2CO_3$ | Sodium carbonate; soda ash |
| $Na_2S_2O_5$ | Sodium metabisulfite |
| NaCN | Sodium cyanide |
| NaOH | Sodium hydroxide |
| NCM | Nyanzaga chert member |
| ND | Not detected |
| NE | Northeast |
| NEMC | National Environment Management Council |
| NGP | Nyanzaga Gold Project |
| $NH_3$ | Ammonia |
| Ni | Nickel |

| ABBREVIATION | DESCRIPTION |
|---|---|
| NI | National Instrument |
| Nm | Newton-metre |
| NMCL | Nyanzaga Mining Corporation Limited |
| NMM | Nyanzaga mudstone member |
| NNE | North-northeast |
| NNW | North-northwest |
| No. | Number |
| $NO_2$ | Nitrogen dioxide |
| NPV | Net present value |
| $NPV_{10\%}$ | Net present value at discount rate of 10% |
| NQ or NQ2 | Drill core size |
| NSM | Nyanzaga sandstone member |
| NT | Near threatened |
| NTU | Nephelometric turbidity unit |
| NW | Northwest |
| NYZ | Nyanzaga |
| O | Oxygen (element) |
| $O_2$ | Oxygen (molecule) |
| $OCN^-$ | Cyanate ion |
| OIT | Operator interface terminal |
| OK | Ordinary kriging |
| ONAF | Oil natural, air forced |
| ONAN | Oil natural, air natural |
| OPGW | Optical ground wire |
| orig. | Original |
| OX | Oxide |
| oz | Troy ounce |
| P | Phosphorus |
| $P_{80}$ | 80% passing size of particles |
| $P_{95}$ | 95% passing size of particles |
| $P_{100}$ | 100% passing size of particles |
| Pa | Pascal |
| Pa/Nm | Pascal per newton-metre |
| PAF | Potentially acid forming |
| PAX | Potassium amyl xanthate |
| Pb | Lead |
| PC | Personal computer |
| PCS | Process control system |
| PDF | Portable document format |
| perc. | Percentile |
| PFS | Pre-feasibility Study |
| pH | Potential of hydrogen |
| PID | Proportional-integral-derivative |
| P&ID | Piping and instrumentation diagram |
| PL | Prospecting licence |
| plc | Public limited company |
| PLC | Programmable logic controller |
| $PM_{2.5}$ | Particulate matter with a diameter of 2.5 microns or less |
| $PM_{10}$ | Particulate matter with a diameter of 10 microns or less |
| PMP | Probable maximum precipitation |
| PMR | Private mobile radio |
| pp. | Pages |

| ABBREVIATION | DESCRIPTION |
|---|---|
| PPE | Personal protective equipment |
| ppm | Part per million |
| PQ | Drill core size |
| proj. | Project |
| PS | Performance standard |
| PSA | Pressure swing adsorption |
| pt | Point |
| Pt-Co | Platinum-cobalt (unit) |
| Pty | Proprietary |
| Q4 | Fourth quarter |
| QAQC | Quality assurance/quality control |
| QC | Quality control |
| QP | Qualified Person |
| Q-Q | Quantile-quantile (plots) |
| ® | Registered trademark |
| $R^2$ | Square of Pearson product moment coefficient |
| RAB | Rotary air blast drilling |
| rad | Radian |
| RAP | Resettlement Action Plan |
| RC | Reverse circulation drilling |
| RCDD | Drilling with reverse circulation collars and diamond core tails |
| res. | Residence |
| Rev. | Revision |
| RIR | Reference intensity ratio |
| RL | Reduced level |
| RMPD | Relative mean paired difference |
| RMR | Rock mass rating |
| ROM | Run-of-mine |
| RPEEE | Reasonable prospects for eventual economic extraction |
| rpm | Revolution per minute |
| R&R | Rest and recreation |
| RWG | Resettlement Working Group |
| RWi | Bond rod mill work index |
| s | Second |
| $s^{-1}$ | Per second |
| S | South |
| S | Sulfur |
| SAB | Semi-autogenous grinding and ball milling |
| SADCAS | South African Development Community Accreditation Service |
| SAG | Semi-autogenous grinding |
| samps | Samples |
| SANAS | South African National Accreditation System |
| Sb | Antimony |
| SCADA | Supervisory control and data acquisition |
| SCD | Sediment control dam |
| $SCN^-$ | Thiocyanate ion |
| SCSE | SAG (semi-autogenous grinding mill) circuit specific energy |
| SD | Standard deviation |
| Se | Selenium |
| SE | Southeast |
| sem. | Semi |
| Sep. | September |

| ABBREVIATION | DESCRIPTION |
|---|---|
| SFA | Screen fire assay |
| SG | Specific gravity |
| Si | Silicon |
| SI | Système international d'unités |
| SIA | Social Impact Assessment |
| SIC | Sulfur impregnated carbon |
| $SiO_2$ | Silicon dioxide; silica |
| SMBS | Sodium metabisulfite |
| SMCL | Sotta Mining Corporation Limited |
| SML | Special Mining Licence |
| SMP | Structural, mechanical and piping |
| SMU | Selective mining unit |
| $SO_2$ | Sulfur dioxide |
| SQL | Structured Query Language |
| SS | Sandstone |
| SSE | South-southeast |
| $S_{sulfide}$ | Sulfide sulfur |
| SSW | South-southwest |
| Std | Standard |
| std dev. | Standard deviation |
| stoich. | Stoichiometric |
| SVC | Static VAR compensator |
| SW | Southwest |
| SWD | Sediment laden water diversion |
| t | Metric tonne |
| t/a | Metric tonne per year |
| t $CO_2e$/a | Metric tonne of carbon dioxide equivalent per year |
| t $CO_2e$/oz | Metric tonne of carbon dioxide equivalent per troy ounce |
| t $CO_2$/MWh | Metric tonne of carbon dioxide per megawatt-hour |
| t/h | Metric tonne per hour |
| $t/m^2/h$ | Metric tonne per square metre per hour |
| $t/m^3$ | Metric tonne per cubic metre |
| t/MWh | Metric tonne per megawatt-hour |
| TANROADS | Tanzania National Roads Agency |
| TARURA | Tanzania Rural Roads Agency |
| Te | Tellurium |
| TANESCO | Tanzania Electric Supply Company Limited |
| TDS | Total dissolved solids |
| ™ | Trademark |
| TMA | Tanzanian Meteorological Authority |
| TOFR | Top of fresh rock |
| Trans. | Transitional (ore) |
| TSF | Tailings storage facility |
| TSS | Total suspended solids |
| TSX | Toronto Stock Exchange |
| TV | Television |
| typ. | Typical |
| TZS | Tanzanian shilling |
| TZS/kWh | Tanzanian shilling per kilowatt-hour |
| TZS/kVA/month | Tanzanian shilling per kilovolt-ampere per month |
| UC | Uniform conditioning |
| UCS | Uniaxial compressive strength |

| ABBREVIATION | DESCRIPTION |
|---|---|
| UNCITRAL | United Nations Commission on International Trade Law |
| US or USA | United States of America |
| US$ | United States dollar |
| USD | United States dollar |
| UTM | Universal Transverse Mercator |
| UVS | Upper volcanics |
| v. | Version |
| V | Vanadium |
| V | Volt |
| VAR | Volt-ampere reactive |
| VAT | Value-added tax |
| VHMS | Volcanic hosted massive sulfide |
| VIP | Very important person |
| VoIP | Voice over internet protocol |
| VU | Vulnerable |
| w/v | Weight by weight |
| w/w | Weight by volume |
| W | West |
| WAD | Weak acid dissociable |
| WASM | Western Australian School of Mines |
| WB | Wellbore drilling |
| WHO | World Health Organisation |
| WHT | Withholding tax |
| WNW | West-northwest |
| WSW | West-southwest |
| x | Direction on x-axis (typically east) |
| XOF | West African Communauté Financière Africaine (African Financial Community) franc |
| XRD | X-ray diffraction |
| y | Direction on y-axis (typically north) |
| z | Direction on z-axis (typically reduced level) |
| ZAR | South African rand |
| Zn | Zinc |

## 2.4 DATA SOURCES

A list of the sources of information and data contained in this report is provided in Section 27 of this report. Project-specific information relied upon in preparing this report has been provided by Perseus.

## 2.5 ACKNOWLEDGEMENTS

Mr Ian Patterson (Study Manager) and Mr Richard Brownbill (Group Mining Engineer) contributed to Sections 15, 16, 18 and 21 of the Report. Both Mr Patterson and Mr Brownbill are full time employees of Perseus.

# 3. RELIANCE ON OTHER EXPERTS

## 3.1 OTHER EXPERTS

The authors contributing to this report have relied in good faith on information provided by other experts in relation to the aspects listed in Table 3-1.

The QPs have not independently investigated the Ownership and Title, Mineral Rights and Legal Obligations, Permits and Approvals, Land Access and Compensation, and Environmental Liabilities of the Property. In relation to these sections of the report, the authors have relied upon the subject matter expertise of Mr Martijn Bosboom (General Counsel and Company Secretary), Mrs Melanie Pollard (Chief Corporate Affairs and Sustainability Officer), and Mr Alex Calder (General Manager Health, Safety and Environment). Mr Bosboom, Mrs Pollard and Mr Calder are full time employees of Perseus (or its subsidiaries).

Information concerning Ownership and Title, Mineral Rights and Legal Obligations, and Land Access and Compensation provided by Mr Bosboom includes that contained in the section "Mineral Concession Interests at August 1, 2024" contained in the Perseus Annual Report (2024). Mr Bosboom has confirmed to the QPs by review of the Report on April 28, 2025, the previously disclosed change in the Tanzanian Government free-carried interest from 16% to 20%. The QPs relied on this information in Section 4 and the Summary of this report.

Information concerning Permits and Approvals, and Environmental Liabilities of the Property including outlining operational management practices and compliance was provided by Mrs Pollard and Mr Calder via direct contributions to the Report. The QPs relied on this information in Section 20 and the Summary of this report.

***Table 3-1: Other experts***

| REPORT SECTION | INFORMATION | SOURCE |
|---|---|---|
| 4.3 | Ownership and Title | Martijn Bosboom |
| 4.4 | Mineral Rights and Legal Obligations | Martijn Bosboom |
| 4.5 | Land Access and Compensation | Martijn Bosboom and Alex Calder |
| 4.6 | Environmental Liabilities | Melanie Pollard and Alex Calder |
| 4.7 | Permits and Approvals | Martijn Bosboom and Alex Calder |
| 20 | Environmental Studies, Permitting and Social or Community Impact | Melanie Pollard and Alex Calder |

# 4. PROPERTY DESCRIPTION AND LOCATION

## 4.1 LOCATION

The Nyanzaga Gold Project (the Project) is located in north-western Tanzania, south of Lake Victoria within the Sengerema District of the Mwanza Region. The Project is approximately 60 km southwest of Mwanza (Tanzania's second largest city) and 7 km southeast of Ngoma, with the total area of the Project being 16,085 ha. The Project is approximately 60 km east of the Geita Gold Mine and 35 km northeast of the Bulyanhulu Gold Mine, at 2°58'S Latitude and 32°42'E Longitude as shown in Figure 4-1.




*Figure 4-1: Nyanzaga Gold Project location plan (Source: Perseus, 2025)*

## 4.2 PROPERTY DESCRIPTION

The Nyanzaga Gold Project consists of one Special Mining Lease (SML), nine granted prospecting licences, and one prospecting licence application. A full list of licences held is tabulated in Table 4-2.

The SML was granted on 13 December 2021 to Sotta Mining Corporation Limited (SMCL) for an initial period of 15 years. Through its subsidiary, Nyanzaga Mining Corporation Limited (NMCL) Perseus holds an 80% interest in SMCL. The Treasury Registrar holds the 20% free carried interest of the Government of Tanzania (GoT) in accordance with the Mining Act [CAP. 123 R.E. 2019] (Mining Act).

A summary of royalty and licence conditions are tabulated in Table 4-1.

***Table 4-1: Royalty and licence conditions***

| MINING LEGISLATION | RATE/COMPLIANCE | | | |
|---|---|---|---|---|
| **Government Charges** | | | | |
| Free carry | 20% | | | |
| Mineral royalties | 6% for metallic minerals (includes gold), reduced to 4% in the case of gold sold to the Bank of Tanzania at refinery centres in Tanzania | | | |
| Inspection fee | 1% of gross value (exempted if sold to the Bank of Tanzania or refined at a local refinery) | | | |
| Service levy | 0.3% of turnover | | | |
| Tax on Profit | 30% | | | |
| | | | | |
| **Local Content Regulations** | | | | |
| Maintain minimum level of Tanzanian employees - The time requirements relate to the date of the SML | **Description** | **Start** | **5 years** | **10 years** |
| | Management staff | 30% | 50-60% | 70-80% |
| | Technical core staff | 20% | 50-60% | 70-80% |
| | Other staff | 80% | 90% | 100% |
| Use Tanzanian licence service providers or joint venture entities | At least 20% equity participation by Tanzanian citizens | | | |
| Ownership by indigenous Tanzanian company | At least 50% local shareholding | | | |
| Use of Tanzanian banks and financial institutions | At least 20% local shareholding | | | |
| Prepare and submit a local content plan | Submit and report annually, report employment and training quarterly | | | |
| | | | | |
| **Corporate Social Responsibility** | | | | |
| Prepare and submit a corporate social responsibility plan | Submit annually | | | |
| Integrity pledge | Comply with Integrity Pledge | | | |
| Government minerals warehouse | | | | |
| Establish mineral warehouses | At head office and branches of the bank | | | |
| Transportation of minerals | Requires a permit | | | |

## 4.3 OWNERSHIP AND TITLE

Framework and Shareholder Agreements between NMCL and the GoT were signed on December 13, 2021, with amendments to the Agreements currently being finalised. The Agreements specify the key rights and obligations of the Company and the Government with respect to the development and management of the Project.

Pursuant to the Framework Agreement, the GoT has agreed to facilitate the procurement of the rights, permits and approvals necessary for the establishment, development and operation of the Project, subject

to SMCL's compliance with Tanzanian procedural and statutory requirements. Fiscal and taxation assumptions and arrangements reflect prevailing Tanzanian legislative and regulatory requirements.

The Shareholders Agreement outlines the relationship between NMCL and the GoT, confirming the parties' shareholding in SMCL, as well as the board structure. The board of SMCL consists of five directors nominated by NMCL (including the chair) and two directors nominated by the GoT. The Shareholders Agreement also contains standard provisions relating to:

- Board and shareholder meetings, operation and management of SMCL.
- Pre-emption in respect of any proposed transfer of NMCL's shares in SMCL to a third party.
- Reserved matters which will require the approval of the GoT, including in respect of the conduct of business outside approved business plans, other actions outside the ordinary course of business, and winding up and dissolution of SMCL.

The Agreements provide for any disputes to be resolved by reference to international arbitration under the UNCITRAL Arbitration Rules and also contain other customary terms which are typical for an incorporated joint venture.

Special Mining Licence (SML) 653/2021 was granted to SMCL on 13 December 2021 for a period of 15 years and covers the Nyanzaga and Kilimani mineralisation. The project area comprises a further nine prospecting licences and one prospecting licence in application. The licence details are presented in Table 4-2 and shown spatially in Figure 4-2. Coordinate information for the respective tenure is presented in Table 4-3.

***Table 4-2: Nyanzaga Gold Project tenement summary***

| TENEMENT | HOLDER | STATUS | APPLICATION DATE | GRANT DATE | EXPIRY DATE | AREA ($km^2$) |
|---|---|---|---|---|---|---|
| SML 653/2021 | SMCL (100%) | Active | 10/10/2017 | 13/12/2021 | 12/12/2036 | 23.36 |
| PL 11873/2022 | SMCL (100%) | Active | 1/02/2022 | 29/03/2022 | 28/03/2026 | 17.03 |
| PL 11874/2022 | SMCL (100%) | Active | 1/02/2022 | 29/03/2022 | 28/03/2026 | 21.22 |
| PL 12427/2023 | SMCL (100%) | Active | 6/07/2023 | 24/07/2023 | 23/07/2027 | 37.26 |
| PL 12428/2023 | SMCL (100%) | Active | 6/07/2023 | 24/07/2023 | 23/07/2027 | 42.78 |
| PL 12429/2023 | SMCL (100%) | Active | 6/07/2023 | 24/07/2023 | 23/07/2027 | 4.20 |
| PL 12430/2023 | SMCL (100%) | Active | 6/07/2023 | 24/07/2023 | 23/07/2027 | 1.37 |
| PL 10877/2016 | Perseus Tanzania Limited (100%) | Active | 11/03/2016 | 7/10/2016 | 6/10/2025 | 7.42 |
| PL 10911/2016 | Perseus Tanzania Limited (100%) | Active | 21/04/2016 | 23/09/2016 | 22/09/2025 | 10.91 |
| PL 11186/2018 | Perseus Tanzania Limited (100%) | Active | 14/12/2016 | 26/10/2018 | 25/10/2025 | 18.21 |
| PL 11961/2017 | Perseus Tanzania Limited (100%) | Application | 31/05/2017 | - | - | 3.53 |

Prospecting licences are granted for an initial period of up to four years. A first renewal may be applied for, consisting of a further three years and an associated 50% reduction in the licence area, with the possibility of a second renewal, for a further two years and another 50% reduction in area. No further extensions to prospecting licences are typically permitted.

Prospecting licences PL 10877/2016 and PL 10911/2016 are both in the second renewal phase and options for their extension, or conversion to another licence type, are being investigated. Should these licences expire there is no direct impact to the viability of the Nyanzaga Gold Project.

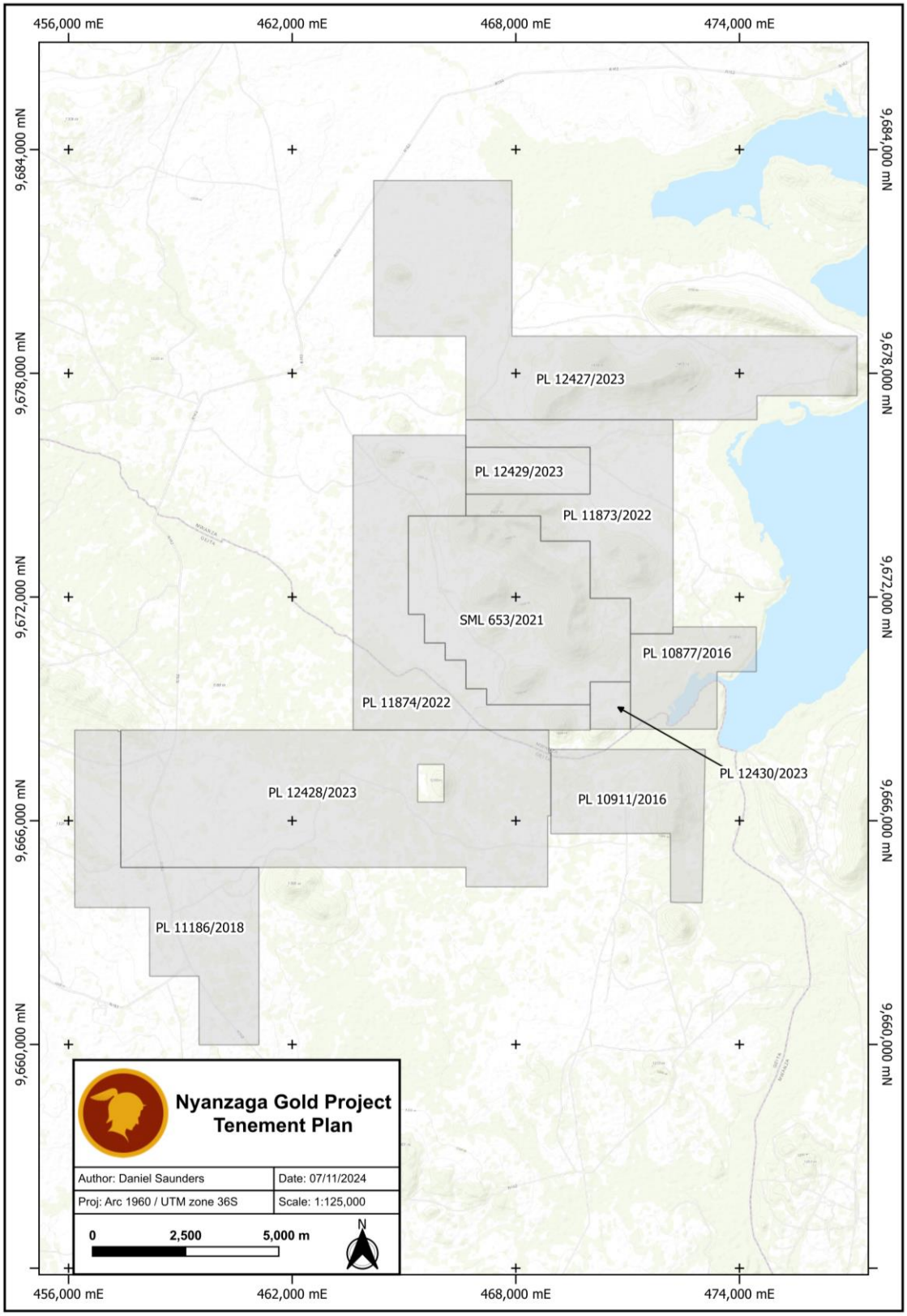



*Figure 4-2: Nyanzaga Gold Project tenement location plan (Source: Perseus, 2025)*

*Table 4-3: Nyanzaga Gold Project tenement coordinates*

| TENEMENT | CORNER | LATITUDE | | | LONGITUDE | | |
|---|---|---|---|---|---|---|---|
| | | DEGREES (°) | MINUTES (') | SECONDS (") | DEGREES (°) | MINUTES (') | SECONDS (") |
| SML 653/2021 | 1 | -2 | 56 | 53 | 32 | 41 | 10 |
| | 2 | -2 | 56 | 53 | 32 | 43 | 5 |
| | 3 | -2 | 57 | 15 | 32 | 43 | 5 |
| | 4 | -2 | 57 | 15 | 32 | 43 | 48 |
| | 5 | -2 | 58 | 5 | 32 | 43 | 48 |
| | 6 | -2 | 58 | 5 | 32 | 44 | 23 |
| | 7 | -2 | 59 | 18 | 32 | 44 | 23 |
| | 8 | -2 | 59 | 18 | 32 | 43 | 48 |
| | 9 | -2 | 59 | 38 | 32 | 43 | 48 |
| | 10 | -2 | 59 | 38 | 32 | 42 | 18 |
| | 11 | -2 | 59 | 24 | 32 | 42 | 18 |
| | 12 | -2 | 59 | 24 | 32 | 42 | 0 |
| | 13 | -2 | 58 | 59 | 32 | 42 | 0 |
| | 14 | -2 | 58 | 59 | 32 | 41 | 42 |
| | 15 | -2 | 58 | 44 | 32 | 41 | 42 |
| | 16 | -2 | 58 | 44 | 32 | 41 | 24 |
| | 17 | -2 | 58 | 19 | 32 | 41 | 24 |
| | 18 | -2 | 58 | 19 | 32 | 41 | 10 |
| PL 10877/2016 | 1 | -2 | 59 | 59.24 | 32 | 45 | 38.2 |
| | 2 | -2 | 59 | 59.24 | 32 | 44 | 23 |
| | 3 | -2 | 58 | 36 | 32 | 44 | 23 |
| | 4 | -2 | 58 | 36 | 32 | 45 | 0 |
| | 5 | -2 | 58 | 30 | 32 | 45 | 0 |
| | 6 | -2 | 58 | 30 | 32 | 46 | 12.4 |
| | 7 | -2 | 59 | 9.1 | 32 | 46 | 12.4 |
| | 8 | -2 | 59 | 9.1 | 32 | 45 | 38.2 |
| PL 10911/2016 | 1 | -3 | 0 | 17 | 32 | 43 | 13.76 |
| | 2 | -3 | 0 | 17 | 32 | 45 | 28 |
| | 3 | -3 | 2 | 30.96 | 32 | 45 | 25.28 |
| | 4 | -3 | 2 | 30.56 | 32 | 44 | 57.82 |
| | 5 | -3 | 1 | 30.38 | 32 | 44 | 57.63 |
| | 6 | -3 | 1 | 30.67 | 32 | 43 | 13.76 |
| PL 11186/2018 | 1 | -3 | 0 | 0 | 32 | 36 | 57.6 |
| | 2 | -3 | 0 | 1 | 32 | 36 | 57.6 |
| | 3 | -3 | 0 | 1 | 32 | 37 | 0 |
| | 4 | -3 | 2 | 0 | 32 | 37 | 0 |
| | 5 | -3 | 2 | 0 | 32 | 39 | 0 |
| | 6 | -3 | 4 | 35 | 32 | 39 | 0 |
| | 7 | -3 | 4 | 35 | 32 | 38 | 8 |
| | 8 | -3 | 3 | 35 | 32 | 38 | 8 |
| | 9 | -3 | 3 | 35 | 32 | 37 | 25 |
| | 10 | -3 | 2 | 35 | 32 | 37 | 25 |
| | 11 | -3 | 2 | 35 | 32 | 36 | 20 |
| | 12 | -3 | 0 | 0 | 32 | 36 | 20 |
| PL 11873/2022 | 1 | -2 | 55 | 29 | 32 | 45 | 0 |
| | 2 | -2 | 58 | 36 | 32 | 45 | 0 |
| | 3 | -2 | 58 | 36 | 32 | 44 | 23 |
| | 4 | -2 | 58 | 5 | 32 | 44 | 23 |

| TENEMENT | CORNER | LATITUDE | | | LONGITUDE | | |
|---|---|---|---|---|---|---|---|
| | | DEGREES (°) | MINUTES (‘) | SECONDS (“) | DEGREES (°) | MINUTES (‘) | SECONDS (“) |
| | 5 | -2 | 58 | 5 | 32 | 43 | 48 |
| | 6 | -2 | 57 | 15 | 32 | 43 | 48 |
| | 7 | -2 | 57 | 15 | 32 | 43 | 5 |
| | 8 | -2 | 56 | 53 | 32 | 43 | 5 |
| | 9 | -2 | 56 | 53 | 32 | 42 | 0 |
| | 10 | -2 | 56 | 34 | 32 | 42 | 0 |
| | 11 | -2 | 56 | 34 | 32 | 43 | 48 |
| | 12 | -2 | 55 | 53 | 32 | 43 | 48 |
| | 13 | -2 | 55 | 53 | 32 | 42 | 0 |
| | 14 | -2 | 55 | 29 | 32 | 42 | 0 |
| PL 11874/2022 | 1 | -2 | 55 | 42.5 | 32 | 40 | 22 |
| | 2 | -2 | 55 | 42.5 | 32 | 42 | 0 |
| | 3 | -2 | 56 | 53 | 32 | 42 | 0 |
| | 4 | -2 | 56 | 53 | 32 | 41 | 10 |
| | 5 | -2 | 58 | 19 | 32 | 41 | 10 |
| | 6 | -2 | 58 | 19 | 32 | 41 | 24 |
| | 7 | -2 | 58 | 44 | 32 | 41 | 24 |
| | 8 | -2 | 58 | 44 | 32 | 41 | 42 |
| | 9 | -2 | 58 | 59 | 32 | 41 | 42 |
| | 10 | -2 | 58 | 59 | 32 | 42 | 0 |
| | 11 | -2 | 59 | 24 | 32 | 42 | 0 |
| | 12 | -2 | 59 | 24 | 32 | 42 | 18 |
| | 13 | -2 | 59 | 38 | 32 | 42 | 18 |
| | 14 | -2 | 59 | 38 | 32 | 43 | 48 |
| | 15 | -3 | 0 | 0 | 32 | 43 | 48 |
| | 16 | -3 | 0 | 0 | 32 | 40 | 22 |
| PL 12427/2023 | 1 | -2 | 52 | 0 | 32 | 40 | 40 |
| | 2 | -2 | 52 | 0 | 32 | 42 | 40 |
| | 3 | -2 | 54 | 16 | 32 | 42 | 40 |
| | 4 | -2 | 54 | 16 | 32 | 47 | 40 |
| | 5 | -2 | 55 | 8 | 32 | 47 | 40 |
| | 6 | -2 | 55 | 8 | 32 | 46 | 13 |
| | 7 | -2 | 55 | 29 | 32 | 46 | 13 |
| | 8 | -2 | 55 | 29 | 32 | 42 | 0 |
| | 9 | -2 | 54 | 16 | 32 | 42 | 0 |
| | 10 | -2 | 54 | 16 | 32 | 40 | 40 |
| PL 12428/2023 | 1 | -3 | 0 | 0 | 32 | 43 | 12 |
| | 2 | -3 | 0 | 20 | 32 | 43 | 12 |
| | 3 | -3 | 0 | 20 | 32 | 43 | 13.76 |
| | 4 | -3 | 1 | 15 | 32 | 43 | 13.76 |
| | 5 | -3 | 1 | 15 | 32 | 43 | 12.33 |
| | 6 | -3 | 1 | 14.97 | 32 | 43 | 12 |
| | 7 | -3 | 1 | 15 | 32 | 43 | 12 |
| | 8 | -3 | 1 | 15 | 32 | 43 | 11 |
| | 9 | -3 | 2 | 17 | 32 | 43 | 11 |
| | 10 | -3 | 2 | 17 | 32 | 42 | 0 |
| | 11 | -3 | 2 | 0 | 32 | 42 | 0 |
| | 12 | -3 | 2 | 0 | 32 | 37 | 0 |
| | 13 | -3 | 0 | 0 | 32 | 37 | 0 |

| TENEMENT | CORNER | LATITUDE | | | LONGITUDE | | |
|---|---|---|---|---|---|---|---|
| | | DEGREES (°) | MINUTES (‘) | SECONDS (“) | DEGREES (°) | MINUTES (‘) | SECONDS (“) |
| excluding | 1 | -3 | 0 | 30 | 32 | 41 | 18 |
| | 2 | -3 | 1 | 3 | 32 | 41 | 18 |
| | 3 | -3 | 1 | 3 | 32 | 41 | 41 |
| | 4 | -3 | 0 | 30 | 32 | 41 | 41 |
| PL 12429/2023 | 1 | -2 | 55 | 53 | 32 | 42 | 0 |
| | 2 | -2 | 55 | 53 | 32 | 43 | 48 |
| | 3 | -2 | 56 | 34 | 32 | 43 | 48 |
| | 4 | -2 | 56 | 34 | 32 | 42 | 0 |
| PL 12430/2023 | 1 | -2 | 59 | 18 | 32 | 43 | 48 |
| | 2 | -2 | 59 | 18 | 32 | 44 | 23 |
| | 3 | -2 | 59 | 59.24 | 32 | 44 | 23 |
| | 4 | -2 | 59 | 59.24 | 32 | 43 | 48 |

## 4.4 MINERAL RIGHTS AND LEGAL OBLIGATIONS

### 4.4.1 MINING ACT

The Mining Act, CAP. 123 is the principal legislation that governs mining activities and mineral rights. According to the Act the entire property and control over minerals in Tanzania is vested in the President in trust for the People of Tanzania. The Government shall have lien over any material, substance, product or associated products extracted from the mining operations or mineral processing.

In practice the Mining Commission has overall responsibility for minerals including advising the Government on minerals matters, reviewing mining sector activities and promoting development. The Mining Commission also serves as a conduit between the Government and prospective investors.

The main laws governing mining operations in Tanzania are the following:

- Mining Act, 2010.
- The Natural Wealth and Resources (Permanent Sovereignty) Act, 2017 (Sovereignty Act).
- The Natural Wealth and Resources Contracts (Review and Renegotiation of Unconscionable Terms) Act, 2017 (Unconscionable Terms Act).
- The Occupational Safety and Health Act, CAP. 424.
- The Mining (Mineral Rights) Regulations, 2018.
- The Mining (Local Content) Regulations, 2018.
- The Mining (State Participation) Regulations, 2022.
- The Mining (Government Minerals Warehouse) Regulations, 2021.
- Mining (Mineral Beneficiation) Regulation, 2018.
- Corporate Social Responsibility Regulations, 2023.

### 4.4.2 TENURE

The SML shall remain valid for the period of the life of the ore body indicated in the Feasibility Study provided in support of the application, or such period as the applicant may request (in the case of SML 653/2021 this is 15 years) unless it is sooner cancelled, suspended or surrendered in accordance with the law.

The SML shall cease to subsist if the holder of the licence ceases mining operations or abandons the area where mining operations are undertaken without prior permission of the Mining Commission.

Renewal of the SML shall be subject to conditions stipulated under Section 45 of The Mining Act.

### 4.4.3 MINE DEVELOPMENT AND PRODUCTION

Before commencement of mining operations, the holder of the SML shall ensure the proposed plan for relocation, resettlement and payment of compensation to people within the area where mining operations will be undertaken is implemented in accordance with the provisions of The Land Act, or the Village Land Act, as the case may be.

Before carrying out any work or activity within the area where mining operations will be undertaken, the holder of the SML, contractor or subcontractor shall set up a project office within the area of land in the District where the mining project is located.

The holder of the SML, contractor or subcontractor shall commence mining activities within eighteen calendar months from the date of grant of the SML or such further period as may be determined by the Mining Commission on the basis of plans, general designs for the mine and related facilities as well as other ancillary operations. SMCL has met this requirement.

### 4.4.4 METHOD OF OPERATIONS

The holder of the SML shall carry out the program of mining operations in accordance with the program of mining operations approved by the Mining Commission, as may be amended, and satisfy obligations under the SML, and take full responsibility and assume attendant risks.

The holder of a SML, contractor or subcontractor shall take all reasonable measures necessary to secure the safety, health and welfare of persons engaged in the mining operations in or about the area to which the SML apply and ensure safety or properties in accordance with the governing laws.

The holder of a SML, contractor or subcontractor shall, in respect of the mine, take all measures necessary to avert occurrence of accidents whether accidental or premeditated and to observe and satisfy conditions stipulated under The Occupational Safety and Health Act.

### 4.4.5 BENEFICIATION

Unless agreed otherwise with the Government, the holder of a SML shall set at least 20% of gold produced aside for beneficiation and trading in Tanzania. The Government and SMCL have agreed that any such in-country beneficiation shall be at a London Bullion Market Association (LBMA) accredited refinery.

### 4.4.6 ENVIRONMENTAL MANAGEMENT

The holder of a SML and any other person who exercises powers or performs functions or carries duties in relation therewith shall be under statutory obligation to comply with the Environmental Management Plan approved by NEMC as well as environmental principles and safeguards prescribed under the Environmental Management Act, CAP. 191, and other relevant laws.

The holder of a SML, contractor or subcontractor shall ensure that management of production, transportation, storage, treatment and disposal of waste arising out of mining operations is carried out in accordance with environmental principles and safeguards prescribed by the Environmental Management Act.

The holder of a SML, contractor or subcontractor may, for the purpose of the paragraph above contract a separate competent entity to manage transportation, storage, treatment or disposal of waste arising out of mining operations.

The holder of a SML, contractor or subcontractor shall ensure that regular environmental audits, monitoring and evaluation are carried out to avert environmental spoil, degradation and hazardous substances which are or may be harmful to human beings, and or the environment.

The holder of a SML, contractor or subcontractor shall develop and adopt Mine Closure and Rehabilitation Plans of the area where mining operations are carried out.

### 4.4.7 LOCAL CONTENT

The holder of a SML, contractor or subcontractor, carrying out mining activities, shall ensure that a Local Content Plan is developed and implemented in accordance with the requirements of Part VIII of The Mining Act, CAP. 123 as further detailed under the Mining (Local Content) Regulations, 2018 and the Mining Commission (Guidelines for Submission of Local Content Plan), 2018.

For the purposes of the paragraph above, the holder of a SML, contractor, subcontractor and other allied entity are required to make a declaration of adherence to local content requirements in the form set out in the Mining Commission (Guidelines for Submission of Local Content Plan), 2018.

The holder of a SML, contractor or subcontractor shall submit any proposed local content plans to the Mining Commission substantially in the form set out in the Mining Commission (Guidelines for Submission of Local Content Plan) 2018 and in accordance with the Corporate Social Responsibility Regulations, 2023.

### 4.4.8 CORPORATE SOCIAL RESPONSIBILITY

The holder of a SML shall, on an annual basis, prepare a credible Social Responsibility Plan jointly agreed by the relevant local government authority or local government authorities upon consultation with the Minister responsible for local government and the Minister responsible for finance.

The holder of a SML shall ensure that the Corporate Social Responsibility Plan prepared is congruent and responsive to guidelines for corporate social responsibility developed by the relevant local government authority in terms of section 105(4) of The Mining Act, CAP. 123 and make a declaration specified under the Schedule to the Mining Commission (Guidelines for Submission of Local Content Plan), 2018.

### 4.4.9 INTEGRITY PLEDGE

The holder of a SML shall undertake to comply with the Statement of Integrity Pledge in accordance with Part VIII of The Mining Act and The Mining (Integrity Pledge) Regulations, 2018.

The Statement of Integrity Pledge referred to above shall be in the form specified under The Mining (Integrity Pledge) Regulations, 2018.

### 4.4.10 OTHER PERMITS

Numerous other permits are required to construct and operate a mine. A permitting pathway has been generated that encompasses all necessary permits and approvals and the Company has commenced engagement with various Ministries and authorities to progress the permitting process. The key development and operational permits are set out below. Most permits have not been applied for yet and there is no reason to believe these will not be granted (or be renewed as required) within the requisite timelines once applied for.

***Table 4-4: Nyanzaga Gold Project summary of key permits***

| PROJECT PHASE | PROJECT ACTIVITY | PERMIT REQUIREMENT | REGULATORY/VERIFICATION BODY | STATUS |
|---|---|---|---|---|
| Development | Environmental Compliance | ESIA Certificate | National Environment Management Council (NEMC) Vice President's Office - Division of Environment | Granted; being updated to reflect amended project |
| Development | Establishing Tailings Storage Facility | TSF/dam design approval. Construction permit for TSF. Registration of TSF. | Ministry of Water | To be applied for |
| Development | Construction of magazine | Explosive magazine Construction | The Mining Commission. The Commissioner for Minerals | To be applied for |
| Ongoing requirement | Use and storage of petroleum | Consumer installation license. Approval for construction. Construction licence. Storage license | Energy and Water Utilities Regulatory Authority (EWURA) | To be applied for |
| Ongoing requirement | Transporting overload | Special permit to transport overload | Tanzania National Roads Agency (TANROADS) | To be applied for |
| Ongoing requirement | Transporting abnormal, awkward and super dimension loads that unavoidably exceeds the legal dimensions but not axle load limits | Abnormal transport permit | Tanzania National Roads Agency (TANROADS) | To be applied for |
| Decommissioning & Closure | Mine Closure Plan | Mine Closure Plan Approval | Ministry of Minerals | To be applied for |
| Development | Setting up a processing plant | Mining Processing Licence | Ministry of Minerals | To be applied for |
| Ongoing requirement | Preparing open pit | Open pit design approval | Ministry of Minerals | To be applied for |
| Operation | Exporting Minerals | Permit to Export Minerals | Ministry of Minerals | To be applied for |
| Ongoing requirement | Waste rock dump | Waste rock dump design approval | Ministry of Minerals | To be applied for |
| Development | New power line to Nyanzaga site. | ESIA Certificate | Tanzania Electric Supply Company Limited (TANESCO) | Granted |

## 4.5 LAND ACCESS AND COMPENSATION

The conditions for the holder of the SML include:

- Before commencement of mining operations, the proposed plan for relocation, resettlement and payment of compensation to people within the area where mining operations will be undertaken is implemented in accordance with the provisions of The Land Act, CAP. 113, or the Village Land Act, CAP 114, as the case may be.
- Before carrying out any work or activity within the area where mining operations will be undertaken, the contractor or subcontractor shall set up a project office within the area of land in the District where the mining project is located.

The SML area has an estimated area of 2,336 ha or 5,772 acres (23.36 $km^2$), impacting two villages and several hamlets (sub-villages), namely Sotta and Nyabila villages in Igalula Ward, Nyanchenche Division, Sengerema District. Amongst the Project-impacted hamlets, four are in Sotta Village namely Sotta A, Nyang'hona, Kadashi, and Kaningu B; with one hamlet in Nyabila Village, namely Nyashimba Hamlet. It is estimated that the area covered by the SML will affect approximately 725 households with an estimated population of 5,690 people.

Due to the location of the Nyanzaga orebody, complete avoidance of displacement was not possible. SMCL has however made a considered decision to relocate all activities, infrastructure and persons located in the SML area due to the extensive land coverage required for mining activities, processing, mine waste storage, and mining-related infrastructure. Anticipated future expansion and mitigation of the inherent risks to community health and safety associated with mining activities were also considered.

Tanzanian legal requirements pertaining to resettlement are not consolidated into any single piece of legislation. Instead, several laws and policies are relevant to various aspects of land acquisition, compensation and resettlement. The overarching legislation relevant to resettlement in the context of mining projects, the Tanzanian land tenure regime, as well as the ways in which national legal and good international industry practice (GIIP) requirements, were considered in the Resettlement Action Plan (RAP).

The land acquisition and resettlement process consist of a planning and an implementation phase:

- Phase 1: Resettlement planning, which has culminated in the RAP, a Land Replacement Plan (LRP), as well as valuation reports and compensation schedules developed in compliance with Tanzanian legislation and approved by the Chief Valuer. Separate valuation reports and compensation schedules were produced to address additional entitlements under GIIP.
- Phase 2: Resettlement implementation, which involves undertaking the actions necessary to implement the RAP and LRP

Under a Memorandum of Understanding (MoU) dated 5th November 2024 between SMCL and the Mapembe Clan, the Suswa Springs area (Figure 4-3) is subject to conservation and continued cultural access. SMCL will erect and maintain a fence around the Suswa Springs area, ensuring that the Suswa Springs are not adversely impacted by SMCL's activities. Community access to water from the Suswa Springs and ritual access for traditional ceremonies is to be maintained under the terms of the MoU.

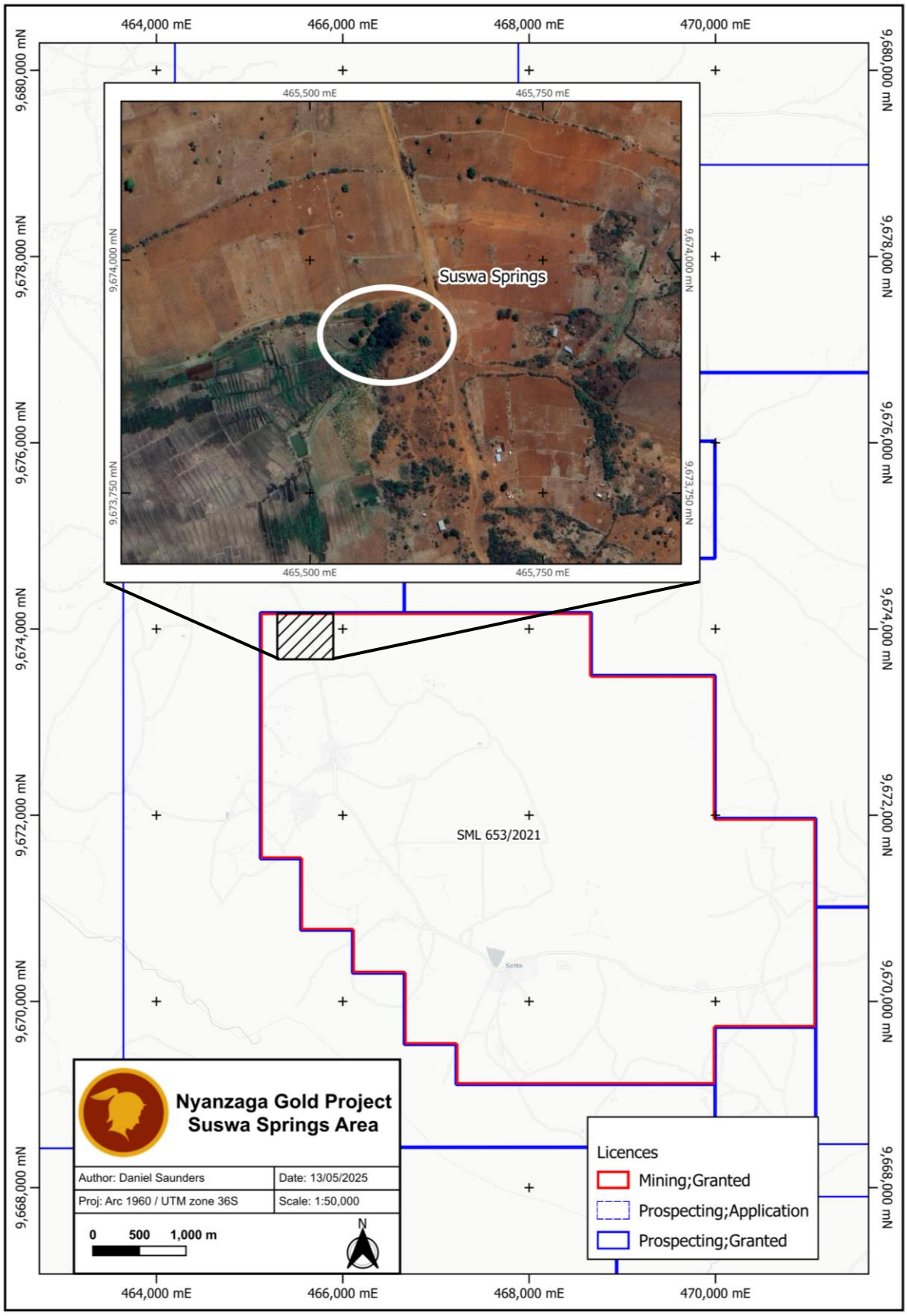



*Figure 4-3: Suswa Springs location plan (Source: Perseus, 2025)*

## 4.6 ENVIRONMENTAL LIABILITIES

The Project was registered with the National Environmental Management Council (NEMC) in May 2016 with baseline surveys being completed during the 2016 and 2017. These surveys set the Scope of Works and Terms of Reference for the Environmental Impact Assessment (EIA). The EIA, carried out by MTL Consulting Company Ltd Tanzania with the guidance and supervision of Dhamana Consulting, was completed in May 2017 (MTL Consulting, 2017). The EIA comprises several management plans which describe how project activities might impact on the natural environment in which it occurs and set out clear commitments from the company taking the action on how those impacts will be avoided, minimised and managed so that they are environmentally acceptable.

An Environmental and Social Impact Assessment (ESIA) was undertaken and submitted to the National Environment Management Council (NEMC) for approval in late 2017. The National Environment Management Council (NEMC) granted an Environmental Certificate (EC) (EC/EIA/2018/0001) to Nyanzaga Mining Company Limited (NMCL) for the Project in February 2018. An EC issued by the NEMC is a mandatory legal document that authorises a developer to commence a project.

Since the granting of the original EC in 2018, additional studies and engineering works were undertaken by OreCorp via their subsidiary SMCL as part of the Definitive Feasibility Study (DFS) on the Project. As a result of changes in the site layout, SMCL submitted an updated Environmental and Social Management Plan (ESMP) to NEMC in July 2023, as per requirements.

The impact assessments did not identify any environmental liabilities outside the normal considerations of an environmental management plan for a new project. These include that the mining activities shall ensure that:

- The holder of a SML and any other person who exercises powers or performs functions or carries duties in relation therewith shall be under statutory obligation to comply with the Environmental Management Plan approved by NEMC as well as environmental principles and safeguards prescribed under the Environmental Management Act, CAP. 191, and other relevant laws.
- Shall ensure that management of production, transportation, storage, treatment and disposal of waste arising out of mining operations is carried out in accordance with environmental principles and safeguards prescribed by the Environmental Management Act.
- For the purpose of the paragraph above contract a separate competent entity to manage transportation, storage, treatment or disposal of waste arising out of mining operations.
- Regular environmental audit, monitoring and evaluation are carried out to avert environmental spoil, degradation and hazardous substances which are or may be harmful to human beings, and or the environment.
- Develop and adopt Mine Closure and Rehabilitation Plans of the area where mining operations are carried out.

## 4.7 PERMITS AND APPROVALS

The SML shall remain valid for the period of the life of the ore body indicated in the Feasibility Study provided in support of the application, or such period as the applicant may request (in the case of SML 653/2021 this is 15 years) unless it is sooner cancelled, suspended or surrendered in accordance with the law.

The SML shall cease to subsist if the holder of the licence ceases mining operations or abandons the area where mining operations are undertaken without prior permission of the Mining Commission. Renewal of the SML shall be subject to conditions stipulated under Section 45 of The Mining Act, CAP. 123.

The holder of the SML, contractor or subcontractor shall commence mining activities within eighteen calendar months from the date of grant of the SML or such further period as may be determined by the Mining Commission on the basis of plans, general designs for the mine and related facilities as well as other ancillary operations consistent with the approved Mining Plan.

## 4.8 OTHER FACTORS

The QP is not aware of any other significant factors or risks that may affect access, title, or the right or ability to perform work on the Property.

# 5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

## 5.1 ACCESSIBILITY

Many international airlines fly into Tanzania from Europe, the Middle East and elsewhere in Africa. Regular commercial domestic flights, supplemented by charter airlines, provide connections to Mwanza Airport.

The Project will rely on import of major equipment and specialist materials and consumables through the Port of Dar es Salaam.

Road access between Dar es Salaam and Mwanza is just over 1,100 km, with access to the Project from Mwanza by the sealed Mwanza – Geita Highway, crossing Smith Sound (an arm of Lake Victoria) via ferry or the recently constructed Kigongo – Busisi Bridge (John Pombe Magufuli Bridge), and then travelling on the unsealed regional road network for 35 km from Sengerema to Ngoma. The Project area is approximately 9 km southeast of Ngoma, and an unsealed road is currently under construction to bypass Ngoma township and reach the Nyanzaga site. This road construction is key enabling infrastructure for Project delivery and operations.

The national road network is generally well maintained by the Tanzania National Roads Agency (TANROADS) as far as Ngoma. Rural roads are managed by TARURA. Construction of the Ngoma bypass road is being conducted with TARURA agreement.

Key elements of Project transportation and logistics are discussed further in Section 18.1.

## 5.2 PHYSIOGRAPHY

The central part of the Project is dominated by ranges of hills which run roughly northwest–southeast (Figure 5-1). Site topography ranges from a height of approximately 1,130 m above sea level (at the lowest valley point) to 1,473 m above sea level (Nyanzaga hill) (Sotta Mining Corporation Limited, 2023). The process plant will be constructed at approximately 1,210 m above sea level (Lycopodium, 2024a). The hilly ground is covered by light to medium miombo woodland, surrounded by gently sloping ground, proximal to the hills often covered by indurated laterite, rock boulders and gravels.

Most of the areas to the south and to the east towards Lake Victoria are relatively flat-lying and are covered by old lake sediments of black cotton soil (mbuga), parts of which are waterlogged during the rainy season and are mainly used as farmland. There are few seasonal rivers, the main one being the Wingi River which drains water from the Project area to Lake Victoria.



*Figure 5-1: Aerial view of the project site (looking west) (Source: OreCorp, 2023)*

## 5.3 CLIMATE

The climate of Tanzania ranges from tropical along the coast, to temperate in the highlands, due mainly to the widely varying topography of the country. The central, northern and western regions (e.g., Mwanza, Kagera, Kigoma, Shinyanga and Tabora), including the area in which the Project is located, have a climate moderated by the highland plateau. The Nyanzaga Gold Project is located in an area that has a Köppen climate classification of tropical savannah climate (Aw) (Knight Piésold, 2021a).

Weather data from both the Mwanza Meteorological Station (MMS), operated by the Tanzania Meteorological Agency (TMA), and a weather station located at the Nyanzaga site have been used as primary data sources to understand the climate of the Nyanzaga Gold Project.

Monthly precipitation data, from the site weather station from the periods of 2012 to 2020 and 2022 to 2024, and the MMS, indicate that the mean monthly rainfall over the period varied between 0 mm and 254 mm (Lycopodium, 2024a), (Knight Piésold, 2021a). The mean annual total precipitation is estimated to be between 928 mm and 1,063 mm, with approximately 110 wet days per year (Lycopodium, 2024a), (Knight Piésold, 2021a). The 100-year average recurrence interval (ARI) wet scenario precipitation is estimated to be 1,698 mm, and the 100-year ARI dry scenario precipitation is estimated to be 623 mm (Knight Piésold, 2021a).

The rainfall pattern suggests a bimodal rainy season comprised of the long rains of Masika between March and May and short rains of Vuli between October and December (which is typical for the Lake Victoria basin). The dry season occurs between June and September, when the average monthly rainfall is between 0 mm and 38 mm per month (Lycopodium, 2024a). Relative humidity measured at the Nyanzaga site ranges from 14.9% during the dry season to 99.8% during the rainy seasons (Lycopodium, 2024a). Annual pan evaporation is estimated to be 2,378 mm, and annual lake evaporation is estimated to be 1,685 mm (Knight Piésold, 2021a).

Temperature records, from the site weather station from the periods of 2012 to 2020 and 2022 to 2024, and the MMS, indicate that the mean monthly maximum temperature varies between 25°C and 34°C, and the mean monthly minimum temperature varied between 15°C and 23°C (Lycopodium, 2024a). The highest temperature recorded was 41.7°C and the lowest temperature recorded was 14.5°C (Lycopodium, 2024a).

Given the proposed process plant site elevation of 1,210 m above sea level, typical atmospheric pressure is estimated to be 87.8 kPa at 20°C (Lycopodium, 2024a).

Annual average daily solar collection measured at the Nyanzaga site is 4.87 kWh/m$^2$/d, with a maximum value of 7.4 kWh/m$^2$/d measured (Lycopodium, 2024a).

A wind rose diagram, showing wind direction and speed measured at the Nyanzaga site weather station from the periods of 2012 to 2020 and 2022 to 2024 is shown in Figure 5-2. Winds are predominantly SE/ESE and NNE, with mean monthly wind speed measured at 1.5 m/s.

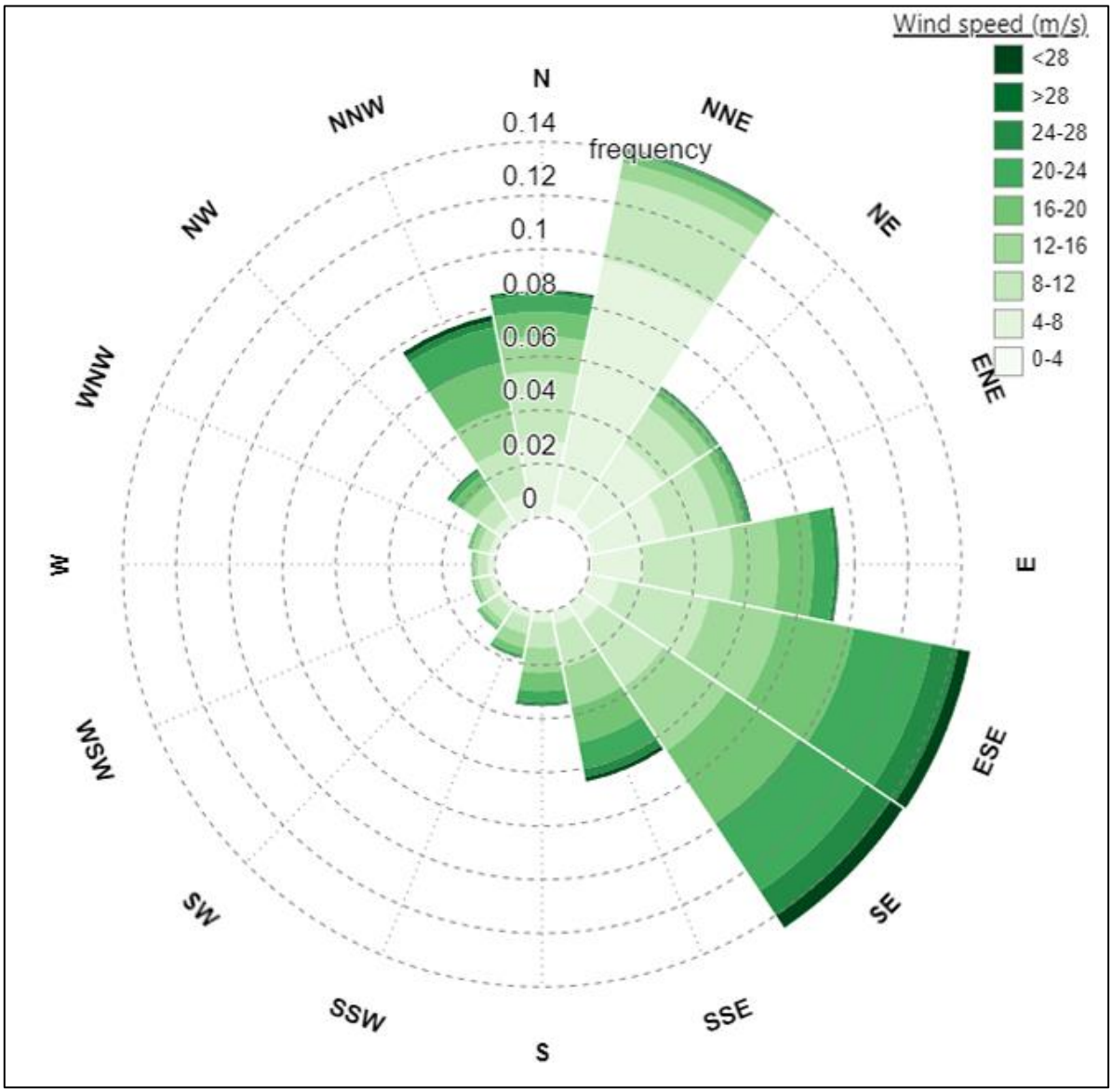



*Figure 5-2: Wind rose diagram for the Nyanzaga Gold Project (Source: (Lycopodium, 2024a))*

## 5.4 SEISMICITY

The seismic conditions of the Nyanzaga Gold Project site have been studied by Knight Piésold (2021b), and Lycopodium (2024a).

Figure 5-3 shows the location and magnitude of earthquakes recorded within a 500 km radius (yellow circle), 200 km radius (green circle), and 100 km radius (red circle) of the Project. Within the 500 km radius, 2,990 earthquakes have been plotted. Note that the majority of earthquakes have occurred more than 200 km from the Project, with the focal areas of activity associated with the eastern and western branches of the East African Rift (EAR) zone, and that there is comparatively less activity in the Lake Victoria area. The largest

earthquake within 200 km of the site was recorded in 1983, with the epicentre ~140 km southwest of the site.

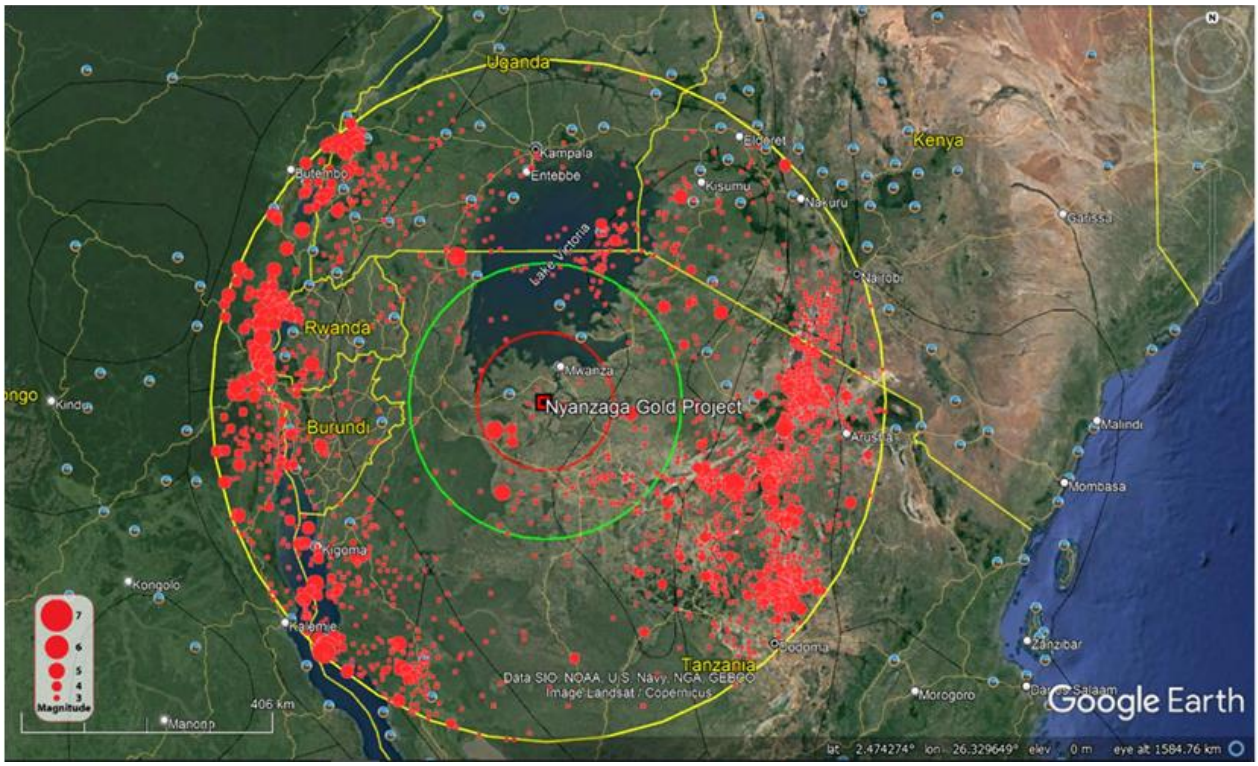



*Figure 5-3: Earthquakes occurring within 500 km of the Nyanzaga Gold Project site (Source: (Knight Piésold, 2021b))*

Seismic design conditions for the process plant, buildings and TSF have been selected to mitigate for the site-specific seismic risk.

## 5.5 INFRASTRUCTURE

The property is located within the village boundary of Sotta, and 7 km southeast of Ngoma. These villages offer little infrastructure. Basic services are available in Sengerema and Mwanza, located approximately 35 km and 60 km respectively to the north. Roads that currently exist within the Project area are mostly dry season tracks that commonly get waterlogged during the wet season.

Proposed infrastructure for the Nyanzaga Gold Project is discussed in Section 18.

## 5.6 LABOUR AVAILABILITY

Tanzania's mining industry has grown significantly in the last 20 years and, with this, the skills base has also grown. A slow-down in the growth of the Tanzanian mining industry from 2017 has resulted in improved availability of local skilled staff. The bulk of the human resources required for the Nyanzaga mine operations are Tanzanian nationals, with external expatriates only considered where the appropriate skills cannot be sourced in-country.

The over-riding considerations for staff selection is the skills level for each position as well as the individual's cultural fit for the location and company. Thereafter, the following hierarchy for staff recruitment is applied in order of preference:

- Communities in the immediate vicinity of the mine.
- Sengerema District communities.
- Personnel from the Mwanza Region.

- Tanzanian nationals from outside of the Mwanza Region.
- Regional and international expatriates.

Workforce planning efforts have commenced for Nyanzaga and represent a key component in establishing a sound cost base for the operation. Due consideration is given to the size and constitution of the workforce, Tanzanian labour law, local employment imperatives and roster design. The latter plays a key role across all operational areas and is the focus of near-term planning activities. A 2:1 labour ratio, a minimum of two days worked for each day of rest earned, is anticipated to be the most effective in ensuring adequate coverage to enable continuous shift operations. A combination of rosters, based on this 2:1 ratio, will likely be employed at the operation relative to the duties and responsibilities of specific workforce cohorts. For example, expatriates will be engaged on a six weeks on three weeks off roster, national professional staff may be engaged on a four weeks on two weeks off arrangement, while employees from the local communities will likely operate on shorter aligned work patterns. Nyanzaga roster design planning is maturing and is expected to be finalised in the coming months.

## 5.7 LOCAL ECONOMY

Agriculture is the main economic activity of the people in the local area. Igalula Ward has arable land of approximately 22.7 $km^2$ that supports production of various crops throughout the year. There are two main agricultural seasons determined by rainfall patterns, which include short rains between October and December, and long (heavy) rains that occur in March to May.

The primary source of livelihood for most households is subsistence farming, with approximately 12% depending on other sources including artisanal mining, fishing, salaried employment, general labour, livestock keeping and small trading. For most subsistence farmers, crop sales are their main source of income. Other supplementary sources of income are sale of livestock, firewood, charcoal, medicinal plants, processed food products, and grass/reeds.

Approximately 7.7 $km^2$ (33%) of the total SML area is uncultivated, being the hilly areas of Kilimani Ridge, Nyanzaga Hill and Nyamtukuza Hill. Most of the remaining land is used for food and cash crops. The main food and cash crops grown are maize and rice, and to a lesser extent crops such as lentils, beans, ground nuts, sweet potatoes, cassava, chickpeas, and sorghum. Cash crops include cotton, sisal, and aloe vera. Mango trees are the main fruit tree in the area. Most households have a land size of 1 to 10 acres.

# 6. HISTORY

The exploration history of the Nyanzaga gold deposit dates to the colonial period when gossan outcrops were identified on Tusker Hill in 1937.

## 6.1 PRE-ORECORP EXPLORATION

Early exploration included trenching and excavation of adits. A summary of modern exploration by different companies from 1996 to 2015 when OreCorp took ownership is presented in Table 6-1.

***Table 6-1: Summary of historical exploration at the Nyanzaga Gold Project***

| COMPANY | PERIOD | ACTIVITIES |
|---|---|---|
| Maiden Gold JV with Sub Sahara Resources | 1996 | Mapping, soil sampling, rock chips, geophysics, drilling |
| AvGold JV with Sub Sahara Resources | 1997-1998 | Soil sampling, rock chips, trenching, geophysics |
| Anglovaal Mining Ltd JV with Sub Sahara Resources | 1999-2001 | Soil sampling, rock chips, trenching, geophysics, drilling |
| Placer Dome JV with Sub Sahara Resources | 2002 | Trenching, mapping, petrography, drilling, |
| Sub Sahara Resources | 2003 | Rock chips, drilling |
| Barrick Exploration Africa Ltd (BEAL) JV with Sub Sahara Resources | 2004-2009 | Mapping, soil sampling, geophysics, drilling, petrography |
| Western Metals/Indago Resources JV with BEAL (49%/BEAL 51%) | 2009-2010 | Drilling |
| African Barrick Gold Exploration Ltd | 2010-2015 | Drilling |

## 6.2 ORECORP EXPLORATION

In September 2015, OreCorp Ltd entered a JV with Acacia Mining plc on the Nyanzaga project, incorporating the deposit plus a contiguous tenement package covering 282 $km^2$ of prospective sequences. OreCorp, via its wholly owned subsidiary Sotta Mining Corporation Limited (SMCL), commenced a systematic relogging program of existing drilling to build a consistent reference for subsequent geological and structural interpretations, along with a range of other exploration and resource definition activities (Table 6-2).

***Table 6-2: Summary of SMCL exploration at the Nyanzaga Gold Project***

| COMPANY | PERIOD | ACTIVITIES |
|---|---|---|
| SMCL | Sep-Oct 2015 | Data validation, collation of geological mapping |
| SMCL | Oct 2015 – Feb 2016 | Relogging of historical drilling, geological interpretation, topography surveys |
| SMCL | 2016 | Geological mapping (25,000 and 2,500 scales), reinterpretation of geophysical data, |
| SMCL | 2017 | Surface geochemistry, soil sampling, drilling |

The majority of work completed post 2017 related to various technical studies to advance the project towards a Feasibility Study and subsequent development.

## 6.3 HISTORICAL MINERAL RESOURCE ESTIMATES

The estimates described below are historical, included for information only and should not be regarded as current Mineral Resource estimates.

A QP has not done sufficient work to classify the historical estimates as current Mineral Resources or Mineral Reserves and the Company is not treating the historical estimates as current Mineral Resources or Mineral Reserves.

### 6.3.1 PRE-2012 MINERAL RESOURCE ESTIMATES

Some historical Mineral Resource Estimates (conducted in 2006 and 2009) have been cited in historical reports and memos, however the veracity and background of these cannot be confirmed and hence the estimates will not be quoted in this report.

### 6.3.2 2012 MINERAL RESOURCE ESTIMATE

In April 2012, African Barrick Gold (ABG) released a Mineral Resource Estimate (MRE) for the Kilimani and Tusker (later re-named to Nyanzaga) deposits. The MRE was reported at a 0.4 g/t Au cut-off under NI43-101 guidelines. The reported Mineral Resources for Tusker (Nyanzaga) and Kilimani are tabulated in Table 6-3 and Table 6-4 respectively.

*Table 6-3: April 2012 Tusker (Nyanzaga) MRE – reported at 0.4 g/t Au*

| CLASSIFICATION (NI 43-101) | TONNES (000's) | GRADE (Au g/t) | METAL (koz) |
|---|---|---|---|
| **Indicated** | 110,900 | 1.33 | 4,700 |
| **Inferred** | 42,200 | 1.20 | 1,600 |
| **Total** | **153,200** | **1.29** | **6,300** |

*Table 6-4: April 2012 Kilimani MRE – reported at 0.4 g/t Au*

| CLASSIFICATION (NI 43-101) | TONNES (000's) | GRADE (Au g/t) | METAL (koz) |
|---|---|---|---|
| **Indicated** | 8,200 | 0.82 | 220 |
| **Inferred** | 6,500 | 0.70 | 140 |
| **Total** | **14,700** | **0.77** | **360** |

### 6.3.3 2017 MINERAL RESOURCE ESTIMATE

A Mineral Resource Estimate for Nyanzaga and Kilimani was completed by CSA Global in March 2017 and updated in September 2017. The update was based on an additional 158 diamond (DD), aircore (AC) and reverse circulation (RC) holes for an additional 22,654 m.

The September 2017 MRE for Nyanzaga was used as the basis for the OreCorp DFS (OreCorp Limited, 2022) and was reported in accordance with JORC (2012) at a cut-off grade of 1.5 g/t Au (Table 6-5).

A further update of the Nyanzaga model was completed by CSA Global in 2021 (2021). The reported MRE is unchanged from 2017, with the change relating to the modification of acid rock drainage categories.

*Table 6-5: 2017 Nyanzaga and Kilimani MRE – reported at 1.5 g/t Au cut-off*

| CLASSIFICATION (JORC 2012) | TONNES (Mt) | GRADE (Au g/t) | METAL (koz) |
|---|---|---|---|
| **Measured** | 4.63 | 4.96 | 738 |
| **Indicated** | 16.17 | 3.80 | 1,977 |
| **Subtotal M&I** | **20.80** | **4.06** | **2,715** |
| **Inferred** | 2.90 | 3.84 | 358 |

### 6.3.4 2022 KILIMANI MINERAL RESOURCE ESTIMATE

An updated MRE for the Kilimani deposit was completed in May 2022, following the completion of the 2021/2022 drilling campaign. This incorporated a further 68 DD and RC drillholes for 9,802.3 m. The MRE was reported at a cut-off grade of 0.4 g/t gold and is classified in accordance with JORC 2012 (Table 6-6).

*Table 6-6: 2022 Kilimani MRE – reported at 0.4 g/t Au cutoff*

| CLASSIFICATION (JORC 2012) | TONNES (Mt) | GRADE (Au g/t) | METAL (koz) |
|---|---|---|---|
| **Indicated** | 3.4 | 1.09 | 119 |
| **Inferred** | 2.9 | 1.02 | 94 |
| **Total** | **6.3** | **1.06** | **213** |

# 7. GEOLOGICAL SETTING AND MINERALISATION

## 7.1 REGIONAL GEOLOGY

The Nyanzaga Project is located on the north-eastern flank of the Sukumaland Greenstone Belt, representing one of the six greenstone belts within the Tanzanian portion of the Lake Victoria Goldfield. The greenstone belts contain a diverse sequence of volcanic and sedimentary rocks of mostly greenschist metamorphic grade, which host numerous gold prospects and active mines (e.g. Bulyanhulu, Geita, and North Mara). The greenstone sequences within these belts have been divided into the Nyanzian Supergroup (Nyanzian) and Kavirondian Supergroup (Kavirondian) (Stockley, 1943; Borg & Krogh, 1977).

Further division of the Nyanzian has been proposed into a “Lower Series” of mafic-intermediate volcanic (minor ultramafic) with subordinate iron formations and clastic sediments, and an “Upper Series” of felsic to intermediate volcanics, volcaniclastics, iron formations, chert, mudstone, and sandstones. The Kavirondian, which unconformably overlies the Nyanzian, is dominated by coarse clastic sediments (sandstones and conglomerates) (Figure 7-1).

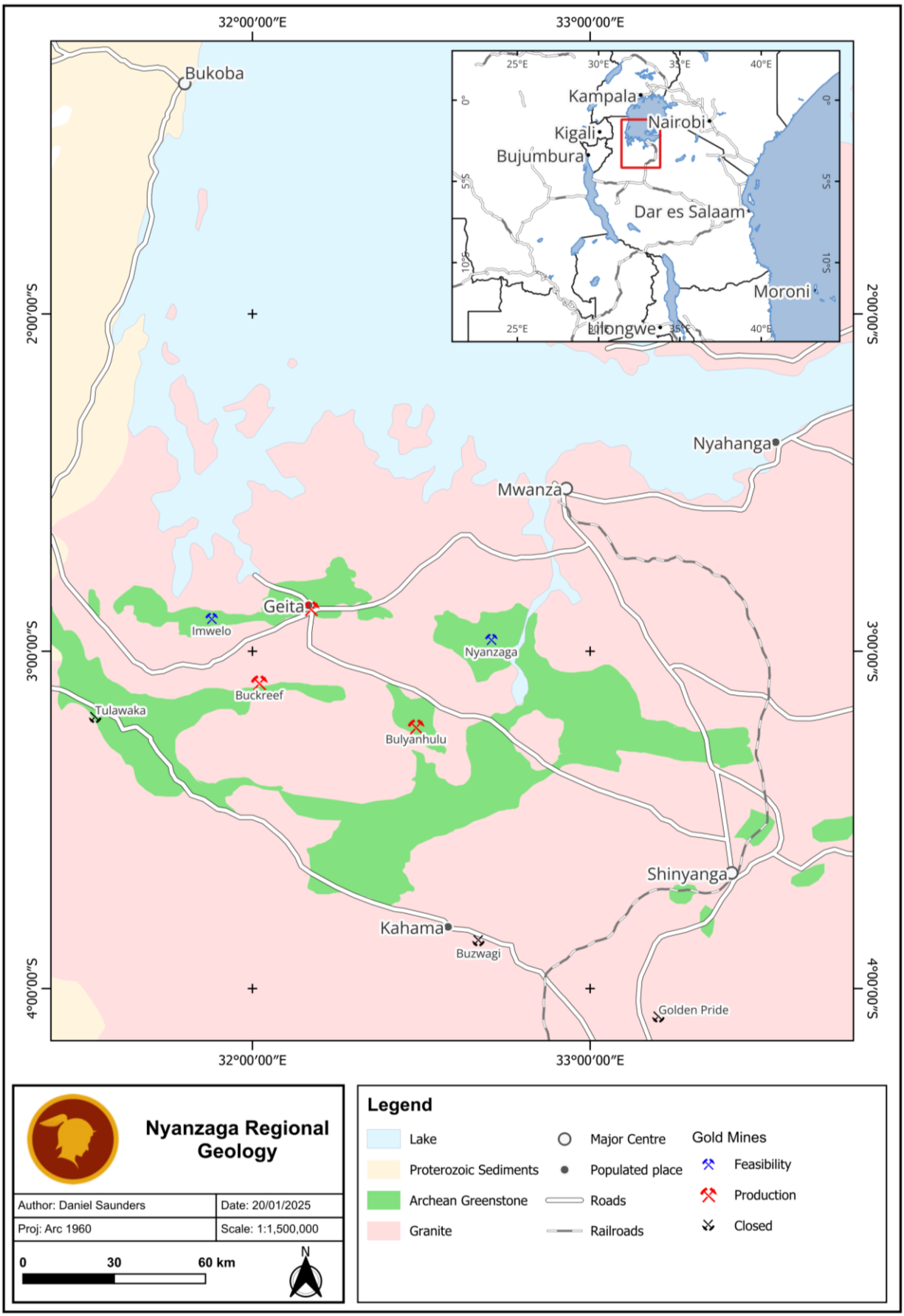



*Figure 7-1: Nyanzaga Regional Geology (Source: Perseus, 2025)*

## 7.2 LOCAL GEOLOGY

The Project is situated on the north-eastern flank of the Sukumaland Greenstone Belt. Rock sequences comprise Nyanzian-aged sequences of mafic volcanics in the far south-west and banded-iron-formation, tuffs, mudstone, sandstone and epiclastics of general volcanogenic origin and massive sulfide lenses and volcanics of rhyodacitic to andesitic composition. The sequences are tightly folded and strike generally west-northwest.

Historical petrology work indicated the protolith types at Nyanzaga included volcanic arenite and tuffs; siliceous and ferruginous chemical sediments and reworked tuffs; pelite (mudstone, silty mudstone), calc-arenite with primary carbonate matrix; and volcanogenic clastic sediments including andesitic crystal-lithic tuff, polymictic breccia and layered greywacke (Mason, 2011). The country rock suites at Nyanzaga show a dacitic to andesitic volcanogenic composition (Henkel, 2012).

In the central part of the project, the Nyanzaga and Kilimani groups are defined. The Nyanzaga Group is divided into a sequence of three broad mappable units from drill core and outcrop mapping and are in stratigraphical order as follows:

1. Nyanzaga Upper Volcaniclastic Formation.
2. Nyanzaga Central Formation (formerly Mine Formation).
3. Nyanzaga Lower Volcaniclastic Formation.

These three units are folded into the north-northwest plunging Nyanzaga Anticline. These sequences are in turn overlain by the Kilimani Group which appears to be tectonically dislocated from the underlying Nyanzaga Group by faulting and potential earlier thrusts. A map displaying the interpreted geology of the Nyanzaga area is presented in Figure 7-2.

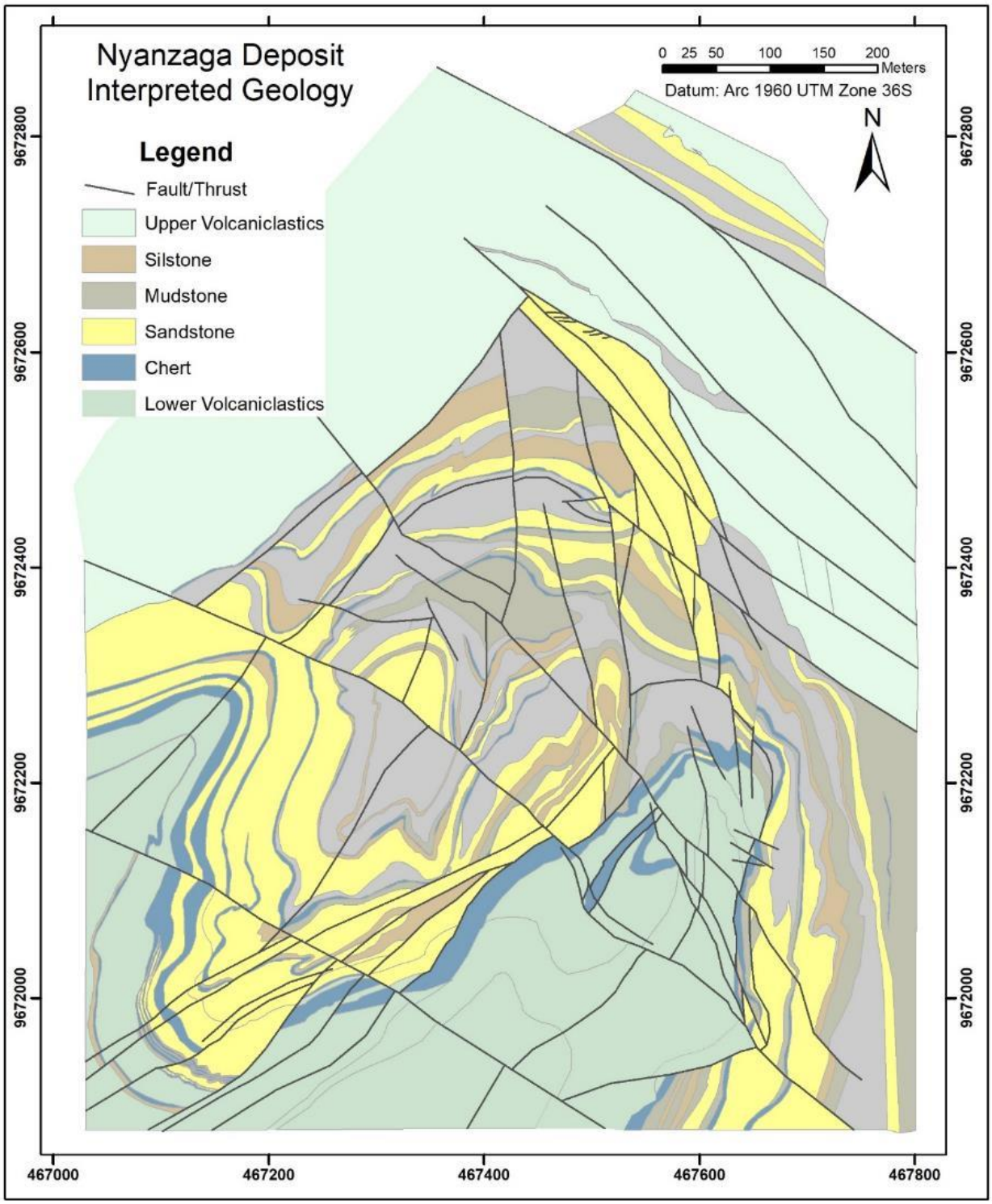



*Figure 7-2: Nyanzaga deposit interpreted geology – plan view (Source: OreCorp, 2023)*

The interpreted stratigraphy and the relative positions of this sequence at Nyanzaga is presented in Figure 7-3. The more significant features with respect to mineralisation at Nyanzaga relate to the chert member (NCM), the sandstone member (NSM) and the mudstone member (NMM). The top of the NMM is often identified by the presence of a haematitic chert marker bed. Examples from core images illustrating typical presentations of each of the members is presented in Figure 7-4, while a graphical cross-section showing the member relationship within the Nyanzaga anticline is presented in Figure 7-5.

| | Formation | | Member | | Units | | | | | Syngenetic Sulphide | Min. | Description |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Name | Thickness | Name | Thickness | Cycle | Proposed Name | Nom. | Thickness | | | | |
| INTRUSIVES | Mafic Intrusions | | | | | Mafic Intrusive | MIG | | | | | gabbro, |
| INTRUSIVES | Felsic Porphyry Intrusions | | Unassigned Granitoids | | | diorite, felsic porphyry dykes | FIY | | | | | Hilime Rocky Hills (Salala B'lith), Ngoma B'lith and Njidindi granoitoids, |
| | | | Old Camp Diorite OCD | | | granite, granodiorite, porphyry | FIY | | | | | rare feldspar-quartz porphyritic dykes at Nyanzaga |
| | | | Wingi Intrusive Complex WIC | | | | FIY | | | | | Interpreted granitoid bodies, rare dykes (or boulders) in drilling |
| | | | Gneiss | | | | FIY | | | | | Nyangh'wale gneiss- footwall to Busolwa Group |
| KAVIRONDIAN GROUP | | >500m | KV | | | | SST | ~50m | | | | magnetic unit in sandstone |
| | | | | | | | SST | >300m | | | | sandstones |
| | | | | | | | SCG | >200m | | | | basal conglomerates, diamictite |
| UNCONFORMITY | | | | | | | | | | | | |
| KILIMANI GROUP | Sotta Hills Fm. | | KSM | >500m | | | SST, SSL, SIF | >500m | | | | Undifferentiated sand-, silt- and mud-stones and lesser BIF above Kilimani BIF |
| KILIMANI GROUP | Kilimani Fm. | | Kilimani Mb KIM | 50-200m | | | SIF | 20-100m | | | | banded-iron-formation, mudstone |
| | | | | | | | MSS | 1-3m | | | | minor massive sulphide |
| | | | | | | | | <1m | | | | Minor Barite layers |
| | | | | | | | SST, SSL, SIF | 20-50m | | | | sandstone,siltstone, banded-iron-formation, |
| NYANZAGA GROUP | Nyanzaga Upper Volcaniclastic Fm. | 350-500m | Upper Felsic Mb. NUF | 100-350m | | Felsic Epiclastics | FYE, SGR | 100- 350m | | | | Felsic volcaniclastic sediments, c grained. Au Mineralised at Kilimani |
| | | | Upper Dacitic Volcaniclastic Mb. NUD | >250-350m | | Dacitic Epiclastics | DYE, SGR | 250-350m | | | | Dacitic to Andesitic composition, characteristic high Cr, Ni chemistry; basal grits, vc sandstones, and overlying agglomerates, congomerates, vc sandstones; dark grey coloured, massive. Minor chert. Au Mineralised at Kilimani. |
| | | | | | 10 | C10 Chert | DYE, SCT | 0-20m | | | | Thin chert layer hosted in sandstone and volcaniclastics |
| | | | | | | Dacitic Epiclastics | DYE, SGR | | | | | Dacitic volcaniclastic sediments |
| | Nyanzaga Central Fm. | 270-290m | Mudstone Mb. NMM | 250m | 9 | C09 Red Chert | SCM, SCT | 1-2m | | | | red chert, tuff, mudstone; laminated; sheared and pronounced sericite alteration in places. |
| | | | | | | C09 Sandstone | SST, SGR | 5-10m | | | | coarse sandstones, grits, pebble beds; massive to weakly bedded. |
| | | | | | 8 | C08 Mudstone | SCT, SCM | 1-3m | | | | grey and red chert, clhlorite-magnetite mudstone. Massive to bedded |
| | | | | | | C08 Siltstone | SSL | 15-20m | | | | chlorite-magnete siltstone, minor sandstone, dark grey; massive to bedded. |
| | | | | | 7 | C07 Mudstone | SCM | 2-5m | | | | chlorite-magnetite mudstone, minor chert, spherulite textures |
| | | | | | | C07 Siltstone | SSL | | | | | dark grey siltstone, magnetic siltstone |
| | | | | | 6 | C06 Mudstone | SCM, SCT | 2-5m | | | | magnetite-spherulite-minor chert |
| | | | | | | C06 Siltstone | SSL | 5-10m | | | | magnetic siltstone; and f sandstone, bedded |
| | | | | | 5 | C05 Mudstone | SCM, SCT | 2-5m | | | | magnetite-spherulite-minor chert |
| | | | | | | C05 Siltstone | SSL | 10-35m | | | | dark grey, weakly magnetic siltstone; and f sandstone; dark grey colour; bedded. |
| | | | | | 4 | C04 Mudstone | SCM, SCT | 2-5m | | | | siltstone, laminated thin chert, bedded |
| | | | | | | C04 Sandstone | SST, SIS | 10-25m | | | | light grey, m-f. sandstone and sulphidic mudstone, bedded. |
| | | | Sandstone Mb. NSM | | 3 | C03 Chert | SCT | 3-10m | | | | siltstone,minor laminated thin chert, bedded |
| | | | | | | C03 Sandstone | SST, MSS | 10-15m | | | | light grey, c-m. sandstone, minor siltstone; well sorted and bedded. Massive sulphide. |
| | | | | | 2 | C02 Chert | SCT | 1-8m | | | | laminated thin chert, siltstone; bedded. |
| | | | | | | C02 Sandstone | SGR | 40-50m | | | | c-vc. Sandstone; 1 to 2distinctive grit and minor agglomeratic beds; sulphidic siltstones. Massive to bedded. |
| | | | | | | | SST | | | | | |
| | | | | | | | SGR | | | | | |
| | | | | | | | SIS, SST | | | | | |
| | Nyanzaga Lower Volcanoclastic Fm. | >350m | Chert Mb. NCM | 20-50m | 1 | C01U Upper Chert | SCT, SIS | 0-5m | | | | laminated cherts; laterally sulphidic siltstones. |
| | | | | | | C01 Sandstone | SST | 5-20m | | | | m-c, minor vc feldspathic sandstone; massive. |
| | | | | | | C01L Lower Main Chert | SCT, SST, MSS | 15-25m | | | | laminated cherts; rare semi to massive sulphide lenses; banded and bedded. Massive sulphide lenses. Abundant carbonate replacement. |
| | | | Lower Volcanoclastic Mb. NLM | >300m | 0 | Grits, sandstone, minor siltstone | SST, SSL | 0-15m | | | | grits, vc sandstones; massive. Minor siltstone, and tuff with thin chert developed |
| | | | | | | Intermediate Epiclastics | IVE, SGR | >300m | | | | andestitic composition; epiclastics, cobble beds; minor f-m grained sandstones; massive to weakly graded bedded. |

*Figure 7-3: Interpreted stratigraphic sequence of the Nyanzaga Gold Project (Source: OreCorp, 2024)*

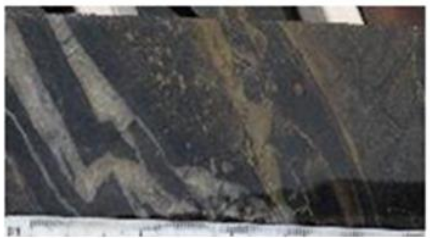
| | |
|---|---|
| NCM – Chert Member |  |
| NSM – Sandstone Member |  |
| NMM – Mudstone Member (chlorite-magnetite mudstone, siltstone, spherulite nodules and minor chert bands) |  |
| NMM – Upper limit showing haematitic chert |  |

***Figure 7-4: Nyanzaga member groups example images (Source: OreCorp, 2024)***

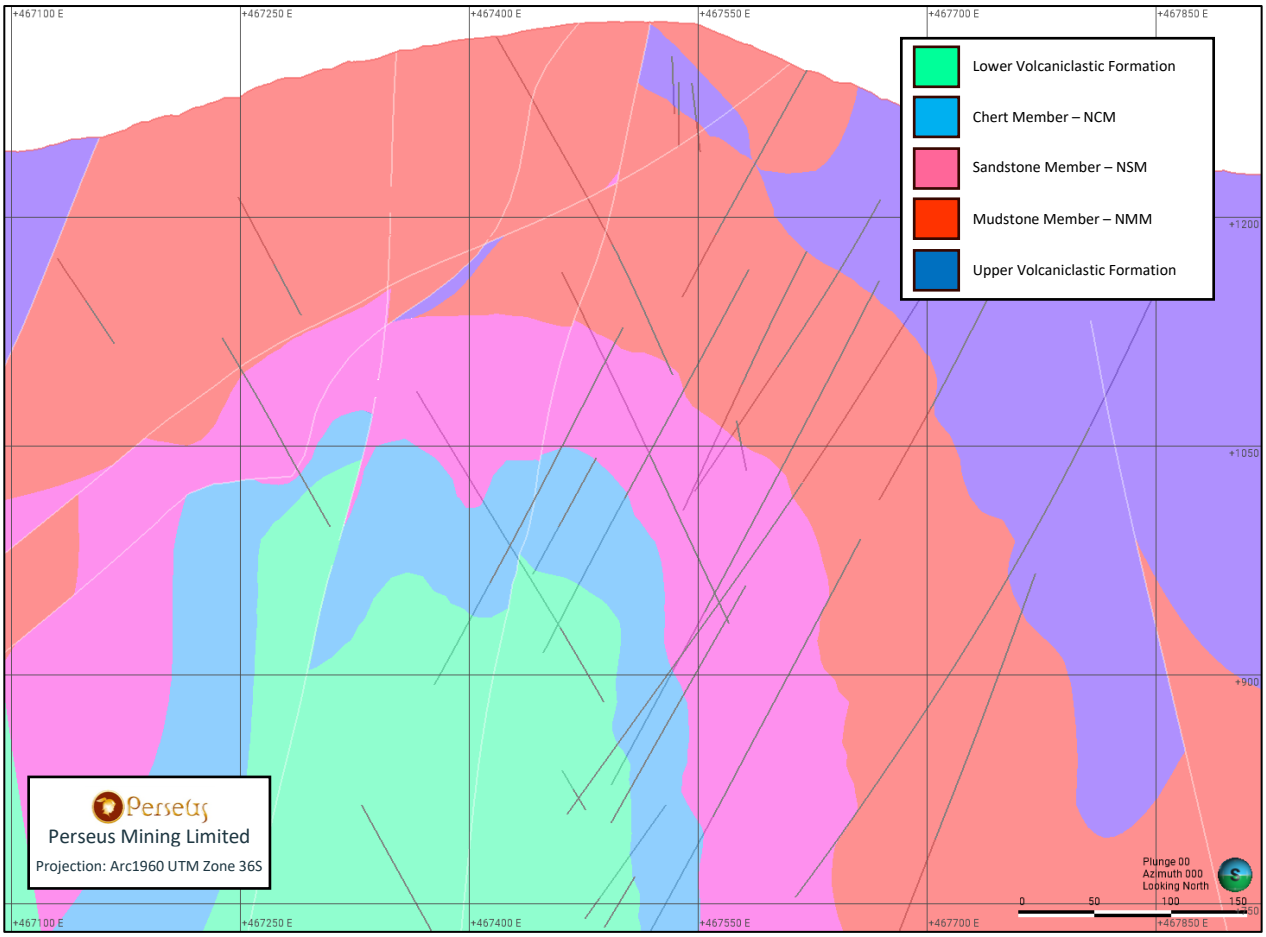



***Figure 7-5: Nyanzaga diagrammatic cross section – 9,672,420 mN looking north showing members and interpreted position of major faults (Source: Perseus, 2025)***

The Kilimani deposit, located 450 m northeast of Nyanzaga, is developed in the fold hinge of an interpreted double plunging anticline. The bulk of the defined deposit occurs in the heavily weathered, upper 140 m from surface.

## 7.3 STRUCTURE

### 7.3.1 REGIONAL

Distinctive structural domains are evident in the regional aeromagnetics and are highlighted in Figure 7-6. These domains preserve distinct structural characteristics, and there is a particularly large contrast between intensely deformed domains and relative flat-signature low-intensity deformed domains. These structural boundaries are also likely to locate changes in metamorphic grade between different domains with different structural and metamorphic histories.

The Nyanzaga domain has a unique signature in terms of folds and magnetic units, and may represent a distinct sub-basin with fault bound compartments. This working interpretation is based on the evidence of local facies and thickness variations (which are observed in the field and in drill core) and the presence of massive sulfides which are likely fault controlled. The basin-bounding extensional faults are likely later reactivated in inversion during compression and are an important aspect of the local scale architecture of the Nyanzaga domain.

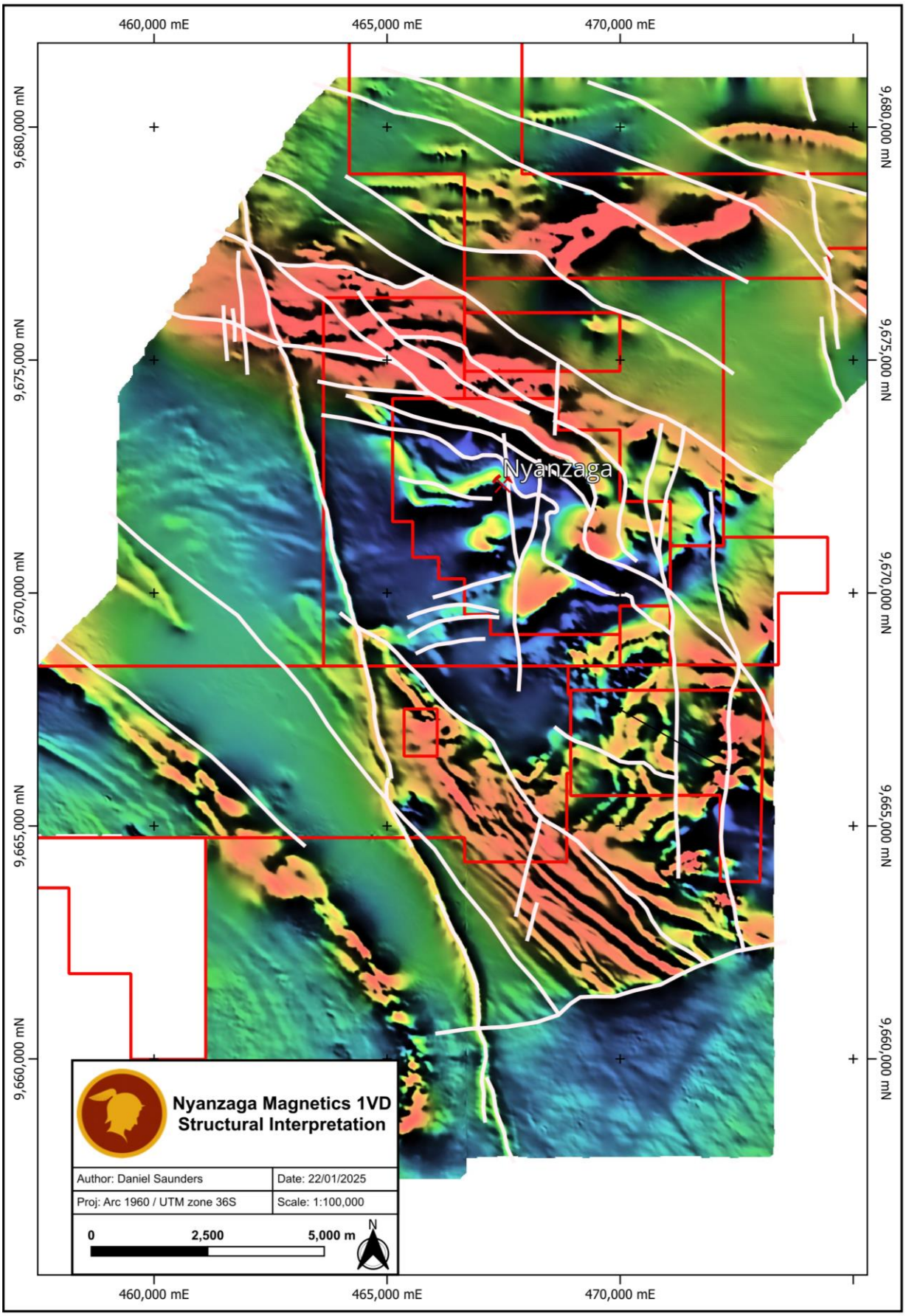



*Figure 7-6: Nyanzaga Magnetics – First vertical derivative (1VD) with structural interpretation (Source: Perseus, 2025)*

### 7.3.2 LOCAL

A series of different faulting sets has been recognised across the Nyanzaga project area. These include observed outcrop positions with suggested sinistral movement; others with inferred dextral movement; a series of steep faults sub-parallel to bedding; and a number of low angle thrust faults. Additionally, east-west trending normal faults with minor displacement have been identified.

The interaction of these various fault orientations results in the definition of numerous fault block domains. The geological model has focussed on those faults where evidence is observed across multiple sections, and therefore likely to have influence on the geological model at a resource scale. A cross section showing an example of the relative fault positions is presented in Figure 7-. Small scale and discontinuous features are expected to be present but unlikely to materially influence the position of mineralisation within the project.

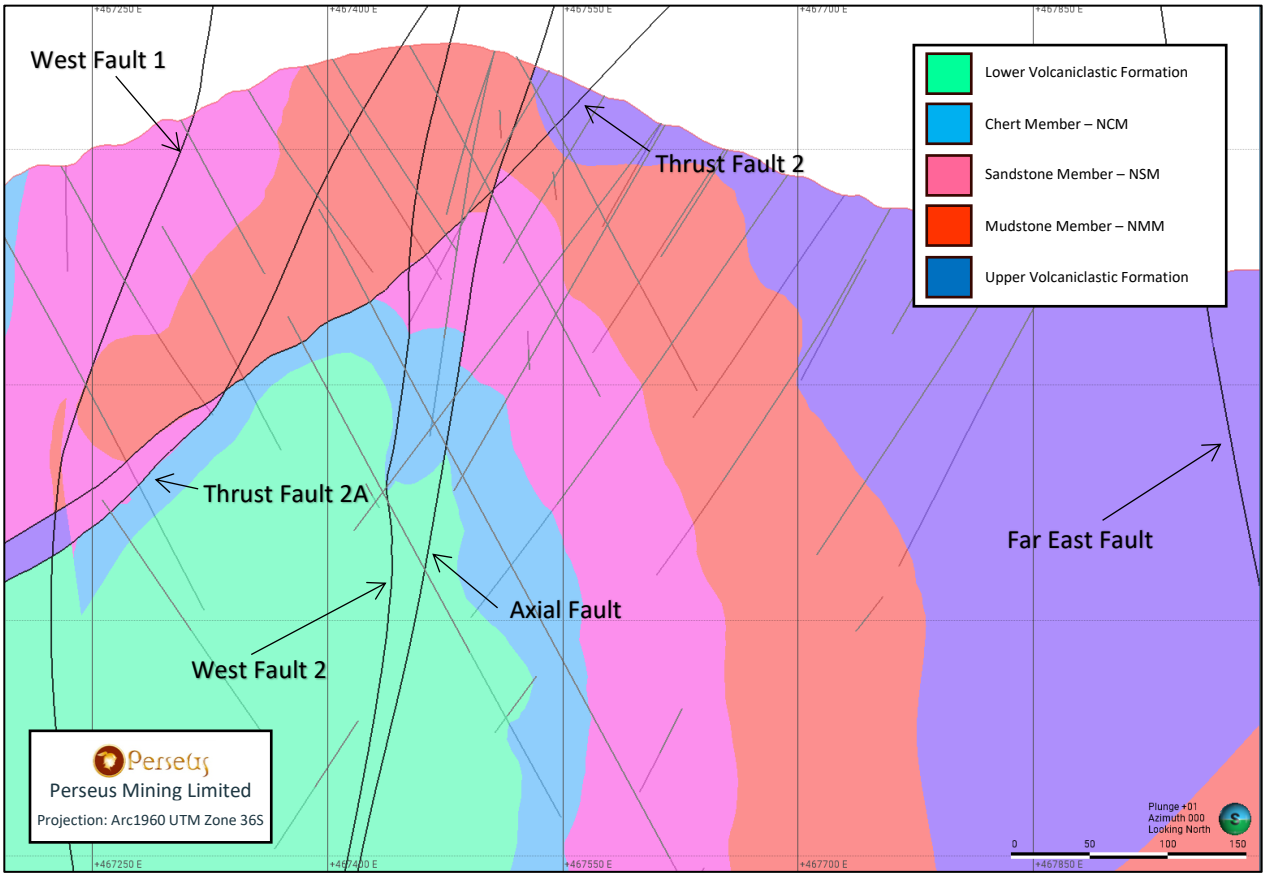



*Figure 7-7: Cross section 9,672,280mN showing members and positions of interpreted faults (Source: Perseus, 2025)*

## 7.4 ALTERATION AND MINERALISATION

The two mineralisation systems show similar alteration and mineralisation styles, though the Kilimani deposit is interpreted to have been emplaced at shallower levels than at Nyanzaga.

Typical alteration features include pervasive carbonate alteration, varying from distal ferroan-calcite to proximal ankerite - sericite dominated and quartz-pyrite alteration. Three key alteration assemblages have been identified. These include:

- Stage 1: Crustiform carbonate stockwork. An initial, distinctive broad zone of crustiform carbonate veining and disseminated sulfide associated with low grade gold mineralisation.

- Stage 2: Silica-sericite-dolomite breccia replacement overprint. An overprinting breccia, dolomitisation and silica/sericite. Fine grained disseminated and minor veinlet pyrite/pyrrhotite disseminated moderate grade gold mineralisation. This stage is likely related to localised demagnetisation.
- Stage 3: Silica-sulfide-gold veins. A late, silica sulfide remobilisation event incorporating pyrrhotite veinlets, quartz-free gold tensional veinlets and late, subhedral coarser pyrite and in some instances, increased arsenopyrite concentration.

The Far East Fault mineralisation is defined by strong alteration, which is zoned from proximal silica-sericite to more distal carbonate alteration. En-echelon arrays of sub-vertical quartz veins occur immediately adjacent to the silica-core and indicate a sinistral sense of movement of the Far East Fault zone.

The presence of molybdenite, scheelite, tourmaline and the massive carbonate influx into the alteration system supports the potential of an intrusive body in proximity to Nyanzaga.

The current interpretation indicates that there is a distinct lithological control and most the gold appears to be hosted by iron rich sediments in the form of an extensive stock-work of carbonate, quartz veins, and quartz-carbonate breccias. Preferential grade enhancement occurs in selected altered units such as the thick cherts, silica-dolomite altered medium grained sandstones, brecciated silica-carbonate altered mudstones; or in the late quartz veins as free gold. High-gold grades occur in narrow 5 to 20 mm wide tensional quartz veins that developed as conjugate sets and dip moderately to the southwest and southeast. Evidence suggests these veins may have developed along the axis of plunging parasitic folds in the area of the cherts; or with an apparent preference for developing in dolomitised and silicified, medium to coarse grained sandstone host rocks.

Several vein types have been identified. Examples of these are displayed in Figure 7-8.

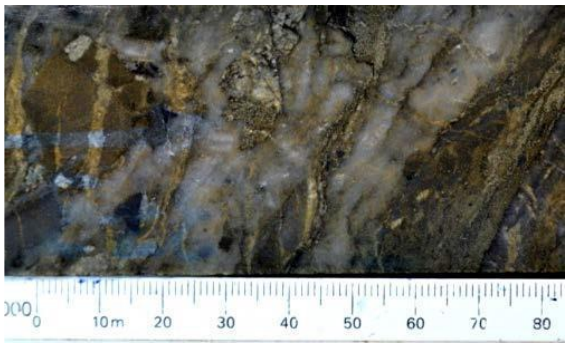
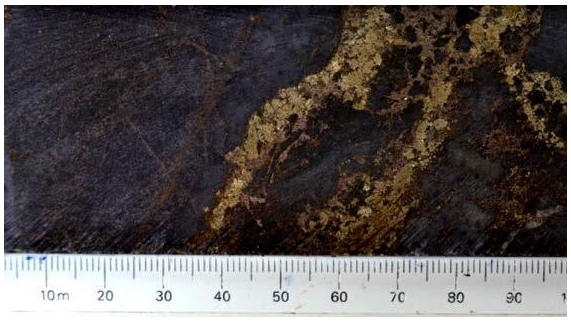
| | |
|---|---|
|  | • **Carbonate veins**. Crustiform, crack-seal textures. Irregular stockwork development (low-gold grade, associated with the demagnetised core). |
|  | • • **Quartz-sulfide veins**. Associated sulfide and silica replacement. Orientated west-northwest to northwest strike, dip 50°S (low-moderate gold grades). |
|  | • • **Sulfide veins**. Irregular stringer developed sub parallel to So and as fracture fill. Oriented east-northeast to west-northwest, dip ~50– 80°N and S (moderate/higher gold grades). |
|  | • **Nuggety gold** generally within quartz veins, which have a 40–50°SW and 50–60°SE preferred orientations. It is rare and often difficult to identify. |

*Figure 7-8: Identified vein types at Nyanzaga (Source: OreCorp, 2023)*

## 7.5 COMMENTS ON GEOLOGICAL SETTING AND MINERALISATION

In the opinion of the QP the understanding of the Property geological setting and nature of mineralisation is at a level suitable to support reporting of Mineral Resources.

# 8. DEPOSIT TYPES

The Lake Victoria Gold Field hosts numerous small-scale and several large-scale orogenic gold deposits. The orogenic deposits are found in regionally metamorphosed terrains of volcanic or sedimentary rocks, of all ages from the mid Archaean to the Tertiary. At the broadest scale the deposits were formed during compressional or transpressional deformation processes at convergent plate margins in accretionary and collisional orogenic events, which are typified by the emplacement of abundant granitoid plutons and batholiths. In both tectonic regimes, hydrated marine sedimentary sequences are added to continental margins. Subduction related thermal events then drive extensive hydrothermal fluid systems resulting in the emplacement of gold bearing quartz veins from depths of 15 km-20 km to surface. See Figure 8-1 for tectonic setting.

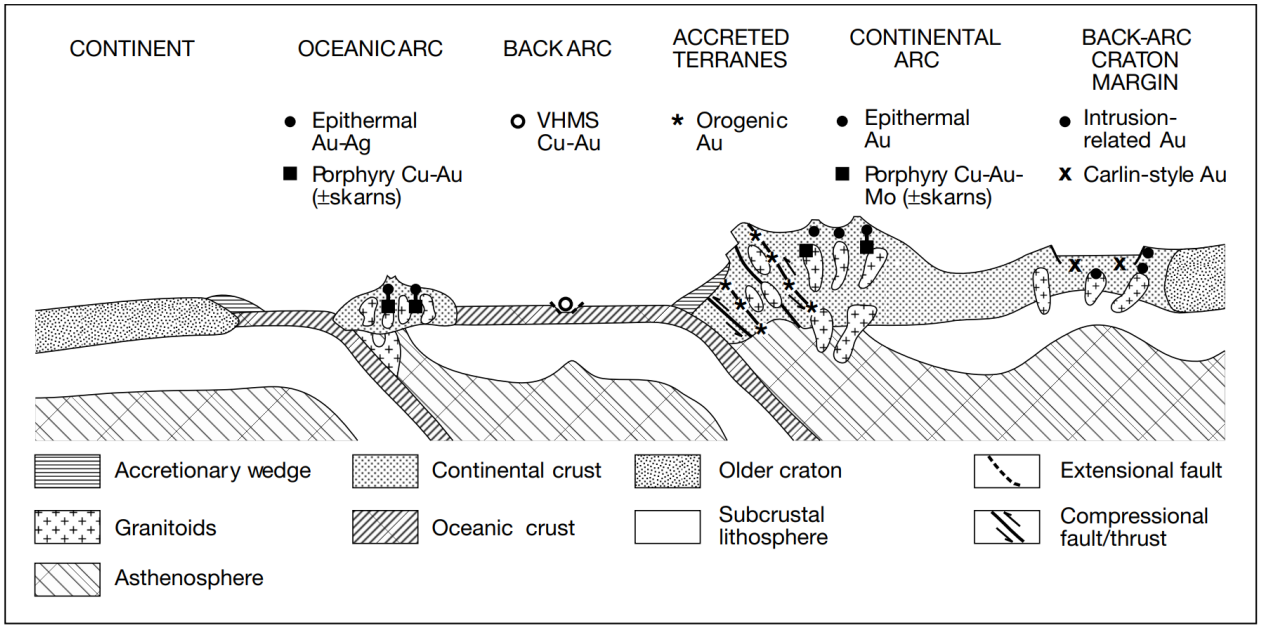



***Figure 8-1: Tectonic settings of gold-rich epigenetic mineral deposits. Vertical scale is exaggerated to allow schematic depths of formation of various deposit styles to be shown. Adapted from Groves et al (1998). Abbreviations: VHMS = volcanic hosted massive sulfide.***

Mineralisation takes place post the deformation of the host rock but is syn-orogenic with respect to the ongoing deep crustal, subduction related thermal processes. Fluid flow is probably driven by episodes of major pressure fluctuations during seismic events. The majority of orogenic gold deposits in metamorphic terranes are located adjacent to first-order, deep-crustal fault zones, which may extend along strike for tens to hundreds of kilometres with widths of as much as a few thousand meters.

Mineralisation formed as vein fill of second- and third-order shears and faults, particularly at jogs or changes in strike along the crustal fault zones. Mineralisation styles vary from stockworks and breccias in shallow, brittle regimes, through laminated crack-seal veins and sigmoidal vein arrays in brittle-ductile crustal regions, to replacement- and disseminated-type ore bodies in deeper, ductile environments (i.e., a continuum model).

Orogenic deposits may be subdivided into epizonal (<6 km), mesozonal (6-12 km), and hypozonal (>12 km) subtypes based on pressure-temperature conditions of ore formation (Groves, Goldfarb, Gebre-Mariam, Hagemann, & Robert, 1998). Most orogenic gold deposits contain 2 to 5 percent sulfide minerals and have gold/silver ratios from 5 to 10 and gold fineness >900. Pyrite and arsenopyrite are the dominant sulfide minerals, whereas pyrrhotite is more important in higher temperature ores and base metals are not highly anomalous. Alteration intensity, width, and assemblage vary with the host rock, but carbonates, sulfides, muscovite, chlorite, K-feldspar, biotite, tourmaline, and albite are generally present, Ore fluids were, in most

cases, near-neutral pH, slightly reduced, dominated by sulfide complexes and $CO_2$ rich, with low to moderate salinities.

The Nyanzaga mineralisation is a member of the orogenic clan of gold deposits. It is hosted by a sequence of chemical and clastic sediments (chert/sandstone/siltstone), and it displays the typical alteration features of an orogenic deposit, such as pervasive carbonate alteration, going from distal ferroan calcite dominated to proximal ankerite and sericite dominated and quartz-pyrite alteration. There is a distinct lithological control; the majority of the gold is hosted by Fe-rich sediments in form of an extensive stock work (crustiform carbonate veins, quartz veins, quartz carbonate breccias). The brittle deformation style allows the mineralisation to be classified as epizonal.

# 9. EXPLORATION

## 9.1 OVERVIEW

Since acquisition of the project by OreCorp in 2015 there has been limited exploration activity across Nyanzaga and associated tenements, with the focus being the various studies to support development decisions.

## 9.2 COORDINATES, SURVEY CONTROLS AND TOPOGRAPHIC SURVEYS

The coordinate reference system in place at the Nyanzaga project is Arc 1960 (EPSG 4210), a geodetic datum first defined in 1960 and suitable for use in Kenya, Tanzania and Uganda. The projected equivalent coordinate set is Arc 1960 UTM zone 36 south (EPSG 21036). This system is prescribed for use by the Government of Tanzania.

Topographic control for the project is provided by survey datums in the area as defined in Table 9-1.

***Table 9-1: Nyanzaga survey datum***

| DATUM ID | EASTING (m) | NORTHING (m) | ELEVATION (m) |
|---|---|---|---|
| NBM05 | 466946.638 | 9673346.493 | 1272.911 |
| NBM06 | 466971.919 | 9673503.612 | 1286.584 |

## 9.3 EXPLORATION ACTIVITY AND RESULTS

In the period since acquisition of the project by OreCorp various surface sampling programs have been completed across the project tenements. The distribution of these samples by sample type is presented in Figure 9-1, with a summary of the numbers of samples presented in Table 9-2.

***Table 9-2: Nyanzaga surface sampling statistics***

| PROSPECT | NO. SAMPLES | | | MAX Au (ppm) | | |
|---|---|---|---|---|---|---|
| | *Grab* | *Rock chip* | *Soils* | *Grab* | *Rock chip* | *Soils* |
| Kilimani | - | 19 | - | - | 1.41 | - |
| Nyanhongo | - | - | 1,026 | - | - | 4.14 |
| Nyanshimba | - | 21 | - | - | N/A | - |
| Nyanzaga | 142 | - | - | N/A | - | - |
| Nyanzaga Hill | - | - | 13 | - | - | 0.36 |
| Regional | 184 | - | 2,031 | 4.97 | - | N/A |
| Waterfall | - | 15 | - | - | 0.44 | - |
| West Kilimani | 7 | - | 165 | N/A | - | N/A |
| **Grand Total** | **333** | **55** | **3,235** | | | |

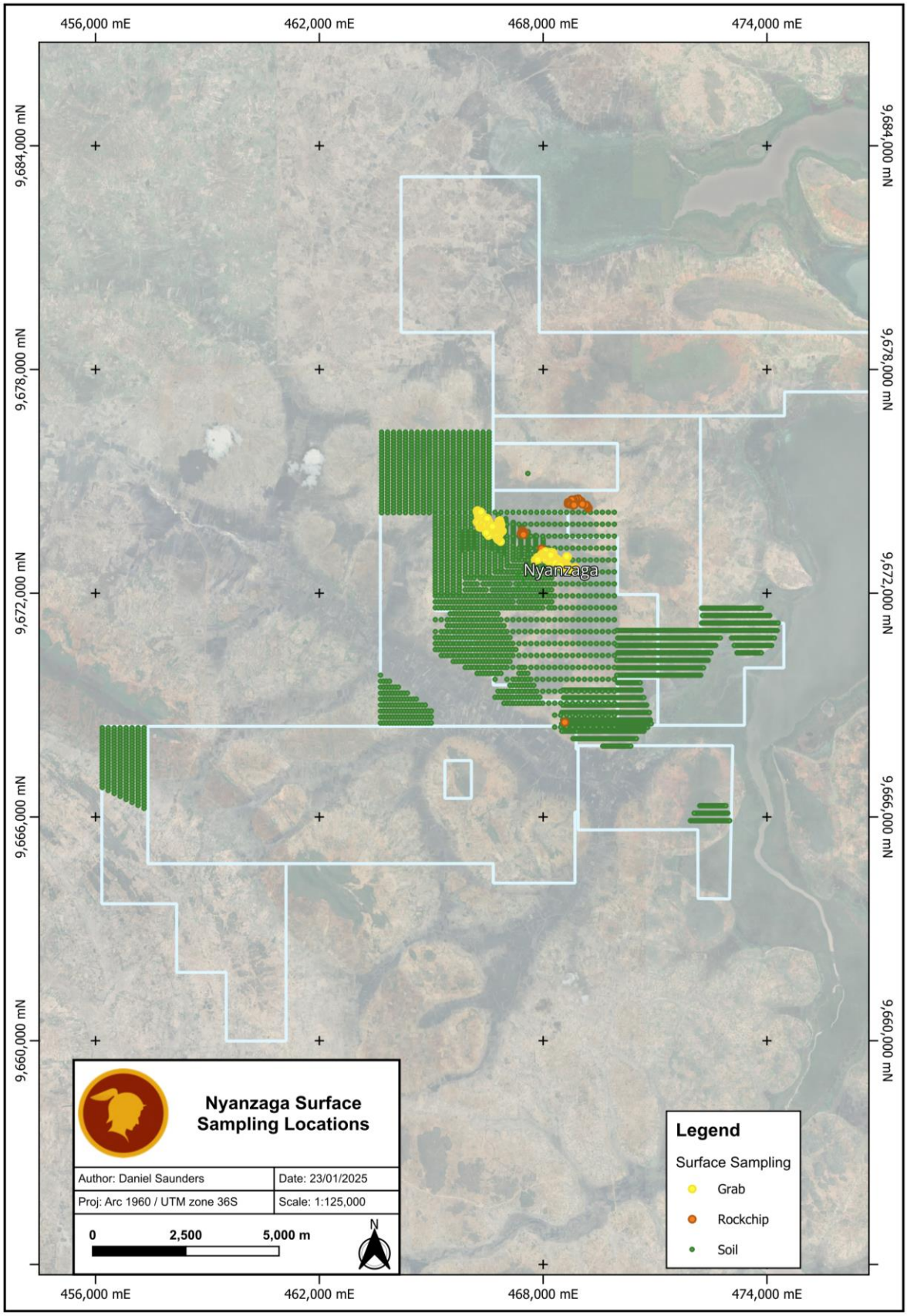



*Figure 9-1: Nyanzaga surface sampling location plan – 2017 onwards (Source: Perseus, 2025)*

# 10. DRILLING

## 10.1 PRE-ORECORP DRILLING

Information presented in this section summarises work done by operators other than OreCorp (and their direct subsidiary Sotta Mining Corporation Limited (SMCL)). Where relevant this information has been used to support determination of Mineral Resources for the Nyanzaga Project.

### 10.1.1 DRILLING SUMMARY

Drilling on the various tenements that comprised the Nyanzaga Gold Project commenced in 1997. A summary of drilling by type and year is presented in Table 10-1 and displayed graphically by year in Figure 10-1 and by type in Figure 10-2.

***Table 10-1: Nyanzaga Gold Project drilling summary pre-SMCL***

| DRILL YEAR | DRILL TYPE | | | | | | | | | | TOTAL HOLES | TOTAL METRES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AC | | RAB | | WB | | RC | | DD | | | |
| | No. | Metres | No. | Metres | No. | Metres | No. | Metres | No. | Metres | | |
| **1997** | | | | | | | 41 | 3,547 | 7 | 1,636.3 | 48 | 5,183.3 |
| **1998** | | | | | | | 25 | 1,860 | | | 25 | 1,860 |
| **2001** | | | | | | | 7 | 850 | 1 | 281.5 | 8 | 1,131.5 |
| **2002** | | | 30 | 1,446 | | | 4 | 226 | 3 | 975.99 | 37 | 2,647.99 |
| **2003** | 39 | 1403 | 42 | 1,380 | | | | | | | 81 | 2,783 |
| **2004** | | | 542 | 11,732 | | | | | | | 542 | 11,732 |
| **2005** | | | 515 | 14,054 | 7 | 596 | 35 | 4,633 | 42 | 15,098.77 | 599 | 34,381.77 |
| **2006** | | | | | | | 27 | 3,879 | 98 | 35,207.84 | 125 | 39,086.84 |
| **2007** | 22 | 942 | | | | | 12 | 1,780 | | | 34 | 2,722 |
| **2009** | | | | | | | 53 | 7,111 | 10 | 1,698.2 | 63 | 8,809.2 |
| **2010** | | | 46 | 1,581 | 1 | 121 | 83 | 10,943 | 34 | 15,392.48 | 164 | 28,037.48 |
| **2011** | | | | | 1 | 108 | 195 | 24,058 | 112 | 45,752.6 | 308 | 69,918.6 |
| **2012** | | | | | 9 | 1,900.6 | 55 | 7,527 | 27 | 17,756.85 | 91 | 27,184.45 |
| **2014** | | | | | | | | | 6 | 1,365.87 | 6 | 1,365.87 |
| **Grand Total** | **61** | **2,345** | **1,175** | **30,193** | **18** | **2,725.6** | **537** | **66,414** | **340** | **135,166.4** | **2,131** | **236,844** |

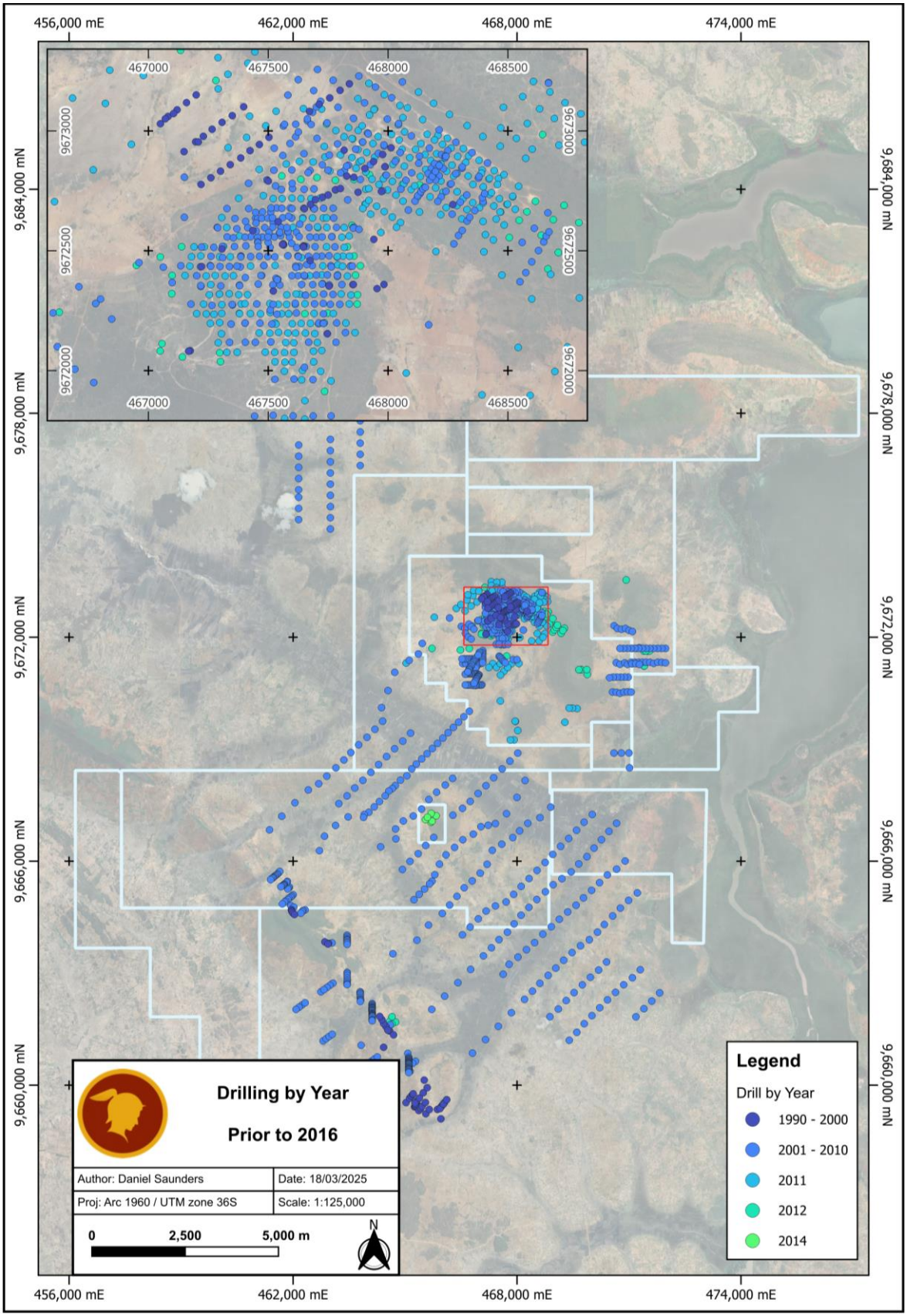



*Figure 10-1: Nyanzaga drilling by year prior to 2016 (Source: Perseus, 2025)*

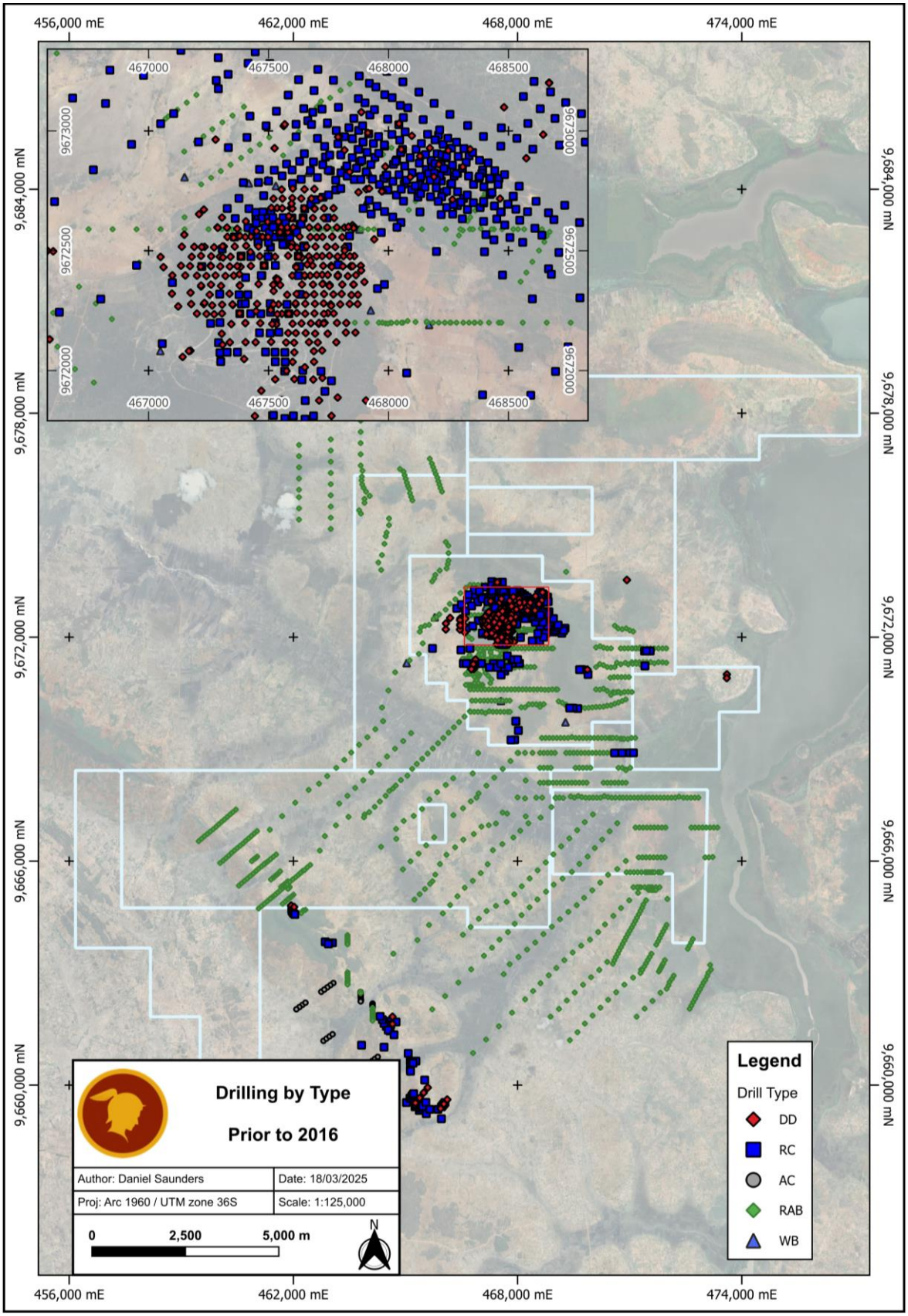



*Figure 10-2: Nyanzaga drilling by type prior to 2016 (Source: Perseus, 2025)*

### 10.1.2 COLLAR SURVEYS

A Differential Global Positioning System (DGPS) survey work program was undertaken to survey accurately any preserved historical drill collars; validate existing historical 2012 control and survey pickups; and in addition, the centre lines of all tracks and benches were also surveyed.

The work was carried out by professional surveyors, Nile Surveys (Uganda) Ltd in March 2017 and was completed in two phases on and around the Nyanzaga Hill. This work found that:

- Historical Acacia holes were very accurate (<10 cm difference) in nothing and easting, with elevations generally ±1-2 m, while several were in the ±4–6 m range, due to elevations being derived from a historical 2011 DTM surface.
- The mine datum pillars (located in the exploration camp compound) established by Acacia using Ramani Surveys were very accurate for the mine grid purpose, but due to the Arc 1960 transform used, a shift of about 2.5 m southeast with respect to government topography and cadastral maps occurred.

The DGPS collar survey information was updated into the database, with the latest DGPS data superseding previous collar coordinates. The database was configured to store different generations of survey data, maintaining all historical records.

### 10.1.3 DOWNHOLE SURVEYS

A combination of poor ground conditions, weathering characteristics and in some instances driller practices (i.e., removal of the stabiliser rod in coincident clay and high waterflow areas to reduce chances of bogging) have influenced the down-hole trajectories in certain areas of the project.

Subsequent review of historical down-hole survey data showed similar tendencies to deviate at Nyanzaga. Gyroscopic re-surveys of several holes with excessive azimuth deviations were undertaken and confirmed localised, significant deflections (even with stabiliser rods fitted) in the unstable portions of the oxide zone. Once into fresh rock hole deviation was minimal.

Deviation caused by strongly magnetic mudstones and pyrrhotite has also been an observed issue in older surveys undertaken with a downhole survey probe based on magnetic readings. Gyroscopic tool readings in these strata produce a more reliable hole trace, and as such have superseded the magnetic down-hole survey probe data where undertaken and have been updated in the database.

### 10.1.4 GEOLOGICAL LOGGING

#### 10.1.4.1 SUB SAHARA RESOURCES

No information on RC logging is available. Core logging was completed on paper until late 2005 when digital logging was introduced concurrent with the implementation of acQuire as the data management software system. The logs captured included lithology, alteration, structure, mineralisation and sample numbers. All the data were relayed electronically to the main database at Bulyanhulu office. For diamond drilling carried out in 2007, there is no information available.

#### 10.1.4.2 BARRICK EXPLORATION AFRICA/ACACIA

Remaining drill cuttings for each metre were placed on the ground, in drill order as piles in rows of ten samples for logging. Representative sieved/washed samples were also taken from each metre drilled. These samples and chips were then put in numerical order into a chip box. Drill cuttings of the representative rock types and features of geological interest intersected in the hole were also archived in chip trays.

The samples were logged at the drill site by the project geologists, and the data was entered directly into a logging software package with a Panasonic Toughbook laptop. After completion of every hole, a check was done between the geologist and the technician in charge of the sampling, to confirm; the final depth of the hole, number of samples collected, sample number intervals and quality assurance/quality control (QAQC) sample insertion/duplicates including number and sample numbers, at the rig.

No information is available on how core logging was conducted.

#### 10.1.4.3 INDAGO

All RC drilling was logged by contract Tanzanian geologists. In addition to lithology and alteration, key emphasis was placed on determining base of complete oxidation (BOCO) and top of fresh rock (TOFR) for the purposes of metallurgical domaining and block modelling. Magnetic susceptibility measurements were taken for each 1 m interval of all of the holes drilled in the 2009 program, using an Exploranium KT-9 Kappameter.

No information is available on how core logging was conducted.

### 10.1.5 RC SAMPLING

#### 10.1.5.1 SUB SAHARA RESOURCES

Samples were collected at 1 m intervals in plastic bags and their weight (25 – 35 kg) was recorded in a logbook. Wet samples were collected in polythene bags and allowed to air dry before splitting. Prior to September 2005, the samples were combined into 3 m composites by taking a 300 g scoop from 10 –15 kg 1 m interval, then mixing it with 300 g scoops from each of two adjacent samples. The 1 kg composite sample was then submitted to SGS Mwanza laboratory (SGS) for preparation and analysis. Magnetic susceptibility readings were taken every metre.

The individual 1 m samples were stored for future assaying in case of positive results obtained by 3 m composite. After September 2005, 1 m split samples of 1 kg weight were submitted directly to SGS for analysis and the remaining weight approximately 15 – 20 kg was stored on site. Samples were placed in plastic bags, labelled and stacked in order on plastic sheets. Samples were catalogued in a register so that samples could readily be retrieved, and sample stacks were covered with plastics and secured.

#### 10.1.5.2 BARRICK EXPLORATION AFRICA/ACACIA

All RC drillholes were sampled at 1 m intervals for the entire length of the hole, where possible. Each sample was collected into a plastic bucket large enough to hold approximately 40 kg of cuttings, which was held below the cyclone spigot by a drill helper. To avoid sample contamination after a drill run was completed, blow-backs were carried out at the end of each of the 6 m runs by the driller whereby the percussion bit was lifted off the bottom of the hole and the hole blown clean. If water was encountered in the hole, the driller was directed to dry out the hole by increasing air pressure into the hole and lifting and lowering the rods prior to continuing the drilling. The sample cuttings for each metre were weighed using a spring scale and recorded.

Following weighing, the sample contents from the bucket were disgorged into a Gilson riffle splitter. A sample was collected on one side of the splitter as a reject. The material collected in the residue buckets on the other side of the splitter was poured back into the splitter and a 4 – 5 kg sample was collected from the second split in a small pre-labelled and tagged plastic bag for dispatch to the assay laboratory. The bag was then folded over several times and stapled to prevent sample leakage. The contents of the second bucket were poured into a pre-labelled plastic sample bag, containing the sample interval marked on an aluminium or plastic tag, for storage at the Nyanzaga camp.

The splitter and sample collection boxes were cleaned by tapping the box/splitter with rubber mallet or stick after every metre drilled. A record was made at the drill site of the sample identity numbers and corresponding intervals, and cross checked against the pre-drilling sample sheet.

Remaining drill cuttings for each metre were placed on the ground, in drill order as piles in rows of ten samples for logging. Representative sieved/washed samples were also taken from each metre drilled. These samples and chips were then put in numerical order into a chip box. Drill cuttings of the representative rock types and geological interest intersected in the hole were also archived in chip trays.

#### 10.1.5.3 INDAGO

The bulk samples for every 1 m interval were collected via a cyclone into a plastic bucket which was then weighed prior to sampling using a triple-tier riffle splitter. Care was taken to ensure the splitter and plastic buckets were cleaned between each sample, and the cyclone cleaned at the end of each rod. As the 12.5%

fraction was often found to be heavier than the 3 kg required by the analytical laboratory's sample preparation specifications all samples from drillhole INTRC005 onwards were further reduced using a 50/50 splitter and one half captured into a numbered calico bag and weighed. The remaining bulk reject samples (87.5% fraction) were collected into polyurethane bags and stored at the Nyanzaga camp in case any future sampling is needed.

An RC sample sheet was used to record all relevant information including the sample numbers and their corresponding intervals, sample weights, control samples, and the presence of any wet samples. An experienced and qualified geotechnician was always present to record this data during drilling. Where the drilling encountered wet samples, they were collected directly from the cyclone into plastic polyweave bags and brought back to camp to dry, after which they were weighed and sampled using a triple-tier splitter. As these intervals generally had a lower recovery, the laboratory samples were not reduced using the 50/50 splitter.

### 10.1.6 DIAMOND CORE SAMPLING AND CORE RECOVERIES

#### 10.1.6.1 SUB SAHARA RESOURCES

The core was correctly fitted in the core boxes prior to sampling to ensure that only one side of the core was sampled consistently. The core was then split using a diamond saw and sampled and QAQC samples inserted accordingly. Sample length varied between 0.5 m and 1.0 m and only half of the cut core was sent to the laboratory, the other half was marked with a sample number tag and stored in racks at Nyanzaga site. Prior to storing the core, Apparent Relative Density (ARD) measurements were taken (every metre) and the data incorporated into the database. The gold assay values received were written in red permanent ink on the corresponding core intervals.

#### 10.1.6.2 BARRICK EXPLORATION AFRICA/ACACIA

A geologist marked the sample intervals and cutting line, which was then placed on the core with a 1 cm offset from the orientation line: the remaining half of the core contains the orientation line. The technicians split the core using an electric core saw in two equal halves which are placed side by side back into the core box. The same half of core was always sampled. Where there is no orientation, a line is chosen to at 90° to the predominant structure so that each cut half of the core will be a mirror image.

Core cutting by diamond saw was conducted in a dedicated core saw shed, while unconsolidated material was split using spoons or trowels. Core was cut in half, or in the case of unconsolidated material, half the material scooped out on one side of the tray. A 1 m half core was removed from the core box for assaying. Each sample interval was placed in a plastic bag with a sample ticket. The bag was labelled with the hole and sample numbers using a marker pen.

After communicating with the responsible geologist, the core was sampled by a trained technician in intervals up to 1 m and no less than 0.25 m. In general, the core was sampled at 1 m intervals, however, in some cases, such as ore zones, samples were taken at irregular intervals to honour the nature of the lithology and mineralisation. The sample number was placed on the remaining half of core, as well as written on the core with permanent marker. The remaining sample number tickets were placed in the core box. The samples were placed in plastic bags and then placed in a bucket with a security seal and put in a secure area until collected and transported to the laboratory.

#### 10.1.6.3 INDAGO

The diamond core was cut using a simple brick saw into equal halves; one half of the core was collected for each 1 m interval (or where the supervising geologist specified) into a calico bag making sure that the same half was consistently sampled down the hole and that any core orientations present were preserved in the remaining core. No sample interval was less than 20 cm or exceeded 1.5 m.

## 10.2 ORECORP DRILLING

### 10.2.1 DRILLING SUMMARY

Drilling activities by OreCorp (as SMCL) commenced in 2016 through to 2022, as presented in Table 10-2 and displayed graphically by year in Figure 10-3, and by type in Figure 10-4.

***Table 10-2: Nyanzaga Gold Project drilling summary - OreCorp***

| DRILL YEAR | DRILL TYPE | | | | | | | | | | TOTAL HOLES | TOTAL METRES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AC | | RAB | | WB | | RC | | DD | | | |
| | No. | Metres | No. | Metres | No. | Metres | No. | Metres | No. | Metres | | |
| **2016** | 230 | 11,935 | 23 | 452 | | | 78 | 3,550 | 3 | 398.5 | 334 | 16,335.5 |
| **2017** | 107 | 5,162 | | | 11 | 1,521 | 55 | 8,194 | 24 | 8,660.59 | 197 | 23,537.59 |
| **2021** | 171 | 7,777 | | | 2 | 230 | 60 | 8,269 | 35 | 3,627.49 | 268 | 19,903.49 |
| **2022** | 213 | 12,919 | | | | | 24 | 5,133.78 | 1 | 150.3 | 238 | 18,203.08 |
| **Grand Total** | **721** | **37,793** | **23** | **452** | **13** | **1,751** | **217** | **25,146.78** | **63** | **12,836.88** | **1,037** | **77,979.66** |

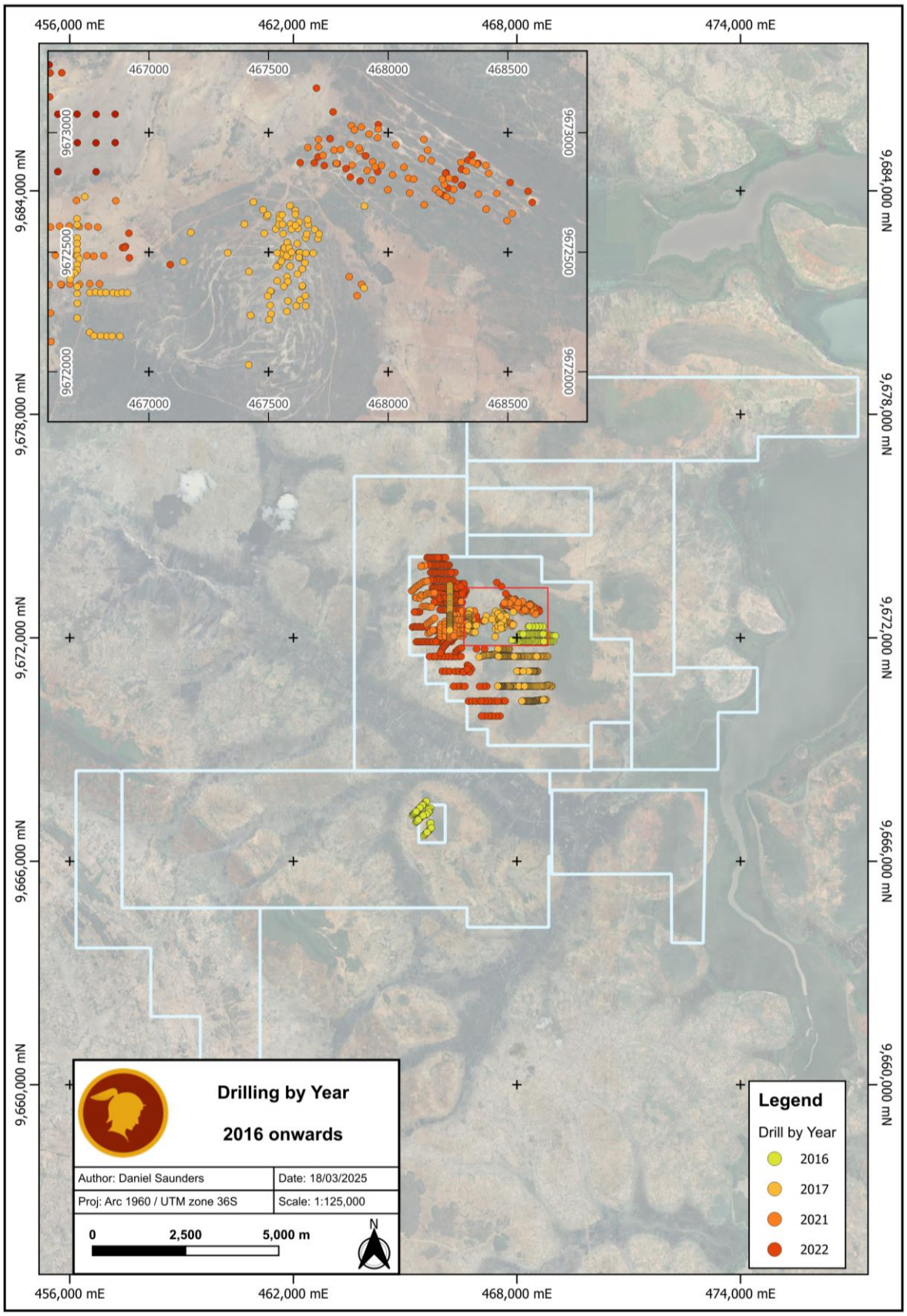



*Figure 10-3: Nyanzaga drilling by year from 2016 onwards (Source: Perseus, 2025)*

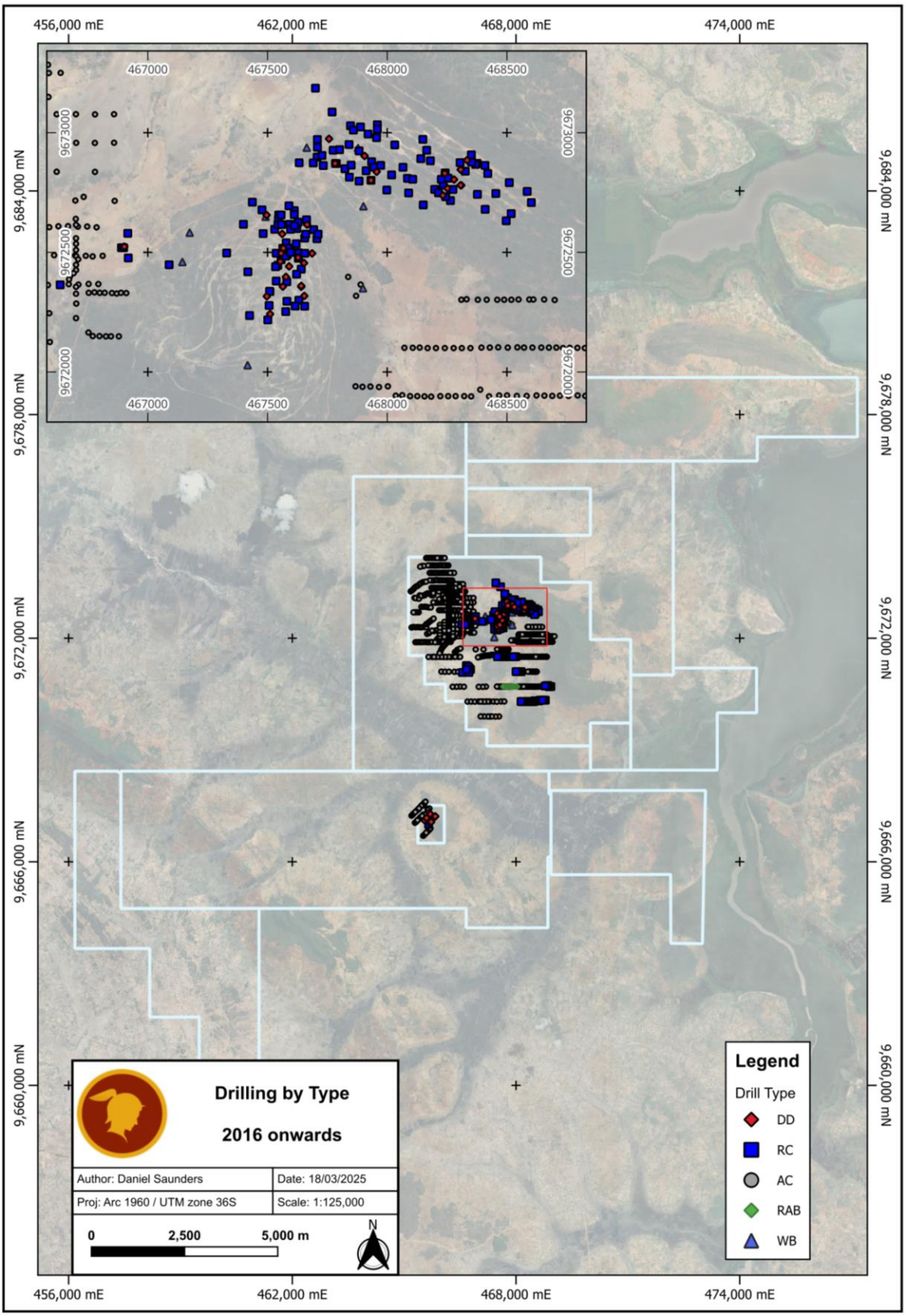



*Figure 10-4: Nyanzaga drilling by type from 2016 onwards (Source: Perseus, 2025)*

### 10.2.2 COLLAR SURVEYS

Drill hole collars are surveyed by an independent survey contractor using DGPS techniques. The surveyed coordinates are provided as digital files for upload to the database.

### 10.2.3 DOWNHOLE SURVEYS

Downhole surveys were completed using Reflex or Flexi It Single Shot at a nominal rate of one test for every 30 m with additional gyroscopic downhole surveys, when deemed necessary.

### 10.2.4 GEOLOGICAL LOGGING

Geological logging procedures employed by OreCorp were largely adopted from those employed by Barrick Exploration Africa/Acacia as described in section 10.1.4.2.

### 10.2.5 RC SAMPLING

All RC drillholes were sampled at 1 m intervals for the entire length of the hole, where possible. Each sample was collected into a plastic bag large enough to hold approximately 40 kg of cuttings, which was held below the cyclone spigot by a drill helper. To avoid sample contamination after a drill run was completed, blow-backs were carried out at the end of each of the 6 m runs by the driller whereby the percussion bit was lifted off the bottom of the hole and the hole blown clean. If water was encountered in the hole, the driller was directed to dry out the hole by increasing air pressure into the hole and lifting and lowering the rods prior to continuing the drilling. The sample cuttings for each metre were weighed using a spring scale and recorded. Drill cuttings of the representative rock types and geological interest intersected in the hole were also archived in chip trays.

Depending on the drill rig, the sample was split at the cyclone, or the bulk sample was passed through a standalone riffle splitter at the drill site to generate the subsample for analysis. A record was made at the drill site of the sample identity numbers and corresponding intervals, and cross checked against the pre-drilling sample sheet.

The sample reduction process generated two subsample splits into calico bags of nominal 2 kg weight. One of the calico splits is submitted for analysis, and the other is stored as a record at the bag farm.

The splitter and sample collection boxes were cleaned by tapping the box/splitter with rubber mallet or stick after every metre drilled.

#### 10.2.5.1 ANALYSIS OF RC RECOVERIES

Review of the drill hole database showed that sample weights for RC drilling were captured only for holes drilled since 2016. It is assumed that while weights prior to this have been captured, their measurements have not been digitally entered to the project database.

In total RC sample weights are captured for 103 drill holes within the Nyanzaga and Kilimani mineral resource footprints (representing ~20% of total RC holes). A breakdown of average sample weights by year and sample condition is presented in Table 10-3, while charts showing the relative distributions of individual sample weights reported for wet, moist, and dry samples are presented in Figure 10-5 to Figure 10-7. Review of the dry sample weights chart in Figure 10-5 shows recorded weights for 2017 were typically much larger than for all other recorded years.

*Table 10-3: RC sample weights by condition and year*

| DRILL YEAR | SAMPLE CONDITION | | | | | |
|---|---|---|---|---|---|---|
| | Dry | | Moist | | Wet | |
| | No. Samples | Avg. Weight (kg) | No. Samples | Avg. Weight (kg) | No. Samples | Avg. Weight (kg) |
| **2016** | 2,595 | 27.9 | 118 | 29.1 | - | - |
| **2017** | 5,992 | 37.4 | 4,460 | 30.3 | 321 | 19.9 |
| **2021** | 420 | 24.2 | 7,856 | 21.7 | 161 | 17.4 |
| **2022** | 1,349 | 27.7 | 1,962 | 23.1 | 100 | 11.0 |

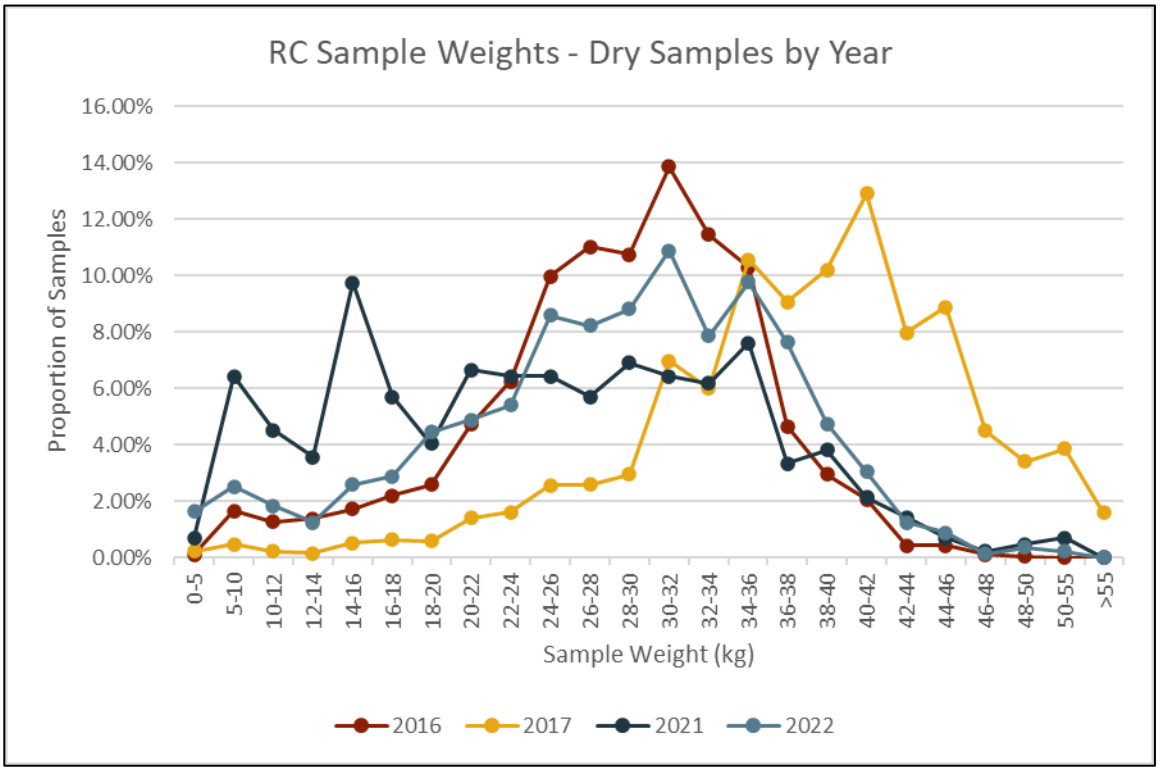



*Figure 10-5: RC sample weight distribution by year – Dry samples only (Source: Perseus, 2025)*

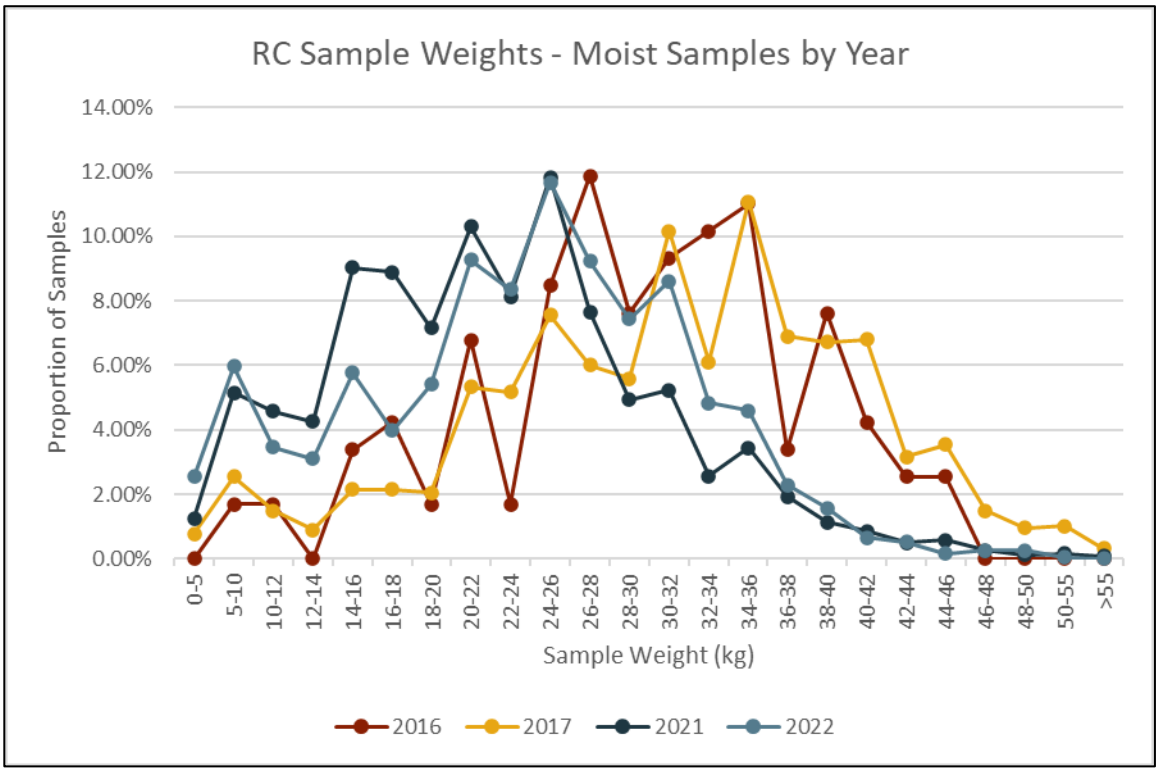



*Figure 10-6: RC sample weight distribution by year – Moist samples only (Source: Perseus, 2025)*

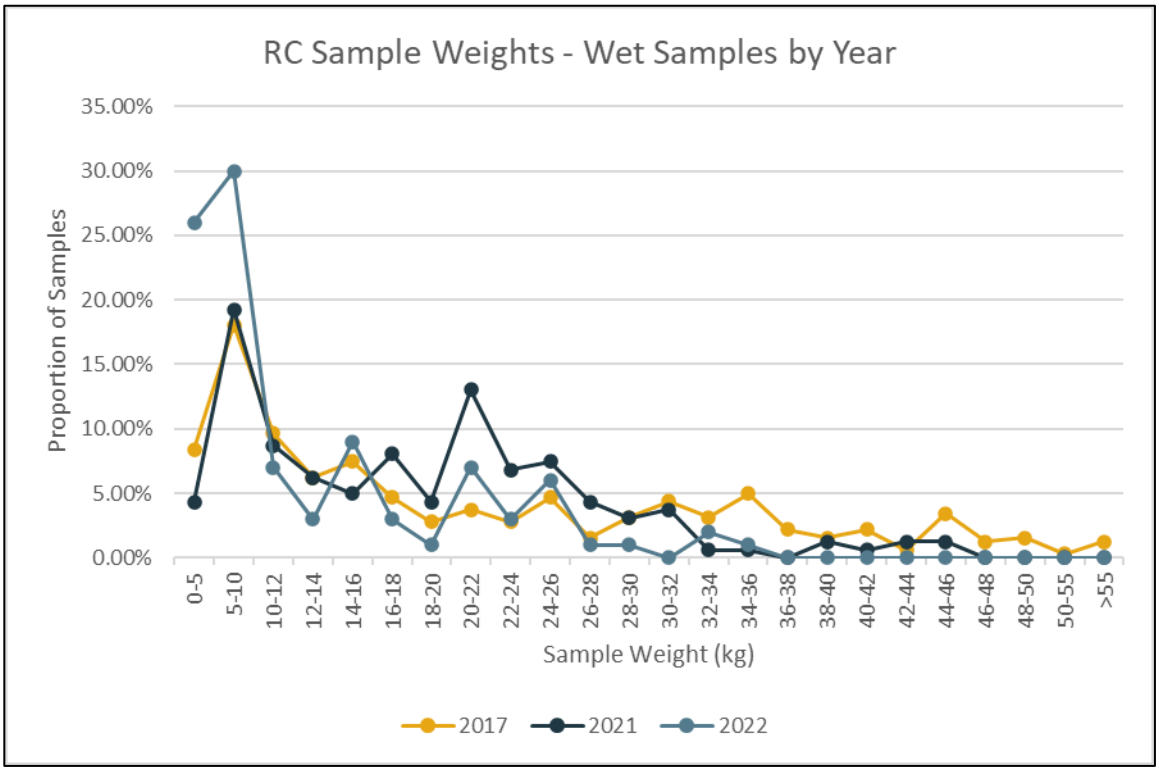



*Figure 10-7: RC sample weight distribution by year – Wet samples only (Source: Perseus, 2025)*

### 10.2.6 DIAMOND CORE SAMPLING AND CORE RECOVERIES

The core is marked up for orientation using the Reflex Ez-Mark™ core orientation system by the drill crew, with a geotechnician completing the orientation process. A cutline is marked offset by approximately 2 cm clockwise of the bottom of hole orientation line, with the orientation line preserved on the un-sampled half-core and retained in the tray.

The entire hole is sampled with samples collected nominally at 1 m or at geological contacts, however should not be less than 0.5 m or more than 1.5 m in length. The geologist will layout and record all the sampling data and will sample the half core into calico bags, recording the sample weight. The sample ticket is placed inside the bag and the bag labelled with the sample number.

The samples are packed into 20 L buckets with a maximum weight of 25 kg containing approximately five samples. Each bucket is marked as bucket number X of Y (e.g., 1 of 20), the sample numbers that it contains and the number of samples in it. A tabulated sample dispatch sheet template is populated, and sample sequences and certified reference materials (CRMs), blanks and duplicate insertion is checked and verified prior to dispatch.

The recorded core recoveries for the SMCL drilling were extracted from the database and assessed. Data was categorised into 10 m downhole intervals up to 250 m depth and the average core recovery by year plotted (Figure 10-8). Review of the results shows that other than the 2016 diamond program, average core recoveries are typically above 90% for all but the upper 10 m of the drill holes.

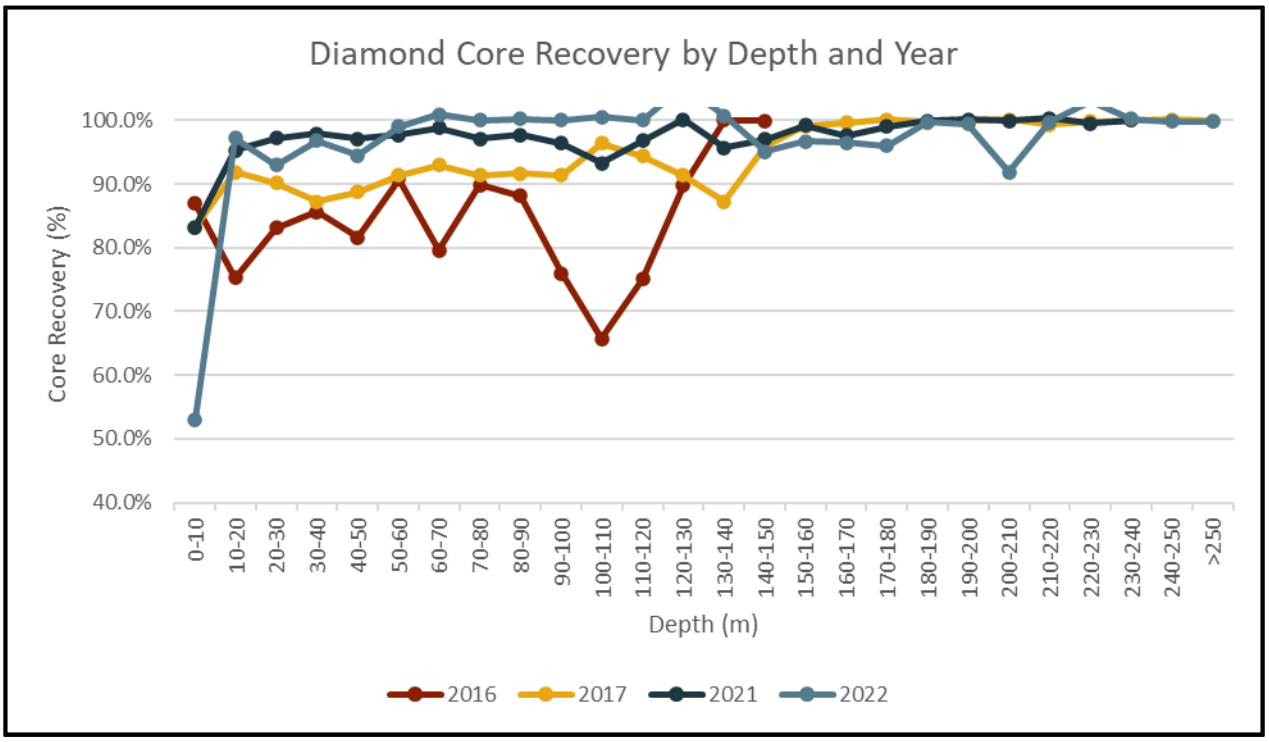



*Figure 10-8: Diamond core recovery by year and depth (Source: Perseus, 2025)*

# 11. SAMPLE PREPARATION, ANALYSIS AND SECURITY

## 11.1 PRE-ORECORP DRILLING

### 11.1.1 SAMPLE PREPARATION AND ASSAY LABORATORIES

The primary laboratory was SGS, located in Mwanza, Tanzania. The laboratory is certified for ISO/IEC 17025:2017 for gold assaying with accreditation by the South African National Accreditation System (SANAS). It was audited by Smee and Associates Consulting Ltd in 2008.

Additional assaying was completed at ALS which has received SANAS accreditation against ISO/IEC 17025:2017 for gold assaying with the accreditation number T0470.

Both SGS and ALS are commercial laboratories that are independent to Perseus.

Both laboratories employed similar sample preparation procedures. The entire sample was emptied into a stainless steel drying tray and dried for 24 hours at 95°C ± 5°C. The sample was then crushed in a jaw crusher to 85%, -2 mm, and riffle split to produce an 800 g to 1 kg split for pulverisation and analysis. The sample was pulverised in a LM2 bowl (1 kg capacity) to 90% passing 75 µm.

A minimum of 150 g to 300 g was scooped into a paper sample packet. All remaining pulp residues were put into new plastic sample bags and stored at the lab. The pulp in the sample packet was used for assay charges, and the residual materials are kept in the packet for storage. All sample preparation equipment is pre-cleaned at the beginning of every sample with barren quartz prior to processing the samples. The laboratory provided crush and grind size reports for a range of samples in each batch.

### 11.1.2 QAQC

#### 11.1.2.1 INTRODUCTION

African Barrick Gold (ABG) maintained a comprehensive QAQC program for the project. Adequate validation and comparative analysis was completed to ensure that the historical drilling was equally representative of the gold grade distribution. Sample preparation, security and analysis meet mining industry requirements and are acceptable for resource estimation.

Sample batches with QC failures were re-assayed with all failures addressed and documented in ABG's acQuire® database. Standards were included in external checks to assist in ensuring laboratory accuracy and precision.

Some poor precision was noted within the RC and DD core duplicates observed in the 2010-2012 data and can be attributed to the inherent variability within the deposit. Precision estimates for both preparation and pulp duplicates were good, indicating that the primary source of the poor precision must lie with the duplication of the field samples. While inconsistent and/or inappropriate sampling techniques may have played a role, it is likely that the variability of the deposit is primarily responsible for the poor precision (nugget effect). An increase in frequency of duplicates was implemented for the high-grade mineralised zones of the deposit to better understand the precision issues.

#### 11.1.2.2 CRMs AND BLANKS

The CRMs used in the Nyanzaga drilling programs are certified reference materials obtained from various sources. Different types of standards are used to cover low, intermediate and high-grade mineralisation in oxide and sulfide zones. If possible, a CRM was selected that is close in composition and grade to that of the samples contained in the batch. The buckets containing the reference material were kept in a clean, secure area in the exploration camp. Standards were inserted as prepared 150 to 200 g packets with each batch of samples. All samples were assayed in number sequence.

Batch failures for accuracy and bias were defined as any assay result for a standard that is more or less than the value plus or minus three standard deviations, or any two consecutive values that are more or less than two standard deviations on the same side of the mean (bias). The mean and standard deviations for each

standard were derived from the Certificate of Analysis provided by the supplier and based on the results of round robin testing by a group of laboratories.

The source material for blanks was local un-mineralised granite collected in large plastic sample bags and pre-crushed to 2.5 cm. This material was stored in a secure, clean container away from other samples or reference material. Blank material samples, ranging from 2.5 kg to 3 kg, were inserted with the samples and were assayed in numerical sequence.

If batch failures were attributed to the laboratory, new pulps were prepared from the coarse rejects for the entire batch and the assays repeated. A summary of the CRM and blanks used in the 2005-2012 period is presented in Table 11-1, with a compilation of failure statistics by standard presented in Table 11-2, and results for the blanks presented in Table 11-3. As is observed from Table 11-3, the significant majority (>96%) of CRMs during this period have been reported in the 2012 year. Example charts for those CRMs with more significant numbers of results, separated by analysis laboratory, are presented in Figure 11-1 to Figure 11-8.

***Table 11-1: Number of CRM and blank analyses – 2005 - 2012***

| STANDARD ID | YEAR | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|
| | 2005 | 2006 | 2009 | 2010 | 2011 | 2012 | |
| AUOE-1 | 2 | - | - | - | - | 4 | 6 |
| AUOE-2 | 3 | - | - | - | - | 167 | 170 |
| AUOH-1 | 3 | - | - | - | - | 6 | 9 |
| AUSK-1 | 7 | - | - | - | - | 219 | 226 |
| BBG | 46 | 79 | - | 39 | 46 | 4,813 | 5,023 |
| HISILP1 | - | - | - | - | 1 | 74 | 75 |
| IN_BLANK | - | - | 4 | | | 308 | 312 |
| OREAS 10c | - | - | - | - | - | 4 | 4 |
| OREAS 15f | - | - | - | - | - | 7 | 7 |
| OREAS 15h | - | - | - | - | - | 10 | 10 |
| OREAS 16b | - | - | - | - | - | 9 | 9 |
| OREAS 18c | - | - | - | - | - | 12 | 12 |
| OREAS 19a | - | - | - | - | - | 12 | 12 |
| OREAS 45P | - | - | - | - | - | 16 | 16 |
| OREAS 50P | - | - | - | - | - | 31 | 31 |
| OREAS 61Pa | 4 | - | - | - | - | 13 | 17 |
| OREAS 62c | - | - | - | - | - | 4 | 4 |
| OREAS 62Pa | - | - | - | - | - | 15 | 15 |
| OREAS 62Pb | 6 | - | - | - | - | 15 | 21 |
| OREAS 6Pc | - | - | - | - | - | 59 | 59 |
| OREAS 901 | - | - | - | - | - | 6 | 6 |
| OxA45 | - | - | - | - | 1 | 66 | 67 |
| OxA71 | - | - | - | - | 1 | 10 | 11 |
| OxC44 | - | - | - | - | 7 | 125 | 132 |
| OxD43 | - | 6 | - | - | - | 56 | 62 |
| OxE21 | 1 | | - | - | - | 3 | 4 |
| OxE42 | - | 10 | - | 2 | 8 | 261 | 281 |
| OxE56 | - | - | - | - | - | 34 | 34 |
| OxE74 | - | - | - | - | - | 8 | 8 |
| OxF41 | - | - | - | - | - | 40 | 40 |
| OxF65 | - | - | - | - | - | 32 | 32 |
| OxG60 | - | - | - | - | - | 2 | 2 |
| OxH37 | - | 6 | - | 3 | 7 | 263 | 279 |
| OxH55 | - | - | - | - | - | 38 | 38 |
| OxI23 | 5 | 6 | - | - | - | 300 | 311 |
| OxI40 | - | 6 | - | - | 3 | 190 | 199 |
| OxJ64 | - | - | - | 3 | 2 | 203 | 208 |
| OxL34 | - | - | - | 1 | 2 | 141 | 144 |
| OxL63 | - | - | - | - | - | 44 | 44 |

| STANDARD ID | YEAR | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|
| | 2005 | 2006 | 2009 | 2010 | 2011 | 2012 | |
| OxN62 | - | - | - | - | - | 2 | 2 |
| S3 | - | - | - | - | - | 19 | 19 |
| S4 | - | - | - | - | - | 110 | 110 |
| SE19 | - | 9 | - | 11 | - | 153 | 173 |
| SE58 | - | - | - | - | - | 15 | 15 |
| SF23 | - | - | - | - | 2 | 130 | 132 |
| SF30 | - | - | - | - | - | 85 | 85 |
| SF57 | - | - | - | - | - | 15 | 15 |
| SG14 | - | - | - | - | - | 151 | 151 |
| SG31 | - | - | - | - | 2 | 165 | 167 |
| SH24 | - | - | - | 6 | - | 120 | 126 |
| SH35 | - | - | - | 2 | 1 | 143 | 146 |
| SJ22 | - | - | - | - | 2 | 157 | 159 |
| SJ39 | - | - | - | 7 | - | 158 | 165 |
| SK21 | - | 17 | - | - | - | 139 | 156 |
| SL20 | - | 7 | - | 2 | - | 96 | 105 |
| SL51 | - | - | - | - | - | 25 | 25 |
| SN16 | - | - | - | - | - | 113 | 113 |
| SN38 | - | - | - | - | - | 68 | 68 |
| ST09/6382 | - | - | - | - | - | 12 | 12 |
| ST14/6368 | - | - | - | - | - | 45 | 45 |
| **Grand Total** | **77** | **146** | **4** | **76** | **85** | **9,541** | **9,929** |

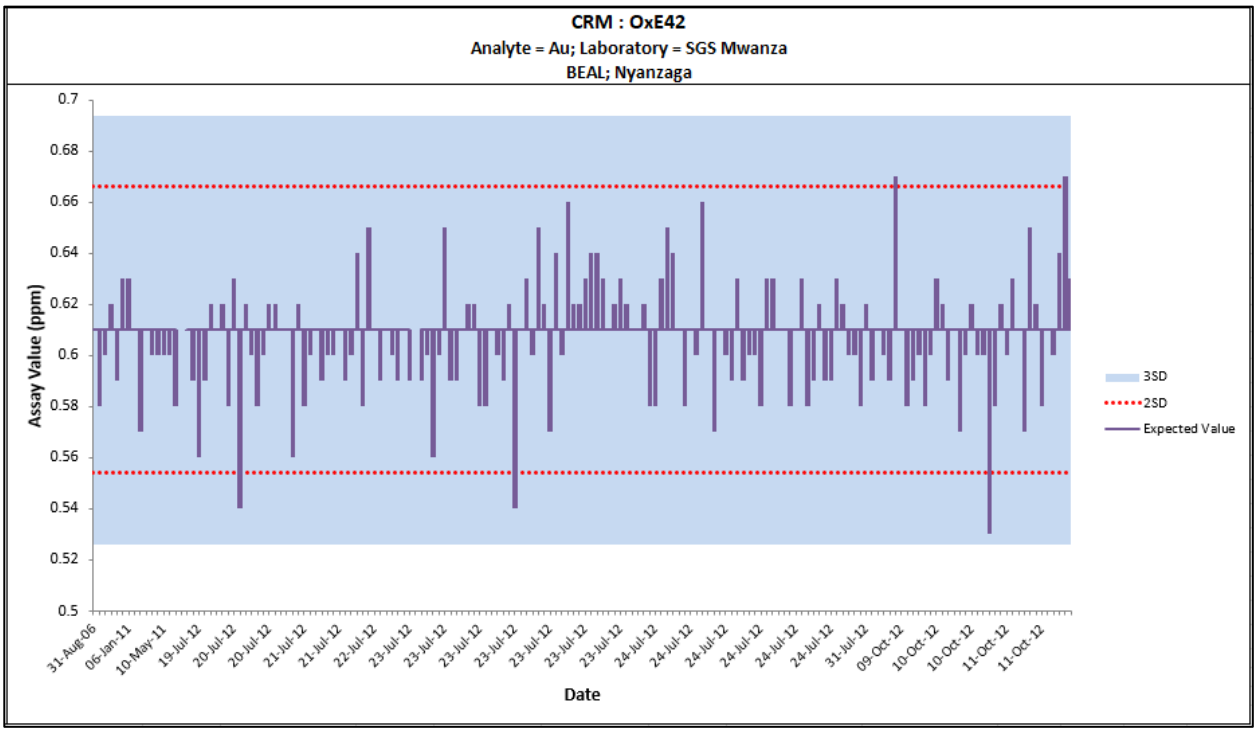



*Figure 11-1: Control chart – OxE42 – SGS Mwanza (Source: Perseus, 2025)*

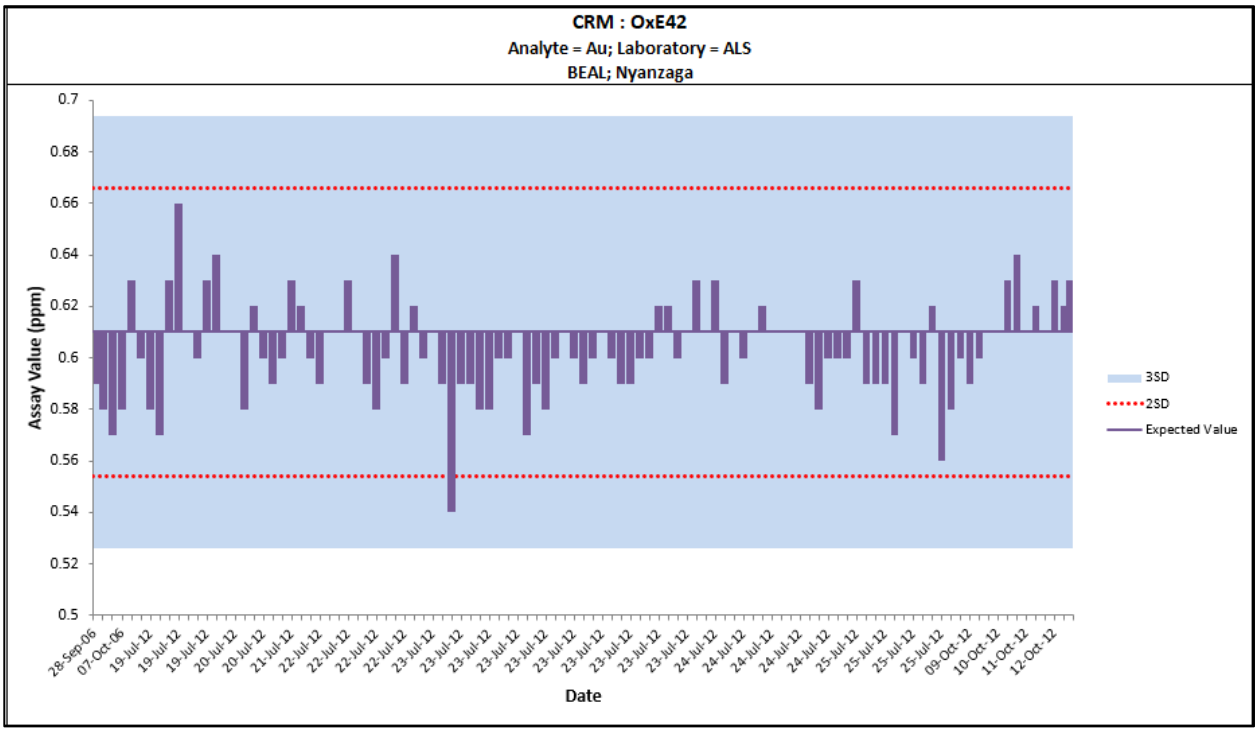



*Figure 11-2: Control chart – OxE42 – ALS (Source: Perseus, 2025)*

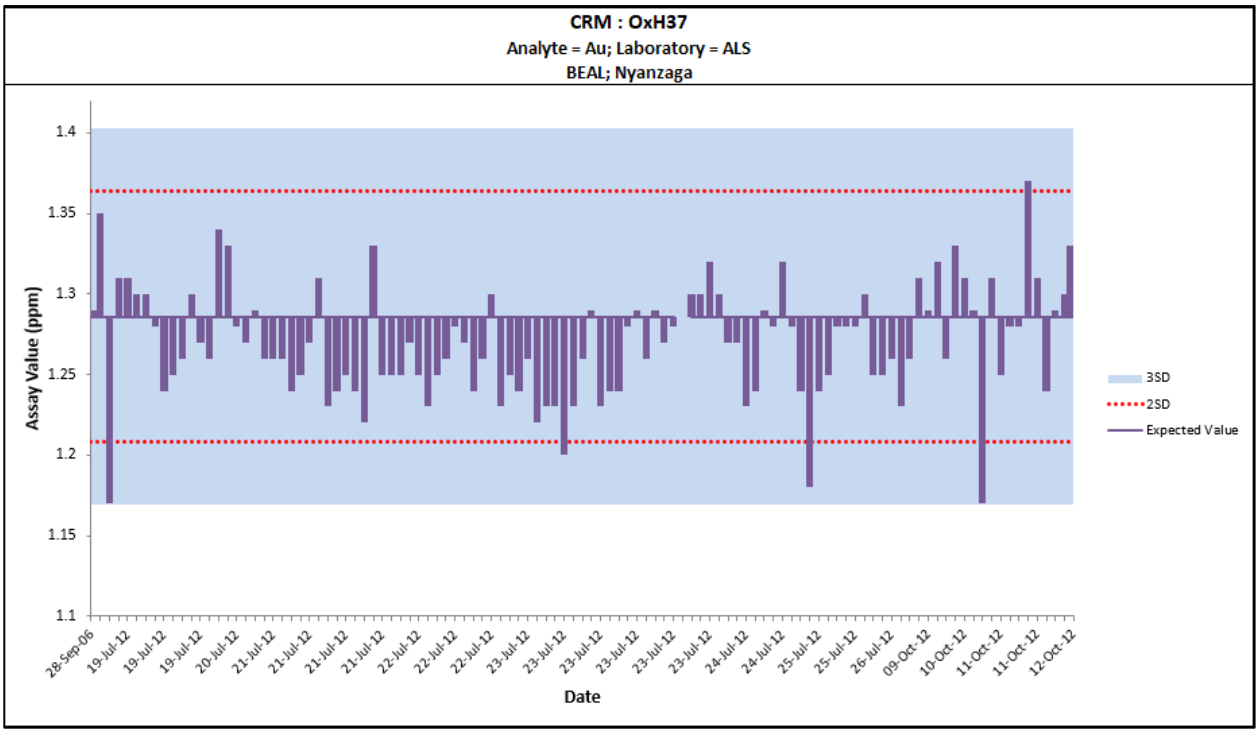



*Figure 11-3: Control chart – OxH37 – ALS (Source: Perseus, 2025)*

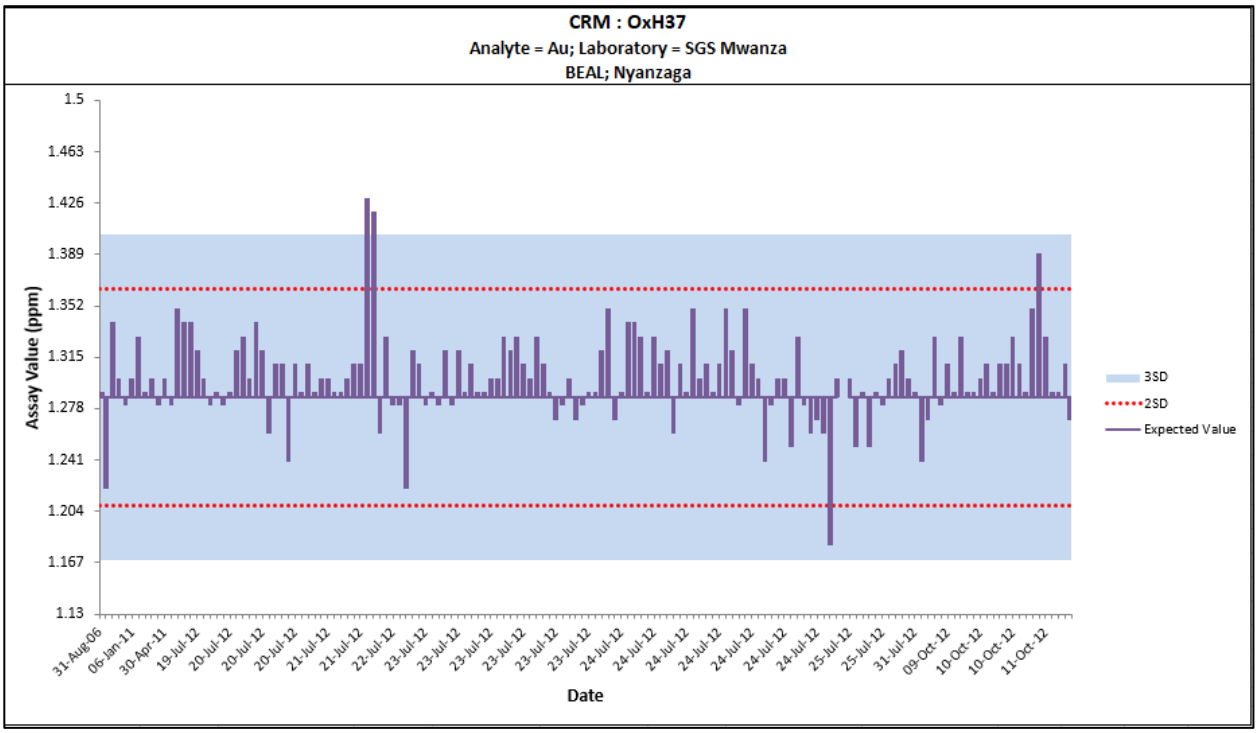



*Figure 11-4: Control chart – OxH37 – SGS Mwanza (Source: Perseus, 2025)*

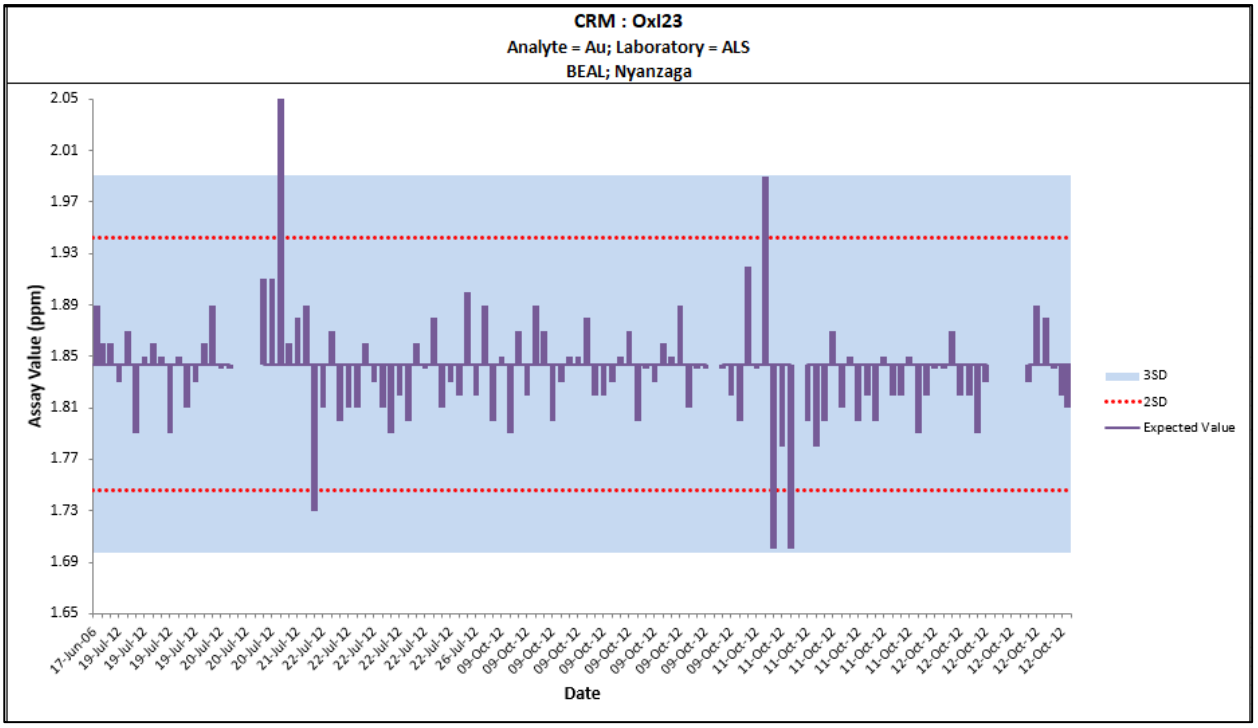



*Figure 11-5: Control chart – OxI23 – ALS (Source: Perseus, 2025)*

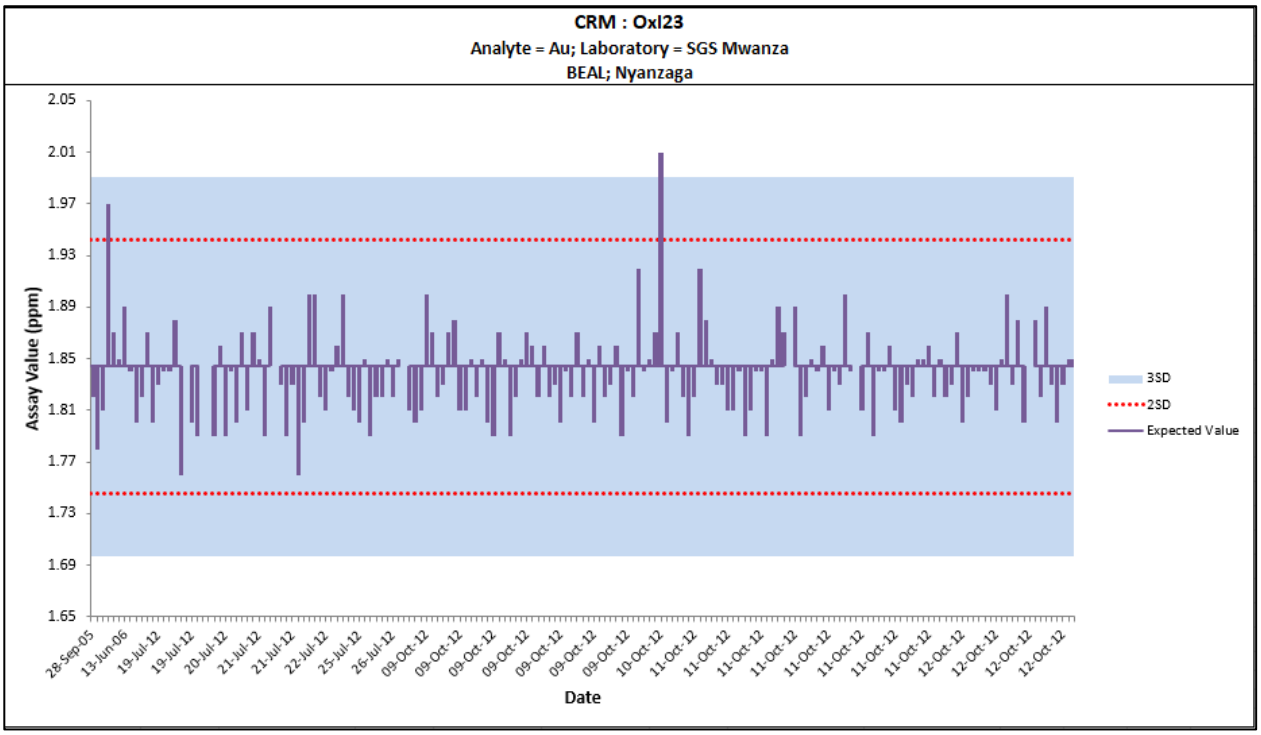



*Figure 11-6: Control chart – OxI23 – SGS Mwanza (Source: Perseus, 2025)*

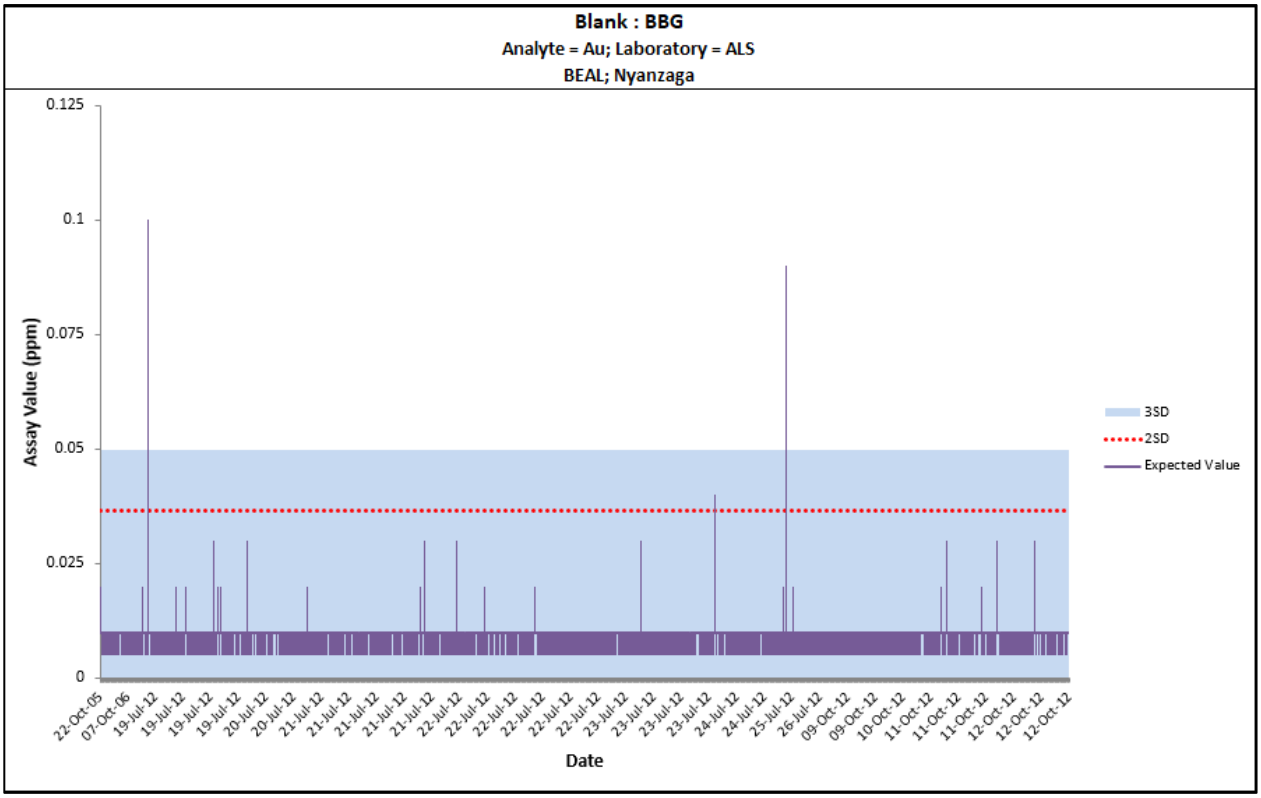



*Figure 11-7: Control chart – Blank BBG – ALS (Source: Perseus, 2025)*

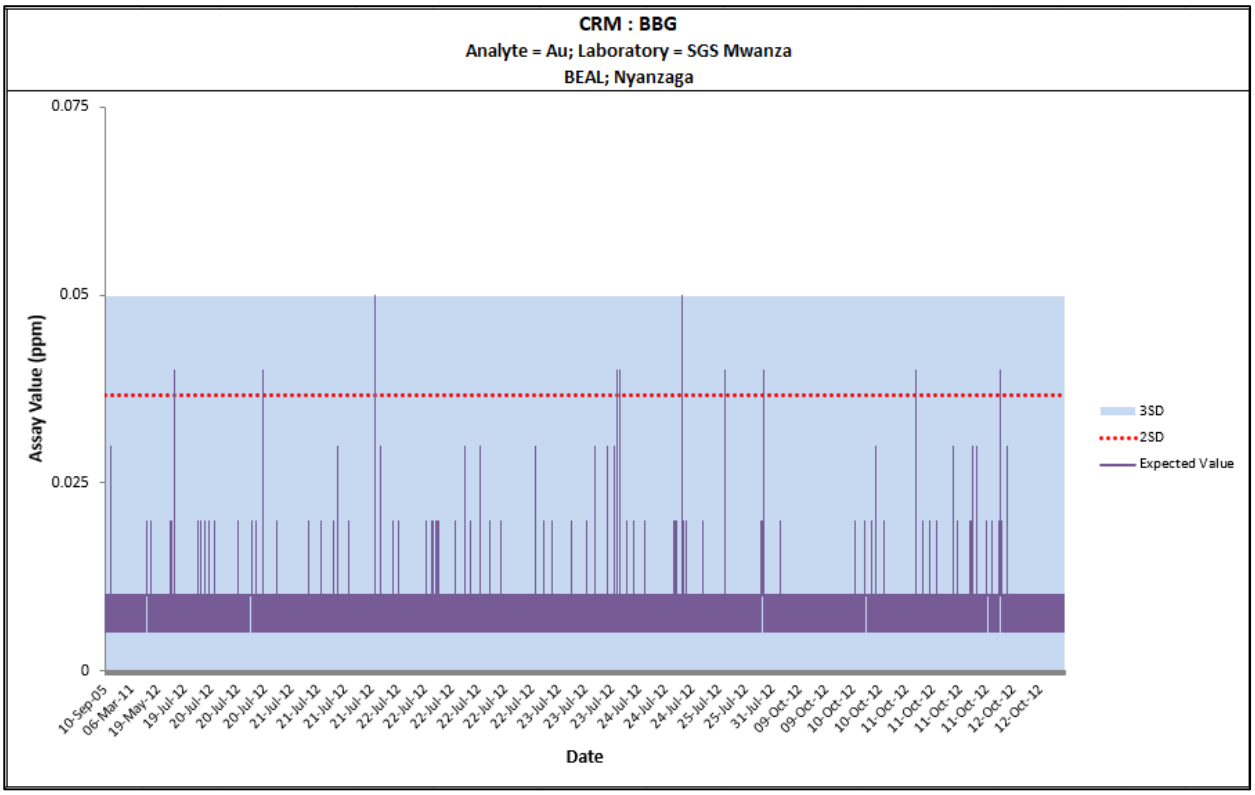



*Figure 11-8: Control chart – Blank BBG – SGS Mwanza (Source: Perseus, 2025)*

*Table 11-2: Summary of CRM performance by laboratory and standard – 2005-2012*

| LABORATORY | STD ID | NO. | EXPECTED VALUE (Au g/t) | ACTUAL MEAN (Au g/t) | BIAS (%) | NO. SAMPLES OUTSIDE 2SD | % OUTSIDE 2SD | NO. SAMPLES OUTSIDE 3SD | % OUTSIDE 3SD | DATE FROM | DATE TO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SGS Mwanza** | AUOE_2 | 122 | 0.615 | 0.600 | -2.46 | 2 | 1.64 | 0 | 0.00 | 28/09/2005 | 12/10/2012 |
| | AUSK_1 | 136 | 3.680 | 3.718 | 1.04 | 27 | 19.85 | 21 | 15.44 | 20/07/2012 | 12/10/2012 |
| | HISLIP1 | 72 | 12.050 | 12.526 | 3.95 | 5 | 6.94 | 0 | 0.00 | 29/12/2011 | 11/10/2012 |
| | Oreas6Pc | 58 | 1.520 | 1.527 | 0.49 | 2 | 3.45 | 0 | 0.00 | 19/07/2012 | 12/10/2012 |
| | OxA45 | 63 | 0.081 | 0.091 | 12.54 | 19 | 30.16 | 5 | 7.94 | 16/05/2011 | 11/10/2012 |
| | OxC44 | 115 | 0.197 | 0.195 | -1.08 | 16 | 13.91 | 4 | 3.48 | 6/03/2011 | 12/10/2012 |
| | OxD43 | 54 | 0.401 | 0.402 | 0.35 | 2 | 3.70 | 1 | 1.85 | 13/06/2006 | 11/10/2012 |
| | OxE42 | 166 | 0.610 | 0.606 | -0.71 | 5 | 3.01 | 0 | 0.00 | 31/08/2006 | 12/10/2012 |
| | OxE56 | 33 | 0.611 | 0.602 | -1.40 | 2 | 6.06 | 1 | 3.03 | 17/05/2012 | 25/07/2012 |
| | OxF41 | 40 | 0.815 | 0.807 | -0.98 | 2 | 5.00 | 1 | 2.50 | 14/01/2012 | 11/10/2012 |
| | OxF65 | 31 | 0.805 | 0.812 | 0.86 | 5 | 16.13 | 3 | 9.68 | 14/01/2012 | 12/10/2012 |
| | OxH37 | 149 | 1.286 | 1.301 | 1.14 | 4 | 2.68 | 2 | 1.34 | 31/08/2006 | 12/10/2012 |
| | OxH55 | 38 | 1.282 | 1.283 | 0.11 | 0 | 0.00 | 0 | 0.00 | 14/01/2012 | 12/10/2012 |
| | OxI23 | 169 | 1.844 | 1.837 | -0.39 | 2 | 1.18 | 1 | 0.59 | 28/09/2005 | 12/10/2012 |
| | OxI40 | 167 | 1.857 | 1.841 | -0.88 | 22 | 13.17 | 8 | 4.79 | 31/08/2006 | 12/10/2012 |
| | OxJ64 | 111 | 2.366 | 2.492 | 5.32 | 67 | 60.36 | 2 | 1.80 | 6/01/2011 | 12/10/2012 |
| | OxL34 | 77 | 5.758 | 5.936 | 3.09 | 8 | 10.39 | 4 | 5.19 | 9/03/2011 | 12/10/2012 |
| | S3 | 19 | 0.939 | 0.926 | -1.41 | 0 | 0.00 | 0 | 0.00 | 21/07/2012 | 12/10/2012 |
| | S4 | 95 | 2.220 | 2.250 | 1.37 | 3 | 3.16 | 0 | 0.00 | 20/07/2012 | 12/10/2012 |
| | SE19 | 49 | 0.583 | 0.594 | 1.90 | 4 | 8.16 | 0 | 0.00 | 14/09/2006 | 12/10/2012 |
| | SF23 | 95 | 0.831 | 0.809 | -2.62 | 11 | 11.58 | 1 | 1.05 | 6/01/2011 | 12/10/2012 |
| | SF30 | 65 | 0.832 | 0.815 | -2.07 | 4 | 6.15 | 0 | 0.00 | 20/07/2012 | 12/10/2012 |
| | SG14 | 149 | 0.989 | 1.001 | 1.25 | 5 | 3.36 | 2 | 1.34 | 19/07/2012 | 11/10/2012 |
| | SG31 | 135 | 0.996 | 0.986 | -0.96 | 13 | 9.63 | 2 | 1.48 | 6/01/2011 | 12/10/2012 |
| | SH35 | 93 | 1.323 | 1.309 | -1.02 | 1 | 1.08 | 1 | 1.08 | 6/01/2011 | 12/10/2012 |
| | SJ22 | 123 | 2.604 | 2.577 | -1.04 | 22 | 17.89 | 4 | 3.25 | 31/01/2011 | 12/10/2012 |
| | SJ39 | 44 | 2.641 | 2.596 | -1.71 | 0 | 0.00 | 0 | 0.00 | 20/07/2012 | 12/10/2012 |
| | SK21 | 137 | 4.048 | 3.955 | -2.31 | 30 | 21.90 | 8 | 5.84 | 14/09/2006 | 12/10/2012 |
| | SL20 | 51 | 5.911 | 5.888 | -0.38 | 2 | 3.92 | 0 | 0.00 | 31/08/2006 | 12/10/2012 |
| | SL51 | 25 | 5.909 | 5.886 | -0.38 | 0 | 0.00 | 0 | 0.00 | 22/07/2012 | 11/10/2012 |
| | SN16 | 103 | 8.367 | 8.360 | -0.08 | 16 | 15.53 | 3 | 2.91 | 19/07/2012 | 12/10/2012 |
| | SN38 | 65 | 8.573 | 8.515 | -0.68 | 10 | 15.38 | 0 | 0.00 | 20/07/2012 | 12/10/2012 |
| | ST14_6368 | 44 | 0.410 | 0.417 | 1.61 | 0 | 0.00 | 0 | 0.00 | 1/07/2012 | 12/10/2012 |
| **ALS** | AUOE_2 | 44 | 0.615 | 0.605 | -1.56 | 0 | 0.00 | 0 | 0.00 | 19/07/2012 | 12/10/2012 |

| LABORATORY | STD ID | NO. | EXPECTED VALUE (Au g/t) | ACTUAL MEAN (Au g/t) | BIAS (%) | NO. SAMPLES OUTSIDE 2SD | % OUTSIDE 2SD | NO. SAMPLES OUTSIDE 3SD | % OUTSIDE 3SD | DATE FROM | DATE TO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | AUSK_1 | 75 | 3.680 | 3.709 | 0.80 | 19 | 25.33 | 12 | 16.00 | 22/10/2005 | 12/10/2012 |
| | OxE42 | 105 | 0.610 | 0.603 | -1.16 | 1 | 0.95 | 0 | 0.00 | 28/09/2006 | 12/10/2012 |
| | OxH37 | 108 | 1.286 | 1.269 | -1.30 | 5 | 4.63 | 0 | 0.00 | 28/09/2006 | 12/10/2012 |
| | OxI23 | 107 | 1.844 | 1.838 | -0.31 | 5 | 4.67 | 1 | 0.93 | 17/06/2006 | 12/10/2012 |
| | OxJ64 | 82 | 2.366 | 2.378 | 0.52 | 12 | 14.63 | 0 | 0.00 | 30/10/2010 | 12/10/2012 |
| | OxL34 | 47 | 5.758 | 5.781 | 0.40 | 3 | 6.38 | 0 | 0.00 | 19/07/2012 | 12/10/2012 |
| | SE19 | 103 | 0.583 | 0.573 | -1.75 | 12 | 11.65 | 9 | 8.74 | 7/10/2006 | 11/10/2012 |
| | SF23 | 20 | 0.831 | 0.828 | -0.36 | 5 | 25.00 | 2 | 10.00 | 19/07/2012 | 11/10/2012 |
| | SG31 | 25 | 0.996 | 0.991 | -0.52 | 2 | 8.00 | 1 | 4.00 | 19/07/2012 | 12/10/2012 |
| | SH24 | 102 | 1.326 | 1.300 | -1.94 | 2 | 1.96 | 0 | 0.00 | 30/10/2010 | 12/10/2012 |
| | SH35 | 38 | 1.323 | 1.306 | -1.28 | 0 | 0.00 | 0 | 0.00 | 20/11/2010 | 12/10/2012 |
| | SJ22 | 28 | 2.604 | 2.575 | -1.10 | 5 | 17.86 | 0 | 0.00 | 19/07/2012 | 12/10/2012 |
| | SJ39 | 104 | 2.641 | 2.609 | -1.22 | 5 | 4.81 | 3 | 2.88 | 30/10/2010 | 12/10/2012 |
| | SK21 | 16 | 4.048 | 3.976 | -1.77 | 2 | 12.50 | 1 | 6.25 | 28/09/2006 | 11/10/2012 |
| | SL20 | 48 | 5.911 | 5.750 | -2.72 | 6 | 12.50 | 4 | 8.33 | 30/10/2010 | 11/10/2012 |

*Table 11-3: Summary of Blank performance by laboratory and standard – 2005-2012*

| LABORATORY | STD ID | NO. | EXPECTED VALUE (Au g/t) | ACTUAL MEAN (Au g/t) | BIAS (%) | NO. SAMPLES OUTSIDE 2SD | % OUTSIDE 2SD | NO. SAMPLES OUTSIDE 3SD | % OUTSIDE 3SD | DATE FROM | DATE TO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **SGS Mwanza** | BBG | 3,520 | 0.010 | 0.007 | -33.04 | 10 | 0.28 | 2 | 0.06 | 10/09/2005 | 12/10/2012 |
| | IN-BLK | 312 | 0.010 | 0.007 | -26.44 | 12 | 3.85 | 12 | 3.85 | 13/07/2009 | 12/10/2012 |
| **ALS** | BBG | 1,220 | 0.010 | 0.006 | -37.05 | 3 | 0.25 | 2 | 0.16 | 22/10/2005 | 12/10/2012 |
| **Intertek Perth** | NYZB1 | 74 | 0.010 | 0.005 | -53.38 | 2 | 2.70 | 2 | 2.70 | 12/10/2016 | 15/04/2017 |

Review of the CRM performance shows that 107 of the 3,945 results (~2.7%) report outside of ± 3 standard deviations (±3SD), representing a relatively low failure rate (some of which may relate to unidentified sample swaps). Further, of these 107 results, 33 relate to one individual standard (AUSK-1), suggesting this standard may not be reliable. Other failures outside ±3SD typically relate to very low-grade standards (i.e. OxA45), or those standards with relatively limited total results.

Assessment of the blank performance shows the results are acceptable, and that contamination in the sample preparation process is minimal.

#### 11.1.2.3 DUPLICATES

Field duplicates for RC samples were generated from a riffle split of the bulk reject. Diamond core duplicates were submitted using the second half of the core from the original sample interval. The results for paired field duplicates were assessed by producing a series of charts including scatter charts, relative difference graphs and quantile-quantile plots, split by analysis laboratory and duplicate type. A summary of the numbers and types of field duplicates are presented in Table 11-4, with summary performance statistics presented in Table 11-5. Charts for RC field duplicates are presented in Figure 11-9 and Figure 11-10 for ALS and SGS Mwanza respectively, with equivalent charts for the diamond core duplicates presented in Figure 11-11 and Figure 11-12.

***Table 11-4: Summary of field duplicates by laboratory and type – 2005-2012***

| LABORATORY | YEAR | DUPLICATE TYPE | | GRAND TOTAL |
|---|---|---|---|---|
| | | Half Core | RC | |
| ALS | 2005 | 112 | 60 | 172 |
| | 2006 | 55 | 125 | 180 |
| | 2010 | 224 | 241 | 465 |
| | 2011 | 109 | 438 | 547 |
| SGS Mwanza | 1990 | | 10 | 10 |
| | 2005 | 54 | 722 | 776 |
| | 2006 | 558 | 541 | 1,099 |
| | 2009 | 62 | 281 | 343 |
| | 2011 | 812 | 1,146 | 1,958 |
| | 2012 | 358 | 403 | 761 |
| **Grand Total** | | **2,344** | **3,341** | **6,311** |

***Table 11-5: Field duplicates summary performance by laboratory and type – 2005-2012***

| LABORATORY | SAMPLE TYPE | NUMBER | ORIGINAL MEAN (Au g/t) | DUPLICATE MEAN (Au g/t) | AVERAGE DIFF. | AVERAGE RMPD |
|---|---|---|---|---|---|---|
| ALS | RC Riffle | 857 | 0.119 | 0.141 | 17.9% | 1.7% |
| | Half Core | 500 | 0.525 | 0.563 | 7.3% | 1.7% |
| SGS Mwanza | RC Riffle | 2,484 | 0.217 | 0.211 | -2.6% | 0.7% |
| | Half Core | 1,843 | 0.599 | 0.628 | 4.7% | -2.0% |

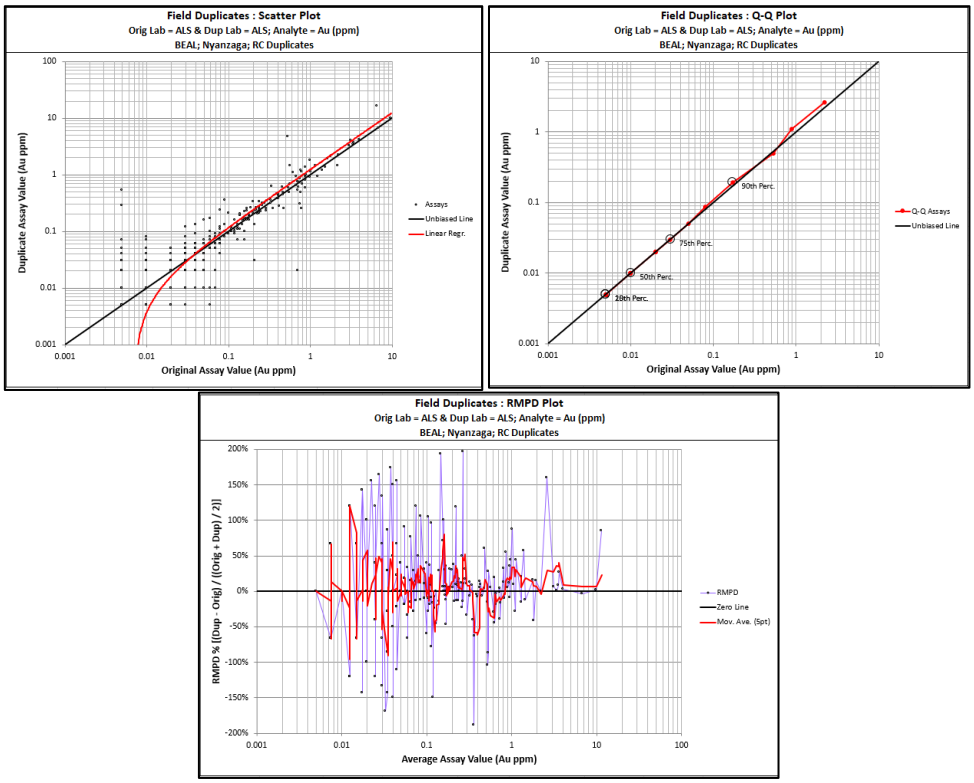



*Figure 11-9: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) RC samples – ALS (Source: Perseus, 2025)*

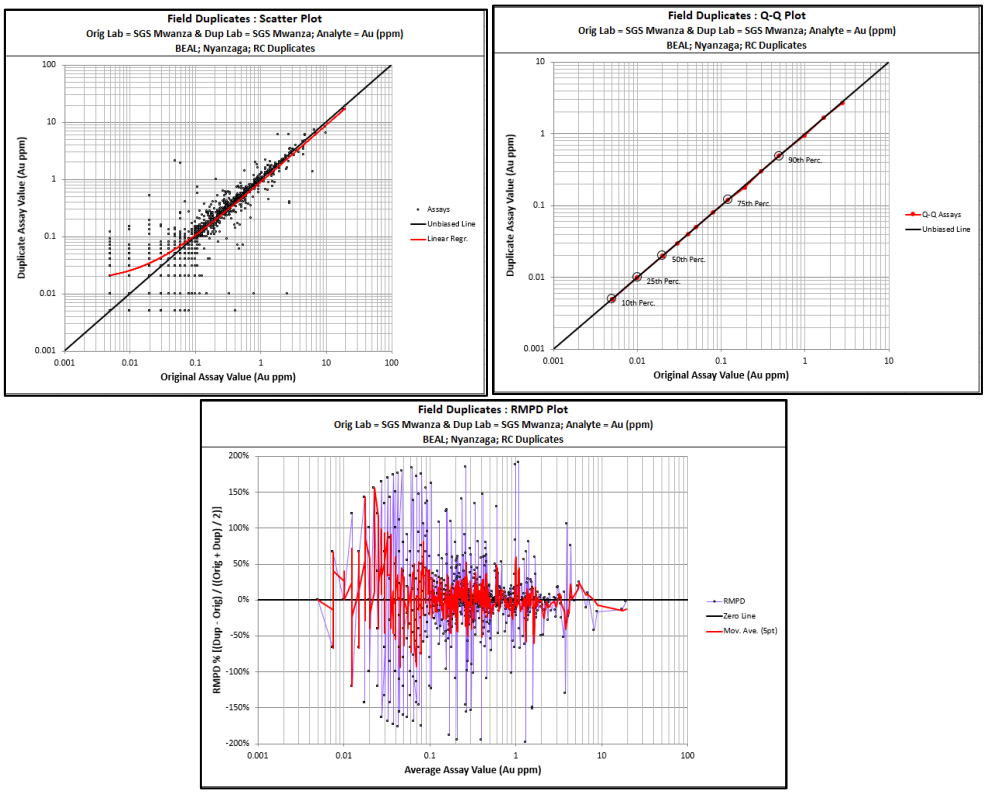



*Figure 11-10: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) RC samples – SGS Mwanza (Source: Perseus, 2025)*

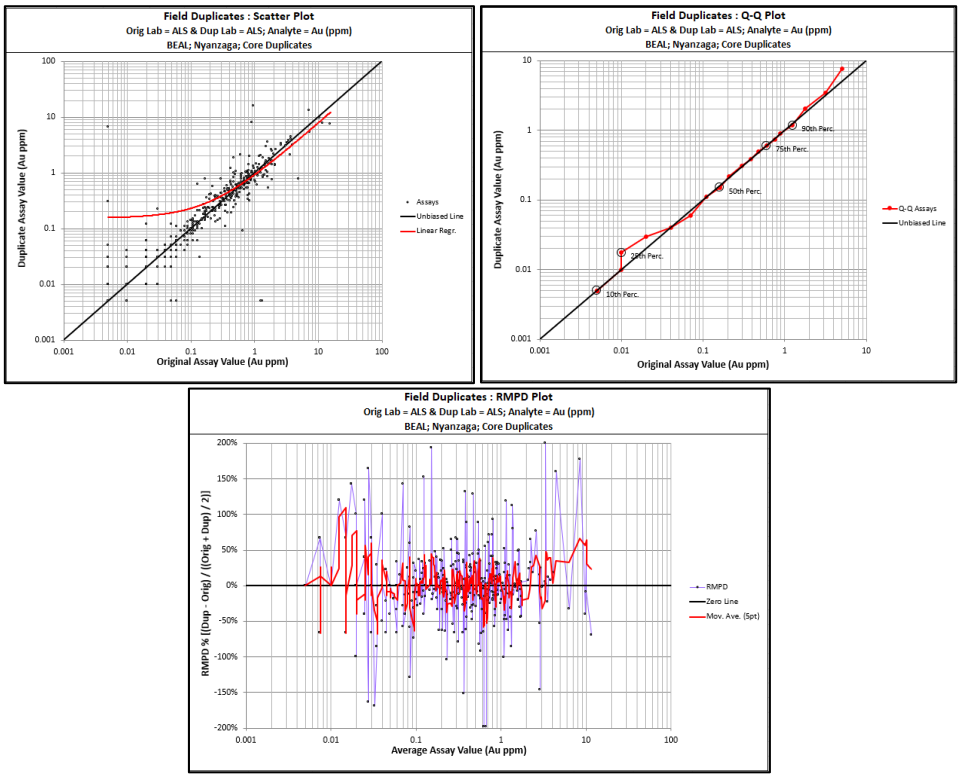



*Figure 11-11: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) DD half core samples – ALS (Source: Perseus, 2025)*

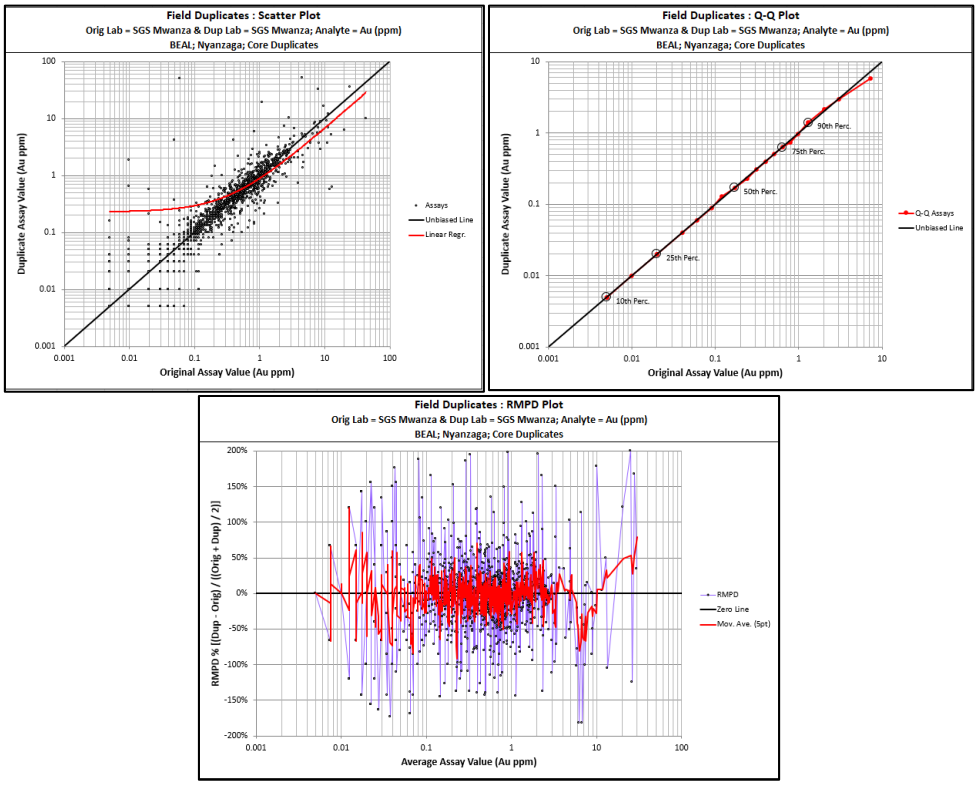



*Figure 11-12: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) DD core samples – SGS Mwanza (Source: Perseus, 2025)*

Review of the field duplicate data shows a wider spread of results for the half core duplicates as compared to the RC duplicates. This is a result of the half core sample not representing a true duplicate, but instead a second sample (being collected from the other half of the core). This spread of results between primary and duplicate sample therefore includes the impacts of the nuggety nature of mineralisation, rather than a true measure of the overall sampling and analytical variability, including the inherent variability of the deposit, all steps in the sampling and preparation of the duplicates, and the analytical precision.

In the opinion of the QP the overall performance of the field duplicates is not unexpected and are considered acceptable.

### 11.1.3 ASSAY METHODS

Both SGS and ALS utilised fire assay techniques with a 50 g charge for the gold analysis with analysis codes of Au-AA24 and FAA505 respectively. The 50 g charge is mixed with flux and fused in clay crucibles. Lead buttons produced after fusions are cupelled and then digested in aqua regia. The digest is analysed for gold using atomic adsorption spectroscopy (AAS). The value is recorded electronically to the laboratory database, exported in csv format and emailed to the client for upload, followed by PDF copies of assay certificates.

## 11.2 ORECORP DRILLING

### 11.2.1 SAMPLE PREPARATION AND ASSAY LABORATORIES

Sample preparation procedures for SGS and ALS are as outlined in Section 11.1.1. Additionally, Nesch Mintech were utilised by OreCorp for analytical services for gold. Nesch Mintech are certified to ISO/IEC 17025:2017 by the South African Development Community Accreditation Service (SADCAS). Sample preparation procedures are in line with the other analytical labs described in Section 11.1.1.

### 11.2.2 QAQC

#### 11.2.2.1 CRMs AND BLANKS

The CRMs used by SMCL were selected using a similar process as described in Section 11.1.2.2, with a spread of grade ranges employed. The CRMs were securely stored in the geology office to avoid potential loss and contamination. Batch failures for accuracy and bias were defined as any assay result for a standard that is more or less than the value plus or minus three standard deviations, or any two consecutive values that are more or less than two standard deviations on the same side of the mean (bias). The mean and standard deviations for each standard were derived from the Certificate of Analysis provided by the supplier and based on the results of round robin testing by a group of laboratories.

A summary of the CRM and blanks used in the 2016-2022 period is presented in Table 11-6. Summary performance statistics by standard are presented in Table 11-7, and results for the blanks presented in Table 11-8. Most CRMs have been submitted in the 2017 year, with a total of 36 different CRMs and blanks used in this period. This results in relatively low numbers of results per CRM, limiting the effectiveness of the control chart assessments. Example charts for the more significant results, separated by analysis laboratory, are presented in Figure 11-13 to Figure 11-15.

***Table 11-6: Number of CRM and blank analysis – 2016 - 2022***

| STD ID | YEAR | | | | GRAND TOTAL |
|---|---|---|---|---|---|
| | 2016 | 2017 | 2021 | 2022 | |
| AMIS0605 | - | - | 4 | 20 | 24 |
| AMIS0720 | - | - | 1 | 26 | 27 |
| AMIS0724 | - | - | - | 22 | 22 |
| AUOE-2 | - | 58 | - | - | 58 |
| AUSK-1 | - | 59 | - | - | 59 |
| BBG | - | 1,184 | - | - | 1,184 |
| G312-7 | - | 69 | 97 | 44 | 210 |
| G313-4 | - | - | - | 52 | 52 |

| STD ID | YEAR | | | | GRAND TOTAL |
|---|---|---|---|---|---|
| | 2016 | 2017 | 2021 | 2022 | |
| G313-6 | 1 | 63 | 25 | - | 89 |
| G314-6 | - | - | 94 | 26 | 120 |
| G315-3 | - | 70 | 12 | - | 82 |
| G315-5 | - | - | - | 60 | 60 |
| G318-8 | - | - | - | 65 | 65 |
| G914-9 | 1 | 69 | 9 | - | 79 |
| G919-7 | - | - | 1 | 38 | 39 |
| G998-3 | - | - | 91 | - | 91 |
| GLG318-2 | - | - | 60 | 24 | 84 |
| HISILP1 | - | 12 | - | - | 12 |
| IN-BLANK | - | 22 | - | - | 22 |
| NYZB1 | 3 | 194 | 12 | - | 209 |
| NYZB2 | - | - | 225 | 230 | 455 |
| OREAS 15h | - | 10 | - | - | 10 |
| OREAS 18c | - | 15 | - | - | 15 |
| OREAS 45P | - | 17 | - | - | 17 |
| OREAS 50P | - | 10 | - | - | 10 |
| OREAS 62Pa | - | 16 | - | - | 16 |
| OxA45 | - | 13 | - | - | 13 |
| OxC44 | - | 17 | - | - | 17 |
| OxE42 | - | 21 | - | - | 21 |
| OxH37 | - | 23 | - | - | 23 |
| OxI23 | - | 106 | - | - | 106 |
| OxI40 | - | 30 | - | - | 30 |
| OxJ64 | - | 24 | - | - | 24 |
| S4 | - | 33 | - | - | 33 |
| SE19 | - | 24 | - | - | 24 |
| SF23 | - | 35 | - | - | 35 |
| SF30 | - | 51 | - | - | 51 |
| SG14 | - | 44 | - | - | 44 |
| SG31 | - | 38 | - | - | 38 |
| SH24 | - | 26 | - | - | 26 |
| SH35 | - | 28 | - | - | 28 |
| SJ22 | - | 33 | - | - | 33 |
| SJ39 | - | 48 | - | - | 48 |
| SK21 | - | 18 | - | - | 18 |
| SL20 | - | 68 | - | - | 68 |
| SN16 | - | 63 | - | - | 63 |
| SN38 | - | 39 | - | - | 39 |
| **Grand Total** | **5** | **2,650** | **631** | **607** | **3,893** |

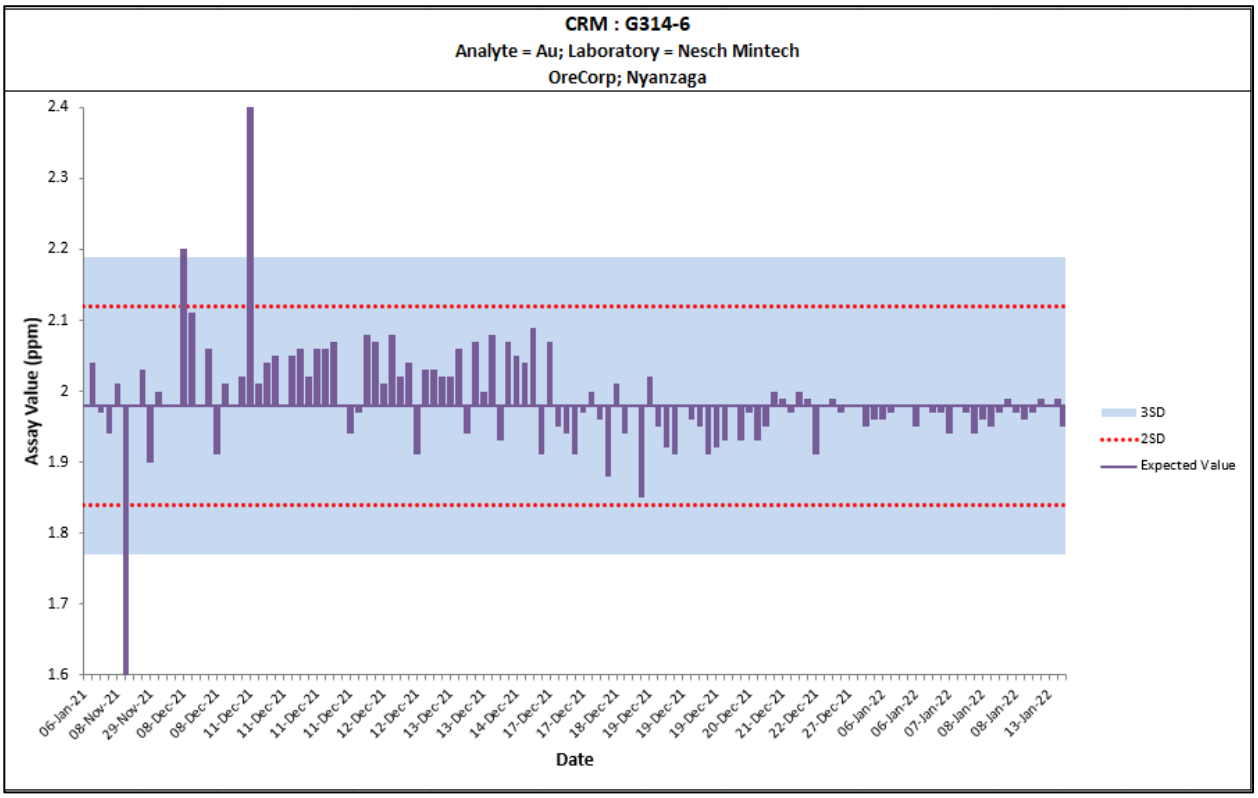



*Figure 11-13: Control chart – G314-6 – Nesch Mintech (Source: Perseus, 2025)*

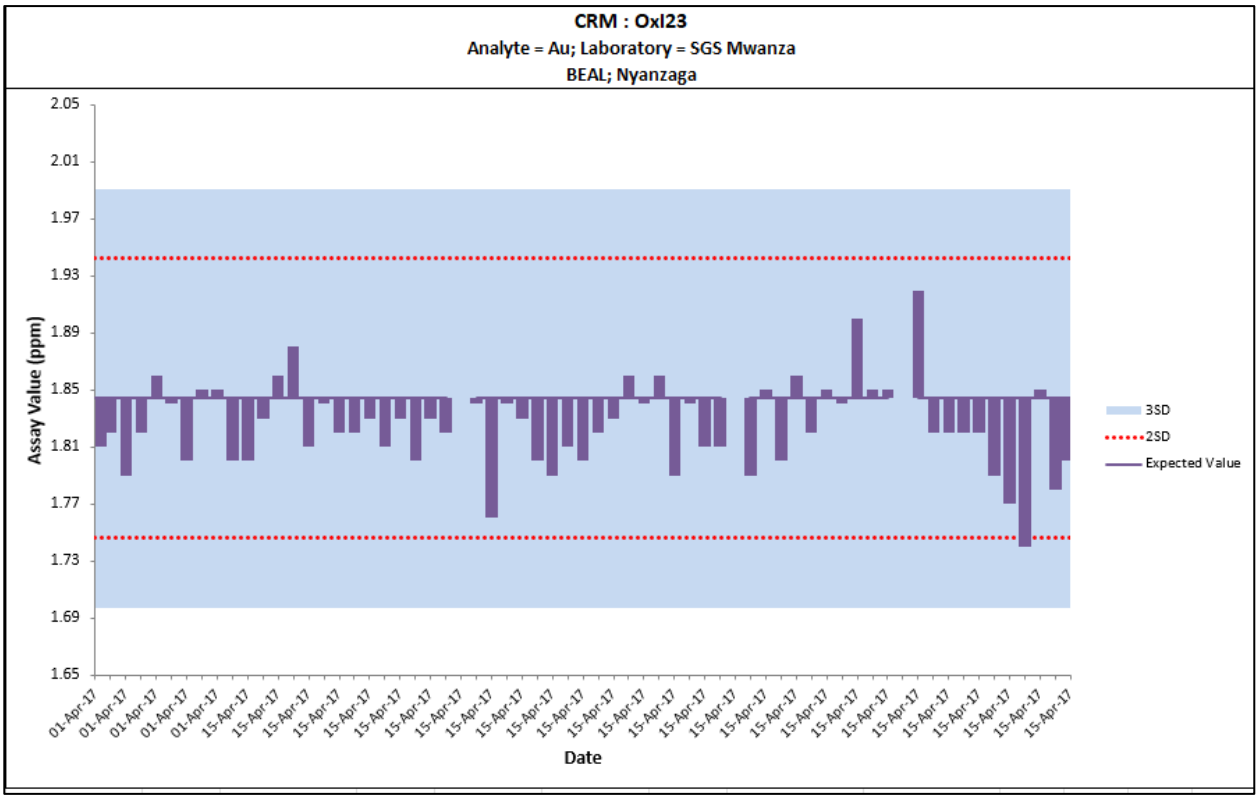



*Figure 11-14: Control chart – OxI23 – SGS Mwanza (Source: Perseus, 2025)*

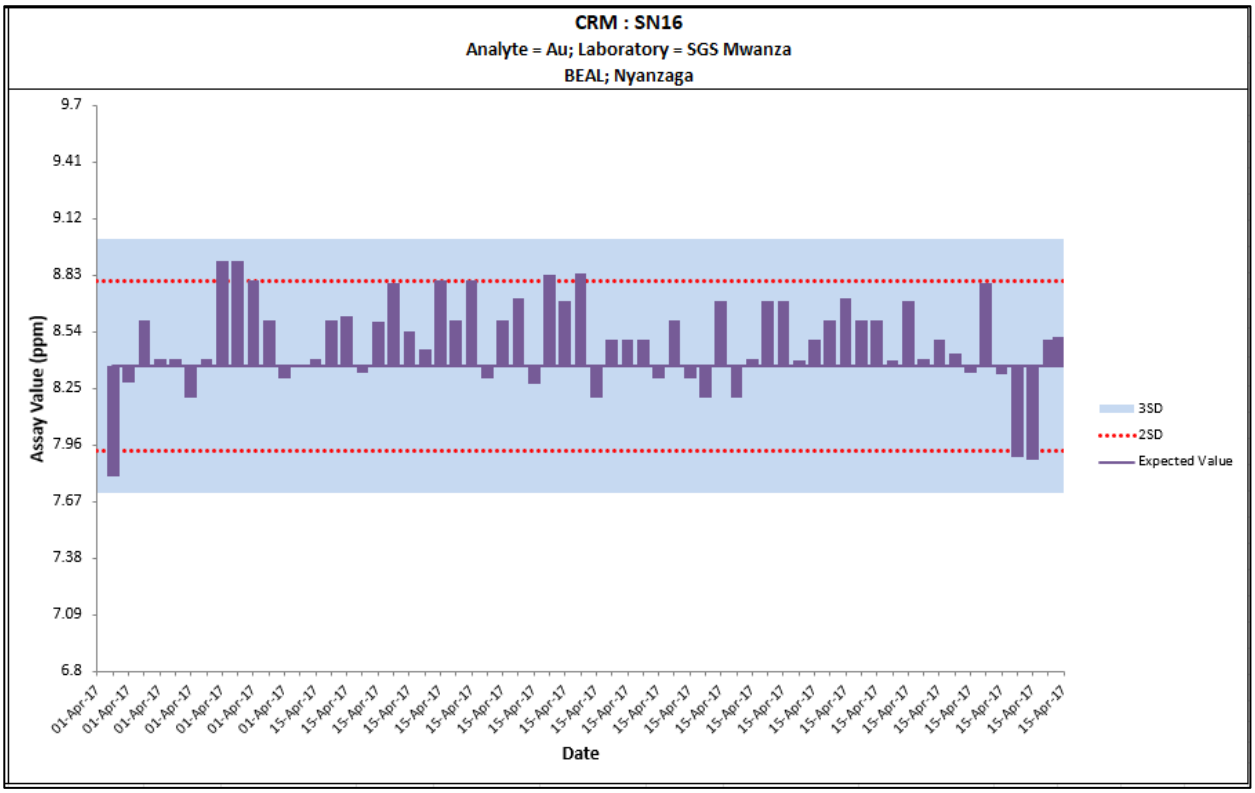



*Figure 11-15: Control chart – SN16 – SGS Mwanza (Source: Perseus, 2025)*

*Table 11-7: Summary of CRM performance by laboratory and standard – 2016-2023*

| LABORATORY | STD ID | NO. | EXPECTED VALUE (Au g/t) | ACTUAL MEAN (Au g/t) | BIAS (%) | NO. SAMPLES OUTSIDE 2SD | % OUTSIDE 2SD | NO. SAMPLES OUTSIDE 3SD | % OUTSIDE 3SD | DATE FROM | DATE TO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ALS | AUOE-2 | 18 | 0.61 | 0.60 | -1.96 | 0 | 0.00 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | AUSK-1 | 13 | 3.68 | 3.69 | 0.15 | 1 | 7.69 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | OxE42 | 10 | 0.61 | 0.62 | 1.15 | 1 | 10.00 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | OxH37 | 11 | 1.29 | 1.25 | -2.45 | 2 | 18.18 | 2 | 18.18 | 1/04/17 | 15/04/17 |
| | OxI23 | 40 | 1.84 | 1.84 | -0.28 | 0 | 0.00 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | OxJ64 | 12 | 2.37 | 2.39 | 1.01 | 2 | 16.67 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SE19 | 18 | 0.58 | 0.58 | 0.06 | 0 | 0.00 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SF23 | 20 | 0.83 | 0.83 | -0.36 | 5 | 25.00 | 2 | 10.00 | 19/07/12 | 11/10/12 |
| | SH24 | 24 | 1.33 | 1.31 | -1.33 | 3 | 12.50 | 3 | 12.50 | 1/04/17 | 15/04/17 |
| | SJ39 | 29 | 2.64 | 2.64 | 0.01 | 1 | 3.45 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SK21 | 10 | 4.05 | 4.47 | 10.50 | 7 | 70.00 | 7 | 70.00 | 15/04/17 | 15/04/17 |
| | SL20 | 13 | 5.91 | 5.89 | -0.43 | 1 | 7.69 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| Intertek Perth | G312-7 | 36 | 0.22 | 0.25 | 15.28 | 8 | 22.22 | 3 | 8.33 | 20/01/17 | 15/04/17 |
| | G313-6 | 22 | 4.94 | 4.73 | -4.16 | 1 | 4.55 | 1 | 4.55 | 12/10/16 | 1/04/17 |
| | G315-3 | 31 | 1.97 | 1.93 | -1.83 | 4 | 12.90 | 1 | 3.23 | 17/01/17 | 15/04/17 |
| | G914-9 | 23 | 16.77 | 16.58 | -1.14 | 3 | 13.04 | 1 | 4.35 | 12/10/16 | 15/04/17 |
| Nesch Mintech | AMIS0605 | 24 | 0.78 | 0.79 | 1.39 | 0 | 0.00 | 0 | 0.00 | 8/01/21 | 13/01/22 |
| | AMIS0720 | 27 | 1.19 | 1.18 | -1.03 | 0 | 0.00 | 0 | 0.00 | 14/01/21 | 19/01/22 |
| | AMIS0724 | 22 | 2.38 | 2.35 | -1.20 | 0 | 0.00 | 0 | 0.00 | 14/01/22 | 22/03/22 |
| | G312-7 | 140 | 0.22 | 0.16 | -26.62 | 75 | 53.57 | 72 | 51.43 | 6/01/21 | 24/08/22 |
| | G313-4 | 52 | 2.00 | 1.99 | -0.67 | 0 | 0.00 | 0 | 0.00 | 6/01/22 | 26/08/22 |
| | G313-6 | 23 | 4.94 | 5.16 | 4.44 | 7 | 30.43 | 4 | 17.39 | 15/09/21 | 20/12/21 |
| | G314-6 | 119 | 1.98 | 2.00 | 0.87 | 3 | 2.52 | 3 | 2.52 | 6/01/21 | 13/01/22 |
| | G315-5 | 61 | 0.10 | 0.10 | -4.10 | 0 | 0.00 | 0 | 0.00 | 6/01/22 | 14/04/23 |
| | G318-8 | 65 | 0.79 | 0.78 | -0.80 | 0 | 0.00 | 0 | 0.00 | 11/07/22 | 15/09/22 |
| | G919-7 | 39 | 4.96 | 4.96 | -0.08 | 0 | 0.00 | 0 | 0.00 | 27/12/21 | 26/08/22 |
| | G998-3 | 91 | 0.81 | 0.80 | -1.72 | 3 | 3.30 | 0 | 0.00 | 12/11/21 | 20/12/21 |
| SGS Mwanza | AUOE-2 | 39 | 0.61 | 0.60 | -1.70 | 0 | 0.00 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | AUSK-1 | 46 | 3.68 | 3.72 | 1.05 | 12 | 26.09 | 5 | 10.87 | 1/04/17 | 15/04/17 |
| | G312-7 | 34 | 0.22 | 0.21 | -4.68 | 2 | 5.88 | 0 | 0.00 | 23/02/17 | 15/09/21 |
| | G313-6 | 44 | 4.94 | 5.00 | 1.16 | 2 | 4.55 | 1 | 2.27 | 3/03/17 | 15/09/21 |
| | G315-3 | 39 | 1.97 | 1.95 | -0.99 | 1 | 2.56 | 1 | 2.56 | 3/03/17 | 1/05/17 |
| | G914-9 | 48 | 16.77 | 16.81 | 0.21 | 1 | 2.08 | 1 | 2.08 | 24/02/17 | 15/09/21 |
| | HISLIP1 | 12 | 12.05 | 12.17 | 0.97 | 1 | 8.33 | 1 | 8.33 | 1/04/17 | 15/04/17 |

| LABORATORY | STD ID | NO. | EXPECTED VALUE (Au g/t) | ACTUAL MEAN (Au g/t) | BIAS (%) | NO. SAMPLES OUTSIDE 2SD | % OUTSIDE 2SD | NO. SAMPLES OUTSIDE 3SD | % OUTSIDE 3SD | DATE FROM | DATE TO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | OxA45 | 11 | 0.08 | 0.11 | 35.64 | 7 | 63.64 | 4 | 36.36 | 1/04/17 | 15/04/17 |
| | OxC44 | 16 | 0.20 | 0.19 | -4.19 | 3 | 18.75 | 1 | 6.25 | 1/04/17 | 15/04/17 |
| | OxE42 | 10 | 0.61 | 0.60 | -1.64 | 0 | 0.00 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | OxF65 | 33 | 0.81 | 0.98 | 21.21 | 6 | 18.18 | 4 | 12.12 | 14/01/12 | 15/04/17 |
| | OxI23 | 62 | 1.84 | 1.82 | -1.08 | 1 | 1.61 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | OxI40 | 20 | 1.86 | 1.87 | 0.57 | 5 | 25.00 | 2 | 10.00 | 1/04/17 | 15/04/17 |
| | OxJ64 | 10 | 2.37 | 2.48 | 4.82 | 5 | 50.00 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | S4 | 30 | 2.22 | 2.22 | -0.23 | 0 | 0.00 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SF23 | 32 | 0.83 | 0.81 | -2.94 | 6 | 18.75 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SF30 | 45 | 0.83 | 0.81 | -2.88 | 8 | 17.78 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SG14 | 42 | 0.99 | 0.99 | -0.09 | 1 | 2.38 | 1 | 2.38 | 1/04/17 | 15/04/17 |
| | SG31 | 26 | 1.00 | 0.99 | -0.68 | 1 | 3.85 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SH35 | 16 | 1.32 | 1.30 | -1.69 | 1 | 6.25 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SJ22 | 31 | 2.60 | 2.58 | -0.90 | 3 | 9.68 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SJ39 | 14 | 2.64 | 2.63 | -0.58 | 2 | 14.29 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SL20 | 53 | 5.91 | 5.91 | -0.01 | 0 | 0.00 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SN16 | 62 | 8.37 | 8.49 | 1.50 | 7 | 11.29 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | SN38 | 39 | 8.57 | 8.53 | -0.47 | 2 | 5.13 | 0 | 0.00 | 1/04/17 | 15/04/17 |

*Table 11-8: Summary of Blank performance by laboratory and standard – 2016-2023*

| LABORATORY | STD ID | NO. | EXPECTED VALUE (Au g/t) | ACTUAL MEAN (Au g/t) | BIAS (%) | NO. SAMPLES OUTSIDE 2SD | % OUTSIDE 2SD | NO. SAMPLES OUTSIDE 3SD | % OUTSIDE 3SD | DATE FROM | DATE TO |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **ALS** | BBG | 243 | 0.01 | 0.01 | -32.30 | 3 | 1.23 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| **Intertek Perth** | NYZB1 | 74 | 0.01 | 0.00 | -53.38 | 2 | 2.70 | 2 | 2.70 | 12/10/16 | 15/04/17 |
| | GLG318-2 | 84 | 0.003 | 0.01 | 356.94 | 1 | 1.19 | 1 | 1.19 | 6/01/21 | 10/07/22 |
| **Nesch Mintech** | NYZB2 | 454 | 0.01 | 0.00 | -54.30 | 0 | 0.00 | 0 | 0.00 | 6/01/21 | 15/09/22 |
| **SGS Mwanza** | BBG | 895 | 0.01 | 0.01 | -30.61 | 4 | 0.45 | 0 | 0.00 | 1/04/17 | 15/04/17 |
| | IN-BLK | 22 | 0.01 | 0.01 | -29.55 | 0 | 0.00 | 0 | 0.00 | 15/04/17 | 15/04/17 |
| | NYZB1 | 123 | 0.01 | 0.04 | 332.52 | 22 | 17.89 | 22 | 17.89 | 23/02/17 | 1/05/17 |

Review of the CRM performance shows a similar failure rate for values outside of ±2SD (204 of 1,807, or ~11.3%) as for the earlier phase of drilling, however an increased number of samples (120 or ~6.6%) outside of ±3SD. Analysis of these results show that 72 of these failures relate to CRM G312-7 reported from Nesch Mintech. This suggests that this laboratory potentially had some issue with precision at low grades, with a negative bias reported against the expected value. This effectively reflects a conservative result, and is unlikely to be material to the ultimate reliability of the assay data.

The performance of NYZB1 reported from SGS Mwanza shows a number of failures. Results from other blanks processed at this laboratory are acceptable, suggesting the general performance of the laboratory in managing contamination is acceptable.

#### 11.2.2.2 DUPLICATES

Field duplicates for RC samples were generated from a riffle split of the bulk reject. Diamond core duplicates were submitted using either half or quarter core, or from samples from the coarse rejects following crushing. The results for paired field duplicates were assessed by producing a series of charts including scatter charts, relative difference graphs and quantile-quantile plots, split by analysis laboratory and duplicate type. A summary of the numbers and types of field duplicates are presented in Table 11-9, with summary performance statistics presented in Table 11-10. Charts for RC field duplicates are presented in Figure 11-16, and for diamond core in Figure 11-17.

***Table 11-9: Summary of field duplicates by laboratory and standard – 2016-2023***

| LABORATORY | YEAR | DUPLICATE TYPE | | GRAND TOTAL |
|---|---|---|---|---|
| | | RC | DD Core | |
| Nesch Mintech | 2021 | 380 | - | 380 |
| | 2022 | 221 | 134 | 355 |
| **Grand Total** | | **601** | **134** | **735** |

***Table 11-10: Field duplicates summary performance by laboratory and type – 2016-2023***

| LABORATORY | SAMPLE TYPE | NUMBER | ORIGINAL MEAN (Au g/t) | DUPLICATE MEAN (Au g/t) | AVERAGE DIFF. | AVERAGE RMPD |
|---|---|---|---|---|---|---|
| Nesch Mintech | RC Riffle | 601 | 0.330 | 0.333 | 0.7% | -1.0% |
| | DD Core | 134 | 0.317 | 0.314 | -0.8% | -1.0% |

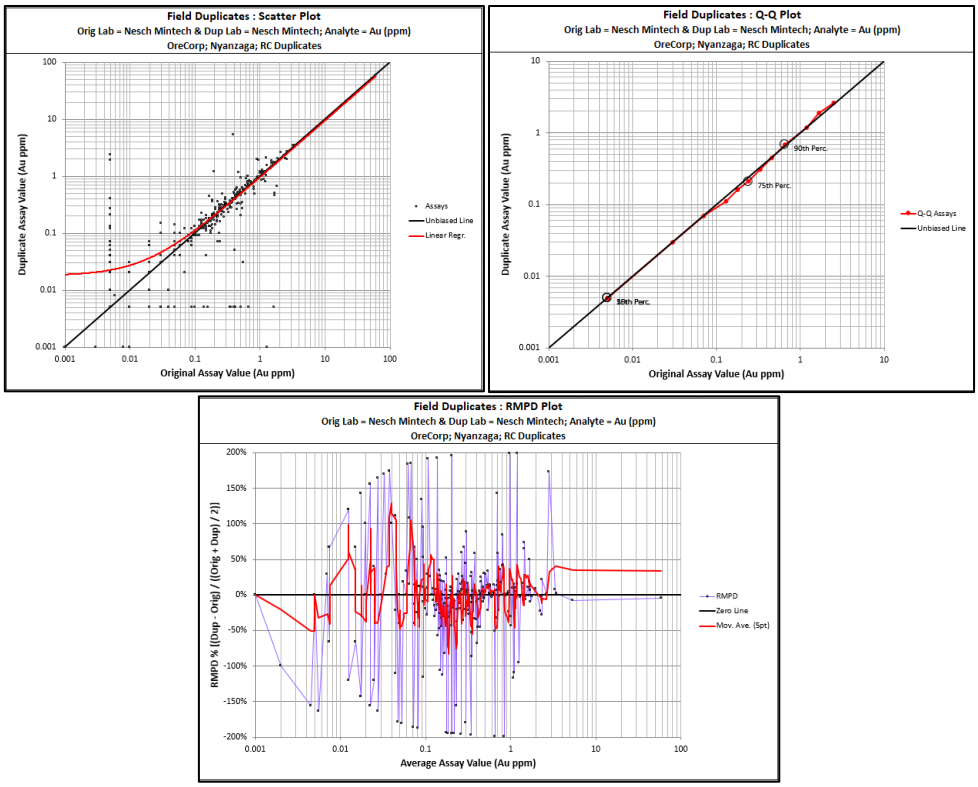



*Figure 11-16: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) RC samples – Nesch Mintech (Source: Perseus, 2025)*

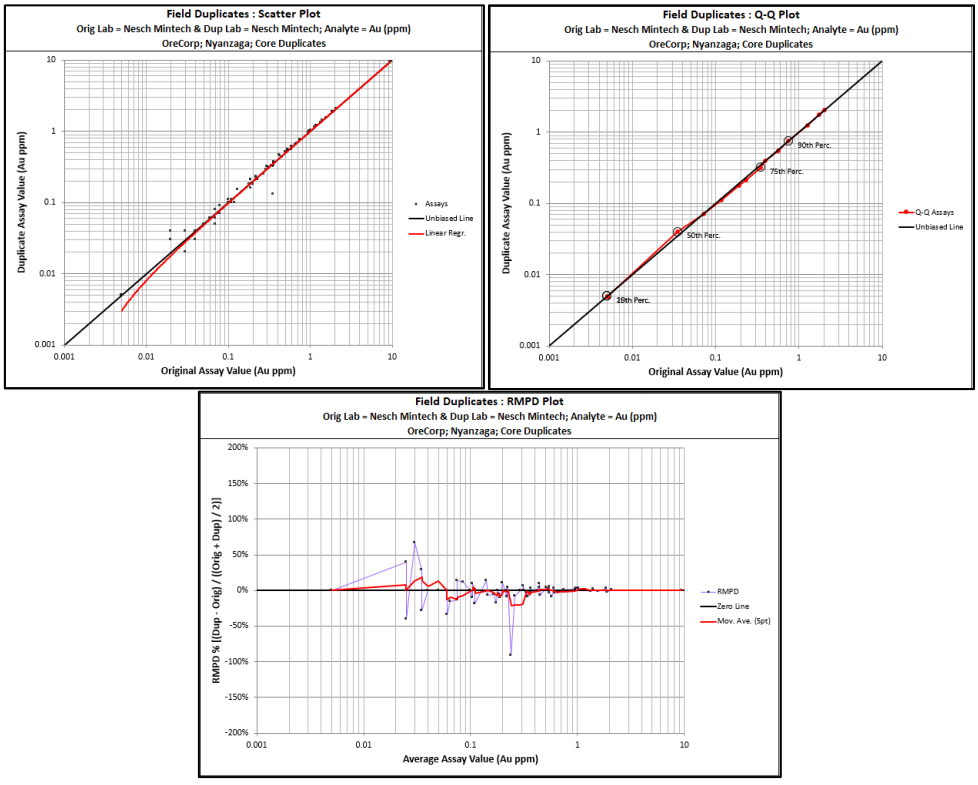



*Figure 11-17: Field duplicates scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) DD core samples – Nesch Mintech (Source: Perseus, 2025)*

### 11.2.2.3 UMPIRE ANALYSIS

As part of OreCorp's QAQC process, samples analysed at ALS were subsequently submitted to SGS for umpire analysis and comprised both RC and coarse reject diamond samples. Summary results for the umpire analysis are presented in Table 11-11, with comparison plots presented in Figure 11-18 and Figure 11-19 for RC and DD coarse reject samples respectively.

The coarse reject performance shows a good alignment between original and duplicate results, reflecting the relative homogenisation of the crushed core sample during analysis. The wider spread of results for the RC samples likely reflects underlying variability of the sample related to nugget effect.

***Table 11-11: Umpire analysis summary performance by laboratory and type – 2016-2023***

| ORIGINAL LAB | UMPIRE LAB | SAMPLE TYPE | NUMBER | ORIGINAL MEAN (Au g/t) | DUPLICATE MEAN (Au g/t) | AVERAGE DIFF. | AVERAGE RMPD |
|---|---|---|---|---|---|---|---|
| **ALS** | **SGS** | RC Riffle | 119 | 1.134 | 0.946 | -16.6% | -12.5% |
| | | Coarse Reject | 105 | 1.723 | 1.750 | 1.5% | 0.9% |

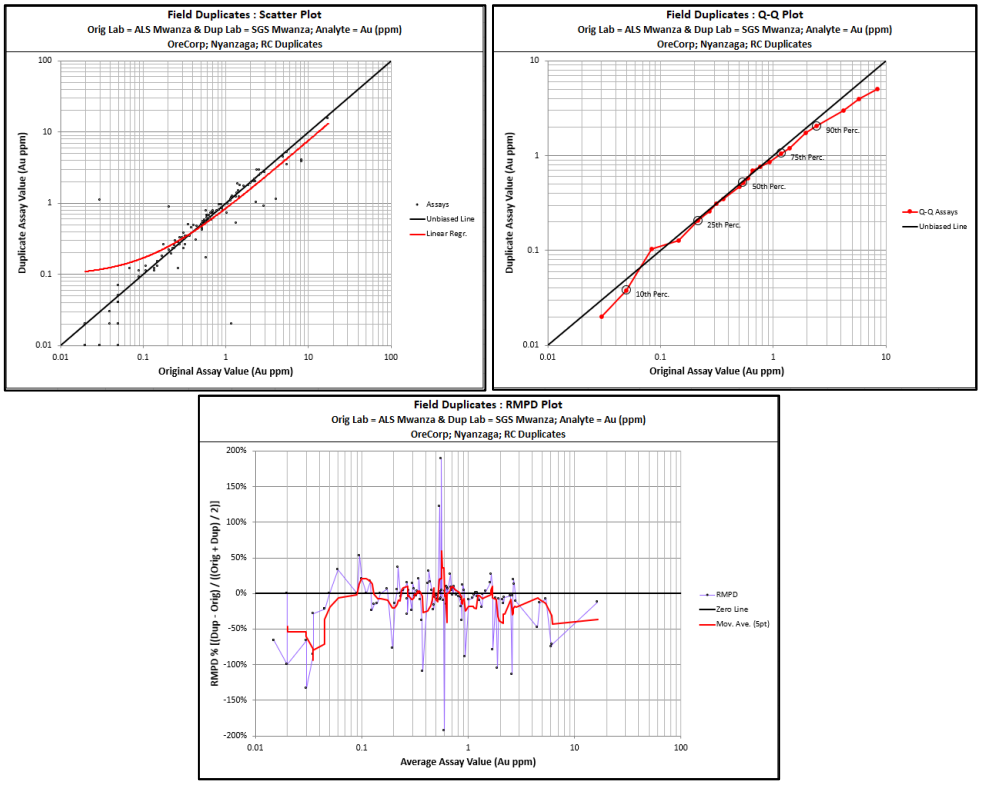



***Figure 11-18: Umpire analysis scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) RC samples – ALS vs. SGS (Source: Perseus, 2025)***

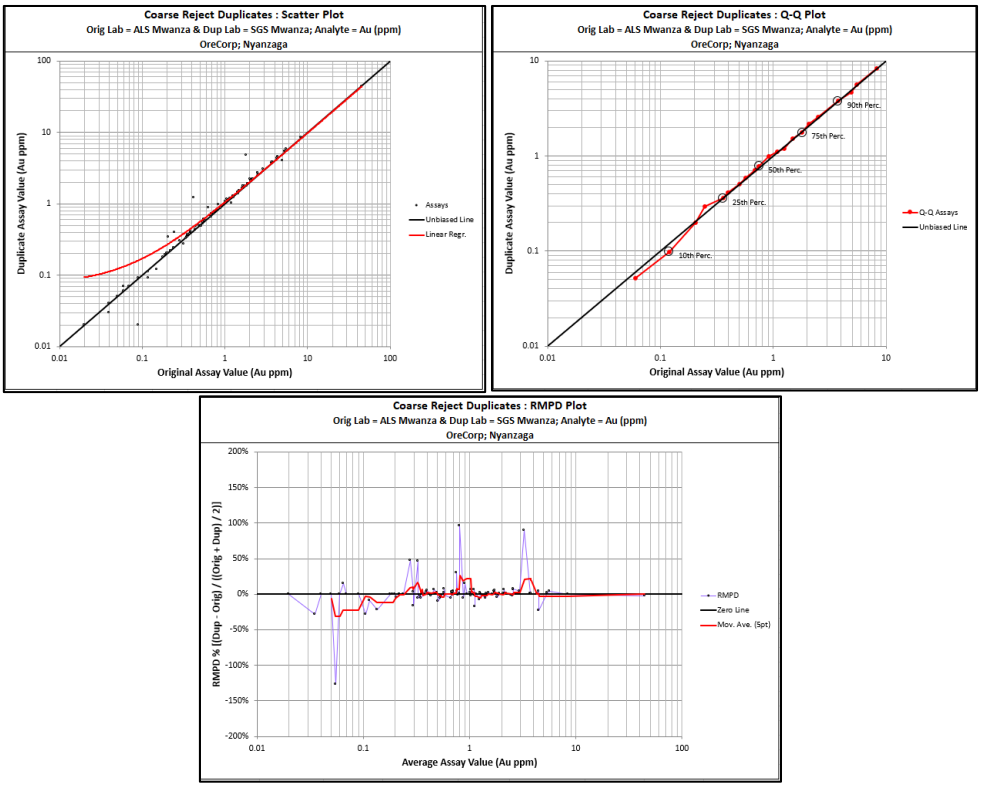



*Figure 11-19: Umpire analysis scatter (top left), quantile-quantile (top right), relative mean paired difference (bottom) DD coarse rejects – ALS vs. SGS (Source: Perseus, 2025)*

### 11.2.3 ASSAY METHODS

Assay methods employed for this phase of drilling are as outlined in Section 11.1.3.

## 11.3 CHAIN OF CUSTODY AND SECURITY

For drilling completed by companies prior to OreCorp, it is understood that all samples were removed from the field at the end of each day's work program and stored in a guarded sample farm before being dispatched to the laboratory in sealed and code locked containers.

Samples collected by OreCorp were also removed from the field at the end of each day's work program and stored in the sample farm. Under current Tanzanian laws, all samples intended for despatch need to be certified by government officials and transported in a closed and sealed truck. Following packaging, application is required to be made for a sample transport permit including truck registration number, transport route and destination laboratory. An associated chain of custody form is required to be completed outlining the total samples being transported, which is checked by the laboratory on receipt.

## 11.4 QAQC CONCLUSIONS

Perseus, as well as the principal laboratories that have been used for analytical services (SGS Mwanza, ALS Mwanza, and Nesch Mintech) have well established QAQC protocols along the entire sample chain. The protocols are considered in line with industry best practice.

Review of the QAQC data from the drilling at Nyanzaga demonstrates the protocols have been implemented and adhered to, and that any quality issue has been addressed in a timely manner.

It is the opinion of the QP that the sample preparation, security, analytical procedures, and drill assay data is therefore of sufficient quality to support reporting of Mineral Resources.

# 12. DATA VERIFICATION

## 12.1 SUMMARY

Verification checks undertaken by the QP to confirm the validity of the Nyanzaga drilling database compiled for the current study include the following:

- Checking for internal consistency between and within database tables.
- Comparison of assay values between nearby holes.
- Comparisons between assay results from different sampling phases.
- Comparison of assay entries with laboratory source files.
- Checks that surveyed locations of drill hole collars are within tolerance of proposed locations and locations recorded on field logging sheets.
- Sense checks of down-hole surveys.
- Checks for missing sample intervals, overlapping sample intervals, and duplicate sample numbers.
- Comparisons of gold assays to visually logged intervals of alteration and mineralisation.
- Visual comparisons, in cross-section and plan views, of gold grades and logged geology in neighbouring drill holes.

These checks were undertaken using the compiled acQuire database implemented by Perseus. The QP's database checks showed no significant inconsistencies. The available information indicates that the drilling database has been carefully compiled and validated, and in the QP's opinion forms an appropriately reliable basis for the resource estimation included in the Report.

## 12.2 PRE-2010

No information is available for the pre-2010 drilling.

## 12.3 ORECORP

For the data used in the 2017 MRE, OreCorp and CSA Global (CSA Global, 2017) completed validation checks on site by comparing information against manual paper logs, assay certificates and surface drillhole collar locations. In-house scripts were used during data loading to check the internal integrity of the stored drillhole data. No significant issues were identified.

The mineralisation is dominantly located in fresh rock, which has been drill tested by diamond core drilling. Recovery in the fresh rock is excellent and exceeds 99%. RC pre-collars drilled in the near surface weathered material encountered some areas of poor recovery; however, the impact on the 2017 MRE was considered insignificant.

No twinning of ABG drillholes was completed by OreCorp. Based on the quality of drill information available and the verification process completed, CSA Global (CSA Global, 2017) did not believe the drilling of twin holes was required to further validate the data used for the MRE. Furthermore, infill drilling adequately tested the geological and mineralisation models.

CSA Global (CSA Global, 2017) stated they were confident that the drillhole data and gold assay results used in the development of the 2017 MRE was of a high standard and suitable for the work completed and the results obtained.

Malcolm Titley, CSA Global Principal Consultant (Competent Person) visited the Project on three occasions: 13–15 November 2015, 26–29 January 2016 and 1–7 February 2017. The purpose of the site visits was to:

- Validate digital data against original hard copy logs.
- Review drill collars and surface geology on the site.
- Review diamond core intercepts.
- Review progress of the 2017 drilling and adjust the plan as required.
- Review the geological interpretation and ensure appropriate procedures and standards were in place to complete the MRE.

## 12.4 PERSEUS

Data verification activities completed by Perseus involved several stages:

- Field verification of accessible drill hole collars completed as part of earlier programs across both the Nyanzaga and Kilimani deposit areas.
- Review of representative drill holes through the modelled geological sequence and mineralised zones and confirmation against logs and assays results.
- Review of a range of assay certificates and against the records in the drill hole database to confirm the accurate import of results.

In addition to these checks, a series of key mineralised intervals across the Nyanzaga mineralisation were collected and submitted for verification analysis. In total 232 m of samples were flagged for submission, however only 139 m were recovered. The intervals unavailable for sampling related to either the RC component of drill holes (with the coarse rejects no longer available for sampling), or portions where the entire core has already been collected either as a field duplicate, or for metallurgical testing. Details of the intervals selected and samples recovered are presented in Table 12-1.

***Table 12-1: Samples selected for verification analysis***

| HOLE ID | YEAR | FROM | TO | INTERVAL (m) | SAMPLES SUBMITTED |
|---|---|---|---|---|---|
| INTDD002 | 2011 | 548 | 564 | 16 | 16 |
| NYZRC0612 | 2016 | 144 | 157 | 13 | - |
| NYZRC0617 | 2017 | 151 | 182 | 31 | - |
| NYZRCDD0018 | 2005 | 178 | 193 | 15 | 13 |
| NYZRCDD0053 | 2006/2012 | 440 | 450 | 10 | 10 |
| NYZRCDD0060 | 2006 | 484 | 505 | 21 | 21 |
| NYZRCDD0108 | 2006 | 330 | 340 | 10 | 10 |
| NYZRCDD0115 | 2006 | 184 | 194 | 10 | 10 |
| NYZRCDD0119 | 2006 | 351 | 376 | 25 | 18 |
| NYZRCDD0401 | 2011 | 498 | 512 | 14 | 14 |
| NYZRCDD0509 | 2011 | 613 | 636 | 23 | 17 |
| NYZRCDD0512 | 2011 | 523 | 534 | 11 | 10 |
| NYZRCDD0618 | 2017 | 316 | 333 | 17 | - |
| NYZRCDD0634 | 2017 | 305 | 321 | 16 | - |
| **Total** | | | | **232** | **139** |

The original results were reported from SGS Mwanza using either fire assay or screen fire methods, while the verification analysis was completed by MSALABS in Geita using CPA on 500 g charges. Results were compared via scatterplot which showed a poor correlation ($R^2$ ≈0.38) between the original and verification results (Figure 12-1).

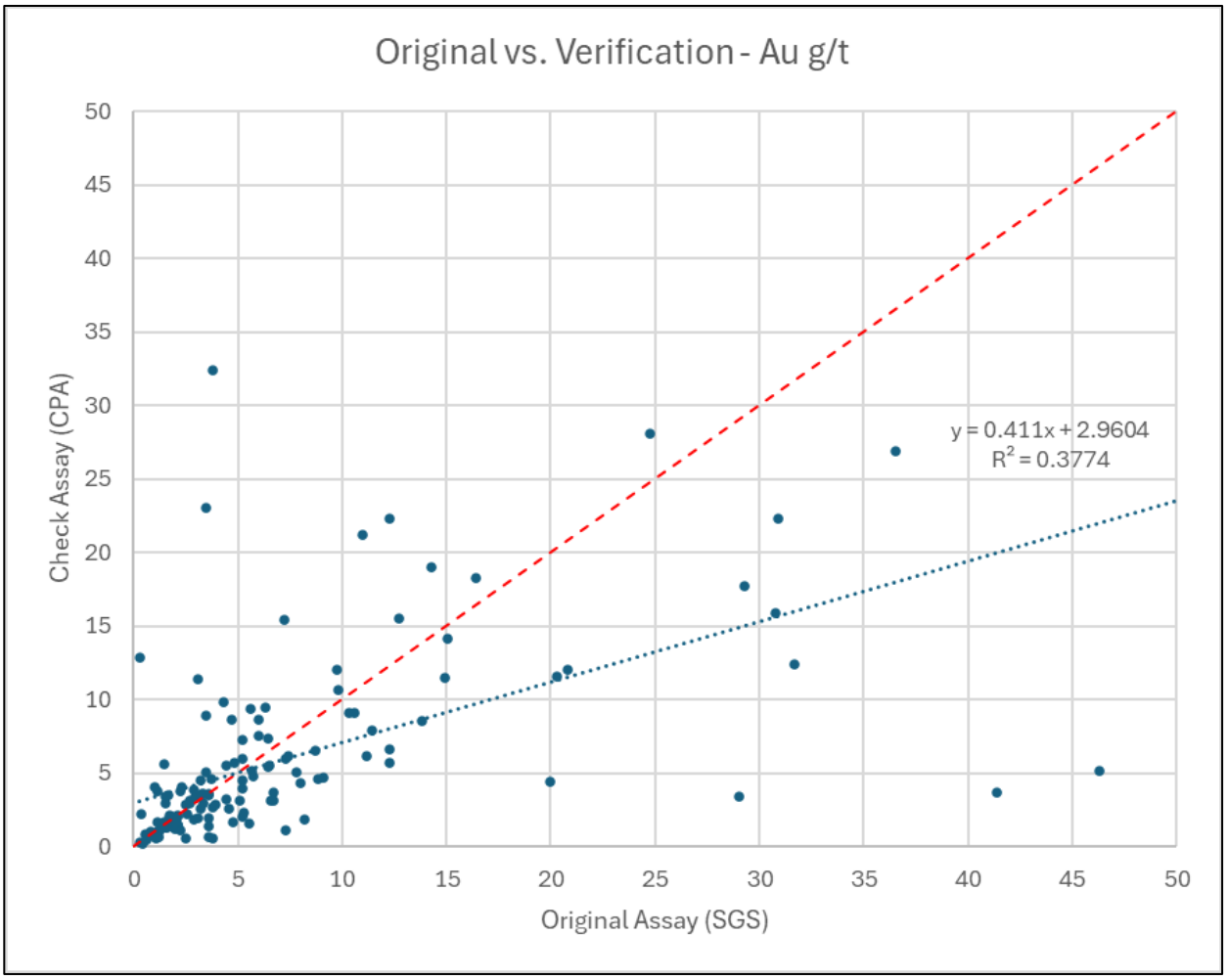



*Figure 12-1: Scatterplot of verification samples – Original (SGS) versus Check (MSA) (Source: Perseus, 2025)*

Given the verification samples were comprised of material from the remaining half core in the trays, there was a possibility that the wide spread of results observed between the original and verification analysis was due to variability between each half of the core (i.e., nugget effect) and not actually reflective of a potential issue in analytical quality.

To test this, the coarse crushed material analysed in the sample pots via CPA was submitted to SGS for fire assay and the results compared. The pulverisation of the 2 mm coarse crush material from the CPA process will result in improved homogeneity of the sample.

The SGS results were compared to the CPA analysis via scatterplot. The selection of a 50 g charge (compared to the nominal 500 g sample weight used for CPA) will likely still result in some individual samples reporting significantly different results. The chart showed a significant improvement in correlation between samples, although with a number of outliers present as expected (Figure 12-2).

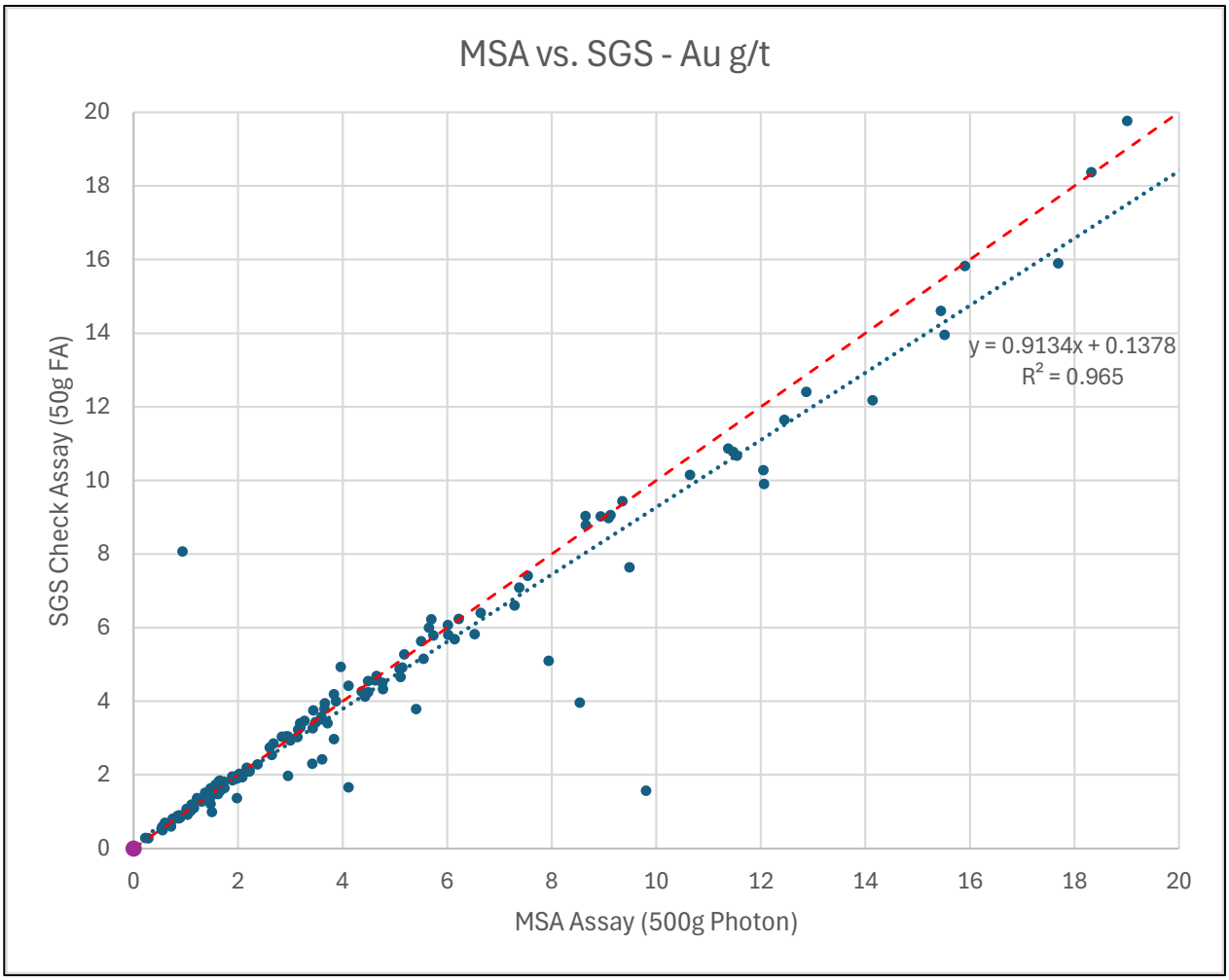



*Figure 12-2: Scatterplot of verification samples – MSALABS (CPA) versus SGS (FA) (Source: Perseus, 2025)*

# 13. MINERAL PROCESSING AND METALLURGICAL TESTING

This section of the report summarises metallurgical test work and predicted metallurgical performance of Nyanzaga Gold Project ores by ore type. Section 13.1 summarises historical metallurgical test work programs conducted before 2017. Section 13.2 summarises subsequent metallurgical test work programs conducted on the Nyanzaga deposit and Section 13.3 summarises the metallurgical test work program conducted on the Kilimani deposit. Section 13.4 presents and discusses raw water analyses for the Project. Section 13.5 summarises the predicted metallurgical performance for Nyanzaga Gold Project ores by ore type, based on both metallurgical test work and process modelling.

It is the opinion of the QP that metallurgical test work programs described in Section 13 are of sufficient scope and quality to support the production planning and the proposed process plant design described in Section 17.

## 13.1 HISTORICAL METALLURGICAL TEST WORK

The metallurgy of the Nyanzaga Gold Project was examined in six historical test work programs before 2017. These metallurgical investigations were commissioned by Barrick (Barrick Africa Corporation Limited, Barrick Exploration Africa Limited (BEAL), Barrick Gold of Australia Limited and African Barrick Gold plc) and conducted by AMMTEC Ltd (AMMTEC) in Perth, Australia from 2005 to 2008 (AMMTEC Ltd, 2005); (AMMTEC Ltd, 2006); (AMMTEC Ltd, 2007a); (AMMTEC Ltd, 2007b); (AMMTEC Ltd, 2008) and JKTech Pty Ltd (JKTech) in Brisbane, Australia in 2012 (JKTech Pty Ltd, 2012).

AMMTEC Ltd and JKTech Pty Ltd are commercial laboratories that are independent to Perseus.

These historical metallurgical test work programs focused on the Nyanzaga deposit and determined the following:

- Head assays and mineralogical examination indicated a relatively high degree of variability with regards to ore type and gold mineralisation.
- Enrichment of mercury was noted in multiple samples.
- The presence of fine/ultra fine gold occurrence was confirmed by diagnostic data.
- Variable concentrations of coarse, gravity recoverable gold were noted, suggesting that some gold may be spotty in nature. Coarse, gravity gold recovery ranged from 7.7% to 51.4%, where measured.
- The ore samples contained iron sulfides (pyrite, pyrrhotite) and iron oxides as their dominant mineral phases. Minor arsenopyrite was noted. Base metal sulfide content was relatively low.
- It was noted that gold particles were present mostly as native gold and electrum, with an occurrence of aurostibnite ($AuSb_2$) also noted.
- A single molybdenum enriched sample was tested for rougher flotation response in the presence of potassium amyl xanthate (PAX) and Polyfroth® W55. Molybdenum recovery to rougher concentrate was poor (17.3% to 21.2%). Variable recovery to rougher concentrate was noted for gold (58.7% to 81.1%) and sulfur (64.6% to 89.4%) across the tests.
- In direct cyanidation tests, gold extraction improved with increasing fineness of grind. Moderate variability was noted across ore samples at the same grind size ($P_{80}$ of 106 µm) with regards to gold extraction (76.2% to 96.8% at 48 h) and reagent consumption levels (0.24 to 1.54 kg/t for lime (60% CaO) and 0.15 to 1.28 kg/t for NaCN).
- Gold dissolution kinetics were rapid, with a significant amount of leaching completed within 8 h, and virtually all leaching completed within 24 h.
- Although low levels of organic carbon were detected in some samples, direct leach and carbon-in-leach test work achieved similar gold extraction results, indicating that the Nyanzaga ore samples tested were not preg-robbing or preg-borrowing. NaCN consumptions were higher for CIL cyanidation tests than direct cyanidation tests.

- Diagnostic gold data indicated that the unrecovered gold content in cyanidation tailings occurred either as silicate (gangue) encapsulated or sulfide mineral occlusions.
- A single weathered ore sample responded positively to heap leach cyanidation (93.8% gold extraction), but response was moderate to poor for two fresh ore samples (44.3% to 66.2% gold extraction).
- Oxide ore samples were noted to be:
  - of low to medium competency, with SMC Test® A×b parameters of 55.4 to 66.9.
  - medium hard to hard, with Bond rod mill work indices (RWi) of 12.2 kWh/t to 15.5 kWh/t, and Bond ball mill work indices (BWi) of 10.7 kWh/t to 14.0 kWh/t at a closing screen size of 106 µm.
  - non-abrasive to medium abrasive, with Bond abrasion indices (Ai) of 0.01 g to 0.44 g.
- Fresh ore samples were noted to be:
  - moderately competent to very competent, with A×b parameters of 26.0 to 41.9.
  - medium hard to very hard, with RWi values of 15.2 kWh/t to 24.3 kWh/t, and BWi values of 14.0 kWh/t to 23.8 kWh/t at a closing screen size of 106 µm.
  - slightly abrasive, with Ai values of 0.11 g to 0.39 g.

## 13.2 NYANZAGA DEPOSIT TEST WORK

The Nyanzaga deposit, as shown in Figure 16-3 and Figure 16-4, was the subject of test work programs commissioned by OreCorp, managed by Lycopodium, and conducted by SGS in Perth, Australia in 2016 and 2017 (SGS, 2017), Outotec in Perth, Australia in 2017 (Outotec, 2017), and ALS Metallurgy in Perth, Australia in 2017 (ALS Metallurgy, 2017a), (ALS Metallurgy, 2017b). As noted in Section 15.2, the Nyanzaga deposit consists of 95% of tonnes and 96% of contained ounces of the Mineral Reserves for the Nyanzaga Gold Project.

SGS, Outotec, and ALS Metallurgy are commercial laboratories that are independent to Perseus.

Samples of oxide and fresh ore from the Nyanzaga deposit were tested to determine:

- the most suitable processing route.
- the plant operating parameters for Nyanzaga deposit ore types for the determined processing route, specifically throughput rate, gold recovery, and reagent consumption.
- engineering parameters required for process plant design.

The metallurgical test work program included the following:

- comminution tests (SMC Test®, BWi and Ai on 20 comminution variability; CWi and RWi on three comminution variability samples; and UCS on 15 UCS variability samples).
- ore type master composite test work program:
  - gold extraction test work to assess gravity, flotation and leaching characteristics across a range of process conditions, leading to selection and demonstration of an optimised extraction flowsheet and process conditions.
  - multi-stage diagnostic leach to gain understanding of gold deportment.
  - determination of parameters necessary for process plant design and operation (oxygen uptake rate).
- engineering composite test work program:
  - bulk cyanidation tests, to provide samples for tailings testing (including mineralogical analysis).
  - determination of parameters necessary for process plant design and operation (viscosity, thickening and settling rate).
- master composite test work program:

- cyanide detoxification test work.
- arsenic precipitation test work.
- determination of parameters necessary for process plant design and operation (carbon adsorption kinetics).

- magnetic separation tests of 20 comminution variability samples.
- BLEG tests on 30 BLEG variability samples to provide an indication of gold recovery by cyanidation.
- gravity/cyanidation tests under optimised process conditions on 31 fresh ore metallurgical variability samples.

### 13.2.1 SAMPLE SELECTION

A total of 20 comminution variability samples, 15 UCS variability samples, 30 BLEG variability samples, 32 metallurgical variability samples, four ore type composites, three engineering bulk composites and one master composite were selected from core taken from 57 drill holes spread across mineralised areas of the Nyanzaga deposit to provide spatial representivity. Samples were selected to focus the majority of test work on the four main ore types based on weathering (oxide) or member (mudstone (NMM), sandstone (NSM), or chert (NCM), as described in Figure 7-3). Samples were taken over an approximate range of:

- 440 m east to west
- 420 m north to south
- 740 m in RL.

Figures shown from Section 13.2.1.1 to Section 13.2.1.6 plot the metallurgical sample intervals and the current pit shell design, as described in Section 16.1.2. It is noted in these Figures that some samples are located below the current pit shell, due to the fact that metallurgical test work samples selected for the 2017 test work campaign considered both open pit and underground mine options.

#### 13.2.1.1 COMMINUTION VARIABILITY SAMPLES

Comminution variability sample drill core intervals tested are listed in Table 13-1, and are shown graphically in plan view in Figure 13-1 and in perspective view in Figure 13-2. As per the legends in these figures, oxide sample intervals (OX) are shown as beige dots, mudstone sample intervals (MS) are shown as red dots, sandstone sample intervals (SS) are shown as magenta dots, and chert samples intervals (CH) are shown as cyan dots.

*Table 13-1: Nyanzaga deposit comminution variability samples*

| SAMPLE | ORE TYPE | DRILL HOLE | FROM (m) | TO (m) |
|---|---|---|---|---|
| C1A-CH-FR-1 | chert | NYZDDM0003 | 365.7 | 406.8 |
| C1A-SS-FR-2 | sandstone | NYZDDM0003 | 258 | 271 |
| C1A-MS-FR-3 | mudstone | NYZDDM0002 | 344 | 354 |
| C1B-CH-FR-4 | chert | NYZRCDD0058 | 216 | 224 |
| C1B-CH-FR-5 | chert | NYZRCDD0164 | 239 | 248 |
| C1B-SS-FR-6 | sandstone | NYZRCDD0480 | 170 | 190 |
| C1B-SS-FR-7 | sandstone | NYZRCDD0494 | 180 | 199 |
| C1B-SS-FR-8 | sandstone | NYZRCDD0428 | 190 | 205 |
| C1B-MS-FR-9 | mudstone | NYZRCDD0494 | 150 | 169 |
| C1B-MS-FR-10 | mudstone | NYZSDD010 | 218 | 240 |
| C1B-MS-FR-11 | mudstone | NYZRCDD0119 | 190 | 209 |
| C1B-CH-FR-12 | chert | NYZRCDD0297 | 306 | 324 |
| C1B-CH-FR-13 | chert | NYZRCDD0156 | 412 | 430 |
| C1B-CH-FR-14 | chert | NYZRCDD0113 | 600 | 621 |
| C1B-SS-FR-15 | sandstone | NYZRCDD0159 | 319 | 330 |
| C1B-SS-FR-16 | sandstone | NYZRCDD0345 | 427 | 437 |
| C1B-SS-FR-17 | sandstone | NYZRCDD0115 | 520 | 530 |
| C1B-MS-FR-18 | mudstone | NYZRCDD0378 | 509 | 522 |
| C1A-OX-OX-20 | oxide | NYZDD0003 | 47 | 54 |
| C1A-OX-OX-21 | oxide | NYZDDM0002 | 20 | 23 |

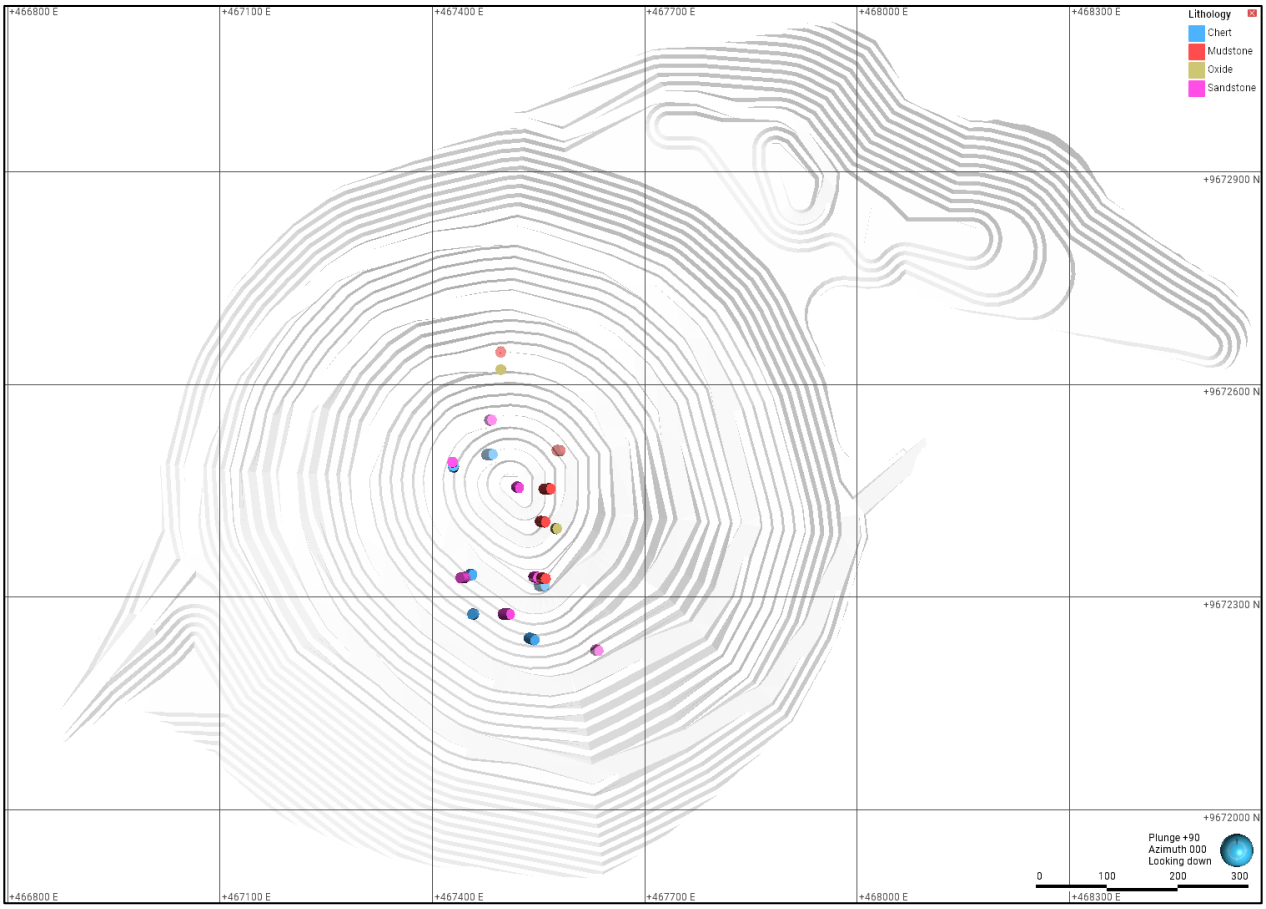



*Figure 13-1: Location of Nyanzaga comminution samples, plan view (Source: Perseus, 2025)*

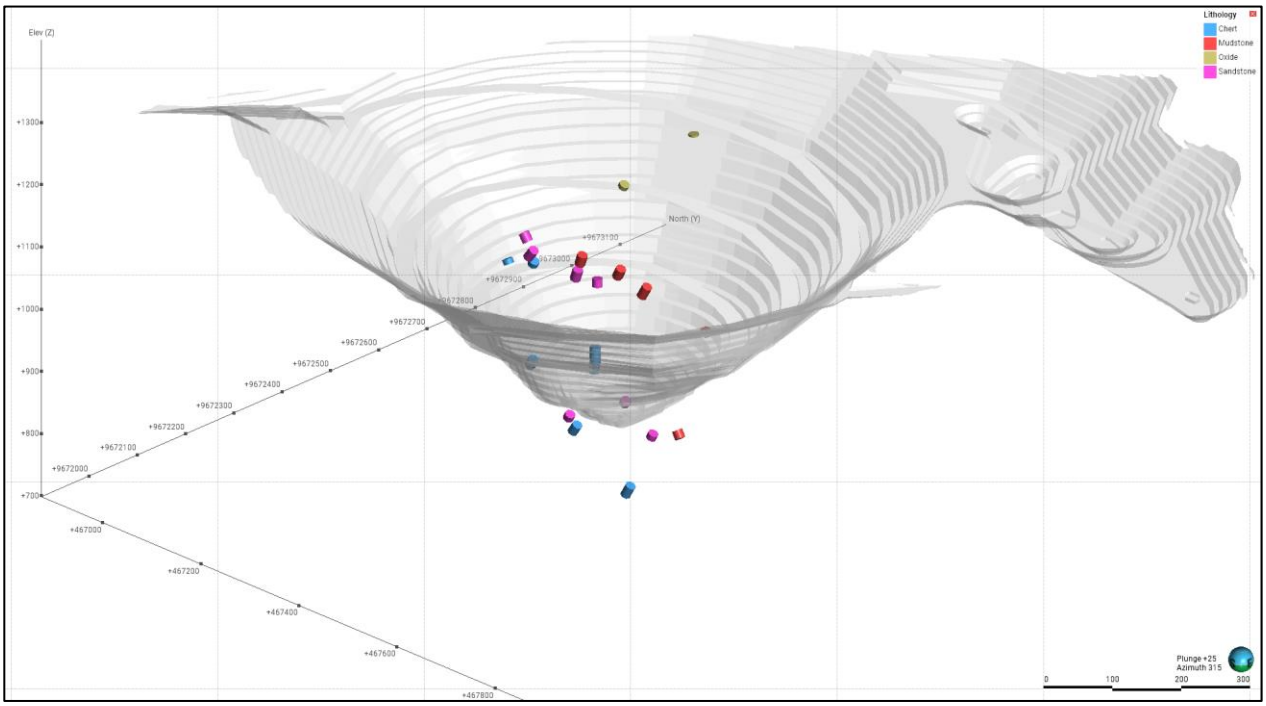



*Figure 13-2: Location of Nyanzaga comminution samples, perspective view looking northeast (Source: Perseus, 2025)*

Separate sample intervals were for chosen for uniaxial compressive strength (UCS) testing. The UCS variability sample drill core intervals tested are listed in Table 13-2, and are shown graphically in plan view in Figure 13-3 and in perspective view in Figure 13-4. As per the legends in these figures, mudstone sample intervals are shown as red dots, sandstone sample intervals are shown as magenta dots, and chert sample intervals are shown as cyan dots.

***Table 13-2: Nyanzaga deposit UCS variability samples***

| SAMPLE | ORE TYPE | DRILL HOLE | FROM (m) | TO (m) |
|---|---|---|---|---|
| RCBT95004 | chert | NYZDDM0003 | 375.94 | 376.94 |
| RCBT95005 | chert | NYZDDM0003 | 392.8 | 393.8 |
| RCBT95006 | chert | NYZDDM0003 | 395.8 | 396.32 |
| RCBT95007 | chert | NYZDDM0003 | 402.48 | 403.48 |
| RCBT95009 | chert | NYZDDM0003 | 404.8 | 405.8 |
| RCBT95011 | sandstone | NYZDDM0003 | 259 | 260 |
| RCBT95012 | sandstone | NYZDDM0003 | 261 | 262 |
| RCBT95013 | sandstone | NYZDDM0003 | 262 | 263 |
| RCBT95015 | sandstone | NYZDDM0003 | 265 | 266 |
| RCBT95018 | sandstone | NYZDDM0003 | 269 | 270 |
| RCBT95019 | mudstone | NYZDDM0002 | 344 | 345 |
| RCBT95021 | mudstone | NYZDDM0002 | 346 | 347 |
| RCBT95023 | mudstone | NYZDDM0002 | 348 | 349 |
| RCBT95026 | mudstone | NYZDDM0002 | 351 | 352 |
| RCBT95028 | mudstone | NYZDDM0002 | 353 | 354 |

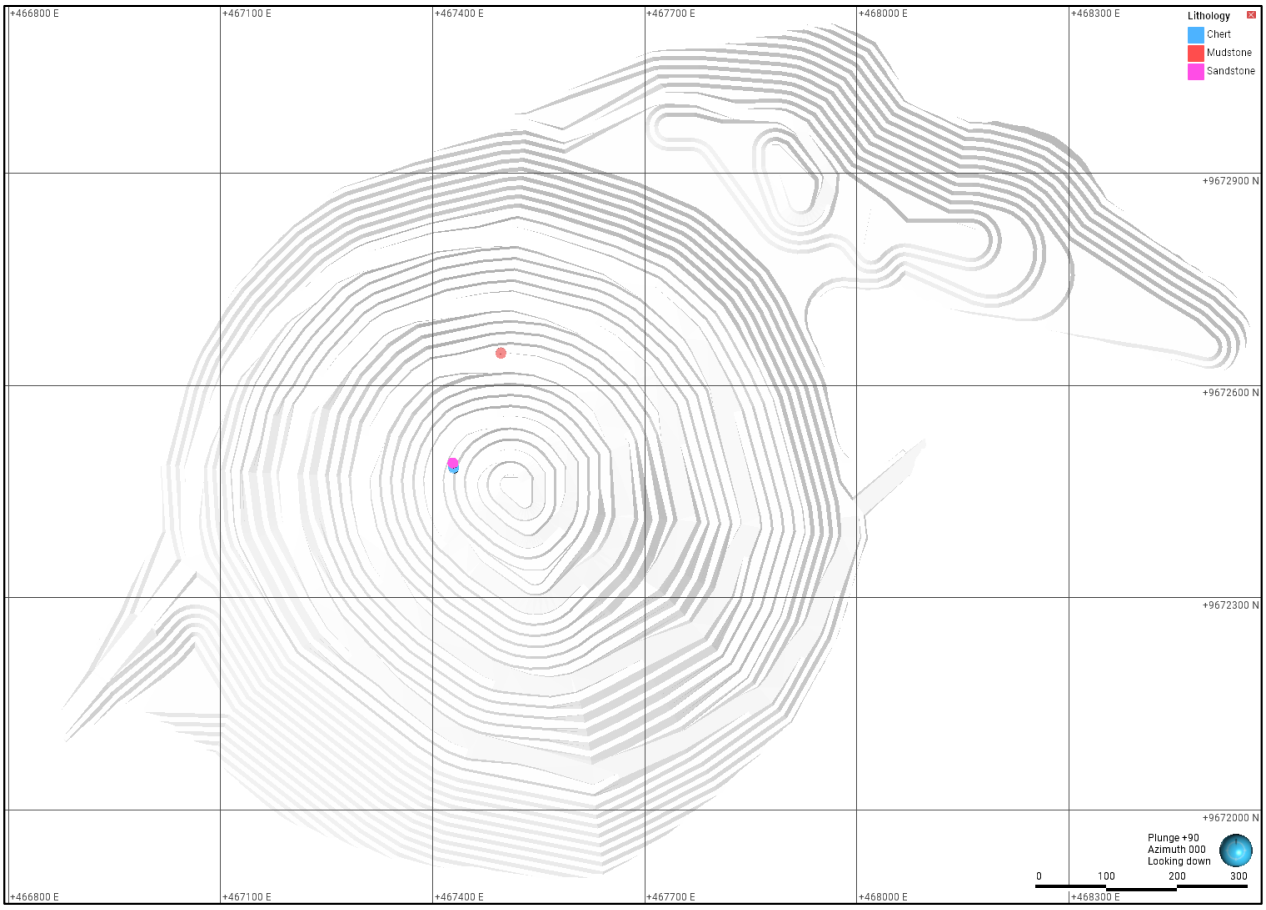



*Figure 13-3: Location of Nyanzaga UCS samples, plan view (Source: Perseus, 2025)*

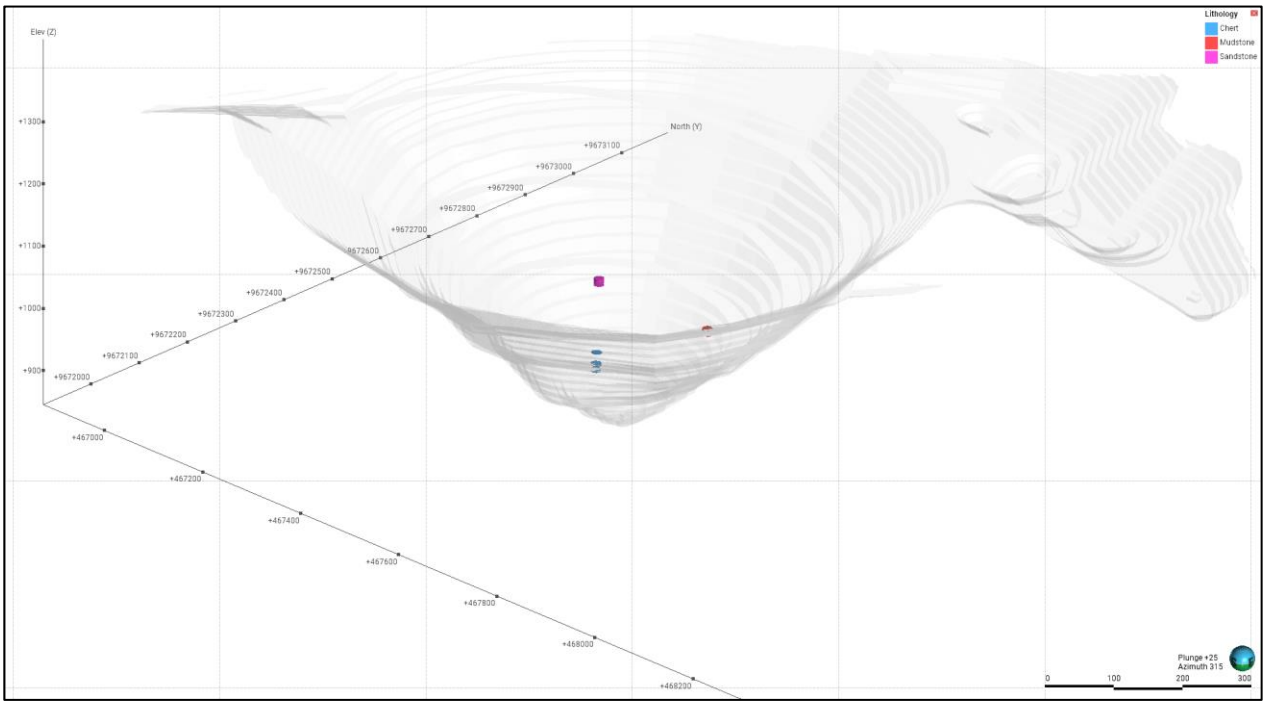



*Figure 13-4: Location of Nyanzaga UCS samples, perspective view looking northeast (Source: Perseus, 2025)*

#### 13.2.1.2 BLEG VARIABILITY SAMPLES

The location of the bulk leach extractable gold (BLEG) variability sample intervals tested are listed in Table 13-3, and are shown graphically in plan view in Figure 13-5 and in perspective view in Figure 13-6. As per the legends in these figures, oxide sample intervals are shown as beige dots, mudstone sample intervals are shown as red dots, sandstone sample intervals are shown as magenta dots, chert samples are shown as cyan dots, and axial fault samples are shown as dark grey dots.

***Table 13-3: Nyanzaga deposit BLEG variability samples***

| SAMPLE | ORE TYPE | DRILL HOLE | FROM (m) | TO (m) |
|---|---|---|---|---|
| RCBT95040 | oxide | NYZDD0003 | 44 | 45 |
| RCBT95060 | oxide | NYZSDD001 | 53 | 54 |
| RCBT95274 | sandstone | NYZRCDD0159 | 340 | 341 |
| RCBT95278 | sandstone | NYZRCDD0345 | 426 | 427 |
| RCBT95303 | sandstone | NYZRCDD0115 | 534 | 535 |
| RCBT95310 | mudstone | NYZRCDD0378 | 501 | 502 |
| RCBT95375 | sandstone | NYZRCDD0373 | 282 | 283 |
| RCBT95381 | chert | NYZRCDD0480 | 200 | 201 |
| RCBT95386 | sandstone | NYZRCDD0294 | 266 | 267 |
| RCBT95393 | mudstone | NYZSDD010 | 245 | 246 |
| RCBT95404 | mudstone | NYZRCDD0077 | 165 | 166 |
| RCBT95417 | mudstone | NYZRCDD0088 | 263 | 264 |
| RCBT95457 | axial | NYZRCDD0373 | 300 | 301 |
| RCBT95465 | chert | NYZRCDD0345 | 475 | 476 |
| RCBT95474 | chert | NYZRCDD0509 | 623 | 624 |
| RCBT95476 | chert | NYZRCDD0509 | 625 | 626 |
| RCBT95515 | chert | NYZRCDD0145 | 502 | 503 |
| RCBT95534 | sandstone | NYZRCDD0359 | 491 | 492 |
| RCBT95554 | mudstone | NYZRCDD0113 | 421 | 422 |
| RCBT95561 | mudstone | NYZRCDD0156 | 278 | 279 |
| RCBT95567 | axial | NYZRCDD0116 | 348 | 349 |
| RCBT95613 | chert | NYZRCDD0100 | 418 | 419 |
| RCBT95664 | chert | NYZRCDD0164 | 238 | 239 |
| RCBT95668 | sandstone | NYZRCDD0104 | 195 | 196 |
| RCBT95672 | sandstone | NYZRCDD0119 | 258 | 259 |
| RCBT95696 | mudstone | NYZRCDD0116 | 228 | 229 |
| RCBT95717 | chert | NYZRCDD0040 | 299 | 300 |
| RCBT95736 | mudstone | NYZRCDD0040 | 279 | 280 |
| RCBT95746 | sandstone | NYZRCDD0388 | 611 | 612 |
| RCBT95756 | sandstone | NYZRCDD0024 | 272 | 273 |

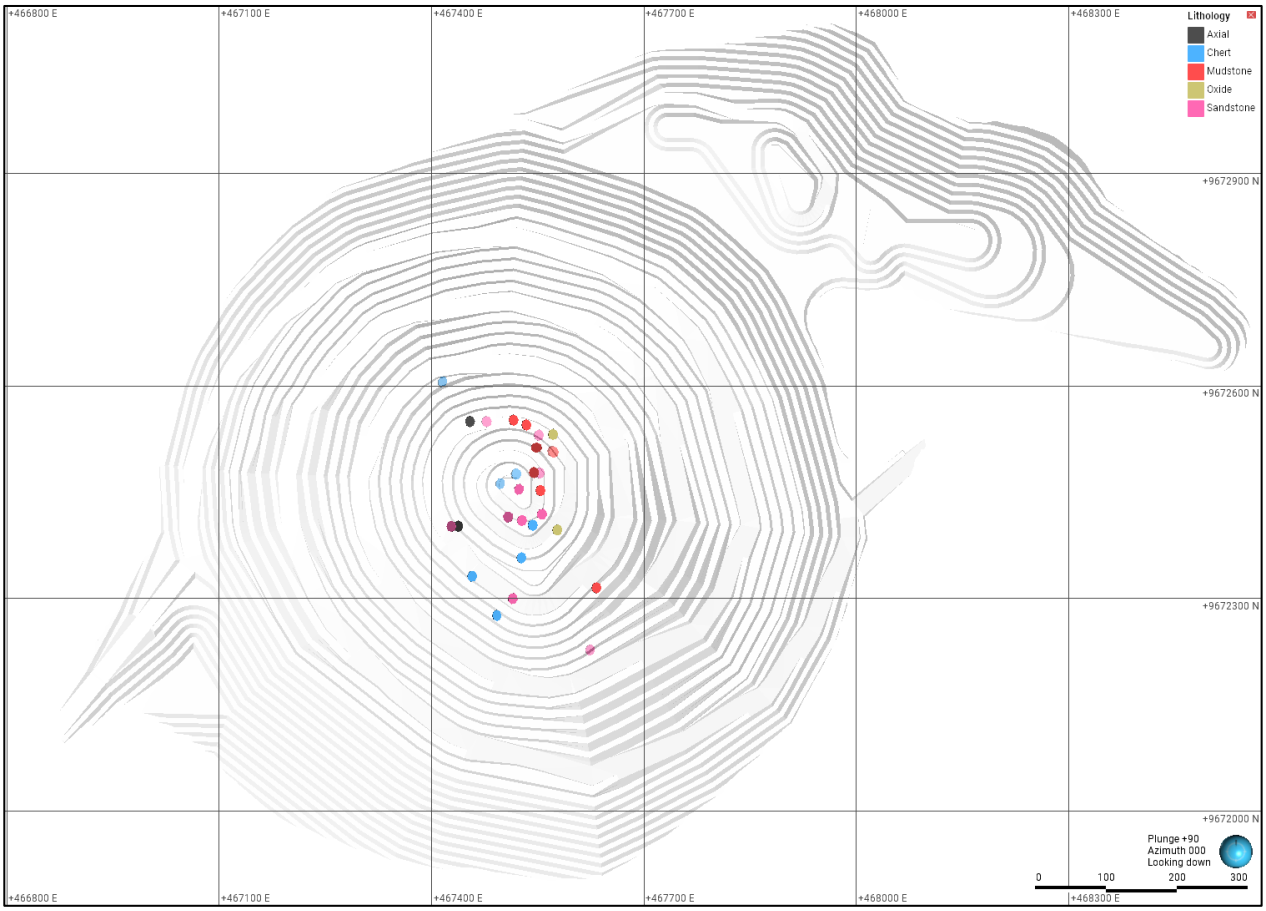



*Figure 13-5: Location of Nyanzaga BLEG samples, plan view (Source: Perseus, 2025)*

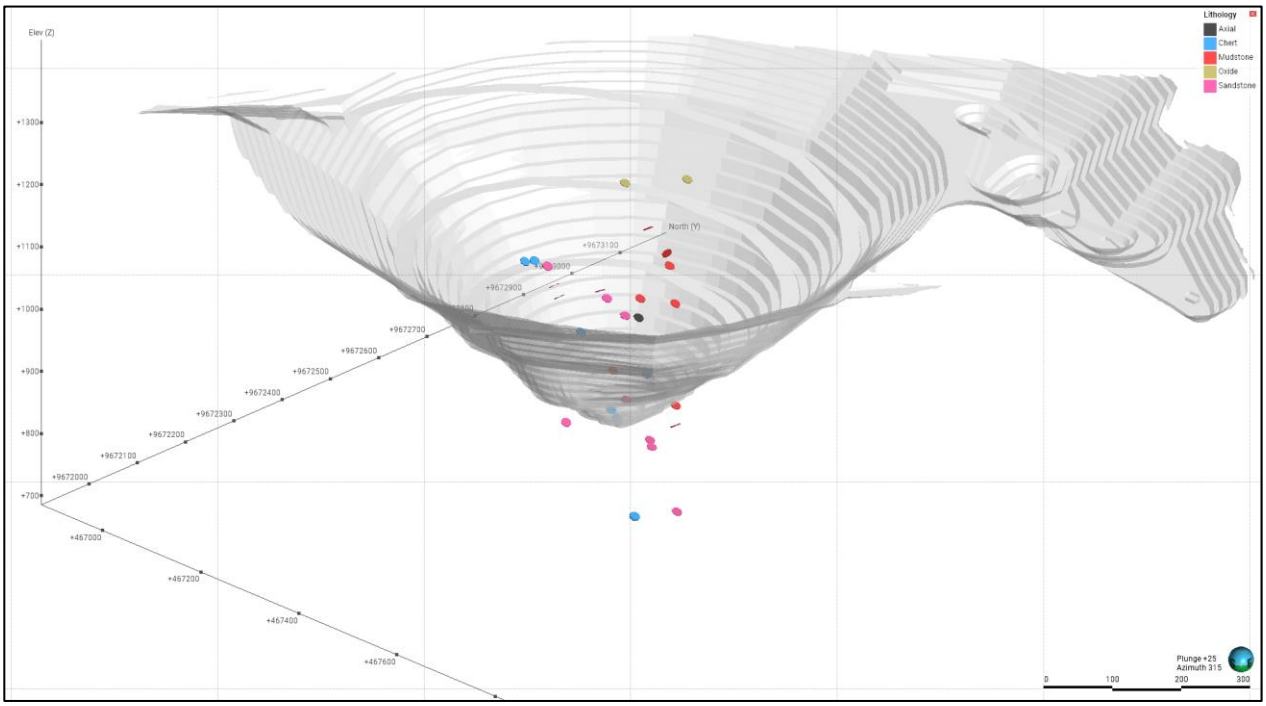



*Figure 13-6: Location of Nyanzaga BLEG samples, perspective view looking northeast (Source: Perseus, 2025)*

### 13.2.1.3 METALLURGICAL VARIABILITY SAMPLES

The location of the 32 metallurgical variability sample intervals tested are listed in Table 13-4, and are shown graphically in plan view in Figure 13-7 and in perspective view in Figure 13-8. As per the legends in these figures, oxide sample intervals (OX) are shown as beige dots, mudstone sample intervals (MS) are shown as red dots, sandstone sample intervals (SS) are shown as magenta dots, chert sample intervals (CH) are shown as cyan dots, chert/fault sample intervals (CHF) are shown as dark blue dots, axial fault sample intervals (AX) are shown as dark grey dots, and far east fault sample intervals (FEF) are shown as purple dots.

***Table 13-4: Nyanzaga deposit metallurgical variability samples***

| SAMPLE | ORE TYPE | DRILL HOLE | FROM (m) | TO (m) |
|---|---|---|---|---|
| V-CH-FR-1 | chert | NYZRCDD0480 | 199 | 200 |
| | | | 201 | 203 |
| V-CH-FR-2 | chert | NYZRCDD0051 | 314 | 318 |
| V-CH-FR-3 | chert | NYZRCDD0119 | 351 | 355 |
| V-CHF-FR-4 | chert/fault | NYZRCDD0043 | 303 | 308 |
| V-CH-FR-5 | chert | NYZRCDD0294 | 422 | 427 |
| V-CH-FR-6 | chert | NYZRCDD0345 | 476 | 479 |
| V-CH-FR-7 | chert | NYZRCDD0509 | 620 | 623 |
| V-CH-FR-8 | chert | NYZRCDD0514 | 426 | 430 |
| V-CH-FR-9 | chert | NYZRCDD0163 | 723 | 724 |
| | | NYZRCDD0348 | 801 | 802 |
| | | NYZRCDD0494 | 277 | 278 |
| V-SS-FR-10 | sandstone | NYZRCDD0428 | 205 | 209 |
| V-SS-FR-11 | sandstone | NYZRCDD0043 | 214 | 218 |
| V-SS-FR-12 | sandstone | NYZRCDD0373 | 281 | 282 |
| | | | 283 | 285 |
| V-SS-FR-13 | sandstone | NYZRCDD0294 | 267 | 271 |
| V-SS-FR-14 | sandstone | NYZRCDD0096 | 192 | 196 |
| V-SS-FR-15 | sandstone | NYZRCDD0159 | 330 | 336 |
| V-SS-FR-16 | sandstone | NYZRCDD0345 | 423 | 426 |
| V-MS-FR-17 | mudstone | NYZSDD010 | 246 | 250 |
| V-MS-FR-18 | mudstone | NYZRCDD0121 | 191 | 195 |
| V-MS-FR-19 | mudstone | NYZRCDD0121 | 207 | 211 |
| V-MS-FR-20 | mudstone | NYZRCDD0077 | 163 | 165 |
| | | | 166 | 167 |
| V-MS-FR-21 | mudstone | NYZRCDD0088 | 260 | 263 |
| V-MS-FR-22 | mudstone | NYZRCDD0113 | 423 | 425 |
| V-MS-FR-23 | mudstone | NYZRCDD0156 | 280 | 282 |
| V-AX-FR-24 | axial fault | NYZRCDD0096 | 216 | 223 |
| V-AX-FR-25 | axial fault | NYZRCDD0373 | 295 | 300 |
| V-AX-FR-26 | axial fault | NYZRCDD0115 | 205 | 210 |
| V-FEF-FR-27 | far east fault | NYZRCDD0099 | 131 | 136 |
| V-FEF-FR-28 | far east fault | NYZRCDD0107 | 163 | 168 |
| V-FEF-FR-29 | far east fault | NYZRCDD0115 | 205 | 210 |
| V-OX-OX-30 | oxide | NYZSDD001 | 28 | 32 |
| V-OX-OX-31 | oxide | NYZDD0003 | 40 | 43 |
| V-OX-OX-32 | oxide | NYZSDD001 | 51 | 53 |
| | | | 54 | 56 |

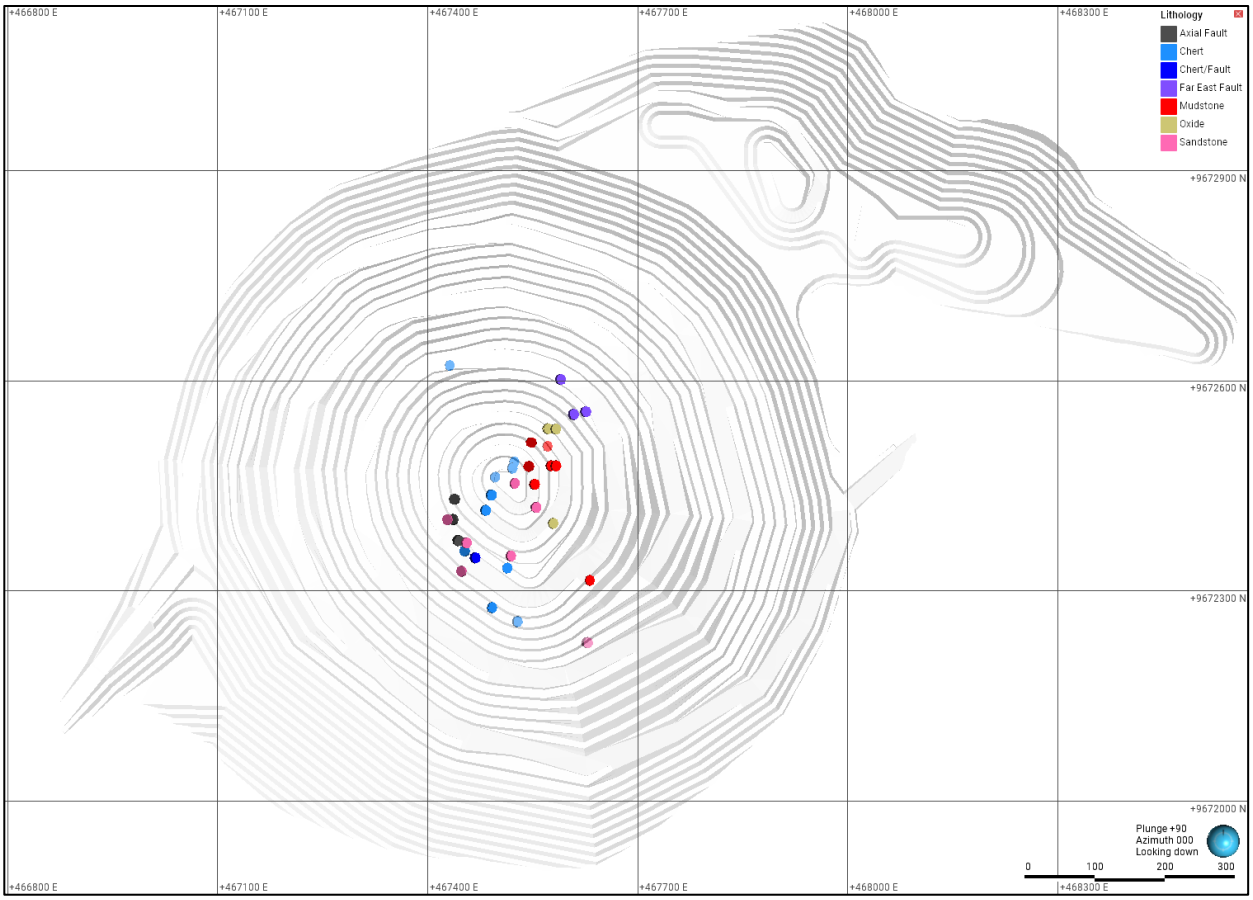



*Figure 13-7: Location of Nyanzaga metallurgical variability samples, plan view (Source: Perseus, 2025)*

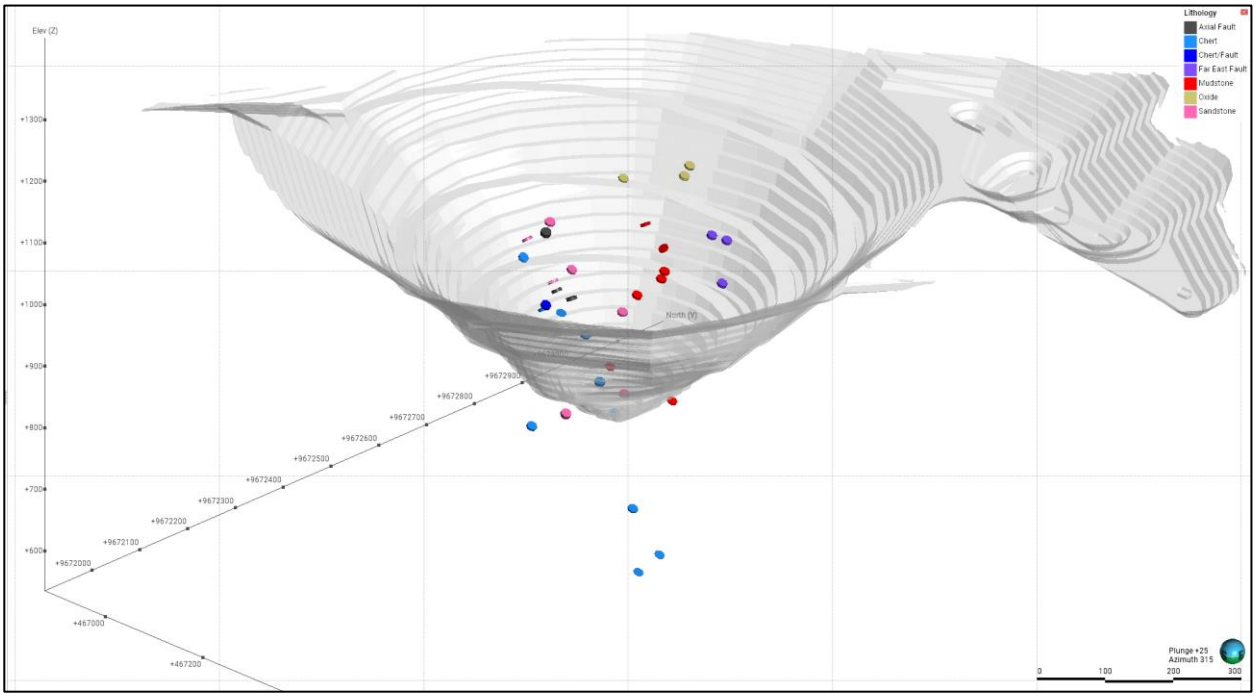



*Figure 13-8: Location of Nyanzaga metallurgical variability samples, perspective view looking northeast (Source: Perseus, 2025)*

### 13.2.1.4 ORE TYPE COMPOSITES

Four ore type composites were generated for gold recovery flowsheet definition and optimisation test work, gold deportment studies, and the determination of oxygen uptake parameters necessary for process plant design and operation. Intervals selected for the oxide ore type composite (OTC-OX-OX) are listed in Table 13-5, and are shown graphically in plan view in Figure 13-9 and in perspective view in Figure 13-10. Intervals selected for the mudstone ore type composite (OTC-MS-FR) are listed in Table 13-6, and are shown graphically in plan view in Figure 13-11 and in perspective view in Figure 13-12. Intervals selected for the sandstone ore type composite (OTC-SS-FR) are listed in Table 13-7, and are shown graphically in plan view in Figure 13-13 and in perspective view in Figure 13-14. Intervals selected for the chert ore type composite (OTC-CH-FR) are listed in Table 13-8, and are shown graphically in plan view in Figure 13-15 and in perspective view in Figure 13-16.

*Table 13-5: Nyanzaga oxide ore type composite sample intervals*

| DRILL HOLE | FROM (m) | TO (m) | MASS (kg) |
|---|---|---|---|
| NYZDD0003 | 40 | 46 | 7.7 |
| NYZSDD001 | 28 | 32 | 4.5 |
| | 51 | 56 | 4.0 |
| NYZSDD002 | 41 | 44 | 5.9 |
| | 76 | 78 | 3.1 |

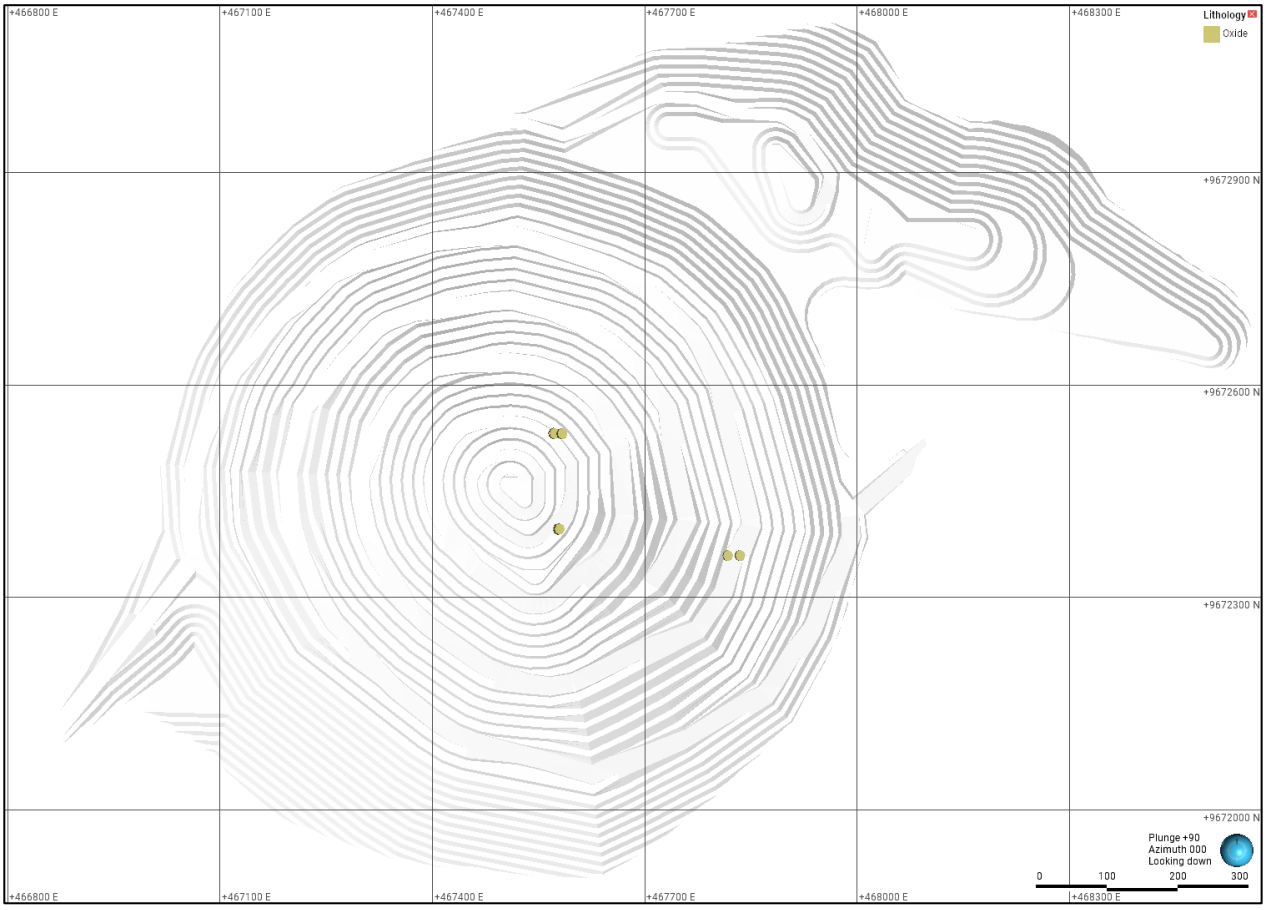



*Figure 13-9: Location of intervals selected for Nyanzaga oxide ore type composite, plan view (Source: Perseus, 2025)*

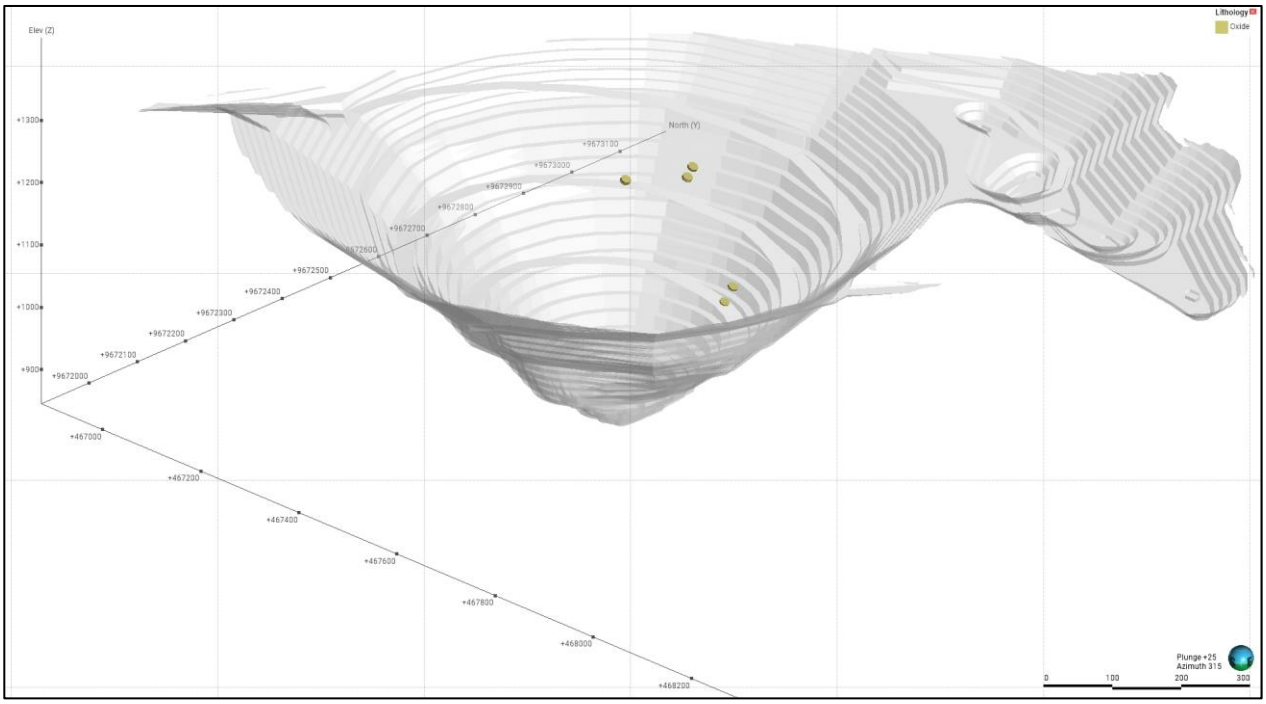



*Figure 13-10: Location of intervals selected for Nyanzaga oxide ore type composite, perspective view looking northeast (Source: Perseus, 2025)*

*Table 13-6: Nyanzaga mudstone ore type composite sample intervals*

| DRILL HOLE | FROM (m) | TO (m) | MASS (kg) |
|---|---|---|---|
| NYZRCDD0030 | 134 | 136 | 5.1 |
| | 233 | 235 | 5.2 |
| | 261 | 263 | 4.8 |
| NYZRCDD0034 | 177 | 179 | 4.5 |
| | 201 | 203 | 4.8 |
| NYZRCDD0036 | 173 | 175 | 2.5 |
| NYZRCDD0077 | 161 | 163 | 4.6 |
| NYZRCDD0088 | 258 | 260 | 4.5 |
| NYZRCDD0098 | 203 | 205 | 5.2 |
| NYZRCDD0099 | 145 | 147 | 3.7 |
| | 280 | 281 | 2.2 |
| NYZRCDD0116 | 213 | 215 | 4.4 |
| | 227 | 228 | 2.2 |
| NYZRCDD0140 | 269 | 270 | 2.4 |
| NYZRCDD0145 | 188 | 190 | 8.4 |
| | 192 | 194 | 8.9 |
| NYZRCDD0146 | 182 | 184 | 3.1 |
| | 212 | 213 | 2.3 |
| | 259 | 260 | 2.1 |
| NYZRCDD0147 | 249 | 250 | 2.3 |
| NYZRCDD0360 | 211 | 212 | 2.2 |
| | 233 | 234 | 1.9 |
| NYZRCDD0422 | 163 | 164 | 1.9 |
| NYZRCDD0480 | 158 | 159 | 2.4 |
| NYZRCDD0494 | 170 | 171 | 2.0 |

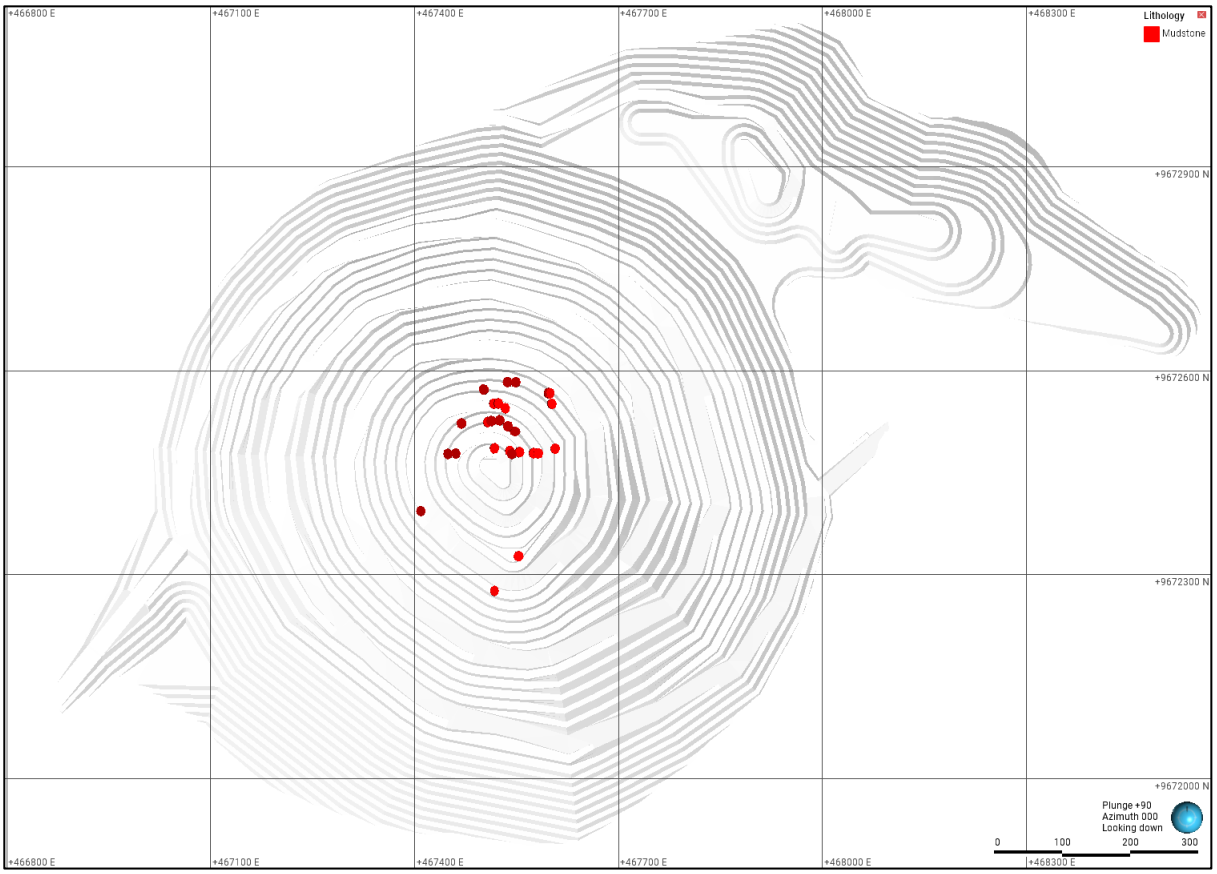



*Figure 13-11: Location of intervals selected for Nyanzaga mudstone ore type composite, plan view (Source: Perseus, 2025)*

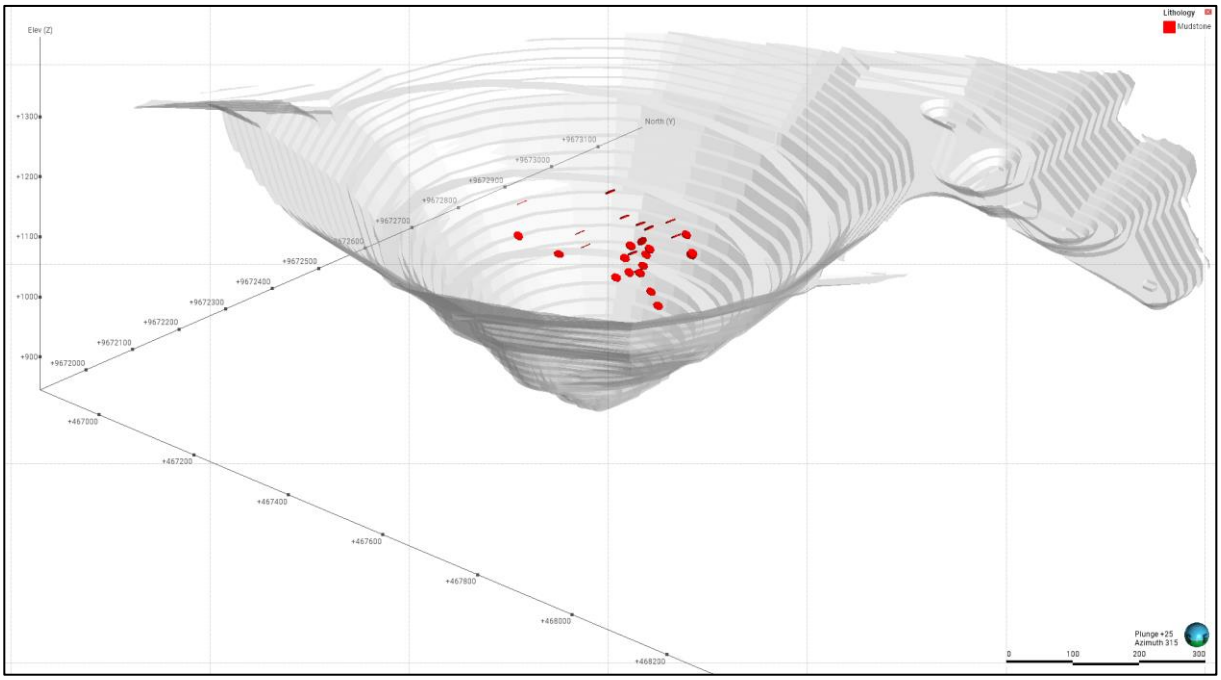



*Figure 13-12: Location of intervals selected for Nyanzaga mudstone ore type composite, perspective view looking northeast (Source: Perseus, 2025)*

*Table 13-7: Nyanzaga sandstone ore type composite sample intervals*

| DRILL HOLE | FROM (m) | TO (m) | MASS (kg) |
|---|---|---|---|
| NYZRCDD0024 | 218 | 220 | 4.9 |
| | 243 | 245 | 5.1 |
| | 273 | 274 | 2.3 |
| | 290 | 292 | 4.8 |
| NYZRCDD0096 | 197 | 198 | 1.6 |
| NYZRCDD0100 | 323 | 325 | 5.1 |
| | 357 | 358 | 2.5 |
| NYZRCDD0104 | 163 | 165 | 4.3 |
| | 170 | 171 | 2.7 |
| | 194 | 195 | 2.2 |
| | 206 | 207 | 2.2 |
| NYZRCDD0111 | 230 | 232 | 4.1 |
| NYZRCDD0116 | 334 | 336 | 4.3 |
| NYZRCDD0119 | 257 | 258 | 2.0 |
| | 273 | 275 | 4.0 |
| | 291 | 293 | 3.8 |
| | 310 | 312 | 3.8 |
| | 316 | 318 | 4.4 |
| | 327 | 328 | 2.8 |
| NYZRCDD0145 | 339 | 341 | 4.4 |
| NYZRCDD0146 | 267 | 269 | 4.0 |
| | 278 | 280 | 4.0 |
| | 292 | 293 | 2.2 |
| NYZRCDD0147 | 421 | 423 | 4.4 |
| NYZRCDD0157 | 285 | 287 | 4.2 |
| | 349 | 351 | 3.6 |
| NYZRCDD0291 | 574 | 576 | 3.4 |
| NYZRCDD0294 | 271 | 273 | 4.1 |
| NYZRCDD0330 | 394 | 395 | 2.2 |
| NYZRCDD0348 | 654 | 656 | 4.3 |
| NYZRCDD0388 | 612 | 613 | 2.0 |
| NYZRCDD0392 | 520 | 521 | 2.2 |
| NYZRCDD0428 | 188 | 189 | 2.5 |
| NYZRCDD0494 | 210 | 211 | 2.1 |
| NYZRCDD0509 | 592 | 593 | 1.9 |
| NYZRCDD0512 | 571 | 573 | 3.6 |
| | 613 | 615 | 3.7 |

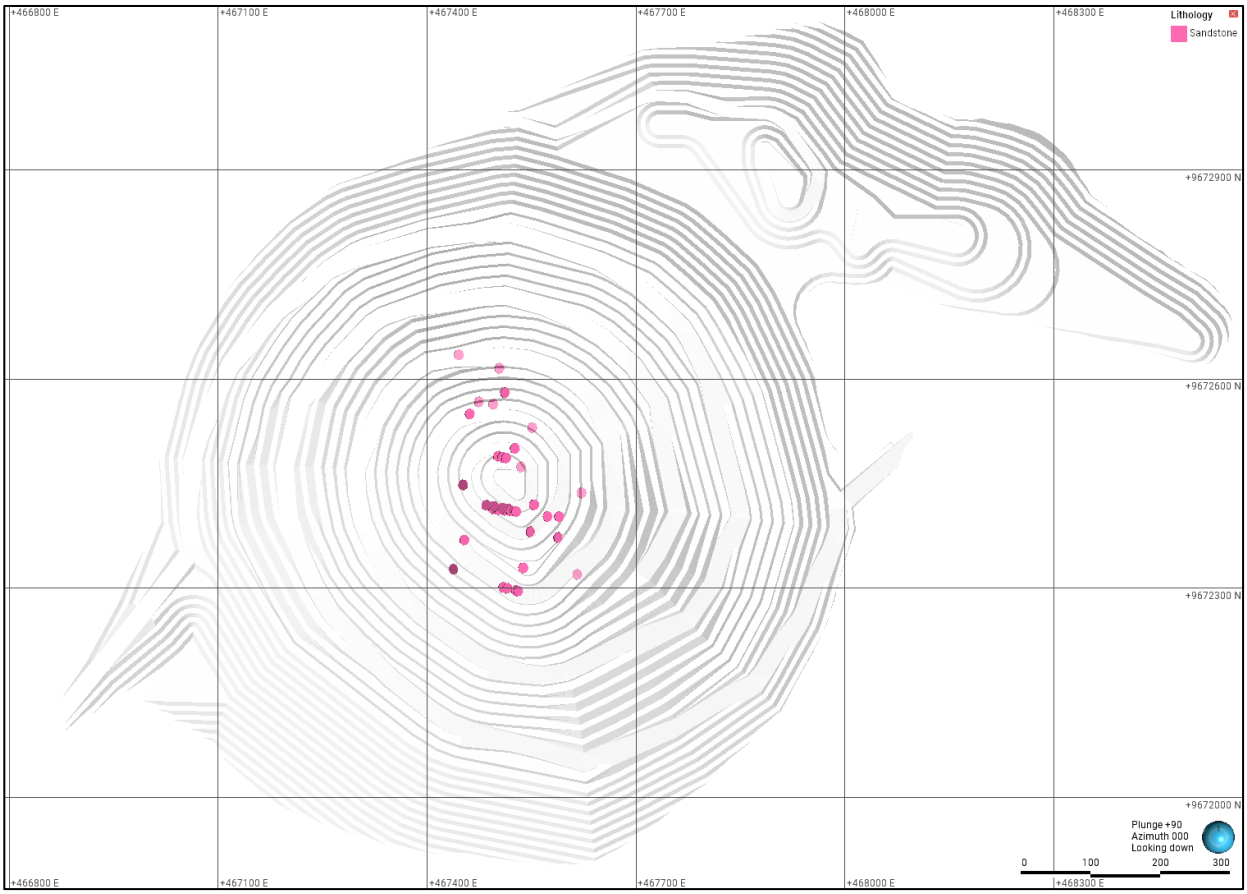



*Figure 13-13: Location of intervals selected for Nyanzaga sandstone ore type composite, plan view (Source: Perseus, 2025)*

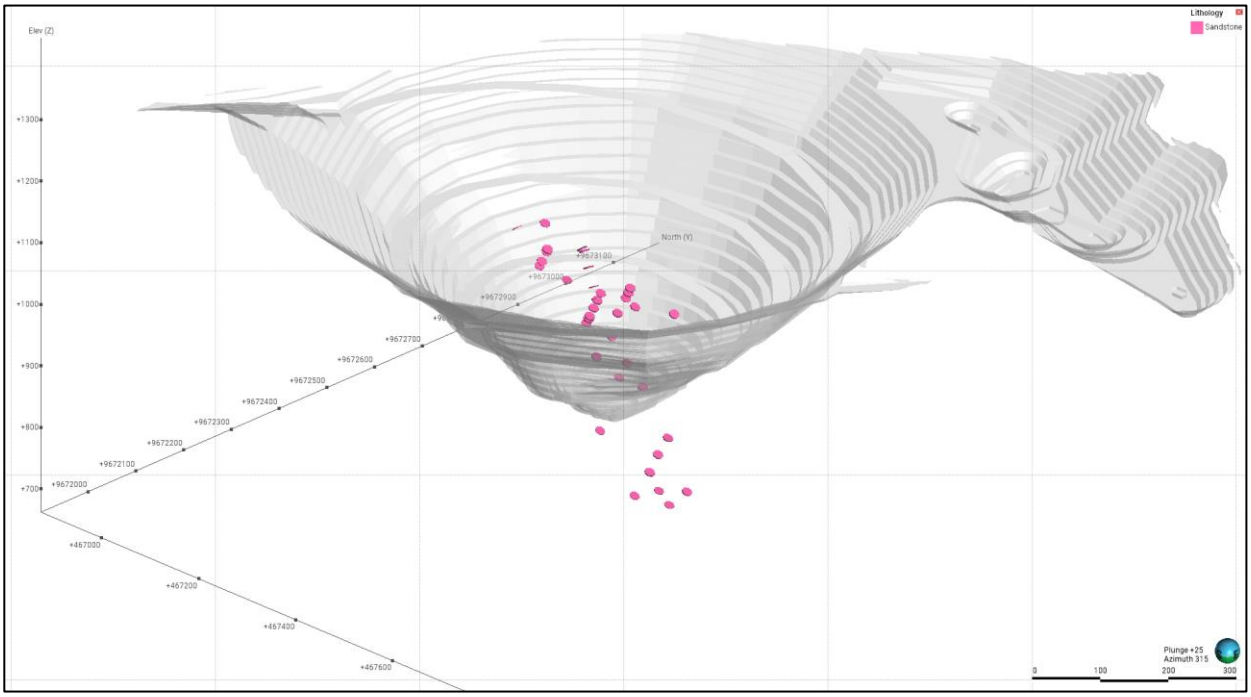



*Figure 13-14: Location of intervals selected for Nyanzaga sandstone ore type composite, perspective view looking northeast (Source: Perseus, 2025)*

*Table 13-8: Nyanzaga chert ore type composite sample intervals*

| DRILL HOLE | FROM (m) | TO (m) | MASS (kg) |
|---|---|---|---|
| NYZDD0003 | 293 | 295 | 4.7 |
| | 296 | 298 | 4.8 |
| NYZRCDD0040 | 291 | 293 | 3.7 |
| | 300 | 301 | 2.2 |
| NYZRCDD0043 | 292 | 293 | 2.4 |
| | 308 | 310 | 4.0 |
| NYZRCDD0052 | 368 | 370 | 3.8 |
| NYZRCDD0100 | 419 | 420 | 2.2 |
| NYZRCDD0104 | 225 | 227 | 4.7 |
| | 266 | 268 | 3.9 |
| NYZRCDD0119 | 355 | 356 | 2.0 |
| | 357 | 358 | 2.3 |
| NYZRCDD0157 | 383 | 385 | 4.4 |
| NYZRCDD0163 | 722 | 723 | 2.0 |
| NYZRCDD0294 | 420 | 422 | 4.0 |
| NYZRCDD0330 | 546 | 547 | 2.4 |
| NYZRCDD0345 | 479 | 481 | 4.6 |
| NYZRCDD0348 | 802 | 803 | 2.2 |
| NYZRCDD0480 | 204 | 205 | 2.5 |
| NYZRCDD0494 | 268 | 270 | 4.1 |
| | 278 | 279 | 2.2 |
| NYZRCDD0509 | 624 | 625 | 2.0 |
| NYZRCDD0514 | 398 | 400 | 4.2 |
| | 423 | 424 | 2.3 |
| | 425 | 426 | 1.9 |

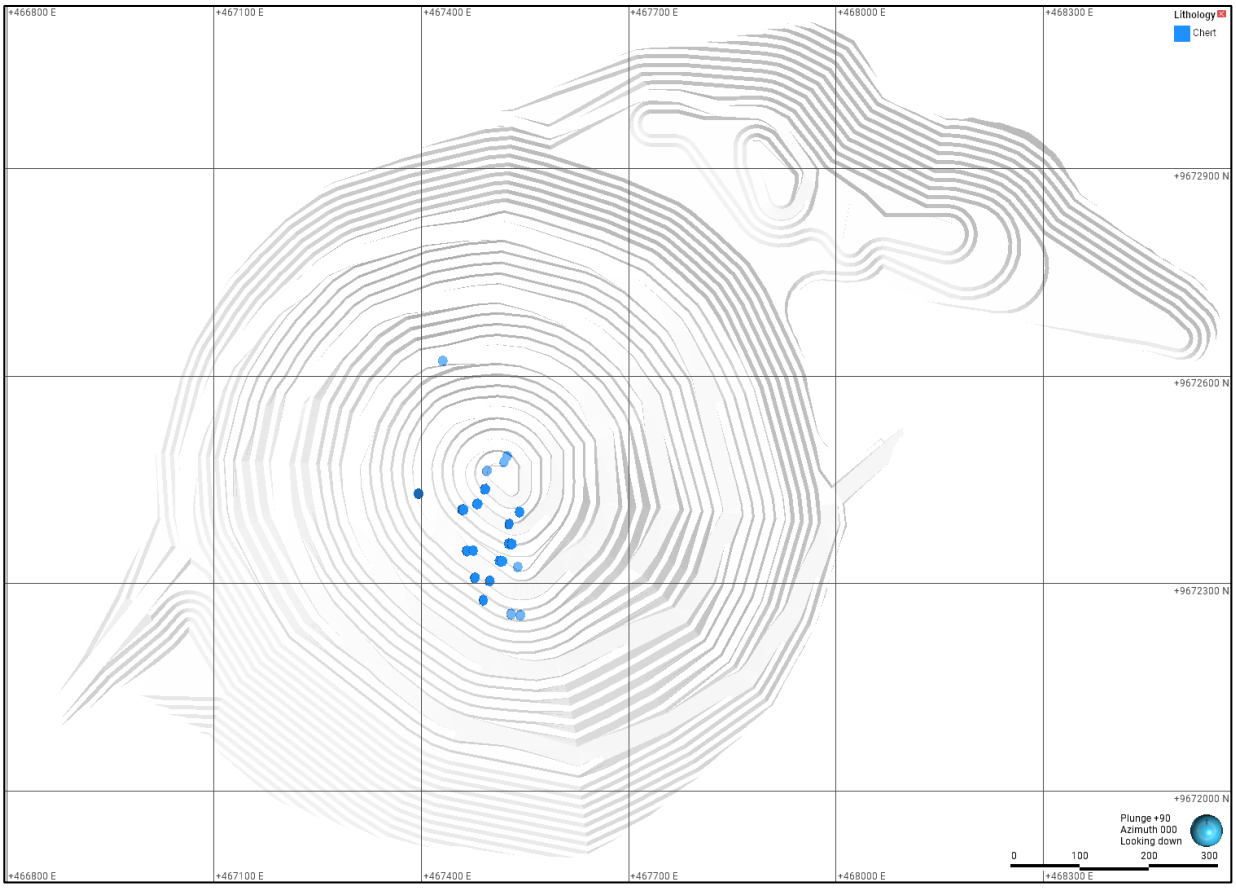



*Figure 13-15: Location of intervals selected for Nyanzaga chert ore type composite, plan view (Source: Perseus, 2025)*

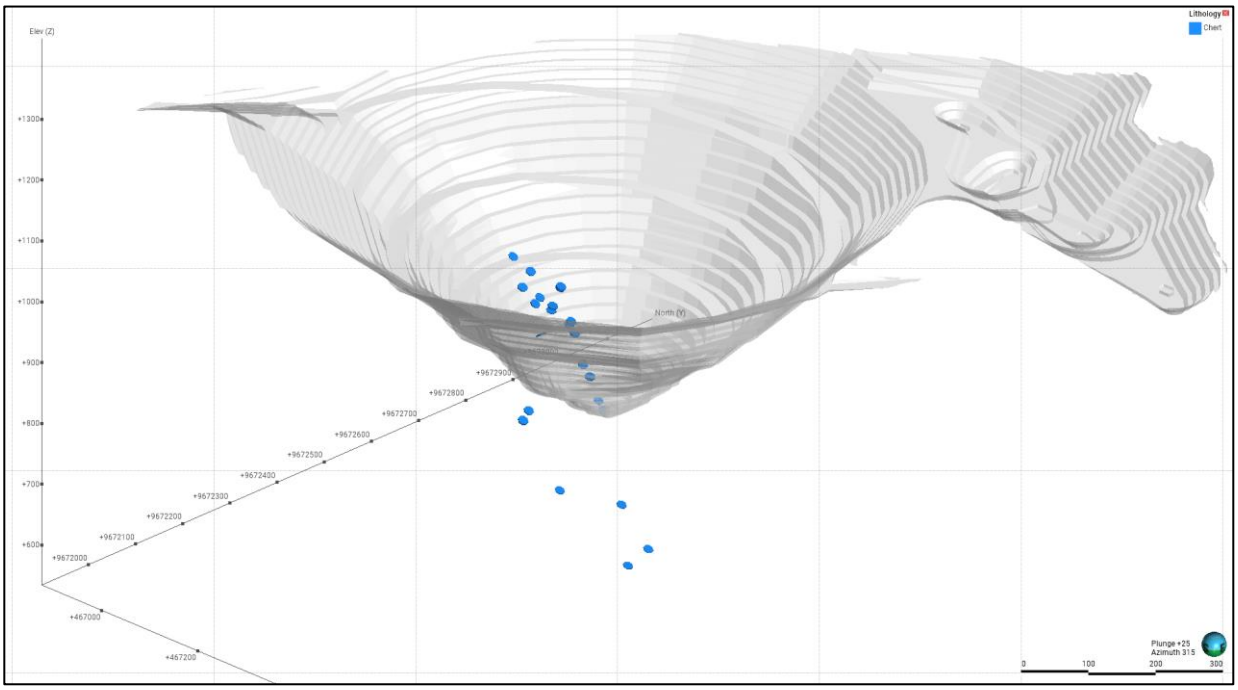



*Figure 13-16: Location of intervals selected for Nyanzaga chert ore type composite, perspective view looking northeast (Source: Perseus, 2025)*

### 13.2.1.5 ENGINEERING BULK COMPOSITES

Three engineering bulk composites were generated for bulk cyanidation tests, and to provide samples for tailings testing (including mineralogical analysis) and the determination of slurry rheology parameters necessary for process plant design and operation for pumping, mixing and thickening.

The oxide bulk engineering composite (OX-ENG-BULK) was generated using varying masses from the reserve of the two oxide comminution variability samples, as well as additional intervals from one of the two drill holes that the oxide comminution variability samples were sourced. Intervals selected for the oxide bulk engineering composite are listed in Table 13-9, and shown graphically in plan view in Figure 13-17 and in perspective view in Figure 13-18.

The fresh bulk engineering composite (FR-ENG-BULK) was generated using varying masses from the reserve of 16 out of the 18 fresh ore (mudstone, sandstone, chert) comminution variability samples (with samples C1B-SS-FR-17 and C1B-MS-FR-18 being excluded). The composition of the fresh bulk engineering composite is listed in Table 13-10, and is shown graphically in plan view in Figure 13-19 and in perspective view in Figure 13-20.

The fresh bulk engineering paste fill feed composite (FR-ENG-PASTE) is of similar composition to FR-ENG-BULK, and was generated using reserve of 15 out of the 18 fresh ore (mudstone, sandstone, chert) comminution variability samples (with samples C1B-MS-FR-10, C1B-SS-FR-15 and C1B-SS-FR-16 being excluded).The composition of the fresh bulk engineering paste fill feed composite is listed in Table 13-11.

***Table 13-9: Nyanzaga oxide bulk engineering composite sample intervals***

| DRILL HOLE | FROM (m) | TO (m) | MASS (kg) |
|---|---|---|---|
| NYZDD0003 | 33 | 40 | 25.0 |
| | 47 | 54 | 9.3 |
| NYZDDM0002 | 20 | 23 | 13.1 |

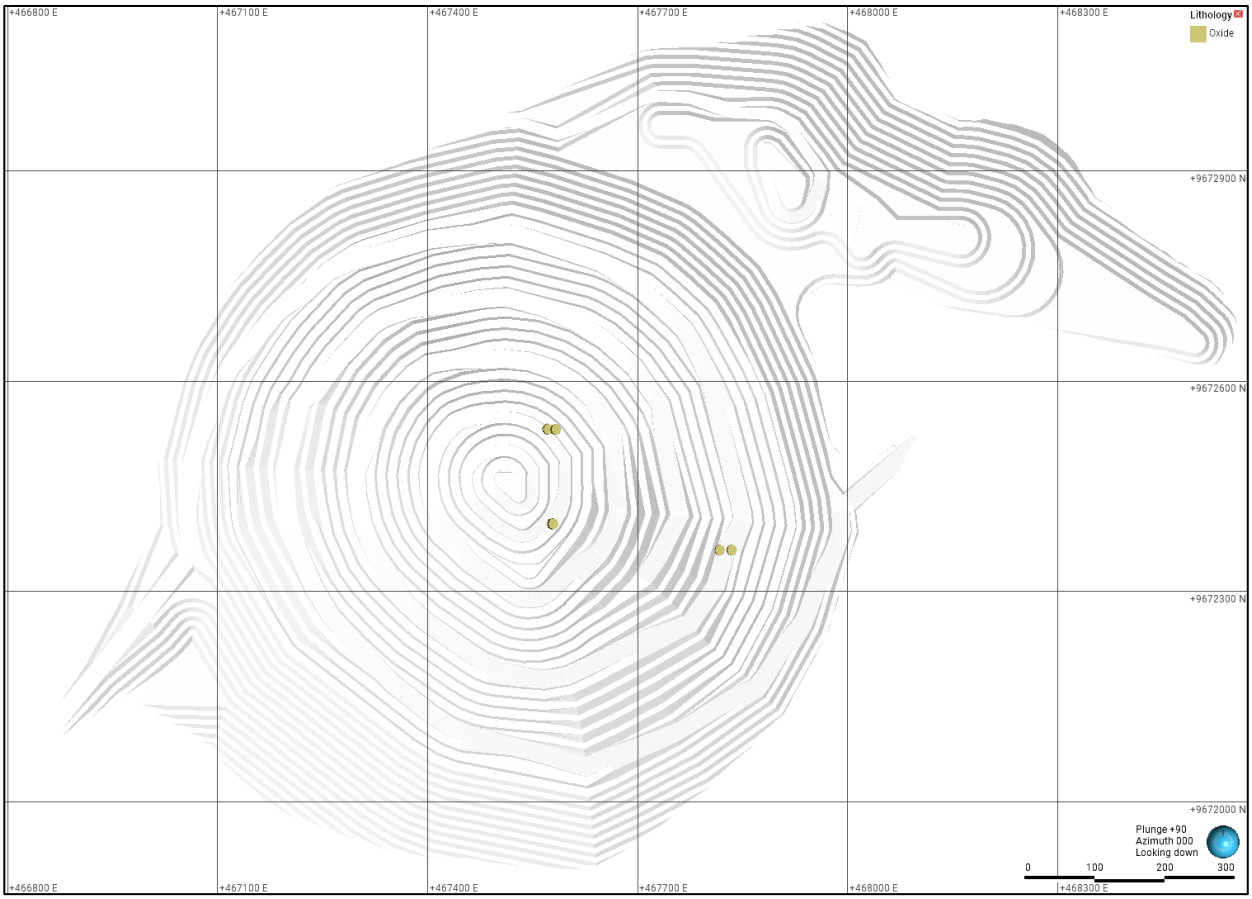



*Figure 13-17: Location of intervals selected for Nyanzaga oxide ore engineering composite, plan view (Source: Perseus, 2025)*

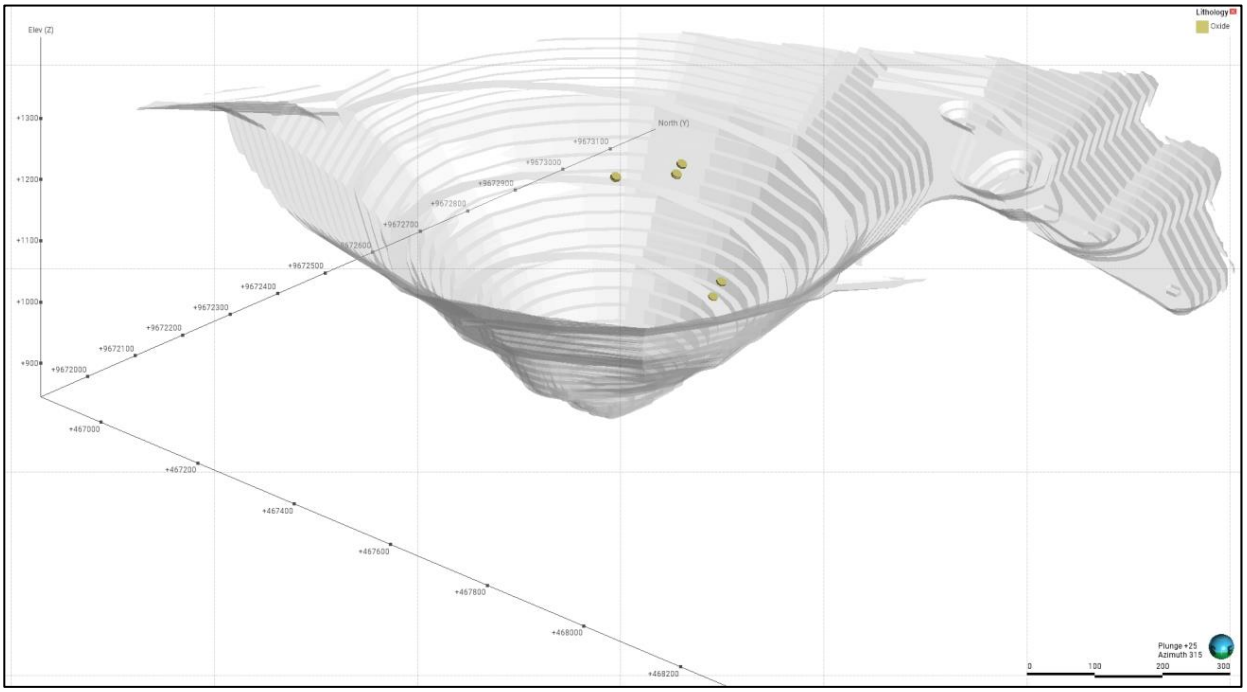



*Figure 13-18: Location of intervals selected for Nyanzaga oxide ore engineering composite, perspective view looking northeast (Source: Perseus, 2025)*

*Table 13-10: Nyanzaga fresh bulk engineering composite composition*

| COMMINUTION SAMPLE | MASS (kg) |
|---|---|
| C1A-CH-FR-1 | 5.0 |
| C1A-SS-FR-2 | 9.2 |
| C1A-MS-FR-3 | 10.7 |
| C1B-CH-FR-4 | 5.0 |
| C1B-CH-FR-5 | 1.1 |
| C1B-SS-FR-6 | 15.2 |
| C1B-SS-FR-7 | 15.2 |
| C1B-SS-FR-8 | 9.4 |
| C1B-MS-FR-9 | 21.1 |
| C1B-MS-FR-10 | 19.0 |
| C1B-MS-FR-11 | 7.4 |
| C1B-CH-FR-12 | 5.8 |
| C1B-CH-FR-13 | 8.9 |
| C1B-CH-FR-14 | 17.1 |
| C1B-SS-FR-15 | 10.1 |
| C1B-SS-FR-16 | 8.7 |

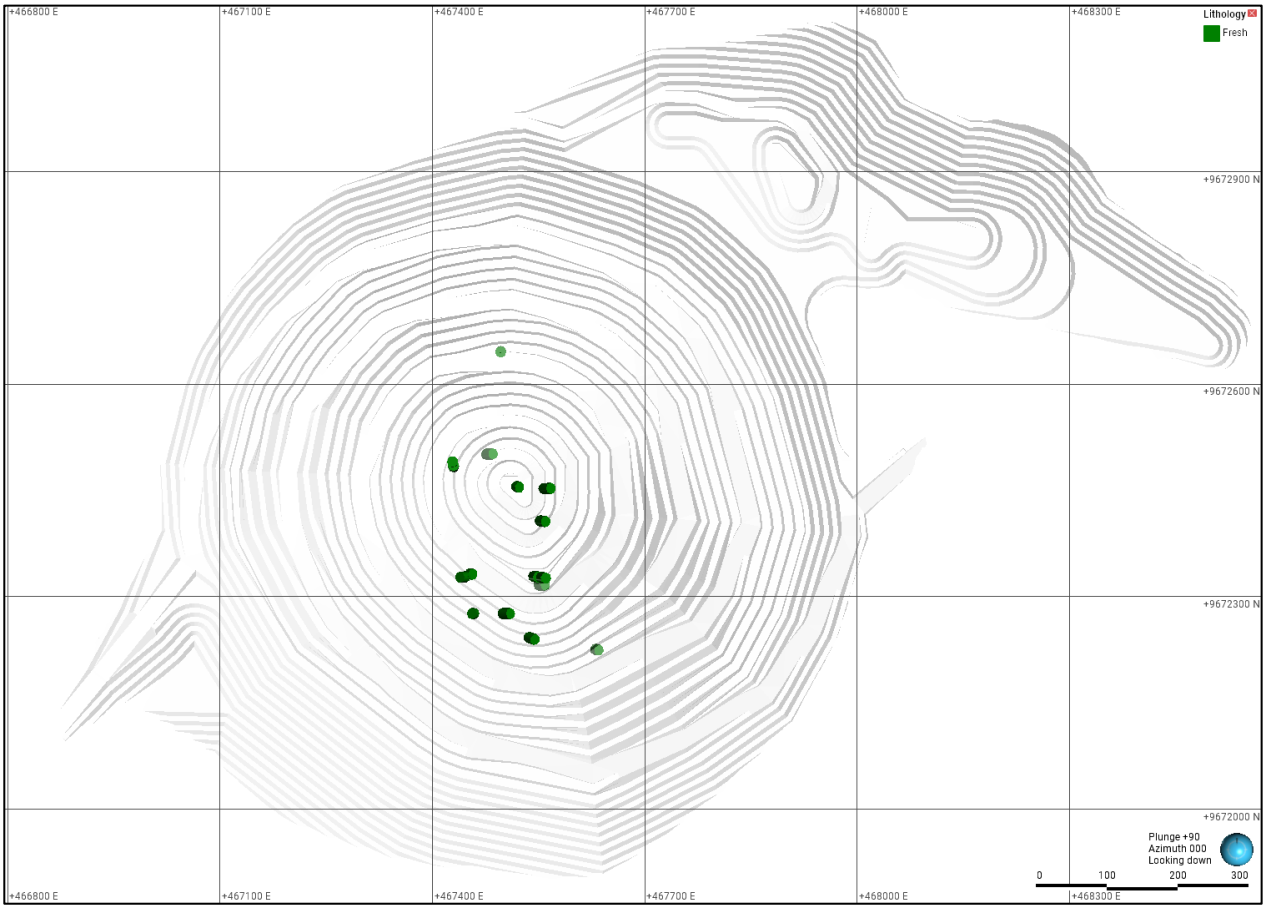



*Figure 13-19: Location of intervals selected for Nyanzaga fresh ore engineering composite, plan view (Source: Perseus, 2025)*

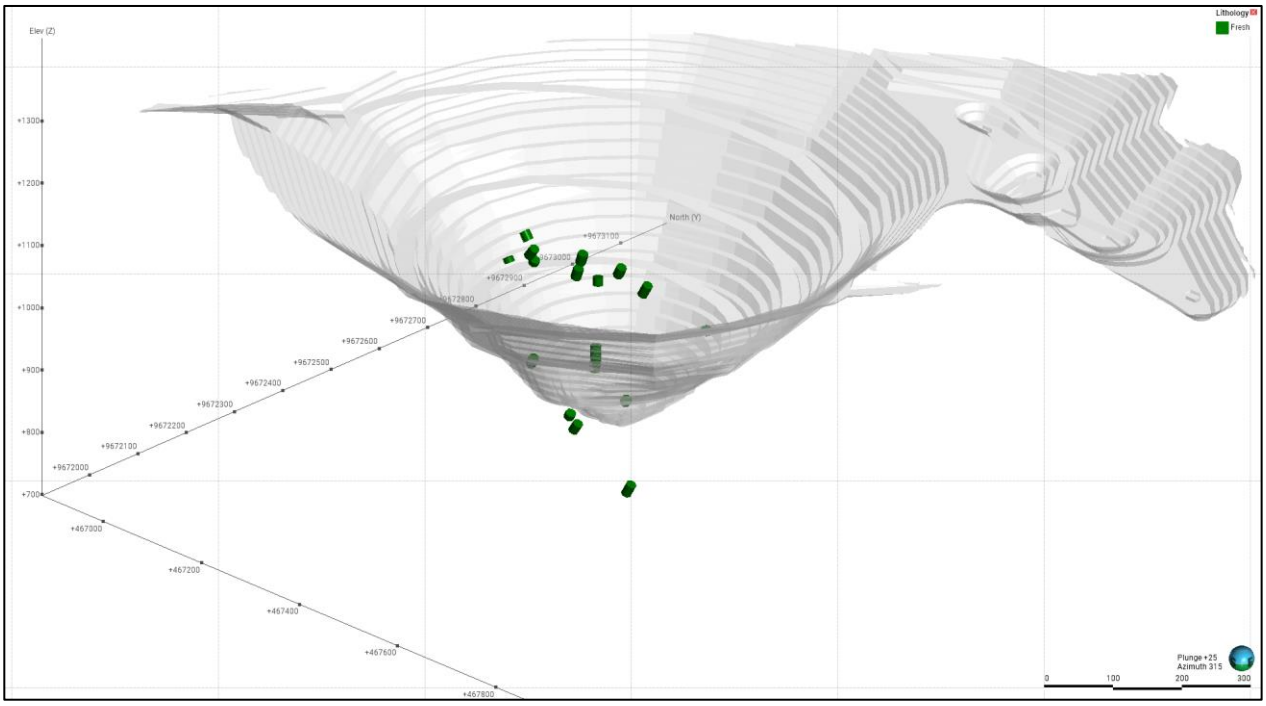



*Figure 13-20: Location of intervals selected for Nyanzaga fresh ore engineering composite, perspective view looking northeast (Source: Perseus, 2025)*

*Table 13-11: Nyanzaga fresh bulk engineering paste fill feed composite composition*

| COMMINUTION SAMPLE | MASS (kg) |
|---|---|
| C1A-CH-FR-1 | 3.4 |
| C1A-SS-FR-2 | 8.6 |
| C1A-MS-FR-3 | 10.0 |
| C1B-CH-FR-4 | 2.4 |
| C1B-CH-FR-5 | 0.8 |
| C1B-SS-FR-6 | 14.7 |
| C1B-SS-FR-7 | 14.9 |
| C1B-SS-FR-8 | 9.1 |
| C1B-MS-FR-9 | 6.3 |
| C1B-MS-FR-11 | 21.8 |
| C1B-CH-FR-12 | 4.3 |
| C1B-CH-FR-13 | 6.5 |
| C1B-CH-FR-14 | 8.2 |
| C1B-SS-FR-17 | 7.6 |
| C1B-MS-FR-18 | 8.3 |

#### 13.2.1.6 MASTER COMPOSITE

A single Nyanzaga master composite was generated from fresh ore samples for demonstration and bulk gravity/cyanidation tests, cyanide detoxification test work, arsenic precipitation test work, and determination of carbon adsorption kinetic parameters necessary for process plant design and operation. The composition, by weight fraction, of the Nyanzaga master composite is 40% mudstone ore type composite, 40% sandstone ore type composite and 20% chert ore type composite. The constituent intervals of the Nyanzaga master composite are shown in plan view in Figure 13-21, and in perspective view in Figure 13-22.

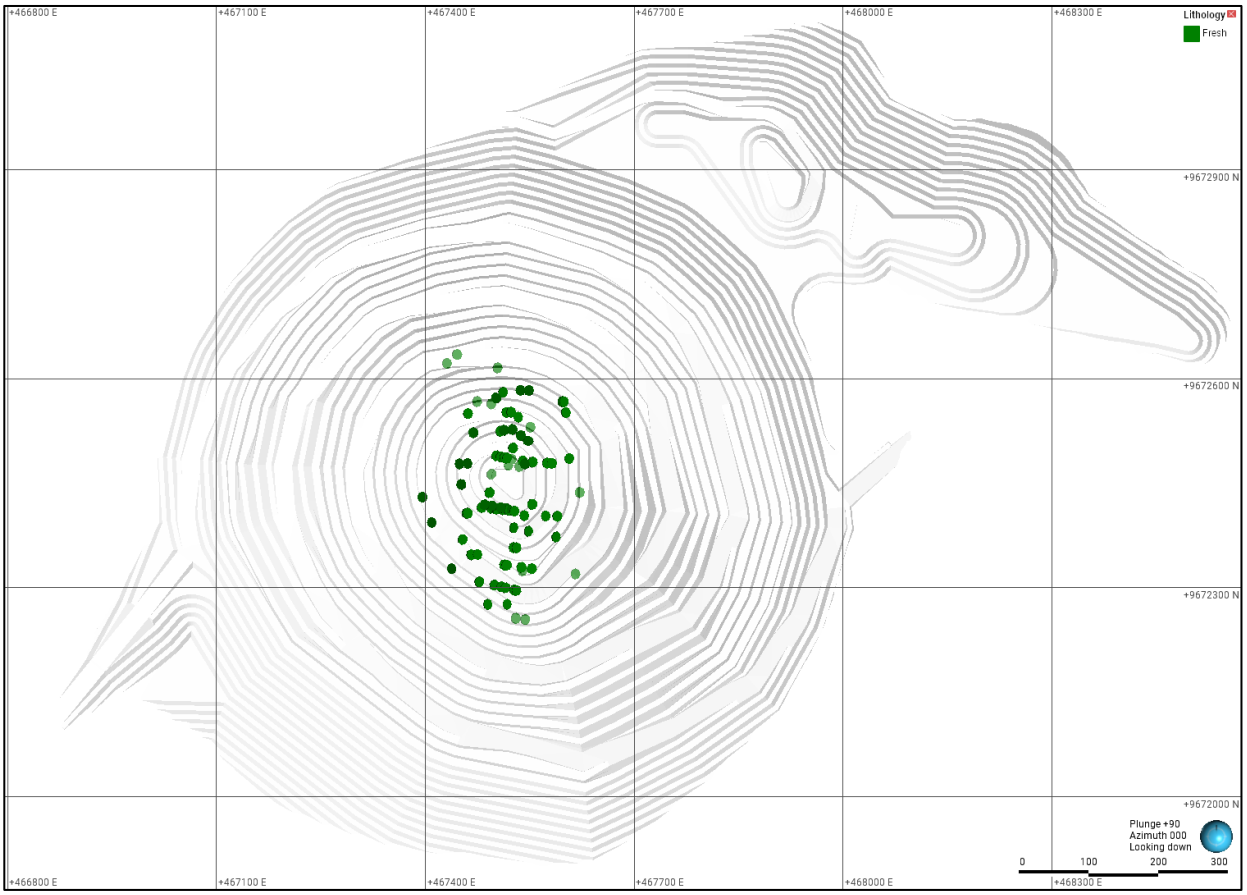



*Figure 13-21: Location of intervals selected for Nyanzaga master composite, plan view (Source: Perseus, 2025)*

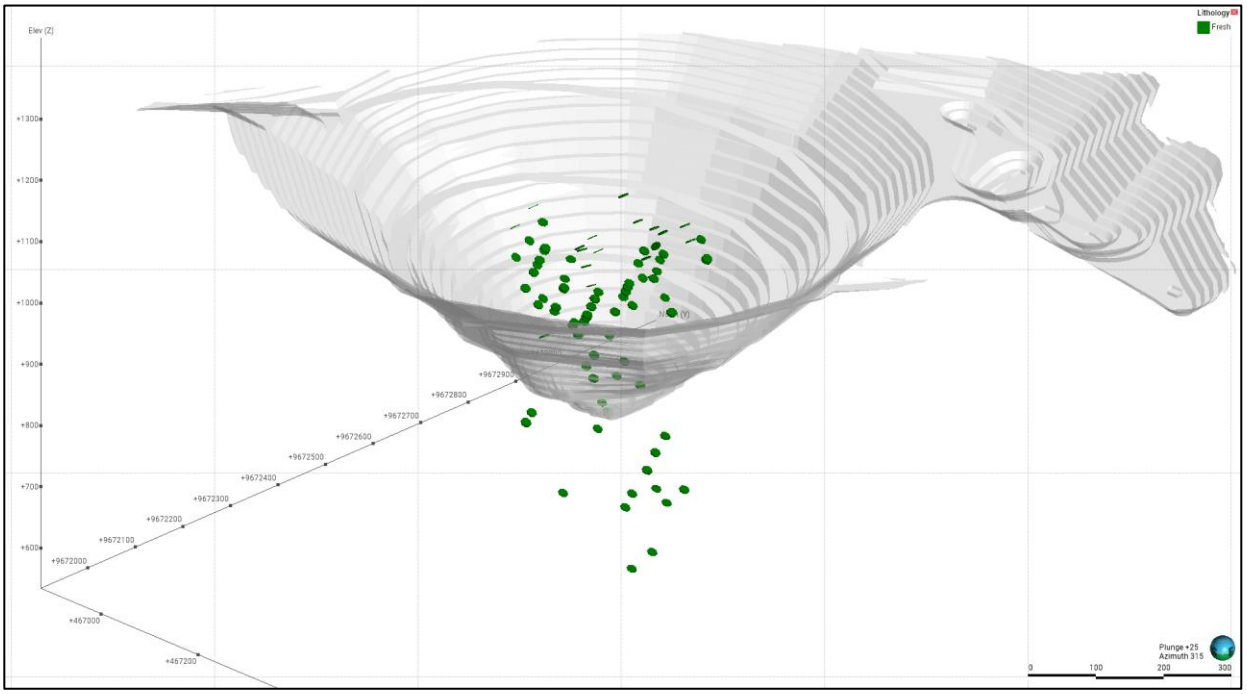



*Figure 13-22: Location of intervals selected for Nyanzaga master composite, perspective view looking northeast (Source: Perseus, 2025)*

### 13.2.2 HEAD GRADE AND SPECIFIC GRAVITY

Each composite and metallurgical variability sample underwent fire assay (FA) for gold in duplicate or triplicate, and multi-element analyses for a further 45 analytes (29 analytes for FR-ENG-PASTE). Metallurgical variability composites also underwent screen fire assay (SFA) for gold. Multi-element analyses were not conducted for OX-ENG-BULK, and FA for gold only was conducted on this composite. A summary of select assay results for composite and metallurgical variability samples is shown in Table 13-12.

From the data presented:

- It can be deduced that gold is present as both coarse spotty gold and fine gold in the Nyanzaga deposit. Coarse spotty gold is indicated by elevated screen fire assay values in the +75 µm fraction, when compared to the -75 µm fraction. The presence of the nuggety nature of some of the mineralisation was also noted in Section 11. Fine gold is indicated by consistency across FA and SFA total values, or where there are elevated screen fire assay values in the -75 µm fraction, when compared to the +75 µm fraction.
- Silver is not present in an economic quantity, though it will need to be considered in process design for the CIL, elution, electrowinning and smelting circuits. Given the elevated silver grade in some samples, silver extraction was monitored in subsequent test work.
- The sulfide sulfur assay data set indicates that sulfide minerals are present, even in some samples that were characterised as oxide. Metal speciation, combined with the mineralogical analysis performed on the cyanidation leach residue of the fresh bulk engineering paste fill feed composite, presented in Section 13.2.7.1, suggests that the dominant sulfide mineral is pyrite, with pyrrhotite and arsenopyrite also present. This finding is also supported by low assay values across the data set for copper and base metals other than iron. Arsenic extraction was monitored in subsequent test work.
- Organic carbon values are low for all samples except V-CH-FR-1, indicating that Nyanzaga deposit ore is unlikely to exhibit preg-robbing behaviour.
- Mercury is present in most samples across all ore types – process design should consider options for mercury recovery and health monitoring of gold room personnel should be put into place to manage residual risk. Mercury extraction was monitored in subsequent test work.
- Antimony levels are elevated across all ore types, increasing the risk of gold passivation that can occur at high pH. pH control should be included in the process control design. Antimony extraction was monitored in subsequent test work.
- Tellurium assay levels are low, indicating that refractory telluride minerals are unlikely to be present.

*Table 13-12: Head assays (select analytes) for Nyanzaga deposit test work composites and metallurgical variability samples*

| SAMPLE | Au FA average (g/t) | Au SFA (g/t) | Au SFA +75 µm (g/t) | Au SFA -75 µm (g/t) | Ag (ppm) | As (ppm) | $C_{organic}$ (%) | Hg (ppm) | $S_{sulfide}$ (%) | Sb (ppm) | Te (ppm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| OTC-OX-OX | 1.97 | 1.79 | - | - | 2.8 | 450 | 0.01 | 1.7 | 1.47 | 30 | 0.6 |
| OTC-MS-FR | 1.70 | 1.71 | - | - | 2.2 | 1,210 | 0.04 | 0.7 | 4.05 | 60 | 0.6 |
| OTC-SS-FR | 3.01 | 3.13 | - | - | 2.0 | 1,580 | <0.01 | 1.1 | 3.74 | 70 | <0.5 |
| OTC-CH-FR | 2.21 | 2.26 | - | - | 2.0 | 1,590 | 0.02 | 1.7 | 4.34 | 60 | <0.5 |
| OX-ENG-BULK | 0.41 | - | - | - | - | - | - | - | - | - | - |
| FR-ENG-BULK | 1.96 | 2.03 | - | - | 1.8 | 705 | 0.04 | 1.7 | 3.17 | 35 | <0.5 |
| FR-ENG-PASTE | 2.14 | - | - | - | 1.8 | 660 | - | 1.7 | - | 47 | - |
| Master Comp* | 2.33 | 2.39 | - | - | 2.1 | 1,430 | 0.02 | 1.1 | 3.98 | 60 | 0.4 |
| V-CH-FR-1 | 0.28 | 0.28 | 0.21 | 0.28 | 0.6 | 820 | 0.31 | 0.9 | 10.1 | 145 | 0.5 |
| V-CH-FR-2 | 1.56 | 1.97 | 2.25 | 1.96 | 0.5 | 1,950 | <0.01 | 0.1 | 1.51 | 20 | <0.5 |
| V-CH-FR-3 | 4.15 | 3.98 | 4.19 | 3.98 | 4.1 | 1,860 | 0.02 | 1.3 | 7.91 | 85 | <0.5 |
| V-CHF-FR-4 | 3.83 | 3.93 | 6.29 | 3.85 | 2.1 | 4,420 | 0.02 | 0.7 | 3.57 | 50 | 0.9 |
| V-CH-FR-5 | 5.51 | 5.35 | 13.1 | 5.12 | 5.0 | 1,600 | <0.01 | 0.9 | 2.37 | 25 | <0.5 |
| V-CH-FR-6 | 9.17 | 6.22 | 8.55 | 6.12 | 2.1 | 815 | <0.01 | 1.3 | 2.15 | 65 | <0.5 |
| V-CH-FR-7 | 1.84 | 1.74 | 2.31 | 1.72 | 0.8 | 190 | <0.01 | 0.1 | 3.12 | 20 | <0.5 |
| V-CH-FR-8 | 1.44 | 1.30 | 1.17 | 1.30 | 1.5 | 845 | <0.01 | 0.6 | 3.66 | 35 | <0.5 |
| V-CH-FR-9 | 10.7 | 10.4 | 8.81 | 10.5 | 5.8 | 2,270 | <0.01 | 0.4 | 3.46 | 50 | <0.5 |
| V-SS-FR-10 | 1.02 | 0.88 | 0.62 | 0.89 | 1.9 | 1,620 | <0.01 | 3.1 | 11.6 | 125 | <0.5 |
| V-SS-FR-11 | 6.57 | 8.19 | 5.71 | 8.29 | 3.2 | 1,110 | 0.01 | 0.4 | 1.38 | 25 | <0.5 |
| V-SS-FR-12 | 2.25 | 1.99 | 2.63 | 1.97 | 20.0 | 1,120 | 0.03 | 1.0 | 17.0 | 280 | <0.5 |
| V-SS-FR-13 | 3.21 | 3.42 | 3.34 | 3.42 | 2.1 | 445 | <0.01 | 0.4 | 4.78 | 20 | <0.5 |
| V-SS-FR-14 | 1.77 | 1.76 | 1.05 | 1.78 | 0.7 | 770 | 0.01 | <0.1 | 3.04 | 40 | <0.5 |
| V-SS-FR-15 | 16.0 | 22.4 | 60.8 | 20.6 | 9.4 | 320 | 0.01 | 0.4 | 2.03 | 20 | <0.5 |
| V-SS-FR-16 | 1.26 | 1.18 | 3.04 | 1.13 | 3.5 | 1,140 | <0.01 | 0.2 | 8.11 | 60 | <0.5 |
| V-MS-FR-17 | 1.23 | 1.29 | 0.92 | 1.30 | 1.0 | 580 | 0.01 | 0.2 | 2.47 | <10 | <0.5 |
| V-MS-FR-18 | 2.81 | 2.74 | 2.64 | 2.74 | 1.2 | 585 | <0.01 | 0.3 | 3.14 | 35 | <0.5 |
| V-MS-FR-19 | 2.08 | 2.03 | 1.32 | 2.06 | 4.1 | 625 | <0.01 | 0.3 | 3.82 | 25 | <0.5 |
| V-MS-FR-20 | 0.79 | 0.59 | 0.36 | 0.60 | 0.6 | 605 | 0.01 | 0.4 | 0.64 | <10 | <0.5 |
| V-MS-FR-21 | 0.91 | 0.86 | 0.50 | 0.88 | 1.5 | 625 | <0.01 | 0.4 | 3.85 | 35 | <0.5 |
| V-MS-FR-22 | 1.93 | 2.08 | 2.03 | 2.08 | 1.3 | 285 | <0.01 | 0.5 | 2.46 | <10 | <0.5 |
| V-MS-FR-23 | 1.66 | 1.36 | 1.34 | 1.36 | 1.2 | 145 | <0.01 | <0.1 | 1.01 | 20 | <0.5 |
| V-AX-FR-24 | 2.89 | 3.96 | 2.61 | 4.02 | 0.9 | 960 | 0.02 | 0.2 | 1.92 | 35 | <0.5 |
| V-AX-FR-25 | 2.86 | 3.28 | 5.18 | 3.23 | 1.4 | 1,420 | <0.01 | 0.4 | 4.63 | 35 | <0.5 |
| V-AX-FR-26 | 2.16 | 1.53 | 1.08 | 1.54 | 3.0 | 425 | <0.01 | 0.2 | 2.62 | 105 | <0.5 |
| V-FEF-FR-27 | 6.83 | 6.35 | 12.2 | 6.20 | 37.5 | 215 | <0.01 | 11.5 | 11.9 | 230 | <0.5 |
| V-FEF-FR-28 | 2.53 | 2.66 | 0.92 | 2.76 | 8.9 | 1,150 | <0.01 | 1.5 | 5.64 | 60 | <0.5 |
| V-FEF-FR-29 | 1.19 | 1.16 | 0.86 | 1.18 | 3.5 | 1,240 | <0.01 | 0.6 | 2.05 | 65 | <0.5 |
| V-OX-OX-30 | 4.99 | 4.86 | 7.37 | 4.76 | 5.9 | 85 | <0.01 | 2.8 | 3.01 | 25 | <0.5 |
| V-OX-OX-31 | 2.45 | 2.68 | 4.52 | 2.59 | 0.5 | 1,140 | <0.01 | <0.1 | 0.01 | 55 | <0.5 |
| V-OX-OX-32 | 0.96 | 0.84 | 0.64 | 0.86 | 1.3 | 1,180 | <0.01 | 0.2 | 0.19 | 110 | <0.5 |

* Master composite assays are calculated based on weighted average of constituent components.

BLEG variability samples underwent fire assay (FA) for gold in sextuplicate. A summary of gold assay results for the BLEG variability samples is shown in Table 13-13. Good correlation is noted across the sextuplicate gold fire assays for all BLEG variability samples.

***Table 13-13: Gold head assays for Nyanzaga deposit test work BLEG variability samples***

| BLEG VARIABILITY SAMPLE | ORE TYPE | Au FA 1 (g/t) | Au FA 2 (g/t) | Au FA 3 (g/t) | Au FA 4 (g/t) | Au FA 5 (g/t) | Au FA 6 (g/t) | AU FA AVERAGE (g/t) |
|---|---|---|---|---|---|---|---|---|
| RCBT95040 | oxide | 0.11 | 0.14 | 0.15 | 0.23 | 0.17 | 0.15 | 0.16 |
| RCBT95060 | oxide | 0.82 | 0.94 | 0.73 | 0.86 | 0.82 | 0.82 | 0.83 |
| RCBT95274 | sandstone | 1.52 | 1.45 | 1.50 | 1.47 | 1.52 | 1.50 | 1.49 |
| RCBT95278 | sandstone | 2.13 | 2.21 | 2.59 | 2.48 | 2.30 | 2.47 | 2.36 |
| RCBT95303 | sandstone | 1.38 | 1.30 | 1.60 | 1.57 | 1.59 | 1.67 | 1.52 |
| RCBT95310 | mudstone | 1.83 | 1.73 | 1.89 | 1.85 | 1.77 | 1.78 | 1.81 |
| RCBT95375 | sandstone | 14.8 | 15.4 | 17.6 | 15.8 | 15.1 | 16.1 | 15.8 |
| RCBT95381 | chert | 0.27 | 0.25 | 0.26 | 0.33 | 0.27 | 0.28 | 0.28 |
| RCBT95386 | sandstone | 2.91 | 2.81 | 2.98 | 2.84 | 2.97 | 3.11 | 2.94 |
| RCBT95393 | mudstone | 0.71 | 0.65 | 0.81 | 0.72 | 0.65 | 0.61 | 0.69 |
| RCBT95404 | mudstone | 1.78 | 1.72 | 1.75 | 1.78 | 1.75 | 1.71 | 1.75 |
| RCBT95417 | mudstone | 0.75 | 0.82 | 0.74 | 0.80 | 0.85 | 0.87 | 0.81 |
| RCBT95457 | axial | 1.33 | 1.38 | 1.46 | 1.34 | 1.37 | 1.25 | 1.36 |
| RCBT95465 | chert | 0.74 | 0.67 | 0.77 | 0.76 | 0.77 | 0.72 | 0.74 |
| RCBT95474 | chert | 1.95 | 1.97 | 2.36 | 2.64 | 2.39 | 2.04 | 2.23 |
| RCBT95476 | chert | 2.45 | 2.58 | 2.62 | 2.87 | 2.40 | 2.26 | 2.53 |
| RCBT95515 | chert | 1.06 | 1.02 | 1.00 | 1.03 | 1.04 | 0.99 | 1.02 |
| RCBT95534 | sandstone | 3.02 | 3.32 | 3.01 | 3.13 | 3.34 | 3.54 | 3.23 |
| RCBT95554 | mudstone | 1.14 | 1.15 | 1.23 | 1.15 | 1.21 | 1.27 | 1.19 |
| RCBT95561 | mudstone | 1.30 | 1.18 | 1.21 | 1.18 | 1.25 | 1.16 | 1.21 |
| RCBT95567 | axial | 2.40 | 2.44 | 2.40 | 2.40 | 2.43 | 2.41 | 2.41 |
| RCBT95613 | chert | 2.46 | 2.34 | 2.49 | 2.58 | 2.50 | 2.62 | 2.50 |
| RCBT95664 | chert | 2.21 | 2.17 | 2.20 | 2.26 | 2.19 | 2.18 | 2.20 |
| RCBT95668 | sandstone | 2.84 | 3.03 | 3.16 | 3.04 | 3.05 | 2.90 | 3.00 |
| RCBT95672 | sandstone | 2.07 | 2.15 | 2.41 | 2.43 | 2.34 | 2.28 | 2.28 |
| RCBT95696 | mudstone | 1.10 | 1.05 | 1.16 | 1.16 | 1.13 | 1.17 | 1.13 |
| RCBT95717 | chert | 1.44 | 1.48 | 1.45 | 1.44 | 1.55 | 1.54 | 1.48 |
| RCBT95736 | mudstone | 0.58 | 0.59 | 0.66 | 0.68 | 0.57 | 0.64 | 0.62 |
| RCBT95746 | sandstone | 1.83 | 1.77 | 1.93 | 1.89 | 1.91 | 1.75 | 1.85 |
| RCBT95756 | sandstone | 2.57 | 2.56 | 2.84 | 2.70 | 2.62 | 2.82 | 2.69 |

Each metallurgical variability sample and most composite samples also underwent a true specific gravity (SG) determination. The true SG results are presented in Table 13-14.

*Table 13-14: True SG for Nyanzaga deposit test work composites and metallurgical variability samples*

| SAMPLE | ORE TYPE | TRUE SG |
|---|---|---|
| OTC-OX-OX | oxide | 3.04 |
| OTC-MS-FR | mudstone | 2.94 |
| OTC-SS-FR | sandstone | 2.97 |
| OTC-CH-FR | chert | 2.93 |
| OX-ENG-BULK | oxide | - |
| FR-ENG-BULK | fresh | 2.95 |
| FR-ENG-PASTE | fresh | - |
| Master Composite* | fresh | 2.95 |
| V-CH-FR-1 | chert | 3.06 |
| V-CH-FR-2 | chert | 2.83 |
| V-CH-FR-3 | chert | 2.99 |
| V-CHF-FR-4 | chert/fault | 2.90 |
| V-CH-FR-5 | chert | 2.88 |
| V-CH-FR-6 | chert | 2.89 |
| V-CH-FR-7 | chert | 2.94 |
| V-CH-FR-8 | chert | 2.90 |
| V-CH-FR-9 | chert | 2.93 |
| V-SS-FR-10 | sandstone | 3.10 |
| V-SS-FR-11 | sandstone | 2.87 |
| V-SS-FR-12 | sandstone | 3.16 |
| V-SS-FR-13 | sandstone | 2.94 |
| V-SS-FR-14 | sandstone | 2.93 |
| V-SS-FR-15 | sandstone | 2.92 |
| V-SS-FR-16 | sandstone | 3.04 |
| V-MS-FR-17 | mudstone | 2.91 |
| V-MS-FR-18 | mudstone | 2.90 |
| V-MS-FR-19 | mudstone | 2.96 |
| V-MS-FR-20 | mudstone | 2.94 |
| V-MS-FR-21 | mudstone | 2.92 |
| V-MS-FR-22 | mudstone | 3.02 |
| V-MS-FR-23 | mudstone | 2.86 |
| V-AX-FR-24 | axial fault | 2.85 |
| V-AX-FR-25 | axial fault | 3.81 |
| V-AX-FR-26 | axial fault | 3.87 |
| V-FEF-FR-27 | far east fault | 4.31 |
| V-FEF-FR-28 | far east fault | 3.75 |
| V-FEF-FR-29 | far east fault | 3.70 |
| V-OX-OX-30 | oxide | 4.65 |
| V-OX-OX-31 | oxide | 3.87 |
| V-OX-OX-32 | oxide | 4.29 |

* Master composite SG was calculated based on weighted average of constituent components.

The SG results for mudstone, sandstone and chert samples (2.8-3.1) generally align with the SG values determined for the same ore types as part of SMC® tests (2.7-3.3, as shown in Table 13-17). The oxide master composite SG of 3.0 is higher than the SG values determined for oxide ore samples as part of SMC® tests (2.5-2.7), and the SG values for the oxide variability samples are anomalously high. Core logging for some of the intervals associated with the oxide variability samples indicate the presence of iron formations, which

can be associated with magnetite. Magnetite is a high SG mineral and this may explain some of the anomalously high SG values for the oxide variability samples.

High SG values were also noted for axial fault and far east fault variability samples. As noted in Section 7.3.1, the presence of massive sulfides in the Nyanzaga deposit are likely fault controlled. Elevated sulfide sulfur assays were noted for most of the fault-type variability samples (Table 13-12), indicating that elevated SG values for the fault-type variability samples are likely associated with higher concentrations of sulfide minerals.

### 13.2.3 COMMINUTION TEST WORK

#### 13.2.3.1 BOND IMPACT CRUSHING WORK INDEX

The Bond impact crushing work index (CWi) test determines a rock sample's resistance to impact crushing and is a measure of the competency of ore samples at larger particle sizes. Up to twenty pieces of core in the size range of -65 + 50 mm were selected for each sample and a standard CWi test was conducted on each piece of core. The results are summarised in Table 13-15.

***Table 13-15: CWi for Nyanzaga deposit comminution variability samples***

| SAMPLE | ORE TYPE | AVERAGE CWi (kWh/t) |
|---|---|---|
| C1A-CH-FR-1 | chert | 12.8 |
| C1A-SS-FR-2 | sandstone | 14.2 |
| C1A-MS-FR-3 | mudstone | 14.9 |

As per the ore hardness classification in Table 13-18, the average chert ore sample is medium hard, and the average sandstone and mudstone samples are hard.

#### 13.2.3.2 SMC TEST®

The SMC Test® is used to determine the breakage characteristics of an ore. It provides a number of parameters that can be used to calculate the power requirements of a grinding circuit to treat the ore.

One of the parameters generated by the test is the A×b parameter. It can be used to classify an ore's competency. The more competent an ore, the more grinding energy is required and the less efficient a SAG mill becomes. Ore competency can be described as shown in Table 13-16 (Lynch, Mainza, & Morrell, 2015).

***Table 13-16: Ore competency classification***

| CLASSIFICATION | A×b |
|---|---|
| Very low competency | >127 |
| Low competency | 67-127 |
| Moderately low competency | 56-67 |
| Medium competency | 43-56 |
| Moderately competent | 38-43 |
| Competent | 30-38 |
| Very competent | <30 |

A standard SMC Test® was conducted on each of the comminution variability samples. The SMC Test® results are summarised in Table 13-17.

*Table 13-17: SMC Test® results for Nyanzaga deposit comminution variability samples*

| SAMPLE | ORE TYPE | DWI (kWh/m³) | A×b | $M_{ia}$ (kWh/t) | $M_{ic}$ (kWh/t) | SG | SCSE (kWh/t) |
|---|---|---|---|---|---|---|---|
| C1A-CH-FR-1 | chert | 6.52 | 42.6 | 18.5 | 7.0 | 2.8 | 9.74 |
| C1A-SS-FR-2 | sandstone | 7.88 | 35.1 | 21.8 | 8.6 | 2.8 | 10.62 |
| C1A-MS-FR-3 | mudstone | 8.04 | 35.0 | 21.8 | 8.6 | 2.8 | 10.73 |
| C1B-CH-FR-4 | chert | 6.51 | 44.5 | 17.7 | 6.7 | 2.9 | 9.84 |
| C1B-CH-FR-5 | chert | 6.75 | 41.8 | 18.6 | 7.1 | 2.8 | 9.97 |
| C1B-SS-FR-6 | sandstone | 6.26 | 43.6 | 18.3 | 6.9 | 2.7 | 9.51 |
| C1B-SS-FR-7 | sandstone | 6.05 | 45.4 | 17.5 | 6.6 | 2.8 | 9.42 |
| C1B-SS-FR-8 | sandstone | 4.66 | 70.9 | 12.0 | 4.3 | 3.3 | 8.30 |
| C1B-MS-FR-9 | mudstone | 5.66 | 48.0 | 16.9 | 6.3 | 2.7 | 9.11 |
| C1B-MS-FR-10 | mudstone | 8.89 | 30.9 | 23.6 | 9.6 | 2.8 | 11.42 |
| C1B-MS-FR-11 | mudstone | 6.54 | 41.9 | 18.7 | 7.1 | 2.8 | 9.77 |
| C1B-CH-FR-12 | chert | 4.77 | 58.7 | 14.3 | 5.1 | 2.8 | 8.47 |
| C1B-CH-FR-13 | chert | 7.12 | 40.1 | 19.3 | 7.5 | 2.9 | 10.19 |
| C1B-CH-FR-14 | chert | 5.12 | 54.4 | 15.2 | 5.5 | 2.8 | 8.75 |
| C1B-SS-FR-15 | sandstone | 7.49 | 37.7 | 20.5 | 8.0 | 2.8 | 10.37 |
| C1B-SS-FR-16 | sandstone | 5.80 | 48.5 | 16.7 | 6.2 | 2.8 | 9.23 |
| C1B-SS-FR-17 | sandstone | 7.54 | 35.8 | 21.6 | 8.4 | 2.7 | 10.35 |
| C1B-MS-FR-18 | mudstone | 6.44 | 43.3 | 18.4 | 7.0 | 2.8 | 9.66 |
| C1A-OX-OX-20 | oxide | 7.87 | 33.7 | 22.4 | 8.8 | 2.7 | 10.63 |
| C1A-OX-OX-21 | oxide | 5.16 | 47.4 | 17.4 | 6.3 | 2.5 | 8.98 |

The results show the oxide ore samples to be between medium competency and competent, and more competent than noted in historical test work in Section 13.1.

Fresh ore samples are between low competency and competent, with an average A×b of 44.3 (medium competency). Mudstone samples tested have an average A×b of 39.8 (moderately competent); sandstone samples tested have an average A×b of 45.3 (medium competency); and chert samples tested have an average A×b of 47.0 (medium competency). The fresh ore samples tested observed a wider range of A×b values than those noted in historical test work in Section 13.1, and were marginally less competent.

#### 13.2.3.3 BOND BALL MILL WORK INDEX

The grindability or hardness of an ore can be classified by the BWi value according to Table 13-18 (Lynch, Mainza, & Morrell, 2015).

*Table 13-18: Ore grindability/hardness classification*

| CLASSIFICATION | BOND WORK INDEX (kWh/t) |
|---|---|
| Very soft | <7.0 |
| Soft | 7.0-9.0 |
| Medium hard | 9.0-14.0 |
| Hard | 14.0-20.0 |
| Very hard | >20.0 |

A standard BWi test was conducted on each of the comminution variability samples. A closing screen of 106 µm was used, to yield a $P_{80}$ of 75 µm. The target grind size $P_{80}$ of 75 µm was determined from the gravity/leach grind size optimisation test work in Section 13.2.6.4. The results are presented in Table 13-19.

*Table 13-19: BWi for Nyanzaga deposit comminution variability samples*

| SAMPLE | ORE TYPE | BWi (kWh/t) |
|---|---|---|
| C1A-CH-FR-1 | chert | 18.81 |
| C1A-SS-FR-2 | sandstone | 17.58 |
| C1A-MS-FR-3 | mudstone | 16.87 |
| C1B-CH-FR-4 | chert | 19.22 |
| C1B-CH-FR-5 | chert | 18.29 |
| C1B-SS-FR-6 | sandstone | 23.60 |
| C1B-SS-FR-7 | sandstone | 22.02 |
| C1B-SS-FR-8 | sandstone | 11.60 |
| C1B-MS-FR-9 | mudstone | 22.82 |
| C1B-MS-FR-10 | mudstone | 19.02 |
| C1B-MS-FR-11 | mudstone | 20.88 |
| C1B-CH-FR-12 | chert | 18.02 |
| C1B-CH-FR-13 | chert | 18.13 |
| C1B-CH-FR-14 | chert | 16.49 |
| C1B-SS-FR-15 | sandstone | 24.09 |
| C1B-SS-FR-16 | sandstone | 17.21 |
| C1B-SS-FR-17 | sandstone | 20.40 |
| C1B-MS-FR-18 | mudstone | 22.93 |
| C1A-OX-OX-20 | oxide | 16.39 |
| C1A-OX-OX-21 | oxide | 18.41 |

The results show the oxide ore samples to be hard, and harder than noted in historical test work in Section 13.1.

Fresh ore samples were between medium hard and very hard, with an average BWi of 19.33 kWh/t (hard). Mudstone samples tested have an average BWi of 19.93 kWh/t (hard); sandstone samples tested have an average BWi of 19.50 kWh/t (hard); and chert samples tested have an average BWi of 18.16 kWh/t (hard). The fresh ore samples tested were of similar hardness to those tested in historical test work in Section 13.1.

#### 13.2.3.4 BOND ROD MILL WORK INDEX

A standard RWi test was conducted on three fresh ore comminution variability samples. A closing screen of 1,180 µm was used. The results are presented in Table 13-20.

*Table 13-20: RWi for Nyanzaga deposit comminution variability samples*

| SAMPLE | ORE TYPE | RWi (kWh/t) |
|---|---|---|
| C1A-CH-FR-1 | chert | 20.67 |
| C1A-SS-FR-2 | sandstone | 22.25 |
| C1A-MS-FR-3 | mudstone | 20.47 |

As per the ore hardness classification in Table 13-18, the fresh ore samples tested were all very hard. When RWi values are higher than BWi values for the same samples, it is indicative of higher competency ores, which correlates with the observations from Section 13.2.3.2.

The RWi values from these tests fall within the range observed for fresh ore samples from historical test work noted in Section 13.1.

#### 13.2.3.5 BOND ABRASION INDEX

The abrasiveness of an ore can be classified by the Ai value according to Table 13-21 (Metso Outotec, 2023).

*Table 13-21: Ore abrasion classification*

| CLASSIFICATION | Ai (g) |
|---|---|
| Non-abrasive | <0.1 |
| Slightly abrasive | 0.1-0.4 |
| Medium abrasive | 0.4-0.6 |
| Abrasive | 0.6-0.8 |
| Very abrasive | >0.8 |

A standard Ai test was conducted on each of the comminution variability samples. The results are presented in Table 13-22.

*Table 13-22: Ai for Nyanzaga deposit comminution variability samples*

| SAMPLE | ORE TYPE | Ai (g) |
|---|---|---|
| C1A-CH-FR-1 | chert | 0.5385 |
| C1A-SS-FR-2 | sandstone | 0.2240 |
| C1A-MS-FR-3 | mudstone | 0.2730 |
| C1B-CH-FR-4 | chert | 0.6711 |
| C1B-CH-FR-5 | chert | 0.4525 |
| C1B-SS-FR-6 | sandstone | 0.2953 |
| C1B-SS-FR-7 | sandstone | 0.1841 |
| C1B-SS-FR-8 | sandstone | 0.4309 |
| C1B-MS-FR-9 | mudstone | 0.2357 |
| C1B-MS-FR-10 | mudstone | 0.2735 |
| C1B-MS-FR-11 | mudstone | 0.2442 |
| C1B-CH-FR-12 | chert | 0.3273 |
| C1B-CH-FR-13 | chert | 0.4144 |
| C1B-CH-FR-14 | chert | 0.3447 |
| C1B-SS-FR-15 | sandstone | 0.2867 |
| C1B-SS-FR-16 | sandstone | 0.2334 |
| C1B-SS-FR-17 | sandstone | 0.2557 |
| C1B-MS-FR-18 | mudstone | 0.2393 |
| C1A-OX-OX-20 | oxide | 0.0430 |
| C1A-OX-OX-21 | oxide | 0.6798 |

The results show the oxide ore samples to be between non-abrasive and abrasive. The Ai for sample C1A-OX-OX-21 is significantly higher than the range observed in historical test work in Section 13.1.

Fresh ore samples were between slightly abrasive and abrasive, with an average Ai of 0.3291 g (slightly abrasive). Mudstone samples tested have an average Ai of 0.2531 g (slightly abrasive); sandstone samples tested have an average Ai of 0.2729 g (slightly abrasive); and chert samples tested have an average Ai of 0.4581 g (medium abrasive). A number of fresh ore samples tested were more abrasive than those tested in historical test work in Section 13.1.

#### 13.2.3.6 UNIAXIAL COMPRESSIVE STRENGTH

Uniaxial compressive strength (UCS) tests determine the maximum axial compressive stress that a rock sample can withstand when there is no confining pressure around it. Samples can be classified by UCS value according to Table 13-23 (International Society for Rock Mechanics and Rock Engineering, 2007).

*Table 13-23: UCS classification*

| STRENGTH CLASSIFICATION | UCS (MPa) |
|---|---|
| Very low | <5 |
| Low | 5-25 |
| Moderate | 25-50 |
| Medium | 50-100 |
| High | 100-250 |
| Very high | >250 |

The fresh ore UCS variability samples were prepared from full PQ drill core specimens with a length-to-diameter ratio of 2.5 to 3.0. The prepared specimens were tested using a 500 kN capacity machine, with the load applied at a constant rate such that failure occurred within 5 to 15 minutes of loading. The results are presented in Table 13-24.

*Table 13-24: UCS values for Nyanzaga deposit UCS variability samples*

| SAMPLE | ORE TYPE | UCS (MPa) | FAILURE MODE |
|---|---|---|---|
| RCBT95004 | chert | 227 | shattered |
| RCBT95005 | chert | 260 | shattered |
| RCBT95006 | chert | 198 | shattered |
| RCBT95007 | chert | 137 | shattered |
| RCBT95009 | chert | 42 | shear |
| RCBT95011 | sandstone | 198 | shattered |
| RCBT95012 | sandstone | 119 | shattered |
| RCBT95013 | sandstone | 39 | shear |
| RCBT95015 | sandstone | 114 | shattered |
| RCBT95018 | sandstone | 105 | shear |
| RCBT95019 | mudstone | 151 | shattered |
| RCBT95021 | mudstone | 329 | shattered |
| RCBT95023 | mudstone | 263 | shattered |
| RCBT95026 | mudstone | 259 | shattered |
| RCBT95028 | mudstone | 166 | shattered |

The fresh ore samples were of moderate to very high strength, with an average UCS of 174 MPa (high strength). Mudstone samples tested have an average UCS of 234 MPa (high strength); sandstone samples tested have an average UCS of 115 MPa (high strength); and chert samples tested have an average UCS of 173 MPa (high strength).

### 13.2.4 FLOTATION

As part of flowsheet definition test work, a series of tests were conducted on Nyanzaga deposit ore type composites (oxide, mudstone, sandstone, and chert) to determine the gold recovery response to gravity concentration, flotation of gravity tailings, and cyanidation of flotation concentrate and tails streams.

A summary of test work procedures used for flowsheet development and optimisation test work is included in Section 13.2.4.1 to Section 13.2.4.3. Results from the flowsheet development and optimisation test work are summarised in Section 13.2.4.4 to Section 13.2.4.6. An evaluation of the gravity/flotation/cyanidation flowsheet, compared to the gravity/cyanidation flowsheet, and selection of the preferred alternative is presented Section 13.2.15.

#### 13.2.4.1 GRAVITY SEPARATION TEST PROCEDURES

Gravity separation test procedures were as described in Section 13.2.6.1.

#### 13.2.4.2 FLOTATION TEST PROCEDURES

In general, sighter flotation tests were conducted as follows:

1. The flotation feed sample, prepared to a target $P_{80}$ grind size in a stainless-steel laboratory rod mill, was transferred into a 5 L laboratory flotation cell.
2. Perth tap water was added to slurrify the sample to establish the target pulp density (approximately 33% w/w solids).
3. The flotation feed cell, containing the sample slurry, was introduced to the Agitair laboratory flotation machine, with agitation speed set at 900 rpm.
4. Copper sulfate was added (20 g/t) and the slurry was conditioned for 5 min.
5. Further reagent additions were made to the pulp to achieve the desired pulp conditions and reagent concentrations. Dosing rates for the additional reagents were potassium amyl xanthate (135 g/t), Cytec® AERO® MAXGOLD® 900 promoter (30 g/t) and Huntsman POLYFROTH® W-22 frother (as required). All tests were conducted at natural pH. Adequate conditioning times were allowed after each addition (1-2 min per stage, for a total of 7 min additional conditioning time).
6. Air was added, with the flow rate measured by a calibrated rotameter.
7. Concentrate removal was performed under controlled conditions (50 mm scraper, operating at a 10 s frequency) to ensure a consistent scrape frequency, and depth. Total flotation residence time was 30 min.
8. Timed concentrates and the final flotation tails were filtered, dried at low temperature, and assayed for gold, silver, sulfur and sulfide sulfur.

#### 13.2.4.3 CYANIDATION TEST PROCEDURES

Cyanidation of flotation concentrate and tails streams were performed as described in Section 13.2.6.2.

#### 13.2.4.4 GRAVITY/FLOTATION TESTS

Four Nyanzaga ore type composites were subjected to two flotation amenability tests each under the following conditions:

- Samples (4 kg) were prepared to grind size $P_{80}$ of 125 µm and $P_{80}$ of 75 µm.
- Gravity separation was conducted on each grind size sample, with gravity concentrate treated by amalgamation (refer to Section 13.2.4.1).
- Flotation tests were conducted on a reduced mass of 2 kg for each grind size sample (as described in Section 13.2.4.2).

Three Nyanzaga fresh ore type composites (mudstone, sandstone and chert) were subjected to a further bulk flotation test, to generate sufficient mass of concentrate for subsequent cyanidation tests, under the following conditions:

- Samples (14 kg) were prepared to grind size $P_{80}$ of 75 µm.
- Gravity separation was conducted on each sample, with gravity concentrate treated by intensive cyanidation leach (refer to Section 13.2.4.1).
- Flotation tests were conducted on a reduced mass of 4 kg (2× 2 kg flotation tests) for each grind size sample (as described in Section 13.2.4.2).

The results from these gravity and flotation tests are presented in Table 13-25. Column headers prefixed with PW refer to the individual test numbers in the SGS report.

Key points from the gravity/flotation tests are:

- Gold recovery to the gravity stage was highest for the oxide ore type composite (26.6% to 27.6%). Gold recovery to the gravity stage for the fresh ore type composites was 15.1% to 20.6% for mudstone, 20.5% to 21.4% for sandstone, and lowest for chert at 15.5% to 16.0%.
- Gold recovery to the gravity stage was comparable across treatment methods (amalgamation and intensive cyanidation) for the same sample type at the same grind size.
- In the flotation amenability tests, the fresh ore type composites recovered 82.5% to 95.1% of sulfides and 73.8% to 80.9% of gold in flotation feed to flotation concentrate, with 13.8% to 19.1% mass pull.
- The oxide ore type composite performed poorer, recovering 75.4% to 79.9% of sulfides and 57.9% to 61.4% of gold in flotation feed to flotation concentrate, with 9.4% to 11.6% mass pull.
- The oxide and chert ore type composites observed higher gold recovery at the finer grind size ($P_{80}$ of 75 µm vs $P_{80}$ of 125 µm), but mudstone and sandstone ore type composites observed higher gold recovery at the coarser grind size.
- Gold flotation kinetics were similar for all ores, with approximately 90% of the gold recovered to flotation concentrate occurring in the first six minutes.
- The bulk flotation tests showed similar sulfide and gold recoveries across all fresh ore type composites, with 89.3% to 92.5% of sulfides and 78.1% to 80.2% of gold present in flotation feed recovered to flotation concentrate. Mass pulls were also comparable, at 13.8% to 16.7%.
- Combined gold recovery (gravity and flotation) was 75.1% to 80.6% for the fresh ores, and 64.9% to 69.1% for oxide ore, indicating that flotation won't be able to produce an economic throw away tailings stream.

*Table 13-25: Gravity and flotation test results for Nyanzaga deposit ore type composite samples*

| PARAMETER | UNIT | PW3219-F1 | PW3219-F2 | PW3150-F1 | PW3150-F2 | PW3204-F1 | PW3204-F2 | PW3049-F1 | PW3049-F2 | PW3339 | PW3338 | PW3334 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-OX-OX | OTC-OX-OX | OTC-MS-FR | OTC-MS-FR | OTC-SS-FR | OTC-SS-FR | OTC-CH-FR | OTC-CH-FR | OTC-MS-FR | OTC-SS-FR | OTC-CH-FR |
| Test type | - | Amenability | Amenability | Amenability | Amenability | Amenability | Amenability | Amenability | Amenability | Bulk | Bulk | Bulk |
| $P_{80}$ grind size | µm | 125 | 75 | 125 | 75 | 125 | 75 | 125 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | | | | |
| Au | g/t | 1.88 | 1.88 | 1.70 | 1.70 | 3.07 | 3.07 | 2.24 | 2.24 | 1.70 | 3.07 | 2.24 |
| Ag | g/t | 2.8 | 2.8 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| $S_{sulfide}$ | % | 1.47 | 1.47 | 4.05 | 4.05 | 3.74 | 3.74 | 4.34 | 4.34 | 4.05 | 3.74 | 4.34 |
| Calc. head grade | | | | | | | | | | | | |
| Au | g/t | 1.88 | 1.81 | 1.72 | 1.26 | 3.08 | 3.05 | 2.12 | 2.15 | 1.68 | 2.95 | 2.19 |
| Ag | g/t | 0.7 | 0.9 | 1.3 | 1.3 | 3.3 | 3.5 | 1.5 | 1.5 | 1.9 | 2.5 | 2.2 |
| $S_{sulfide}$ | % | 1.63 | 1.69 | 4.63 | 4.35 | 4.86 | 4.75 | 4.64 | 4.79 | 4.27 | 4.72 | 5.09 |
| Recovery to gravity con. | | | | | | | | | | | | |
| Au | % total feed | 26.6 | 27.6 | 15.1 | 20.6 | 20.5 | 20.7 | 16.0 | 15.8 | 15.5 | 21.4 | 15.5 |
| Ag | % total feed | 0.0 | 0.0 | 7.1 | 7.1 | 7.8 | 7.4 | 8.5 | 8.5 | 5.3 | 11.2 | 6.4 |
| Flot. stage recovery | | | | | | | | | | | | |
| mass | % flot. feed | 11.6 | 9.4 | 17.7 | 14.7 | 18.2 | 16.7 | 19.1 | 18.7 | 13.8 | 16.0 | 16.7 |
| Au | % flot. feed | 57.9 | 61.4 | 79.8 | 74.0 | 77.9 | 73.8 | 76.9 | 80.9 | 80.2 | 78.1 | 79.1 |
| Ag | % flot. feed | 61.9 | 69.3 | 87.0 | 87.2 | 58.4 | 55.2 | 89.3 | 89.4 | 53.3 | 66.8 | 56.1 |
| $S_{sulfide}$ | % flot. feed | 79.9 | 75.4 | 94.5 | 95.1 | 82.5 | 89.8 | 87.3 | 89.1 | 92.5 | 89.3 | 90.2 |
| Combined con. grade | | | | | | | | | | | | |
| Au | g/t | 6.95 | 8.6 | 6.59 | 5.06 | 10.5 | 10.7 | 7.18 | 7.8 | 8.2 | 10.9 | 8.7 |
| Ag | g/t | 3.7 | 6.5 | 6.2 | 7.9 | 10.8 | 11.7 | 7.1 | 7.3 | 7.1 | 9.5 | 7.0 |
| $S_{sulfide}$ | % | 11.2 | 13.6 | 24.7 | 28.2 | 22.1 | 25.6 | 21.2 | 22.8 | 28.6 | 26.4 | 27.4 |
| Recovery to flot. con. | | | | | | | | | | | | |
| Au | % total feed | 38.3 | 41.5 | 64.0 | 55.2 | 58.1 | 54.4 | 60.0 | 64.4 | 65.1 | 58.9 | 63.3 |
| Ag | % total feed | 61.9 | 69.3 | 78.6 | 78.6 | 44.7 | 42.3 | 79.3 | 79.9 | 42.1 | 52.8 | 43.6 |
| $S_{sulfide}$ | % total feed | 79.9 | 75.4 | 94.5 | 95.1 | 82.5 | 89.8 | 87.3 | 89.1 | 92.5 | 89.3 | 27.4 |
| Total grav. + flot. recovery | | | | | | | | | | | | |
| Au | % total feed | 64.9 | 69.1 | 79.1 | 75.8 | 78.6 | 75.1 | 76.0 | 80.2 | 80.6 | 80.3 | 78.8 |
| Ag | % total feed | 61.9 | 69.3 | 85.7 | 85.7 | 52.5 | 49.7 | 87.8 | 88.4 | 47.4 | 64.0 | 50.0 |
| $S_{sulfide}$ | % total feed | 79.9 | 75.4 | 94.5 | 95.1 | 82.5 | 89.8 | 87.3 | 89.1 | 92.5 | 89.3 | 27.4 |

### 13.2.4.5 TAILINGS FLOTATION SIZE DISTRIBUTION

Samples of tailings from each of the flotation amenability tests, from Section 13.2.4.4, were tested to determine the distributions of mass, gold, silver and sulfide sulfur using 125 µm, 106 µm, 75 µm, 53 µm and 38 µm screens. The results are presented graphically in Figure 13-23 to Figure 13-26.

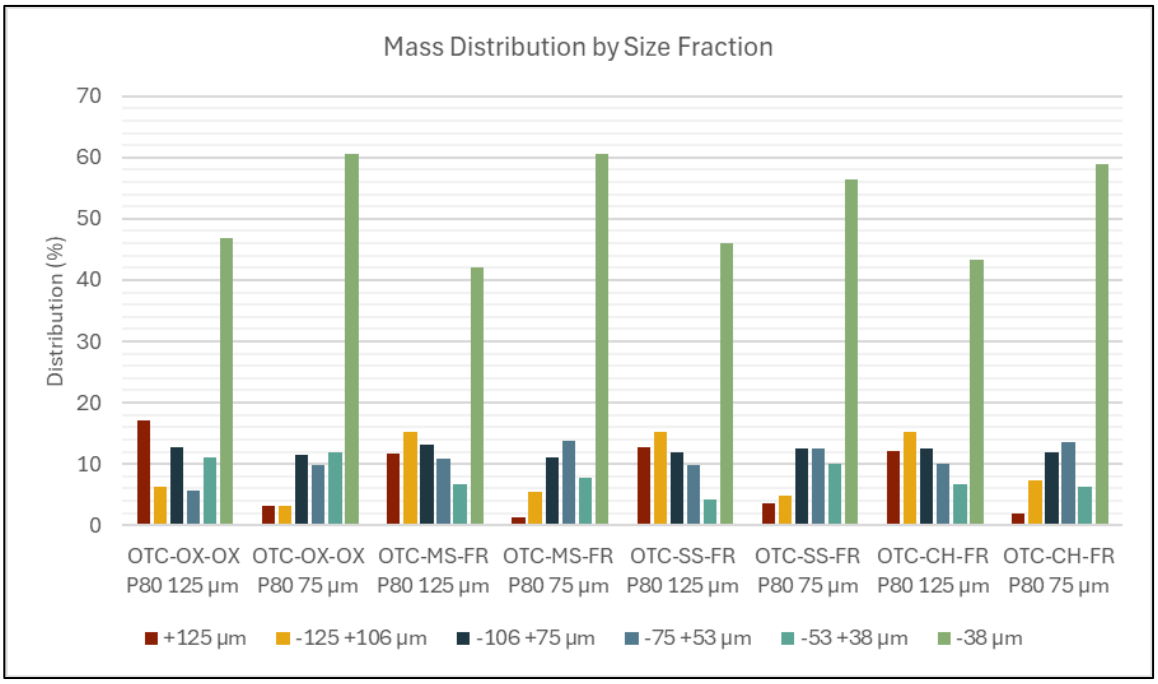



*Figure 13-23: Flotation tailings mass distribution by size fraction for Nyanzaga ore type composite samples (Source: Perseus, 2025)*

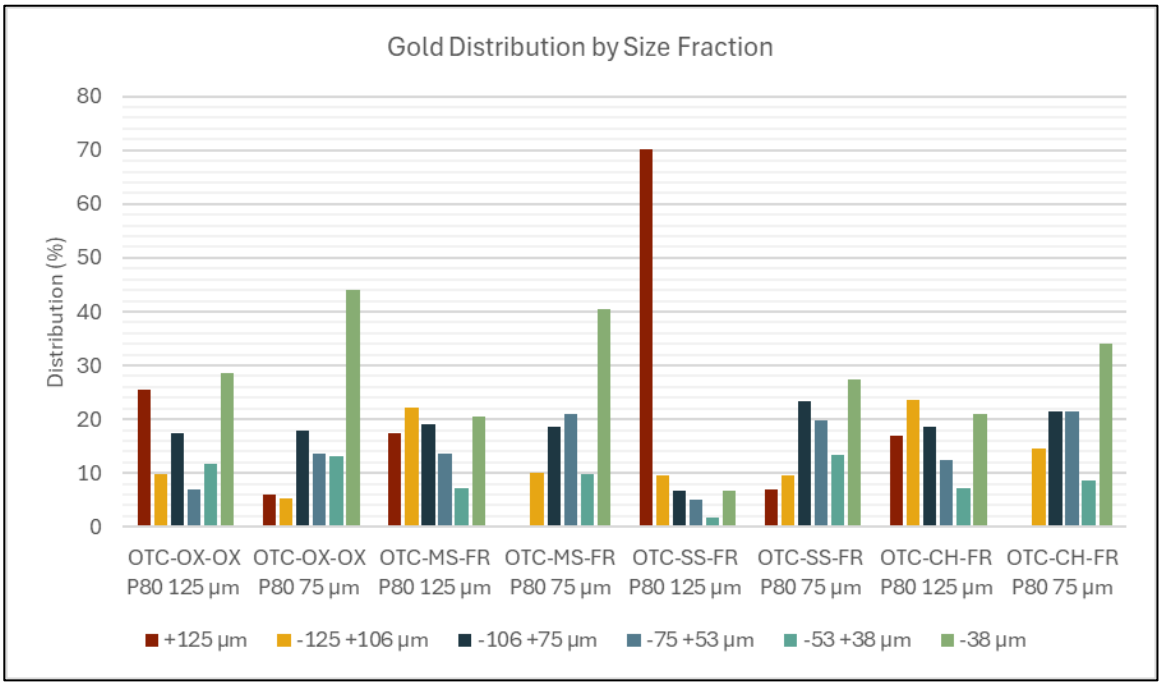



*Figure 13-24: Flotation tailings gold distribution by size fraction for Nyanzaga ore type composite samples (Source: Perseus, 2025)*

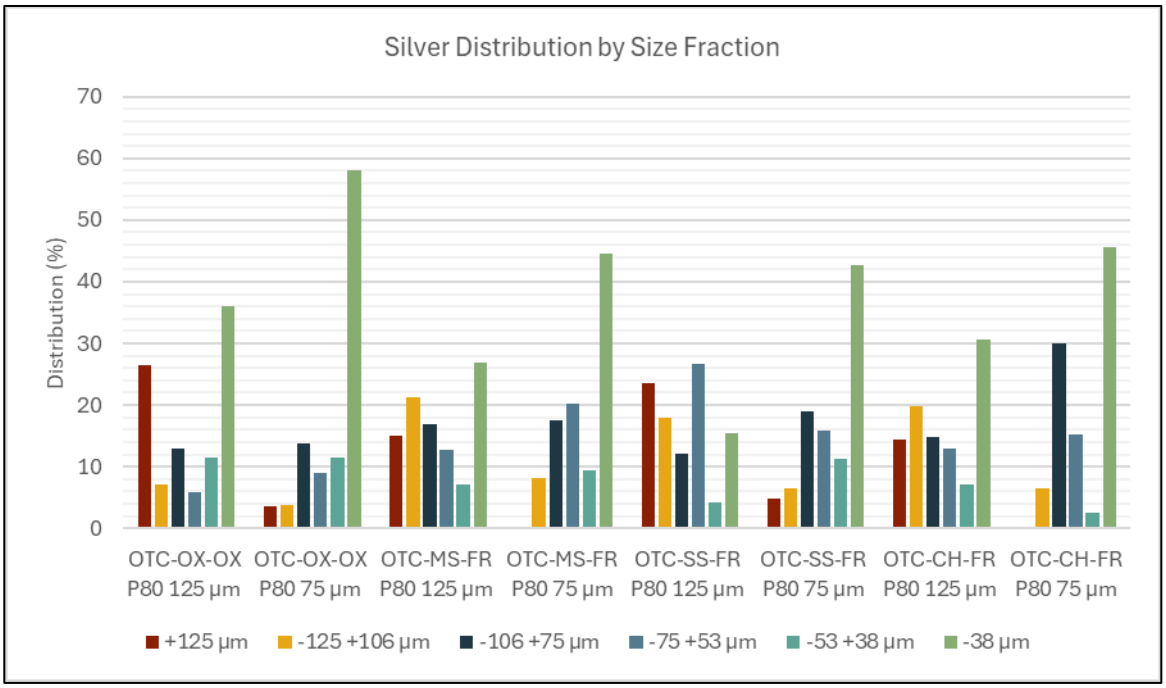



***Figure 13-25: Flotation tailings silver distribution by size fraction for Nyanzaga ore type composite samples (Source: Perseus, 2025)***

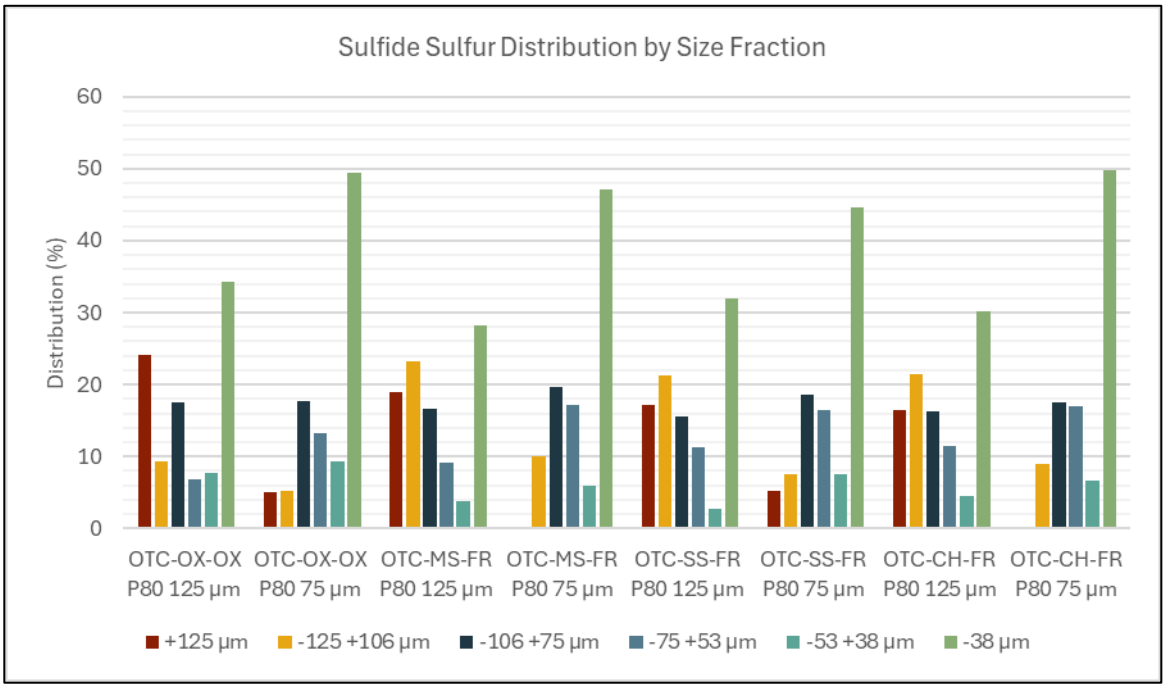



***Figure 13-26: Flotation tailings sulfide sulfur distribution by size fraction for Nyanzaga ore type composite samples (Source: Perseus, 2025)***

Key points from the distribution by size analyses are:

- Gold, silver and sulfide sulfur distribution across six size fractions of four flotation tailings samples at both grind sizes are in good agreement with the mass distribution for all ore type composites, except for the sandstone ore type composite flotation tailings sample at grind size $P_{80}$ of 125 µm.

- In the sandstone ore type composite flotation tailings sample at grind size $P_{80}$ of 125 µm, the highest gold grade was observed in the +125 µm fraction and the highest silver grade in the -75 +53 µm fraction, instead of in the expected -38 µm fraction with the highest distribution of sample mass. This could be indicative of both gold and silver being spotty in the sandstone ore type composite. Spotty gold is supported by the head assays for the sandstone ore type composite (OTC-SS-FR) presented in Table 13-12.

#### 13.2.4.6 CYANIDATION OF FLOTATION PRODUCTS

Following flotation, cyanide leach tests were performed on bulk flotation concentrates under the following conditions:

- Flotation concentrate, at $P_{80}$ of 75 µm, was received from the bulk flotation tests. A sub-sample was taken for cyanidation testing.
- A further sub-sample of flotation concentrate was reground to grind size $P_{100}$ of 25 µm prior to cyanidation testing.
- Direct cyanidation of the flotation concentrate samples was conducted (as per Section 13.2.4.3), with the following parameters:
  - 250 g sample tested.
  - Pulp density of 30% w/w solids.
  - Pre-oxidation step performed.
  - Sodium cyanide addition of 3 kg/t, maintain above 0.1% w/v.
  - 72 h leach time.

Cyanide leach tests were also performed on bulk flotation tails under the following conditions:

- Flotation tails, at $P_{80}$ of 75 µm, was received from the bulk flotation tests.
- Direct cyanidation of the samples was conducted (as per Section 13.2.4.3), with the following parameters:
  - 1,000 g sample tested.
  - Pulp density of 40% w/w solids.
  - No pre-oxidation step performed.
  - Sodium cyanide addition of 1.5 kg/t, maintain above 0.03% w/v.
  - 20 g/L of activated carbon for mudstone ore type composite flotation tailings sample only, as per the findings in Section 13.2.6.3.
  - 24 h leach time.

The results from these cyanidation tests are presented in Table 13-26. Column headers prefixed with PW refer to the individual test numbers in the SGS report.

Key points from the cyanidation tests are:

- 72 h gold extraction from fresh ore type composite flotation concentrates at grind size $P_{80}$ of 75 µm ranged from 83.8% to 92.0%.
- Regrinding the flotation concentrate samples to $P_{100}$ of 25 µm saw the 72 h gold extractions increase by between 2.3% and 5.4%. The chert and mudstone samples benefited the most from regrinding the

concentrate prior to cyanidation, indicating these ores contain a higher proportion of fine gold compared to sandstone.

- The higher gold extractions at the finer grind size were accompanied by higher sodium cyanide and lime consumptions. NaCN consumption was between 48% and 128% higher and lime consumption was between 142% and 359% higher from cyanidation tests at the finer grind size when compared to tests at the coarser grind size.
- Gold leach kinetics of flotation concentrate is fast, with most of the recoverable gold extracted within the first eight hours. Gold leach kinetics were not impacted by regrinding of the flotation concentrate.
- Leach kinetics of silver contained in flotation concentrates is slow, with leaching continuing until at least 48 h, and in some case apparently still leaching at 72 h.
- 24 h gold extraction from fresh ore type composite flotation tailings samples at grind size $P_{80}$ of 75 µm ranged from 66.0% to 75.2%.
- Gold and silver leach kinetics of flotation tailings is fast, with most of the recoverable metal extracted within the first 12 h.

*Table 13-26: Test results for cyanidation of Nyanzaga deposit ore type composite flotation concentrate and tails samples*

| PARAMETER | UNIT | PW3349 | PW3350 | PW3351 | PW3346 | PW3347 | PW3348 | PW3343 | PW3344 | PW3345 |
|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR |
| Test type | - | Concentrate | Concentrate | Tailings | Concentrate | Concentrate | Tailings | Concentrate | Concentrate | Tailings |
| Grind size | µm | $P_{80}$ 75 | $P_{100}$ 25 | $P_{80}$ 75 | $P_{80}$ 75 | $P_{100}$ 25 | $P_{80}$ 75 | $P_{80}$ 75 | $P_{100}$ 25 | $P_{80}$ 75 |
| Assay head grade | | | | | | | | | | |
| Au | g/t | 8.22 | 8.22 | 0.33 | 10.9 | 10.9 | 0.58 | 8.73 | 8.73 | 0.47 |
| Ag | g/t | 7.1 | 7.1 | 1.0 | 9.5 | 9.5 | 0.9 | 7.0 | 7.0 | 1.1 |
| Calc. head grade | | | | | | | | | | |
| Au | g/t | 8.23 | 8.15 | 0.42 | 11.1 | 10.4 | 0.58 | 8.19 | 7.69 | 0.48 |
| Ag | g/t | 10.7 | 7.8 | 1.6 | 12.2 | 12.5 | 1.2 | 9.4 | 9.0 | 1.0 |
| Pulp density (solids conc.) | % w/w | 29.9 | 29.9 | 40.0 | 29.9 | 30.0 | 40.0 | 29.9 | 29.9 | 39.7 |
| Pre-oxygenation | - | yes | yes | no | yes | yes | no | yes | yes | no |
| Carbon concentration | g/L | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| Extraction at time (Au) | | | | | | | | | | |
| 2 hours | % | 85.6 | 95.6 | 61.1 | 88.4 | 92.7 | 59.8 | 85.5 | 90.4 | 56.9 |
| 4 hours | % | 85.3 | 98.0 | 68.9 | 89.2 | 94.6 | 64.9 | 84.9 | 93.9 | 60.0 |
| 8 hours | % | 87.5 | 93.6 | 65.4 | 88.6 | 96.5 | 67.4 | 83.0 | 90.5 | 60.0 |
| 10 hours | % | - | - | - | 89.0 | 93.2 | - | 82.8 | 91.3 | - |
| 12 hours | % | 85.6 | 95.6 | 71.4 | - | - | 67.4 | - | - | 66.0 |
| 24 hours | % | 88.1 | 96.4 | 75.2 | 90.1 | 89.2 | 72.3 | 83.8 | 90.5 | 66.0 |
| 36 hours | % | 88.1 | 95.7 | - | 90.7 | 92.3 | - | 83.3 | 88.9 | - |
| 48 hours | % | 88.8 | 93.7 | - | 90.0 | 92.7 | - | 83.0 | 91.7 | - |
| 60 hours | % | 88.5 | 93.7 | - | 91.0 | 93.8 | - | 84.0 | 90.2 | - |
| 72 hours | % | 88.3 | 93.7 | - | 92.0 | 94.3 | - | 83.8 | 88.6 | - |
| Extraction at time (Ag) | | | | | | | | | | |
| 24 hours | % | 45.2 | 55.8 | 29.5 | 61.0 | 64.0 | 31.2 | 55.8 | 63.4 | 30.1 |
| 72 hours | % | 51.4 | 71.8 | - | 73.0 | 76.7 | - | 65.8 | 70.0 | - |
| Solid residue grade | | | | | | | | | | |
| Au | g/t | 0.97 | 0.51 | 0.11 | 0.89 | 0.59 | 0.16 | 1.33 | 0.88 | 0.16 |
| Ag | g/t | 5.2 | 2.2 | 1.1 | 3.3 | 2.9 | 0.8 | 3.2 | 2.7 | 0.7 |
| NaCN consumption | kg/t | 4.59 | 6.81 | 0.79 | 1.76 | 4.02 | 0.30 | 1.20 | 2.65 | 0.22 |
| Lime usage | kg/t | 1.48 | 4.45 | 0.67 | 0.64 | 2.94 | 0.67 | 1.32 | 3.20 | 0.61 |
| Terminal DO | ppm | 17.2 | 17.8 | 17.6 | 20.5 | 20.0 | 21.4 | 20.8 | 21.4 | 20.4 |

### 13.2.5 BLEG TEST WORK

Thirty variability samples were subjected to BLEG tests to provide an indication of gold recovery by cyanidation. Duplicate tests were conducted at two separate laboratory facilities. BLEG test conditions were:

- Approximately 1,000 g of solids were used for the first batch of tests, and approximately 500 g of solids were used for the second batch of tests.
- Samples were pulverised. Although not measured or stated in the laboratory test work report, a typical grind size of 95% passing 75 µm ($P_{95}$ of 75 µm) can be considered.
- Samples were slurrified to 50% w/w solids using Perth tap supply
- pH established and maintained within a range of 10.5 to 11.0, using hydrated lime.
- Initial NaCN concentration of 0.25% w/w.
- Oxygen sparged into the bottle head space, to maintain DO concentrations above 20 mg/L.
- 24 h bottle roll cyanidation, with gold and silver analysis of solid residue.

Note that as the samples are pulverised to a finer particle size distribution that the optimised gravity/cyanidation test conditions ($P_{80}$ of 75 µm, as noted in Section 13.2.6.4), gold extractions may be overstated. The leach time for the BLEG tests, at 24 h, is the same residence time selected from gravity/cyanidation tests (as noted in Section 13.2.6.3). The sodium cyanide concentration used is higher than the range tested in gravity/cyanidation tests (as noted in Section 13.2.6.7). The results of the tests are summarised in Table 13-27. The calculated head grade was derived by an addition of the cyanide recoverable portion of the sample plus the leach solid residue grade.

Key points from the data are:

- Generally good correlation between test 1 and test 2 calculated gold grades, though the calculated gold grades are approximately 10% lower than the sextuplicate fire assay gold head grades.
- Generally good correlation between test 1 and test 2 gold extraction. Moderate variability in gold extraction was noted across samples.
- There was poor correlation between test 1 and test 2 calculated silver grades (approximately 30% higher on average for test 1 compared to test 2) and silver extractions (test 2 extractions approximately double test 1 extractions on average). This may indicate slow leaching silver components of the ore, as well as BLEG leach conditions being sub-optimal for silver extraction.
- BLEG gold extractions for oxide samples range between 86.2% and 95.3%, with an average of 91.1%.
- BLEG gold extractions for mudstone samples range between 73.6% and 93.2%, with an average of 85.5%.
- BLEG gold extractions for sandstone samples range between 74.6% and 94.3%, with an average of 88.6%.
- BLEG gold extractions were the lowest for the chert samples, with a range between 33.9% and 97.1% and an average of 78.9% (excludes one test that reported 0% extraction). It is uncertain whether low test results were due to procedural issues, insufficient leach reagent(s) for the reaction (e.g., oxygen), or preg-robbing effects.
- BLEG gold extractions for axial fault samples range between 83.3% and 92.0%, with an average of 87.8%.
- BLEG gold extractions for all ore types, except chert, correlate with the data range observed for metallurgical variability samples under optimised gravity/cyanidation conditions (Section 13.2.6.11). BLEG gold extractions for chert samples RCBT95381 and RCBT95664 fall significantly below the range observed for metallurgical variability samples of this ore type under optimised gravity/cyanidation conditions.
- BLEG silver extractions across ore types ranged between 5.9% and 94.0%, with an average of 47.8%.

- With the exception of a small number of samples, the Nyanzaga deposit BLEG variability samples generally returned good gold extractions by cyanidation. This supports the decision to proceed with the evaluation of a cyanidation based flowsheet (Section 13.2.6).

***Table 13-27: BLEG results for Nyanzaga deposit BLEG variability samples***

| BLEG VARIABILITY SAMPLE | ORE TYPE | AU FA AVERAGE (g/t) | TEST 1: CALCULATED Au (g/t) | TEST 1: Au EXTRACTION (%) | TEST 2: CALCULATED Au (g/t) | TEST 2: Au EXTRACTION (%) | TEST 1: CALCULATED Ag (g/t) | TEST 1: Ag EXTRACTION (%) | TEST 2: CALCULATED Ag (g/t) | TEST 2: Ag EXTRACTION (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| RCBT95040 | oxide | 0.16 | 0.14 | 86.2 | 0.21 | 95.3 | 2.12 | 5.9 | 0.32 | 37.8 |
| RCBT95060 | oxide | 0.83 | 0.75 | 89.4 | 0.75 | 93.3 | 2.36 | 15.4 | 1.95 | 28.4 |
| RCBT95274 | sandstone | 1.49 | 1.36 | 86.7 | 1.28 | 89.1 | 2.59 | 22.9 | 0.79 | 74.8 |
| RCBT95278 | sandstone | 2.36 | 2.19 | 92.7 | 2.01 | 94.3 | 5.09 | 60.7 | 3.34 | 94.0 |
| RCBT95303 | sandstone | 1.52 | 1.52 | 92.4 | 1.36 | 91.9 | 2.48 | 19.2 | 0.63 | 68.2 |
| RCBT95310 | mudstone | 1.81 | 1.72 | 82.5 | 1.64 | 85.7 | 2.65 | 24.6 | 0.90 | 77.9 |
| RCBT95375 | sandstone | 15.8 | 14.8 | 92.2 | 14.9 | 94.1 | 34.5 | 85.5 | 37.3 | 85.0 |
| RCBT95381 | chert | 0.28 | 0.26 | 0.0 | 0.22 | 43.4 | 2.20 | 9.2 | 1.07 | 25.5 |
| RCBT95386 | sandstone | 2.94 | 2.58 | 82.7 | 2.46 | 84.0 | 3.14 | 36.4 | 1.30 | 84.6 |
| RCBT95393 | mudstone | 0.69 | 0.83 | 91.6 | 0.59 | 93.2 | 2.43 | 17.7 | 0.60 | 66.9 |
| RCBT95404 | mudstone | 1.75 | 1.63 | 86.2 | 1.54 | 86.4 | 2.64 | 24.1 | 1.52 | 47.4 |
| RCBT95417 | mudstone | 0.81 | 0.67 | 78.2 | 0.66 | 82.4 | 3.07 | 34.9 | 1.65 | 57.7 |
| RCBT95457 | axial | 1.36 | 1.19 | 90.7 | 1.12 | 92.0 | 2.55 | 21.6 | 0.71 | 72.0 |
| RCBT95465 | chert | 0.74 | 0.63 | 85.8 | 0.65 | 88.5 | 2.26 | 11.5 | 0.50 | 60.4 |
| RCBT95474 | chert | 2.23 | 2.09 | 91.6 | 1.84 | 92.9 | 2.76 | 27.4 | 0.95 | 78.9 |
| RCBT95476 | chert | 2.53 | 2.23 | 95.5 | 2.27 | 97.1 | 3.10 | 35.4 | 1.33 | 84.9 |
| RCBT95515 | chert | 1.02 | 0.85 | 77.7 | 1.10 | 87.2 | 3.64 | 45.0 | 3.40 | 58.8 |
| RCBT95534 | sandstone | 3.23 | 2.77 | 86.5 | 2.70 | 91.8 | 2.59 | 22.8 | 0.85 | 76.5 |
| RCBT95554 | mudstone | 1.19 | 1.11 | 81.0 | 1.09 | 86.2 | 2.62 | 23.7 | 0.88 | 77.2 |
| RCBT95561 | mudstone | 1.21 | 1.12 | 73.6 | 1.08 | 82.0 | 2.45 | 18.5 | 4.83 | 10.9 |
| RCBT95567 | axial | 2.41 | 2.06 | 85.0 | 2.09 | 83.3 | 5.35 | 62.6 | 5.62 | 59.0 |
| RCBT95613 | chert | 2.50 | 2.32 | 83.8 | 2.29 | 82.7 | 3.51 | 43.1 | 2.38 | 66.3 |
| RCBT95664 | chert | 2.20 | 2.04 | 33.9 | 1.69 | 51.8 | 3.68 | 45.7 | 3.97 | 42.0 |
| RCBT95668 | sandstone | 3.00 | 2.75 | 74.6 | 2.56 | 81.6 | 2.95 | 32.2 | 1.13 | 82.3 |
| RCBT95672 | sandstone | 2.28 | 2.20 | 90.2 | 2.02 | 90.6 | 4.44 | 55.0 | 3.93 | 61.8 |
| RCBT95696 | mudstone | 1.13 | 1.01 | 88.1 | 0.97 | 90.2 | 3.13 | 36.1 | 1.91 | 63.3 |
| RCBT95717 | chert | 1.48 | 1.32 | 86.8 | 1.39 | 85.3 | 3.84 | 48.0 | 2.78 | 71.2 |
| RCBT95736 | mudstone | 0.62 | 0.66 | 86.4 | 0.54 | 91.6 | 2.51 | 20.2 | 0.70 | 71.4 |
| RCBT95746 | sandstone | 1.85 | 1.64 | 86.9 | 1.56 | 89.4 | 2.65 | 24.6 | 0.88 | 77.2 |
| RCBT95756 | sandstone | 2.69 | 2.39 | 89.8 | 2.34 | 91.0 | 2.54 | 21.3 | 4.02 | 52.7 |

### 13.2.6 GRAVITY RECOVERY AND CYANIDATION

As part of flowsheet definition test work, a series of tests were conducted on Nyanzaga deposit ore type composites (oxide, mudstone, sandstone, and chert) to determine the gold recovery response to gravity recovery and cyanidation. A further objective was to optimise gold recovery through testing and evaluating a range of gravity recovery and cyanidation conditions.

A summary of test work procedures used for flowsheet development and optimisation test work is included in Section 13.2.6.1 to Section 13.2.6.2. Results from the flowsheet development and optimisation test work are summarised in Section 13.2.6.3 to Section 13.2.6.7. Results from demonstration and bulk tests are presented in Section 13.2.6.8 and Section 13.2.6.9. The optimised gravity/cyanidation test conditions are collated in Section 13.2.6.10. Results from test work conducted on metallurgical variability samples at the optimised gravity/leach test conditions are summarised in Section 13.2.6.11. An evaluation of the gravity/cyanidation flowsheet, compared to the gravity/flotation/cyanidation flowsheet, and selection of the preferred alternative is presented Section 13.2.15.

### 13.2.6.1 GRAVITY SEPARATION TEST PROCEDURES

In general, gravity recovery tests were conducted as follows:

1. The gravity feed sample, prepared to a target $P_{80}$ grind size in a stainless steel laboratory rod mill, was passed through a 3-inch laboratory Knelson gravity concentrator.
2. The gravity concentrate and tail streams were then processed via one of the following processes:
    a. The gravity concentrate (60 g to 90 g) was transferred to a 2 L leach bottle with a screw-on lid and slurrified to approximately 30% w/w solids with Perth tap water. 10 g of mercury was added to the bottle, along with 0.1 g of NaOH, and the bottle was continuously rolled for 2 h to 3 h. On completion of the amalgamation, the loaded amalgam was recovered by hand panning and assayed for gold. The combined gravity/amalgam tail were then combined and oven dried at low temperature (70°C), and then processed via the flotation procedure (Section 13.2.4.2) or the cyanidation procedure (Section 13.2.6.2).
    b. The gravity concentrate (60 g to 90 g) was hand panned to reduce mass to approximately 50 g and transferred to a 2 L leach bottle with a screw-on lid and slurrified to approximately 10% w/w solids with Perth tap water. 1.0 g of sodium hydroxide (NaOH) with 1.5 g of LeachAid were then added prior to sodium cyanide (NaCN) addition to a concentration of 1.5% w/v. On completion of the 24 h intensive leach, the solution was assayed for gold and silver. The combined gravity/intensive cyanidation tail were then combined and oven dried at low temperature (70°C), and then processed via the flotation procedure (Section 13.2.4.2) or the cyanidation procedure (Section 13.2.6.2).

### 13.2.6.2 CYANIDATION TEST PROCEDURES

In general, cyanidation tests were conducted as follows:

1. The cyanidation feed sample, prepared to a target $P_{80}$ grind size in a stainless steel laboratory rod mill, was transferred into a leach bottle (typically 5 L capacity) with a screw-on lid.
2. Perth tap water was added to slurrify the sample to establish the target pulp density (% w/w solids).
3. If a pre-oxidation step was being performed, hydrated lime (60% w/w CaO) was added to the slurry to establish pH of 10.5. The headspace of the leach bottle was filled with oxygen or air to achieve a target DO concentration, or oxygen or air was sparged to the leach bottle, and the bottle was placed on the bottle rolls for 2 h, with slurry agitation applied by mechanical rollers. If a pre-oxidation step was not required, then Step 3 was skipped and the test proceeded to Step 4.
4. If a carbon-in-leach test was being performed, activated carbon (Haycarb YAO 8×16) was added to the required concentration. Otherwise, if a direct cyanidation test was being performed, then Step 4 was skipped and the test proceeded to Step 5.
5. Hydrated lime (60% w/w CaO) was added to the slurry to adjust pH into the range of 10.0 to 10.5.
6. Sodium cyanide was added to the slurry to establish the target initial cyanide concentration.
7. The headspace of the leach bottle was filled with oxygen or air to provide an elevated DO content, or oxygen or air was sparged to the leach bottle.

8. The leach bottle was placed on the bottle rolls. Slurry agitation was applied by mechanical rollers.
9. At regular intervals, slurry pH, DO, and sodium cyanide concentration were monitored and recorded. Solution sub-samples were taken and assayed for gold and silver. Additional mercury and arsenic assays were performed for selected tests.
10. If required during the test duration, lime, sodium cyanide and oxygen/air were added to maintain target levels. pH was maintained above 10.0 and DO was maintained above the target level for the test.
11. At the conclusion of the test, the terminal pH, oxygen, and cyanide levels were determined. A solution sub-sample was taken and assayed for gold and silver. The residual slurry sample was filtered, washed, and dried to provide leach residue solids, and a sub-sample of residue solid was assayed for gold and silver. Where applicable, carbon was extracted, rinsed, and dried, and a sub-sample was assayed for gold and silver. Additional arsenic, mercury and antimony assays were performed on final liquors and test residues for selected tests. The levels of $CN_{WAD}$, $OCN^-$ and $SCN^-$ were also measured in final liquors for selected tests.

#### 13.2.6.3 DIRECT CYANIDATION AND CIL COMPARISON

To assess the potential for preg-robbing or preg-borrowing behaviour, samples of the Nyanzaga ore type composites were subjected to 48 h leach tests. The first type of test was a direct cyanide leach, and the second type of test was a carbon-in-leach test.

The tests were conducted under the following conditions:

- 1,000 g sample tested.
- Grind size $P_{80}$ of 75 µm.
- No gravity separation.
- No pre-oxygenation.
- Pulp density of 40% w/w solids.
- Initial NaCN concentration of 0.10% w/v, maintained at 0.03% w/v.
- No activated carbon addition for direct cyanidation tests; 20 g/L activated carbon addition for CIL tests.

The results of these tests are summarised in Table 13-28. Column headers prefixed with PW refer to the individual test numbers in the SGS report.

Key findings from the tests are:

- 48 h gold extractions varied between 81.8% and 93.1%.
- Gold leach kinetics for all ore type composites were rapid, with most of the recoverable gold extracted within the first eight hours. Silver leach kinetics for the fresh ore type composites were slower than for the oxide ore type composite, with leaching still occurring after 24 h. Silver leaching in the oxide ore type composite was largely complete within 12 h. Based on these observations, a CIL residence time of 24 h was selected for plant design.
- Assays on final liquor indicated that between 11% and 30% of mercury was solubilised during the 48 h leach. Trace amounts of arsenic and antimony were also detected in leach solutions for the oxide ore type composite, increasing up to 10-18 ppm As and 6 ppm Sb for fresh ore type composites.
- Sodium cyanide consumptions were low (0.15 kg/t to 0.58 kg/t for direct cyanidation tests and 0.79 kg/t to 0.93 kg/t for CIL tests) and lime consumptions were moderate (1.10 kg/t to 1.58 kg/t).
- For oxide, sandstone and chert ore type composites, residue grades are comparable for each sample between direct cyanidation and CIL tests, indicating negligible preg-robbing or preg-borrowing.

- For the mudstone ore type composite, the residue grades for the CIL test are significantly lower (by 0.10 g/t Au) and the gold recovery in significantly higher (6.0%) than for the direct cyanidation test. This indicates that either preg-borrowing or minor preg-robbing is occurring for this sample, and that the activity of the carbon is sufficient to compete with these observed effects.
- For future cyanidation tests, it is recommended that oxide, sandstone and chert samples be subjected to direct cyanidation and mudstone samples will be subjected to CIL tests, unless additional confirmatory testing is performed.

*Table 13-28: Test results comparing direct leach and CIL for Nyanzaga deposit ore type composite samples*

| PARAMETER | UNIT | PW3215 | PW3216 | PW3142 | PW3143 | PW3147 | PW3148 | PW3139 | PW3140 |
|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-OX-OX | OTC-OX-OX | OTC-MS-FR | OTC-MS-FR | OTC-SS-FR | OTC-SS-FR | OTC-CH-FR | OTC-CH-FR |
| Test type | - | Direct cyanidation | CIL | Direct cyanidation | CIL | Direct cyanidation | CIL | Direct cyanidation | CIL |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | |
| Au | g/t | 1.88 | 1.88 | 1.70 | 1.70 | 3.01 | 3.01 | 2.24 | 2.24 |
| Ag | g/t | 2.8 | 2.8 | 2.2 | 2.2 | 2.0 | 2.0 | <5 | <5 |
| Calc. head grade | | | | | | | | | |
| Au | g/t | 1.80 | 2.11 | 1.78 | 1.85 | 3.69 | 3.27 | 2.18 | 2.45 |
| Ag | g/t | 2.7 | 2.6 | 1.9 | 1.5 | 3.0 | 3.0 | 2.4 | 2.2 |
| Pulp density (solids conc.) | % w/w | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| Pre-oxygenation | - | no | no | no | no | no | no | no | no |
| Carbon concentration | g/L | 0 | 20 | 0 | 20 | 0 | 20 | 0 | 20 |
| Recovery to gravity con | | | | | | | | | |
| Au | % | - | - | - | - | - | - | - | - |
| Extraction at time (Au) | | | | | | | | | |
| 2 hours | % | 87.9 | - | 83.4 | - | 85.0 | - | 80.0 | - |
| 4 hours | % | 88.7 | - | 82.6 | - | 88.6 | - | 83.4 | - |
| 8 hours | % | 90.4 | - | 80.9 | - | 94.9 | - | 82.1 | - |
| 12 hours | % | 91.2 | - | 81.7 | - | 93.7 | - | 82.1 | - |
| 24 hours | % | 90.4 | - | 81.7 | - | 93.7 | - | 78.2 | - |
| 36 hours | % | 92.7 | - | 83.3 | - | 93.3 | - | 78.8 | - |
| 48 hours | % | 91.9 | 93.1 | 81.8 | 87.8 | 91.9 | 91.4 | 82.5 | 84.9 |
| Extraction at time (Ag) | | | | | | | | | |
| 12 hours | % | 57.0 | - | 53.2 | - | 57.3 | - | 49.4 | - |
| 24 hours | % | 57.5 | - | 59.9 | - | 61.5 | - | 54.8 | - |
| 36 hours | % | 56.0 | - | 65.1 | - | 67.4 | - | 56.5 | - |
| 48 hours | % | 51.4 | 45.4 | 68.0 | 61.1 | 66.9 | 63.1 | 57.7 | 64.4 |
| Solid residue grade | | | | | | | | | |
| Au | g/t | 0.15 | 0.15 | 0.33 | 0.23 | 0.30 | 0.28 | 0.38 | 0.37 |
| Ag | g/t | 1.3 | 1.4 | 0.6 | 0.6 | 1.0 | 1.1 | 1.0 | 0.8 |
| NaCN consumption | kg/t | 0.15 | 0.81 | 0.57 | 0.79 | 0.51 | 0.86 | 0.58 | 0.93 |
| Lime usage | kg/t | 1.28 | 1.58 | 1.10 | 1.10 | 1.16 | 1.12 | 1.10 | 1.10 |
| Terminal DO | ppm | 16.2 | 16.8 | 15.6 | 18.8 | 18.3 | 18.3 | 15.8 | 18.9 |

#### 13.2.6.4 GRIND SIZE OPTIMISATION AND COMPARISON OF CYANIDATION AND GRAVITY/CYANIDATION

To assess the effect of grind size on gold extraction, samples of the Nyanzaga ore type composites were subjected to leach tests with durations of 24 h (to 32 h). To assess the benefits of inclusion of a gravity recovery step before cyanidation, the fresh ore type composites were tested at each grind size both with and without a gravity concentration step prior to cyanidation. The oxide ore type composite was tested at each grind size with a gravity concentration step prior to cyanidation only.

The tests were conducted under the following conditions:

- 1,000 g sample tested in cyanidation.
- Inclusion of gravity extraction using amalgamation, as noted above.
- No pre-oxygenation step. Target DO of 20 ppm using oxygen gas.
- Pulp density of 40% w/w solids.
- Initial NaCN concentration of 0.10% w/v, maintained at 0.03% w/v.
- No activated carbon addition for oxide, sandstone and chert ore type composites; 20 g/L activated carbon addition for tests on the mudstone ore type composite; for the mudstone ore type composite at grind size $P_{80}$ of 75 µm only, additional tests were conducted with no activated carbon to confirm the results and conclusions from Section 13.2.6.3.
- Grind sizes tested were $P_{80}$ of 125, 106, 75 and 53 µm.

The results of these tests are summarised in Table 13-29 and Table 13-30. Column headers prefixed with PW refer to the individual test numbers in the SGS report.

Key findings from the tests are:

- All ore type composites tested were grind sensitive with respect to gold, with gold extraction rates increasing with decreasing grind size. This was observed for tests both with and without a gravity recovery step.
- When comparing like-for-like flowsheet tests on the same ore type composite at varying grind sizes, reagent consumptions are relatively consistent between grind size $P_{80}$ of 125 µm and $P_{80}$ of 75 µm, but lime and/or cyanide consumption increases at the finer grind size $P_{80}$ of 53 µm.
- Mercury, arsenic and antimony concentrations in the leach solution did not vary with grind size, indicating that these elements are not grind sensitive.
- Techno-economic assessment determined that grind size $P_{80}$ of 75 µm was optimal, and this was used for further test work and process plant design. Sharp decreases in recovery were noted at grind sizes coarser than $P_{80}$ of 75 µm, and the value of the incremental gold extracted grinding finer to $P_{80}$ of 53 µm did not offset the additional incremental capital cost and incremental operating cost associated with grinding energy and reagent dosing.
- Gravity recoveries were consistently replicated across multiple tests performed on the same ore type composites, as well as correlating with the ore type composite gravity recoveries noted in Section 13.2.4.4.
- Marginally lower residue grades were achieved for tests that included a gravity recovery stage before cyanidation.
- Except for one data pair, reagents consumptions are marginally lower for tests with a preceding gravity recovery stage compared to cyanidation only tests. This effect is most pronounced for the sandstone ore type composite.

- Techno-economic assessment determined a marginal benefit for including a gravity recovery stage before cyanidation. At full plant scale, including a gravity circuit in the process flowsheet will also reduce the impact of coarse free gold on cyanidation performance and regulate plant feed grade, enabling more stable operation of CIL and elution circuits. Intensive cyanidation of gravity concentrate may also realise improved leaching of gold associated with semi-refractory minerals that may be present. Furthermore, removing any coarse gold components early in the process flowsheet is advantageous in terms of security. Therefore, gravity recovery was used as a standard parameter for plant design and all further test work, unless otherwise noted.
- The preg-borrowing properties of mudstone ore observed in Section 13.2.6.3 were also noted in the paired tests with no preceding gravity recovery stage in Section 13.2.6.4.

*Table 13-29: Test results for grind size optimisation and inclusion of gravity recovery for Nyanzaga deposit oxide and mudstone ore type composite samples*

| PARAMETER | UNIT | PW3229 | PW3230 | PW3231 | PW3232 | PW3198 | PW3193 | PW3199 | PW3194 | PW3200 | PW3202 | PW3195 | PW3197 | PW3201 | PW3196 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-OX-OX | OTC-OX-OX | OTC-OX-OX | OTC-OX-OX | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR |
| $P_{80}$ grind size | µm | 125 | 106 | 75 | 53 | 125 | 125 | 106 | 106 | 75 | 75 | 75 | 75 | 53 | 53 |
| Assay head grade | | | | | | | | | | | | | | | |
| Au | g/t | 1.88 | 1.88 | 1.88 | 1.88 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 |
| Ag | g/t | 2.8 | 2.8 | 2.8 | 2.8 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| Calc. head grade | | | | | | | | | | | | | | | |
| Au | g/t | 1.92 | 1.89 | 1.92 | 1.88 | 1.87 | 1.70 | 1.89 | 1.74 | 1.88 | 1.77 | 1.79 | 1.60 | 1.92 | 1.81 |
| Ag | g/t | 2.5 | 2.7 | 2.8 | 2.9 | 1.5 | 2.2 | 1.6 | 2.0 | 1.4 | 1.8 | 2.0 | 2.2 | 1.5 | 2.1 |
| Pulp density (solids conc) | % w/w | 39.9 | 39.9 | 39.9 | 39.9 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 |
| Pre-oxygenation | - | no | no | no | no | no | no | no | no | no | no | no | no | no | no |
| Carbon concentration | g/L | 0 | 0 | 0 | 0 | 20 | 20 | 20 | 20 | 20 | 0 | 20 | 0 | 20 | 20 |
| Recovery to gravity con | | | | | | | | | | | | | | | |
| Au | % | 30.3 | 30.6 | 30.2 | 30.9 | 17.3 | - | 17.1 | - | 17.2 | 18.3 | - | - | 16.9 | - |
| Extraction at time (Au) | | | | | | | | | | | | | | | |
| 2 hours | % | 87.5 | 88.0 | 89.8 | 92.5 | 80.5 | 81.7 | 79.1 | 80.5 | 87.7 | 84.8 | 84.3 | 86.2 | 84.9 | 94.2 |
| 4 hours | % | 86.9 | 90.5 | 90.4 | 92.5 | 80.8 | 83.6 | 79.1 | 81.5 | 84.9 | 86.8 | 84.3 | 87.7 | 87.5 | 85.8 |
| 8 hours | % | 88.7 | 91.7 | 92.3 | 93.2 | 80.9 | 81.8 | 83.6 | 83.9 | 84.9 | 86.1 | 90.7 | 83.3 | 89.6 | 85.0 |
| 12 hours | % | 89.9 | 91.1 | 91.7 | 92.5 | 81.5 | 83.3 | 84.3 | 86.9 | 89.4 | 85.5 | 86.6 | 91.7 | 89.0 | 87.0 |
| 24 hours | % | 89.3 | 90.5 | 91.7 | 92.5 | 84.0 | 82.0 | 86.5 | 84.5 | 88.8 | 86.7 | 88.3 | 83.5 | 90.1 | 88.9 |
| 32 hours | % | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Extraction at time (Ag) | | | | | | | | | | | | | | | |
| 2 hours | % | 43.5 | 43.1 | 44.1 | 43.0 | 36.4 | 37.6 | 29.2 | 26.8 | 35.5 | 36.9 | 43.4 | 39.1 | 39.7 | 40.4 |
| 4 hours | % | 47.7 | 45.3 | 47.4 | 46.5 | 38.7 | 32.6 | 33.0 | 39.8 | 37.4 | 40.9 | 34.9 | 40.0 | 39.2 | 48.0 |
| 8 hours | % | 46.6 | 46.4 | 48.4 | 49.0 | 38.7 | 45.9 | 35.2 | 36.8 | 53.1 | 43.3 | 47.5 | 43.7 | 47.0 | 43.3 |
| 12 hours | % | 50.6 | 47.5 | 48.4 | 49.0 | 41.9 | 48.1 | 37.8 | 52.7 | 46.2 | 47.9 | 47.8 | 48.2 | 47.9 | 43.3 |
| 24 hours | % | 51.2 | 51.2 | 53.0 | 51.9 | 45.6 | 49.1 | 49.9 | 45.8 | 51.3 | 56.3 | 48.8 | 55.1 | 52.9 | 57..6 |
| 32 hours | % | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Solid residue grade | | | | | | | | | | | | | | | |
| Au | g/t | 0.21 | 0.18 | 0.16 | 0.14 | 0.30 | 0.31 | 0.26 | 0.27 | 0.21 | 0.24 | 0.21 | 0.27 | 0.19 | 0.20 |
| Ag | g/t | 1.2 | 1.3 | 1.3 | 1.4 | 0.8 | 1.1 | 0.8 | 1.1 | 0.7 | 0.8 | 1.0 | 1.0 | 0.7 | 0.9 |
| NaCN consumption | kg/t | 0.08 | 0.05 | 0.10 | 0.10 | 0.57 | 0.59 | 0.51 | 0.59 | 0.58 | 0.36 | 0.59 | 0.36 | 0.58 | 0.66 |
| Lime usage | kg/t | 1.36 | 1.28 | 1.06 | 1.38 | 0.95 | 1.14 | 0.88 | 1.17 | 0.86 | 0.84 | 1.29 | 1.12 | 1.03 | 1.36 |
| Terminal DO | ppm | 17.8 | 20.0 | 16.4 | 19.5 | 15.5 | 15.6 | 15.1 | 16.4 | 14.4 | 16.9 | 15.8 | 17.6 | 13.4 | 17.2 |

*Table 13-30: Test results for grind size optimisation and inclusion of gravity recovery for Nyanzaga deposit sandstone and chert ore type composite samples*

| PARAMETER | UNIT | PW3209 | PW3205 | PW3210 | PW3206 | PW3211 | PW3207 | PW3212 | PW3208 | PW3188 | PW3183 | PW3189 | PW3184 | PW3190 | PW3185 | PW3191 | PW3186 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR |
| $P_{80}$ grind size | µm | 125 | 125 | 106 | 106 | 75 | 75 | 53 | 53 | 125 | 125 | 106 | 106 | 75 | 75 | 53 | 53 |
| Assay head grade | | | | | | | | | | | | | | | | | |
| Au | g/t | 3.07 | 3.07 | 3.07 | 3.07 | 3.07 | 3.07 | 3.07 | 3.07 | 2.24 | 2.24 | 2.24 | 2.24 | 2.24 | 2.24 | 2.24 | 2.24 |
| Ag | g/t | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Calc. head grade | | | | | | | | | | | | | | | | | |
| Au | g/t | 3.22 | 3.17 | 3.25 | 3.18 | 3.09 | 3.58 | 3.22 | 3.16 | 2.13 | 2.37 | 2.20 | 2.22 | 2.21 | 2.29 | 2.19 | 2.44 |
| Ag | g/t | 3.06 | 2.9 | 3.2 | 2.7 | 2.9 | 2.8 | 2.9 | 2.9 | 1.9 | 2.5 | 2.0 | 2.4 | 2.1 | 2.3 | 2.2 | 2.4 |
| Pulp density (solids conc) | % w/w | 39.9 | 40.0 | 39.9 | 40.0 | 39.9 | 40.0 | 39.9 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 |
| Pre-oxygenation | - | no | no | no | no | no | no | no | no | no | no | no | no | no | no | no | no |
| Carbon concentration | g/L | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Recovery to gravity con | | | | | | | | | | | | | | | | | |
| Au | % | 25.6 | - | 25.3 | - | 26.6 | - | 25.5 | - | 28.2 | - | 27.2 | - | 27.2 | - | 27.4 | - |
| Extraction at time (Au) | | | | | | | | | | | | | | | | | |
| 2 hours | % | 82.7 | 81.5 | 83.3 | 83.1 | 93.4 | 82.5 | 93.4 | 87.9 | 80.9 | 76.2 | 75.9 | 80.4 | 79.2 | 83.3 | 86.2 | 84.3 |
| 4 hours | % | 84.5 | 82.0 | 86.5 | 85.4 | 95.8 | 85.8 | 93.4 | 87.4 | 80.3 | 77.4 | 75.9 | 79.8 | 82.0 | 84.6 | 87.8 | 82.5 |
| 8 hours | % | 86.3 | 83.8 | 86.5 | 89.1 | 95.8 | 87.5 | 95.6 | 88.4 | 80.9 | 79.3 | 78.7 | 83.1 | 81.5 | 84.6 | 86.2 | 81.3 |
| 12 hours | % | 84.6 | 83.4 | 85.6 | 82.4 | 92.1 | 86.7 | 93.0 | 89.7 | 79.8 | 81.7 | 79.8 | 81.8 | 83.1 | 85.2 | 86.2 | 81.3 |
| 24 hours | % | 88.0 | 86.9 | 89.1 | 88.5 | 92.1 | 91.4 | 92.2 | 91.9 | 80.3 | 81.1 | 81.4 | 81.8 | 83.7 | 85.8 | 85.6 | 85.3 |
| 32 hours | % | - | - | - | - | - | - | - | - | - | 79.9 | - | 81.8 | - | 83.4 | - | 85.9 |
| Extraction at time (Ag) | | | | | | | | | | | | | | | | | |
| 2 hours | % | 34.5 | 49.3 | 34.1 | 53.1 | 41.1 | 49.4 | 38.1 | 50.8 | 42.8 | 47.9 | 40.7 | 45.2 | 40.9 | 51.9 | 41.0 | 52.8 |
| 4 hours | % | 36.5 | 49.8 | 35.9 | 54.7 | 43.1 | 52.0 | 41.6 | 52.3 | 44.3 | 48.5 | 43.7 | 48.2 | 43.7 | 53.2 | 45.0 | 55.8 |
| 8 hours | % | 41.7 | 52.3 | 39.5 | 59.0 | 46.2 | 56.1 | 48.0 | 57.3 | 44.3 | 50.2 | 44.4 | 52.4 | 45.1 | 56.3 | 47.6 | 57.6 |
| 12 hours | % | 40.8 | 56.7 | 40.8 | 63.2 | 50.2 | 63.2 | 50.4 | 60.7 | 48.8 | 51.9 | 47.9 | 53.6 | 47.1 | 59.9 | 51.4 | 58.2 |
| 24 hours | % | 47.6 | 62.0 | 54.1 | 66.8 | 54.6 | 68.2 | 52.8 | 69.0 | 52.5 | 57.4 | 50.7 | 58.8 | 53.0 | 65.3 | 55.2 | 66.2 |
| 32 hours | % | - | - | - | - | - | - | - | - | - | 60.6 | - | 58.8 | - | 65.9 | - | 67.3 |
| Solid residue grade | | | | | | | | | | | | | | | | | |
| Au | g/t | 0.39 | 0.42 | 0.36 | 0.37 | 0.25 | 0.31 | 0.25 | 0.26 | 0.42 | 0.48 | 0.41 | 0.41 | 0.36 | 0.38 | 0.32 | 0.35 |
| Ag | g/t | 1.6 | 1.1 | 1.5 | 0.9 | 1.3 | 0.9 | 1.4 | 0.9 | 0.9 | 1.0 | 1.0 | 1.0 | 1.0 | 0.8 | 1.0 | 0.8 |
| NaCN consumption | kg/t | 0.26 | 0.44 | 0.22 | 0.44 | 0.25 | 0.37 | 0.34 | 0.44 | 0.57 | 0.51 | 0.58 | 0.52 | 0.51 | 0.52 | 0.51 | 0.52 |
| Lime usage | kg/t | 0.95 | 1.24 | 0.82 | 1.20 | 0.92 | 1.31 | 1.06 | 1.56 | 0.83 | 1.22 | 0.58 | 1.04 | 0.56 | 1.07 | 0.72 | 1.25 |
| Terminal DO | ppm | 18.4 | 20.1 | 20.4 | 18.5 | 18.4 | 16.8 | 12.4 | 18.6 | 18.8 | 22.5 | 14.8 | 21.6 | 14.6 | 22.4 | 15.1 | 21.6 |

#### 13.2.6.5 SLURRY DENSITY OPTIMISATION

To assess the effect of solids concentration in slurry on gold extraction, samples of the Nyanzaga fresh ore type composites were subjected to leach tests with durations of 24 h. The tests were conducted under the following conditions:

- 1,000 g sample tested in cyanidation.
- Grind size $P_{80}$ of 75 µm.
- Inclusion of gravity extraction, with gravity concentrate treated by intensive cyanidation leach.
- No pre-oxygenation. Target DO of 20 ppm using oxygen gas.
- Initial NaCN concentration of 0.10% w/v, maintained at 0.03% w/v.
- No activated carbon addition for oxide, sandstone and chert ore type composites; 20 g/L activated carbon addition for tests on the mudstone ore type composite.
- Pulp densities tested were 40% w/w, 45% w/w and 50% w/w solids.

The results of these tests are summarised in Table 13-31. Column headers prefixed with PW refer to the individual test numbers in the SGS report.

Key findings from the tests are:

- Gold residue grades were found to be similar across the range of cyanidation slurry solids concentrations tested, indicating that gold extraction is unaffected by slurry density.
- Sodium cyanide and lime consumptions decrease with increasing slurry density.
- 50% w/w solids concentration in cyanidation slurry was selected as the standard parameter for all further test work, unless otherwise noted, and for plant design.

*Table 13-31: Cyanidation slurry density optimisation test results for Nyanzaga deposit fresh ore type composite samples*

| PARAMETER | UNIT | PW3340 | PW3341 | PW3342 | PW3335 | PW3336 | PW3337 | PW3331 | PW3332 | PW3333 |
|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | | |
| Au | g/t | 1.70 | 1.70 | 1.70 | 3.07 | 3.07 | 3.07 | 2.24 | 2.24 | 2.24 |
| Ag | g/t | 2.2 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Calc. head grade | | | | | | | | | | |
| Au | g/t | 1.72 | 1.68 | 1.70 | 2.82 | 2.74 | 2.74 | 2.26 | 2.27 | 1.84 |
| Ag | g/t | 1.7 | 1.6 | 1.6 | 2.9 | 2.8 | 2.8 | 2.5 | 2.4 | 2.3 |
| Pulp density (solids conc.) | % w/w | 40.0 | 45.0 | 50.0 | 40.0 | 45.0 | 50.0 | 40.0 | 45.0 | 50.0 |
| Pre-oxygenation | - | no | no | no | no | no | no | no | no | no |
| Carbon concentration | g/L | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 |
| Recovery to gravity con | | | | | | | | | | |
| Au | % | 15.1 | 15.4 | 15.3 | 25.9 | 26.6 | 26.6 | 15.0 | 15.0 | 18.5 |
| Ag | % | 5.9 | 6.4 | 6.2 | 9.7 | 9.9 | 10.1 | 5.5 | 5.8 | 6.2 |
| Extraction at time (Au) | | | | | | | | | | |
| 2 hours | % | 81.6 | 83.1 | 85.5 | 89.2 | 91.1 | 88.6 | 82.6 | 81.9 | 78.9 |
| 4 hours | % | 81.6 | 85.5 | 85.5 | 89.7 | 89.4 | 88.6 | 82.6 | 92.4 | 79.5 |
| 8 hours | % | 85.8 | 85.5 | 85.0 | 91.2 | 90.6 | 89.6 | 84.6 | 84.5 | 78.9 |
| 12 hours | % | 85.1 | 86.0 | 85.0 | 89.7 | 89.4 | 88.6 | 83.3 | 84.5 | 80.5 |
| 24 hours | % | 87.5 | 86.6 | 87.4 | 89.7 | 89.8 | 89.6 | 84.5 | 85.0 | 80.9 |
| Extraction at time (Ag) | | | | | | | | | | |
| 2 hours | % | 15.9 | 23.2 | 23.4 | 42.8 | 44.8 | 44.4 | 33.9 | 34.3 | 24.6 |
| 4 hours | % | 19.5 | 16.2 | 23.8 | 48.4 | 47.4 | 49.0 | 35.6 | 34.7 | 28.1 |
| 8 hours | % | 22.8 | 24.4 | 51.1 | 50.9 | 52.7 | 53.1 | 40.2 | 39.1 | 33.5 |
| 12 hours | % | 35.1 | 25.8 | 37.4 | 52.4 | 57.2 | 56.4 | 41.4 | 43.3 | 35.5 |
| 24 hours | % | 41.0 | 29.5 | 43.9 | 58.6 | 61.1 | 60.3 | 46.9 | 48.9 | 41.1 |
| Solid residue grade | | | | | | | | | | |
| Au | g/t | 0.22 | 0.23 | 0.22 | 0.29 | 0.28 | 0.29 | 0.35 | 0.34 | 0.35 |
| Ag | g/t | 1.0 | 1.1 | 0.9 | 1.2 | 1.1 | 1.1 | 1.2 | 1.1 | 1.2 |
| NaCN consumption | kg/t | 0.58 | 0.53 | 0.48 | 0.29 | 0.23 | 0.20 | 0.36 | 0.29 | 0.19 |
| Lime usage | kg/t | 1.15 | 0.79 | 0.80 | 1.19 | 1.09 | 1.05 | 1.15 | 1.13 | 1.13 |
| Terminal DO | ppm | 20.4 | 20.2 | 18.1 | 20.4 | 18.0 | 17.0 | 20.5 | 21.0 | 20.7 |

#### 13.2.6.6 OXIDANT EVALUATION

To evaluate the effect of various oxidising conditions on gold extraction, samples of the Nyanzaga ore type composites were subjected to leach tests with durations of 24 h. The tests were conducted under the following conditions:

- 1,000 g sample tested in cyanidation.
- Grind size $P_{80}$ of 75 µm.
- Inclusion of gravity extraction using amalgamation.
- Pulp density of 40% w/w solids.
- Initial NaCN concentration of 0.10% w/v, maintained at 0.03% w/v.
- No activated carbon addition for oxide, sandstone and chert ore type composites; 20 g/L activated carbon addition for tests on the mudstone ore type composite.

The oxidising conditions tested were:

- Dissolved oxygen (DO) levels controlled with oxygen head space in the leach bottle, targeting DO ≥20 ppm.
- DO levels maintained by aeration only, targeting DO in the range of 5 ppm to 10 ppm.
- Dissolved oxygen (DO) levels controlled with oxygen head space in the leach bottle, with 3 h of pre-oxygenation performed prior to leach, targeting DO ≥20 ppm.
- DO levels maintained by aeration only, with 3 h of pre-aeration performed prior to leach, targeting DO in the range of 5 ppm to 10 ppm.
- Dissolved oxygen (DO) levels controlled with oxygen head space in the leach bottle, targeting DO ≥20 ppm, with 100 g/t of lead nitrate added prior to leach.

The results of these tests are summarised in Table 13-32and Table 13-33. Column headers prefixed with PW refer to the individual test numbers in the SGS report.

Key findings from the tests are:

- Higher DO levels, from the addition of oxygen gas, result in lower residue gold grades.
- Tests with pre-aeration or pre-oxygenation typically achieved comparable residue gold grades.
- Lime consumption is significantly lower for tests that included a pre-aeration or pre-oxygenation step.
- Tests with lead nitrate addition achieved comparable gold residue grades to other tests that included the addition of oxygen gas, but did not achieve the reduction in lime consumption that was observed with the test that included pre-oxygenation.
- Controlling DO with oxygen head space in the leach bottle, targeting DO ≥20 ppm, was selected for further test work.
- Techno-economic assessment determined that combining a pre-oxygenation step with DO control via oxygen gas in cyanidation, targeting 20 ppm, was the optimal process condition and this was used for process plant design.

*Table 13-32: Oxidant evaluation test results for Nyanzaga deposit oxide and mudstone ore type composite samples*

| PARAMETER | UNIT | PW3317 | PW3318 | PW3319 | PW3320 | PW3321 | PW3322 | PW3323 | PW3324 | PW3325 | PW3326 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-OX-OX | OTC-OX-OX | OTC-OX-OX | OTC-OX-OX | OTC-OX-OX | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | | | |
| Au | g/t | 1.88 | 1.88 | 1.88 | 1.88 | 1.88 | 1.70 | 1.70 | 1.70 | 1.70 | 1.70 |
| Ag | g/t | 2.8 | 2.8 | 2.8 | 2.8 | 2.8 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| Calc. head grade | | | | | | | | | | | |
| Au | g/t | 1.79 | 1.83 | 1.80 | 1.79 | 1.78 | 1.83 | 1.82 | 1.83 | 1.78 | 1.76 |
| Ag | g/t | 3.0 | 3.0 | 2.8 | 3.0 | 2.9 | 1.9 | 1.8 | 1.9 | 2.1 | 1.6 |
| Pulp density (solids conc.) | % w/w | 39.8 | 39.8 | 39.8 | 39.9 | 39.8 | 39.7 | 39.7 | 39.6 | 39.6 | 39.6 |
| Pre-oxygenation | - | no | no | $O_2$ | air | no | no | no | $O_2$ | air | no |
| Leach oxygenation | - | $O_2$ | air | $O_2$ | air | $O_2$ | $O_2$ | air | $O_2$ | air | $O_2$ |
| Lead nitrate addition | g/t | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 100 |
| Carbon concentration | g/L | 0 | 0 | 0 | 0 | 0 | 20 | 20 | 20 | 20 | 20 |
| Recovery to gravity con | | | | | | | | | | | |
| Au | % | 34.9 | 34.1 | 34.9 | 35.1 | 35.2 | 24.2 | 24.4 | 24.3 | 24.9 | 25.2 |
| Extraction at time (Au) | | | | | | | | | | | |
| 2 hours | % | 88.9 | 83.5 | 89.5 | 87.5 | 87.7 | 82.1 | 80.1 | 92.4 | 83.8 | 81.8 |
| 4 hours | % | 89.7 | 85.2 | 90.4 | 89.1 | 91.1 | 85.2 | 81.6 | 91.6 | 84.9 | 85.1 |
| 8 hours | % | 90.5 | 87.5 | 90.4 | 90.0 | 92.7 | 85.2 | 82.8 | 87.9 | 84.6 | 86.1 |
| 12 hours | % | 89.7 | 88.3 | 89.6 | 90.8 | 90.3 | 84.8 | 84.7 | 87.5 | 85.9 | 85.9 |
| 24 hours | % | 90.5 | 89.1 | 91.9 | 90.8 | 91.9 | 86.9 | 86.2 | 88.2 | 87.3 | 88.1 |
| Extraction at time (Ag) | | | | | | | | | | | |
| 2 hours | % | 45.0 | 43.6 | 47.4 | 43.4 | 50.1 | 20.5 | 20.3 | 23.6 | 15.7 | 35.4 |
| 4 hours | % | 46.0 | 47.0 | 49.5 | 45.9 | 51.6 | 22.5 | 25.7 | 25.5 | 23.3 | 36.5 |
| 8 hours | % | 48.9 | 48.0 | 52.1 | 48.9 | 53.1 | 33.3 | 28.2 | 31.0 | 23.3 | 36.2 |
| 12 hours | % | 50.3 | 49.9 | 52.6 | 47.9 | 54.1 | 27.8 | 28.5 | 29.6 | 28.9 | 36.8 |
| 24 hours | % | 50.3 | 50.8 | 54.1 | 49.8 | 54.6 | 36.9 | 29.1 | 32.9 | 29.6 | 37.6 |
| Solid residue grade | | | | | | | | | | | |
| Au | g/t | 0.17 | 0.20 | 0.15 | 0.17 | 0.15 | 0.24 | 0.25 | 0.22 | 0.23 | 0.21 |
| Ag | g/t | 1.5 | 1.5 | 1.3 | 1.5 | 1.3 | 1.2 | 1.3 | 1.3 | 1.5 | 1.0 |
| NaCN consumption | kg/t | 0.18 | 0.12 | 0.10 | 0.18 | 0.13 | 0.52 | 0.59 | 0.51 | 0.51 | 0.45 |
| Lime usage | kg/t | 0.93 | 1.09 | 0.47 | 0.67 | 1.26 | 1.05 | 0.89 | 0.54 | 0.58 | 0.92 |
| Terminal DO | ppm | 16.7 | 8.3 | 17.0 | 8.1 | 16.8 | 20.0 | 7.6 | 18.4 | 7.4 | 19.1 |

*Table 13-33: Oxidant evaluation test results for Nyanzaga deposit sandstone and chert ore type composite samples*

| PARAMETER | UNIT | PW3312 | PW3313 | PW3314 | PW3315 | PW3316 | PW3307 | PW3308 | PW3309 | PW3310 | PW3311 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | | | |
| Au | g/t | 3.07 | 3.07 | 3.07 | 3.07 | 3.07 | 2.24 | 2.24 | 2.24 | 2.24 | 2.24 |
| Ag | g/t | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Calc. head grade | | | | | | | | | | | |
| Au | g/t | 3.17 | 3.18 | 3.11 | 3.24 | 3.13 | 2.32 | 2.33 | 2.27 | 2.36 | 2.32 |
| Ag | g/t | 2.6 | 2.6 | 2.8 | 2.8 | 2.5 | 2.5 | 2.4 | 2.3 | 2.2 | 2.3 |
| Pulp density (solids conc.) | % w/w | 39.9 | 39.9 | 39.9 | 39.9 | 39.9 | 40.0 | 40.1 | 40.0 | 40.0 | 40.0 |
| Pre-oxygenation | - | no | no | $O_2$ | air | no | no | no | $O_2$ | air | no |
| Leach oxygenation | - | $O_2$ | air | $O_2$ | air | $O_2$ | $O_2$ | air | $O_2$ | air | $O_2$ |
| Lead nitrate addition | g/t | 0 | 0 | 0 | 0 | 100 | 0 | 0 | 0 | 0 | 100 |
| Carbon concentration | g/L | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Recovery to gravity con | | | | | | | | | | | |
| Au | % | 31.6 | 31.6 | 32.3 | 31.0 | 32.1 | 26.7 | 26.5 | 27.2 | 26.2 | 26.6 |
| Extraction at time (Au) | | | | | | | | | | | |
| 2 hours | % | 86.7 | 84.3 | 87.7 | 84.0 | 89.9 | 81.9 | 79.4 | 83.7 | 77.4 | 81.2 |
| 4 hours | % | 87.2 | 87.1 | 90.5 | 87.6 | 89.4 | 83.5 | 80.4 | 83.7 | 79.4 | 81.8 |
| 8 hours | % | 88.1 | 88.9 | 91.5 | 90.3 | 90.8 | 83.5 | 81.9 | 85.2 | 79.4 | 83.3 |
| 12 hours | % | 87.2 | 90.3 | 92.4 | 90.3 | 91.7 | 83.5 | 82.9 | 90.2 | 79.9 | 84.7 |
| 24 hours | % | 91.2 | 91.2 | 91.5 | 91.2 | 91.7 | 84.9 | 84.3 | 84.8 | 81.8 | 84.7 |
| Extraction at time (Ag) | | | | | | | | | | | |
| 2 hours | % | 37.9 | 34.1 | 32.9 | 31.6 | 43.1 | 33.4 | 32.0 | 35.9 | 31.8 | 38.0 |
| 4 hours | % | 40.8 | 35.8 | 36.7 | 35.4 | 46.1 | 34.6 | 32.6 | 36.5 | 33.1 | 40.0 |
| 8 hours | % | 45.9 | 39.2 | 41.4 | 38.0 | 50.1 | 36.3 | 33.2 | 38.4 | 35.6 | 42.5 |
| 12 hours | % | 49.2 | 41.9 | 42.5 | 38.5 | 52.4 | 38.6 | 35.5 | 39.6 | 37.5 | 45.0 |
| 24 hours | % | 53.5 | 46.3 | 49.1 | 42.1 | 56.3 | 40.2 | 38.4 | 44.4 | 38.1 | 47.4 |
| Solid residue grade | | | | | | | | | | | |
| Au | g/t | 0.28 | 0.28 | 0.27 | 0.29 | 0.26 | 0.35 | 0.37 | 0.35 | 0.43 | 0.36 |
| Ag | g/t | 1.2 | 1.4 | 1.4 | 1.6 | 1.1 | 1.5 | 1.5 | 1.3 | 1.4 | 1.2 |
| NaCN consumption | kg/t | 0.30 | 0.37 | 0.36 | 0.29 | 0.30 | 0.31 | 0.30 | 0.15 | 0.22 | 0.37 |
| Lime usage | kg/t | 0.88 | 0.92 | 0.52 | 0.32 | 0.94 | 0.98 | 0.97 | 0.68 | 0.60 | 1.01 |
| Terminal DO | ppm | 20.4 | 7.8 | 20.0 | 7.9 | 20.5 | 20.0 | 8.0 | 18.0 | 7.7 | 17.0 |

### 13.2.6.7 CYANIDE DOSAGE OPTIMISATION

To assess the effect of sodium cyanide concentration in slurry on gold extraction, samples of the Nyanzaga ore type composites were subjected to leach tests with durations of 24 h. The tests were conducted under the following conditions:

- 1,000 g sample tested in cyanidation.
- Grind size $P_{80}$ of 75 µm.
- Inclusion of gravity extraction using amalgamation.
- Pulp density of 50% w/w solids.
- No pre-oxygenation. Target DO of 20 ppm using oxygen gas.
- No activated carbon addition for oxide, sandstone and chert ore type composites; 20 g/L activated carbon addition for tests on the mudstone ore type composite.

The sodium cyanide concentrations tested were:

- Initial NaCN concentration of 0.150% w/v, maintained at 0.030% w/v (not tested for OTC-OX-OX due to sample mass constraints).
- Initial NaCN concentration of 0.100% w/v, maintained at 0.010% w/v.
- Initial NaCN concentration of 0.075% w/v, maintained at 0.010% w/v.
- Initial NaCN concentration of 0.050% w/v, maintained at 0.010% w/v.

The results of these tests are summarised in Table 13-34. Column headers prefixed with PW refer to the individual test numbers in the SGS report.

Key findings from the tests are:

- Within the assessed range, cyanide concentration did not have a significant impact on gold residue grades or gold leach kinetics.
- As the concentration of NaCN in the leach increased, there tended to be a corresponding increase in the cyanide consumption.
- Dissolution of mercury, arsenic, and antimony tends to increase with increasing cyanide concentration.
- An initial NaCN concentration of 0.050% w/v, and maintained at 0.010% w/v, was selected as a standard parameter for plant design and all further test work, unless otherwise noted.

*Table 13-34: Test results for cyanide dosage optimisation for Nyanzaga deposit ore type composite samples*

| PARAMETER | UNIT | PW3360 | PW3361 | PW3362 | PW3363 | PW3364 | PW3365 | PW3366 | PW3356 | PW3357 | PW3358 | PW3359 | PW3352 | PW3353 | PW3354 | PW3355 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-OX-OX | OTC-OX-OX | OTC-OX-OX | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | | | | | | | | |
| Au | g/t | 1.88 | 1.88 | 1.88 | 1.70 | 1.70 | 1.70 | 1.70 | 3.07 | 3.07 | 3.07 | 3.07 | 2.24 | 2.24 | 2.24 | 2.24 |
| Ag | g/t | 2.8 | 2.8 | 2.8 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Calc. head grade | | | | | | | | | | | | | | | | |
| Au | g/t | 1.36 | 1.35 | 1.34 | 1.63 | 1.68 | 1.70 | 1.67 | 2.85 | 2.82 | 2.78 | 2.84 | 2.13 | 2.15 | 2.16 | 2.11 |
| Ag | g/t | 2.8 | 2.5 | 2.6 | 2.2 | 2.2 | 2.2 | 2.2 | 2.8 | 2.8 | 2.5 | 2.6 | 2.5 | 3.1 | 2.4 | 3.0 |
| Pulp density (solids conc) | % w/w | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Pre-oxygenation | - | no | no | no | no | no | no | no | no | no | no | no | no | no | no | no |
| NaCN initial conc. | % w/v | 0.100 | 0.075 | 0.050 | 0.150 | 0.100 | 0.075 | 0.050 | 0.150 | 0.100 | 0.075 | 0.050 | 0.150 | 0.100 | 0.075 | 0.050 |
| NaCN maintain conc. | % w/v | 0.010 | 0.010 | 0.010 | 0.030 | 0.010 | 0.010 | 0.010 | 0.030 | 0.010 | 0.010 | 0.010 | 0.030 | 0.010 | 0.010 | 0.010 |
| Carbon concentration | g/L | 0 | 0 | 0 | 20 | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Recovery to gravity con | | | | | | | | | | | | | | | | |
| Au | % | 18.7 | 18.8 | 19.0 | 15.9 | 15.5 | 15.3 | 15.6 | 25.6 | 25.9 | 26.2 | 25.7 | 15.9 | 15.8 | 15.8 | 16.1 |
| Ag | % | 1.4 | 1.5 | 1.5 | 4.6 | 4.6 | 4.5 | 4.5 | 9.9 | 9.9 | 11.3 | 10.7 | 5.6 | 4.5 | 5.8 | 4.7 |
| Extraction at time (Au) | | | | | | | | | | | | | | | | |
| 2 hours | % | 87.1 | 87.8 | 89.4 | 80.3 | 81.2 | 80.3 | 81.9 | 85.5 | 87.7 | 87.7 | 86.3 | 82.1 | 80.2 | 80.2 | 80.1 |
| 4 hours | % | 88.2 | 86.7 | 87.7 | 83.2 | 84.7 | 83.6 | 83.3 | 88.6 | 88.0 | 88.8 | 87.6 | 81.2 | 80.2 | 79.3 | 81.9 |
| 8 hours | % | 89.3 | 90.1 | 87.7 | 85.6 | 83.5 | 82.5 | 85.0 | 90.0 | 89.0 | 89.8 | 88.0 | 81.6 | 80.6 | 80.1 | 81.5 |
| 12 hours | % | 88.8 | 87.9 | 88.8 | 85.6 | 85.8 | 84.7 | 86.8 | 88.0 | 86.1 | 89.1 | 87.0 | 81.2 | 80.2 | 79.7 | 82.3 |
| 24 hours | % | 89.3 | 88.9 | 88.8 | 88.0 | 86.9 | 86.5 | 86.8 | 90.5 | 90.2 | 90.1 | 90.5 | 82.9 | 82.3 | 82.6 | 83.2 |
| Extraction at time (Ag) | | | | | | | | | | | | | | | | |
| 2 hours | % | 45.9 | 48.7 | 46.9 | 28.5 | 30.4 | 28.3 | 29.5 | 47.5 | 46.5 | 53.5 | 51.1 | 33.8 | 27.5 | 36.7 | 31.1 |
| 4 hours | % | 47.3 | 49.9 | 48.4 | 33.7 | 31.4 | 36.3 | 31.6 | 48.5 | 48.3 | 55.1 | 51.1 | 33.0 | 27.5 | 35.9 | 28.8 |
| 8 hours | % | 49.7 | 50.3 | 51.0 | 36.2 | 36.4 | 37.8 | 35.2 | 52.3 | 50.9 | 58.9 | 56.9 | 36.5 | 30.2 | 39.9 | 32.3 |
| 12 hours | % | 49.0 | 53.5 | 51.7 | 38.3 | 37.1 | 40.6 | 39.1 | 55.9 | 52.6 | 61.9 | 59.1 | 40.2 | 31.7 | 41.4 | 34.5 |
| 24 hours | % | 53.0 | 56.7 | 53.4 | 44.3 | 45.1 | 46.5 | 55.1 | 57.5 | 54.2 | 59.7 | 58.0 | 38.0 | 30.9 | 35.8 | 44.6 |
| Solid residue grade | | | | | | | | | | | | | | | | |
| Au | g/t | 0.15 | 0.15 | 0.15 | 0.20 | 0.22 | 0.23 | 0.22 | 0.27 | 0.28 | 0.28 | 0.27 | 0.37 | 0.38 | 0.38 | 0.36 |
| Ag | g/t | 1.3 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 | 1.0 | 1.2 | 1.3 | 1.0 | 1.1 | 1.4 | 2.0 | 1.4 | 1.5 |
| NaCN consumption | kg/t | 0.20 | 0.20 | 0.10 | 0.57 | 0.48 | 0.37 | 0.34 | 0.29 | 0.30 | 0.25 | 0.10 | 0.30 | 0.29 | 0.15 | 0.24 |
| Lime usage | kg/t | 1.12 | 1.03 | 1.01 | 0.78 | 0.79 | 0.82 | 0.83 | 0.95 | 0.90 | 1.03 | 1.15 | 1.06 | 1.19 | 1.01 | 1.04 |
| Terminal DO | ppm | 21.7 | 22.1 | 19.1 | 23.0 | 22.9 | 22.2 | 22.4 | 19.2 | 18.4 | 16.8 | 18.3 | 10.0 | 9.4 | 8.6 | 8.8 |

### 13.2.6.8 DEMONSTRATION TESTS AT OPTIMISED CONDITIONS

To verify the optimised gravity/cyanidation conditions for Nyanzaga ores, a series of 22 demonstration leach tests were conducted. Most sets of conditions were tested in duplicate, except as otherwise noted.

For the Nyanzaga fresh ore type composites and the Nyanzaga master composite, the effectiveness of gravity extraction was examined through tests both with and without gravity extraction before cyanidation. For the Nyanzaga oxide ore type composite, tests with gravity extraction only were performed.

The tests were conducted under the following conditions:

- 1,000 g sample tested in cyanidation.
- Grind size $P_{80}$ of 75 µm.
- Inclusion of gravity extraction, with gravity concentrate treated by intensive cyanidation leach.
- Pulp density of 50% w/w solids.
- No pre-oxygenation. Target DO of 20 ppm using oxygen gas.
- Initial NaCN concentration of 0.050% w/v, maintained at 0.010% w/v.
- No activated carbon addition for oxide, sandstone and chert ore type composites; tests with both no activated carbon addition and 20 g/L activated carbon addition were considered for the Nyanzaga master composite to test for the presence of preg-borrowing; no activated carbon addition for mudstone ore type composite, except for one of the tests with gravity extraction which was conducted with 20 g/L activated carbon addition to confirm the conclusions regarding preg-borrowing from Section 13.2.6.3.

The results of the demonstration tests performed on the Nyanzaga ore type composites are summarised in Table 13-35, and the results of the demonstration tests performed on the Nyanzaga master composite are summarised in Table 13-36. Column headers prefixed with PW refer to the individual test numbers in the SGS report.

Key findings from the tests are:

- For all Nyanzaga composites, lower gold residue grades were achieved by including a gravity recovery stage, demonstrating the benefit of its inclusion in the process flowsheet.
- Slightly faster gold leaching kinetics were observed for the chert ore type composite with the inclusion of a gravity recovery stage before cyanidation. A similar observation was made for the Nyanzaga master composite, and the likely driver for this is the 20% chert material by mass included in the master composite.
- For fresh ore types, reagent consumptions were generally lower for tests that included a gravity recovery stage.
- Similar gold residue grades were observed for the mudstone ore type composite and the Nyanzaga master composite when comparing CIL and direct cyanidation tests with a preceding gravity recovery stage. However, when comparing the master composite tests without gravity recovery, the CIL tests achieved a significantly lower gold residue grade than the direct cyanidation tests. Based on the findings in Section 13.2.6.3, and the fact that the master composite contains 40% mudstone material by mass, it can be concluded that preg-borrowing behaviour was observed in the master composite tests and it is inferred that the most likely contributor to this observation is the mudstone ore component.

***Table 13-35: Demonstration test results for Nyanzaga deposit ore type composite samples***

| PARAMETER | UNIT | PW3372 | PW3373 | PW3375 | PW3374 | PW3382 | PW3383 | PW3370 | PW3371 | PW3380 | PW3381 | PW3368 | PW3369 | PW3378 | PW3379 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | OTC-OX-OX | OTC-OX-OX | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-MS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-SS-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR | OTC-CH-FR |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | | | | | | | |
| Au | g/t | 1.88 | 1.88 | 1.70 | 1.70 | 1.70 | 1.70 | 3.07 | 3.07 | 3.07 | 3.07 | 2.24 | 2.24 | 2.24 | 2.24 |
| Ag | g/t | 2.8 | 2.8 | 2.2 | 2.2 | 2.2 | 2.2 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |
| Calc. head grade | | | | | | | | | | | | | | | |
| Au | g/t | 1.31 | 1.31 | 1.69 | 1.61 | 1.71 | 1.61 | 2.84 | 2.80 | 3.37 | 2.96 | 2.07 | 2.15 | 2.26 | 2.25 |
| Ag | g/t | 3.0 | 2.7 | 2.1 | 3.4 | 2.4 | 2.2 | 2.6 | 2.8 | 3.2 | 2.8 | 2.7 | 2.6 | 2.5 | 2.5 |
| Pulp density (solids conc) | % w/w | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Pre-oxygenation | - | no | no | no | no | no | no | no | no | no | no | no | no | no | no |
| Carbon concentration | g/L | 0 | 0 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Recovery to gravity con | | | | | | | | | | | | | | | |
| Au | % | 19.4 | 19.4 | 15.4 | 16.2 | - | - | 25.7 | 26.1 | - | - | 16.4 | 15.8 | - | - |
| Ag | % | 1.3 | 1.4 | 4.7 | 2.9 | - | - | 10.6 | 10.0 | - | - | 5.2 | 5.4 | - | - |
| Extraction at time (Au) | | | | | | | | | | | | | | | |
| 2 hours | % | 84.5 | 85.2 | 81.9 | 84.0 | 83.0 | 83.5 | 87.2 | 89.3 | 86.5 | 86.3 | 82.6 | 80.0 | 75.2 | 77.2 |
| 4 hours | % | 88.2 | 88.1 | 85.4 | 84.6 | 84.2 | 82.8 | 89.6 | 90.4 | 89.4 | 88.2 | 84.9 | 81.8 | 77.4 | 78.9 |
| 8 hours | % | 88.9 | 88.9 | 84.3 | 85.2 | 84.2 | 83.4 | 90.3 | 90.4 | 88.5 | 90.8 | 85.8 | 84.0 | 79.9 | 81.0 |
| 12 hours | % | 88.2 | 90.3 | 84.3 | 84.6 | 85.3 | 85.7 | 88.3 | 90.4 | 89.6 | 90.8 | 84.9 | 82.3 | 82.0 | 81.0 |
| 24 hours | % | 88.9 | 88.9 | 87.3 | 86.3 | 84.2 | 83.5 | 90.9 | 90.7 | 91.0 | 90.2 | 84.1 | 84.4 | 82.8 | 82.6 |
| Extraction at time (Ag) | | | | | | | | | | | | | | | |
| 2 hours | % | 38.3 | 41.9 | 37.5 | 19.7 | 30.0 | 32.5 | 44.6 | 43.2 | 45.7 | 46.6 | 33.3 | 35.9 | 42.2 | 41.5 |
| 4 hours | % | 40.6 | 45.5 | 34.2 | 20.0 | 33.6 | 36.4 | 48.3 | 45.0 | 49.1 | 50.1 | 34.4 | 36.3 | 46.1 | 44.7 |
| 8 hours | % | 41.2 | 47.3 | 32.1 | 25.5 | 38.3 | 40.2 | 52.2 | 49.0 | 53.3 | 55.1 | 38.7 | 42.9 | 49.2 | 49.0 |
| 12 hours | % | 41.5 | 48.3 | 34.4 | 29.1 | 43.3 | 42.3 | 55.7 | 52.0 | 55.7 | 57.4 | 40.8 | 42.5 | 50.3 | 51.2 |
| 24 hours | % | 45.8 | 51.3 | 38.8 | 32.5 | 50.7 | 51.1 | 62.2 | 57.1 | 62.0 | 64.5 | 43.8 | 46.0 | 55.5 | 55.3 |
| Solid residue grade | | | | | | | | | | | | | | | |
| Au | g/t | 0.15 | 0.15 | 0.22 | 0.22 | 0.27 | 0.27 | 0.26 | 0.26 | 0.31 | 0.29 | 0.33 | 0.34 | 0.39 | 0.39 |
| Ag | g/t | 1.6 | 1.3 | 1.3 | 2.3 | 1.2 | 1.1 | 1.0 | 1.2 | 1.2 | 1.0 | 1.5 | 1.4 | 1.1 | 1.1 |
| NaCN consumption | kg/t | 0.09 | 0.08 | 0.27 | 0.08 | 0.23 | 0.22 | 0.11 | 0.13 | 0.24 | 0.25 | 0.11 | 0.10 | 0.27 | 0.28 |
| Lime usage | kg/t | 1.22 | 0.97 | 1.17 | 1.11 | 1.34 | 1.44 | 0.98 | 0.95 | 1.14 | 1.18 | 1.11 | 1.14 | 1.60 | 1.31 |
| Terminal DO | ppm | 20.5 | 20.0 | 19.7 | 20.7 | 22.4 | 24.0 | 20.2 | 20.9 | 25.0 | 23.5 | 18.6 | 19.4 | 22.4 | 22.5 |

*Table 13-36: Demonstration test results for the Nyanzaga deposit master composite*

| PARAMETER | UNIT | PW3392 | PW3393 | PW3390 | PW3391 | PW3388 | PW3389 | PW3386 | PW3387 |
|---|---|---|---|---|---|---|---|---|---|
| Composite | - | Master Comp | Master Comp | Master Comp | Master Comp | Master Comp | Master Comp | Master Comp | Master Comp |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | |
| Au | g/t | 2.39 | 2.39 | 2.39 | 2.39 | 2.39 | 2.39 | 2.39 | 2.39 |
| Ag | g/t | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 |
| Calc. head grade | | | | | | | | | |
| Au | g/t | 2.19 | 2.19 | 2.23 | 2.23 | 2.33 | 2.75 | 2.38 | 2.23 |
| Ag | g/t | 3.6 | 4.4 | 3.6 | 2.4 | 2.8 | 2.5 | 2.6 | 2.6 |
| Pulp density (solids conc) | % w/w | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Pre-oxygenation | - | no | no | no | no | no | no | no | no |
| Carbon concentration | g/L | 20 | 20 | 0 | 0 | 20 | 20 | 0 | 0 |
| Recovery to gravity con | | | | | | | | | |
| Au | % | 22.8 | 22.9 | 22.5 | 22.5 | - | - | - | - |
| Ag | % | 5.0 | 4.1 | 5.0 | 7.5 | - | - | - | - |
| Extraction at time (Au) | | | | | | | | | |
| 2 hours | % | 83.6 | 86.3 | 85.8 | 84.5 | 77.7 | 79.3 | 83.5 | 80.8 |
| 4 hours | % | 83.6 | 84.8 | 86.2 | 85.4 | 81.8 | 82.3 | 83.5 | 83.0 |
| 8 hours | % | 86.6 | 86.0 | 86.2 | 85.8 | 84.3 | 86.1 | 56.3 | 84.7 |
| 12 hours | % | 87.6 | 86.4 | 85.8 | 87.9 | 84.0 | 86.1 | 85.1 | 83.4 |
| 24 hours | % | 86.8 | 87.9 | 87.4 | 87.9 | 87.8 | 89.2 | 85.9 | 85.9 |
| Extraction at time (Ag) | | | | | | | | | |
| 2 hours | % | 20.0 | 33.3 | 24.8 | 37.9 | 61.8 | 46.3 | 39.0 | 37.6 |
| 4 hours | % | 30.8 | 47.7 | 27.8 | 41.6 | 46.3 | 52.4 | 43.1 | 41.4 |
| 8 hours | % | 29.9 | 51.1 | 30.5 | 44.0 | 54.7 | 49.2 | 46.3 | 45.1 |
| 12 hours | % | 45.8 | 55.5 | 32.8 | 46.7 | 47.9 | 54.6 | 49.8 | 47.2 |
| 24 hours | % | 49.8 | 51.9 | 35.8 | 54.2 | 56.7 | 51.6 | 54.6 | 53.5 |
| Solid residue grade | | | | | | | | | |
| Au | g/t | 0.29 | 0.27 | 0.28 | 0.27 | 0.29 | 0.30 | 0.34 | 0.32 |
| Ag | g/t | 1.8 | 2.1 | 2.3 | 1.1 | 1.2 | 1.2 | 1.2 | 1.2 |
| NaCN consumption | kg/t | 0.33 | 0.28 | 0.09 | 0.13 | 0.29 | 0.30 | 0.27 | 0.25 |
| Lime usage | kg/t | 0.80 | 1.16 | 1.12 | 0.93 | 1.20 | 1.44 | 1.30 | 1.07 |
| Terminal DO | ppm | 22.4 | 24.4 | 22.4 | 22.0 | 18.3 | 18.2 | 19.1 | 20.4 |

### 13.2.6.9 BULK CYANIDATION TESTS

Bulk cyanidation was required to generate sufficient slurry for carbon adsorption kinetic tests (Section 13.2.8), cyanide detoxification tests (Section 13.2.10), tailings physical and geochemical testing (Section 13.2.14), and tailings testing for paste fill amenability.

The tests were conducted under the following conditions:

- Variable sample masses to cyanidation.
- Grind size $P_{80}$ of 75 µm.
- No gravity separation.
- Leach conducted in a mechanically agitated, baffled leach vat or tank.
- Pulp density of 40% w/w solids or 50% w/w solids, depending on the test.
- No pre-oxygenation. Target DO of 20 ppm using oxygen gas.
- Initial NaCN concentration of either 0.050% w/v or 0.100% w/v, maintained at between 0.010% w/v and 0.030% w/v, depending on the test.
- No activated carbon addition.

The results of the bulk cyanidation tests, performed on the Nyanzaga master composite, the Nyanzaga fresh bulk engineering composite, the Nyanzaga oxide bulk engineering composite, and the Nyanzaga bulk engineering paste fill feed composite are summarised in Table 13-37. Column headers prefixed with PW refer to the individual test numbers in the SGS report, and column headers prefixed with JR refer to the individual test numbers in the ALS Metallurgy report.

Key points from the tests are:

- The results of the two bulk leach tests conducted on the Nyanzaga master composite align closely with those from the demonstration leach tests in Section 13.2.6.8.
- The test on the fresh bulk engineering composite and the 15 kg charge test on the bulk engineering paste fill feed composite returned similar metal extraction results to the master composite, given that the three composite samples have similar composition. It was noted, however, that reagent consumptions were variable across these tests.
- The 165 kg charge test on the bulk engineering paste fill feed composite returned lower metal extraction results compared to the 15 kg charge test. It is hypothesised that the test with the larger sample size experienced slower kinetics due to less efficient mixing.
- There was poor gold accountability for the test on the oxide bulk engineering composite. The residue grade was assayed for in quadruplicate, returning values of 0.56 g/t, 0.57 g/t, 0.74 g/t and 0.77 g/t. This is indicative of coarse spotty gold being present in the oxide bulk engineering composite, and supports the inclusion of a gravity recovery step in the process flowsheet.
- All bulk tests produced slurries sufficiently representative of cyanidation leach tailings for further testing and analysis.

*Table 13-37: Bulk leach test results for Nyanzaga deposit composite samples*

| PARAMETER | UNIT | PW3396 | PW3491 | PW3203 | PW3214 | JR2930 | JR2931 |
|---|---|---|---|---|---|---|---|
| Composite | - | Master Comp | Master Comp | FR-ENG-BULK | OX-ENG-BULK | FR-ENG-PASTE | FR-ENG-PASTE |
| Leach sample mass | g | 9,000 | 15,000 | 58,000 | 15,000 | 15,000 | 165,000 |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | |
| Au | g/t | 2.39 | 2.39 | 2.00 | 0.39 | 2.14 | 2.14 |
| Ag | g/t | 1.5 | 1.5 | 1.8 | 2.9 | 1.8 | 1.8 |
| Calc. head grade | | | | | | | |
| Au | g/t | 2.49 | 2.23 | 2.38 | 3.60 | 2.46 | 2.50 |
| Ag | g/t | 3.0 | 3.9 | 2.4 | 2.8 | - | |
| Pulp density (solids conc) | % w/w | 50.0 | 50.0 | 40.0 | 40.0 | 50.0 | 50.0 |
| Pre-oxygenation | - | no | no | no | no | no | no |
| Carbon concentration | g/L | 0 | - | | | 10 | 10 |
| NaCN initial conc. | % w/v | 0.050 | 0.050 | 0.100 | 0.100 | 0.050 | 0.050 |
| NaCN maintain conc. | % w/v | 0.030 | 0.010 | 0.030 | 0.030 | 0.015-0.025 | 0.015-0.025 |
| Recovery to gravity con | | | | | | | |
| Au | % | - | - | - | | - | - |
| Extraction at time (Au) | | | | | | | |
| 2 hours | % | 66.7 | 78.0 | 80.8 | 19.1 | - | - |
| 4 hours | % | 83.5 | 87.0 | 80.2 | 23.1 | - | - |
| 8 hours | % | 86.7 | 87.9 | 84.0 | 35.1 | - | - |
| 10 hours | % | 89.1 | 87.4 | 82.7 | 37.3 | - | - |
| 24 hours | % | 87.5 | 86.1 | 84.6 | 81.6 | 85.4 | 82.2 |
| Extraction at time (Ag) | | | | | | | |
| 2 hours | % | 28.0 | 37.7 | 49.5 | 42.3 | - | - |
| 4 hours | % | 34.4 | 46.7 | 51.3 | 44.3 | - | - |
| 8 hours | % | 39.4 | 50.8 | 54.9 | 46.0 | - | - |
| 10 hours | % | 41.1 | 51.3 | 57.1 | 46.7 | - | - |
| 24 hours | % | 49.4 | 59.0 | 61.9 | 49.6 | - | - |
| Solid residue grade | | | | | | | |
| Au | g/t | 0.31 | 0.31 | 0.37 | 0.66 | 0.36 | 0.45 |
| Ag | g/t | 1.5 | 1.6 | 0.9 | 1.4 | - | - |
| NaCN consumption | kg/t | 0.27 | 0.26 | 0.39 | 0.15 | 0.42 | 0.35 |
| Lime usage | kg/t | 0.99 | 1.15 | 1.17 | 0.99 | 0.39 | 0.65 |
| Terminal DO | ppm | 15.2 | 15.5 | 16.4 | 14.2 | 20.7 | 17.9 |

### 13.2.6.10 NYANZAGA DEPOSIT OPTIMISED GRAVITY/CYANIDATION TEST PROCEDURE

The following optimised gravity/leach test conditions were carried forward for testing of the Nyanzaga Gold Project metallurgical variability samples:

1. Approximately 2,000 g of gravity feed sample, prepared to a $P_{80}$ of 75 µm in a stainless steel laboratory rod mill, was passed through a 3-inch laboratory Knelson gravity concentrator.
2. The gravity concentrate (60 g to 90 g) was hand panned to reduce mass to approximately 50 g and transferred to a 2 L leach bottle with a screw-on lid and slurrified to approximately 10% w/w solids with Perth tap water. 1.0 g of sodium hydroxide (NaOH) with 1.5 g of LeachAid was then added prior to sodium cyanide (NaCN) addition to a concentration of 1.5% w/v. On completion of the 24 h intensive leach, the solution was assayed for gold and silver. The combined gravity/intensive cyanidation tail were then combined and oven dried at low temperature (70°C).
3. A 1,000 g sub-sample was taken, and the cyanidation feed was transferred into a leach bottle (typically 5 L capacity) with a screw-on lid. Perth tap water was added to slurrify the sample to establish 50% w/w solids.

4. For mudstone samples, or composites containing mudstone ore, activated carbon (Haycarb YAO 8×16) was added to the required concentration. Otherwise, all other samples types were subjected to direct cyanidation tests, and Step 4 was skipped and the test proceeded to Step 5.
5. Hydrated lime (60% w/w CaO) was added to the slurry to establish pH in the range of 10.0 to 10.5.
6. Sodium cyanide was added to the slurry to establish the target initial concentration of 0.050% w/v.
7. The headspace of the leach bottle was filled with oxygen, or oxygen was sparged to the leach bottle, to achieve an elevated DO concentration of 20 ppm.
8. The leach bottle was placed on the bottle rolls. Slurry agitation was applied by mechanical rollers.
9. At regular intervals, slurry pH, DO, and sodium cyanide concentration were monitored and recorded. Solution sub-samples were taken and assayed for gold and silver.
10. If required during the test duration, lime, sodium cyanide and oxygen were added to maintain target levels. Target pH range to maintain was 10.0 to 10.5; target NaCN concentration to maintain was 0.010% w/v, and target DO to maintain was 20 ppm.
11. At the conclusion of the 24 h test, the terminal pH, oxygen, and cyanide levels were determined. A solution sub-sample was taken and assayed for gold and silver. The residual slurry sample was filtered, washed, and dried to provide leach residue solids, and a sub-sample of residue solid was assayed for gold and silver. Where applicable, carbon was extracted, rinsed, and dried, and a sub-sample was assayed for gold and silver. Additional arsenic, mercury and antimony assays were performed on final liquors and test residues.

#### 13.2.6.11 VARIABILITY SAMPLES – GRAVITY/CYANIDATION AT OPTIMISED CONDITIONS

To test the variability of the Nyanzaga deposit, 31 metallurgical variability samples were tested under the optimised gravity/cyanidation conditions noted in Section 13.2.6.10. Note that due to the low gold head grade reported for V-CH-FR-1 in Section 13.2.2, this metallurgical variability sample was not tested.

The metallurgical variability test results are summarised in Table 13-38, with results from the ore type composite demonstration test(s) under the same conditions (Section 13.2.6.8) also presented for comparison. The metallurgical variability test results are presented in further detail in Table 13-39 and Table 13-40. Column headers prefixed with PW refer to the individual test numbers in the SGS report.

***Table 13-38: Summary of gravity/cyanidation metallurgical variability results***

| PARAMETER | | OXIDE | MUDSTONE | SANDSTONE | CHERT | AXIAL FAULT | FAR EAST FAULT |
|---|---|---|---|---|---|---|---|
| Gold extraction (% at 24 h) | Average | 90.1 | 87.8 | 87.0 | 88.1 | 89.1 | 82.3 |
| | High | 92.4 | 93.3 | 95.5 | 94.2 | 90.7 | 86.6 |
| | Low | 87.1 | 76.2 | 76.0 | 77.9 | 87.0 | 77.7 |
| | Ore Type Comp. | 88.9 | 87.3 | 90.8 | 84.2 | - | - |
| Silver extraction (% at 24 h) | Average | 43.7 | 45.3 | 61.9 | 66.1 | 54.9 | 31.4 |
| | High | 71.9 | 59.0 | 88.7 | 93.7 | 67.4 | 37.4 |
| | Low | 16.2 | 29.2 | 38.0 | 48.2 | 44.8 | 28.1 |
| | Ore Type Comp. | 48.6 | 38.8 | 59.6 | 44.9 | - | - |
| Cyanide consumption (kg/t) | Average | 0.08 | 0.24 | 0.16 | 0.04 | 0.13 | 0.10 |
| | High | 0.12 | 0.33 | 0.28 | 0.08 | 0.17 | 0.16 |
| | Low | 0.03 | 0.20 | 0.12 | 0.01 | 0.06 | 0.05 |
| | Ore Type Comp. | 0.08 | 0.27 | 0.12 | 0.10 | - | - |
| Lime consumption (kg/t, 60% CaO) | Average | 1.20 | 0.71 | 0.85 | 0.63 | 0.72 | 0.36 |
| | High | 2.14 | 0.94 | 1.32 | 0.89 | 1.00 | 0.52 |
| | Low | 0.47 | 0.46 | 0.62 | 0.48 | 0.54 | 0.06 |
| | Ore Type Comp. | 1.10 | 1.17 | 0.96 | 1.12 | - | - |

Key findings from the tests are:

- There is a high degree of variability for both gold and silver extractions for mudstone, sandstone, chert and far east fault metallurgical variability samples.
- Across all ore types, recovery of gold through gravity extraction ranged between 11.7% and 62.2% (average 32.0%) and recovery of silver through gravity extraction ranged between 0.8% and 51.6% (average 14.0%). There was poor correlation between the proportion of gold and silver recovered by gravity extraction and the gold and silver head grade of the samples.
- Across all ore types, 24 h gold extraction ranged between 76.0% and 95.5% (average 87.5%) and 24 h silver extraction ranged between 16.2% and 93.7% (average 53.8%).
- Gold leaching kinetics were fast, with gold extraction largely complete within four to eight hours. Silver leaching kinetics were slower, with silver extraction largely complete within 12 h for most variability samples, and some samples continuing to leach silver through to 24 h.
- Across all ore types, sodium cyanide consumptions were low to moderate, and ranged between 0.01 kg/t and 0.33 kg/t (average 0.13 kg/t). Sodium cyanide consumptions for mudstone tests were higher, and this is a common observation for CIL tests (average 0.24 kg/t from the variability tests) compared to direct cyanidation tests (average 0.10 kg/t from the variability tests).
- Across all ore types, lime (60% CaO) consumptions were low to moderate, and ranged between 0.06 kg/t and 2.14 kg/t. Lime consumption for oxide ores (average 1.20 kg/t) was higher than for fresh ores (average 0.69 kg/t).
- The average of metallurgical variability sample performance for oxide and mudstone and sandstone ore types correlated well with the ore type composite demonstration test(s) under the same conditions.
- The average metal extraction for chert metallurgical variability samples was better than the ore type composite, with higher average reagent consumptions noted for the variability samples.
- The average gold extraction for sandstone metallurgical variability samples was lower than the ore type composite, and the average silver extraction was higher. The high degree of variability for sandstone metallurgical variability samples is likely attributed to the presence of coarse gold in the sandstone ore (head grades range from 1-18 g/t Au, with gravity recovery ranging from 15.3% to 62.2%).

*Table 13-39: Gravity/cyanidation test results at optimised conditions for Nyanzaga deposit metallurgical variability samples V-CH-FR-2 to V-MS-FR-17*

| PARAMETER | UNIT | PW3431 | PW3432 | PW3433 | PW3434 | PW3435 | PW3436 | PW3437 | PW3438 | PW3439 | PW3440 | PW3441 | PW3442 | PW3443 | PW3444 | PW3445 | PW3446 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variability sample | - | V-CH-FR-1 | V-CH-FR-3 | V-CHF-FR-4 | V-CH-FR-5 | V-CH-FR-6 | V-CH-FR-7 | V-CH-FR-8 | V-CH-FR-9 | V-SS-FR-10 | V-SS-FR-11 | V-SS-FR-12 | V-SS-FR-13 | V-SS-FR-14 | V-SS-FR-15 | V-SS-FR-16 | V-MS-FR-17 |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | | | | | | | | | |
| Au | g/t | 1.66 | 4.11 | 3.85 | 5.47 | 8.44 | 1.81 | 1.41 | 10.7 | 0.99 | 6.98 | 2.19 | 3.26 | 1.77 | 17.6 | 1.24 | 1.25 |
| Ag | g/t | 0.50 | 4.1 | 2.1 | 5.0 | 2.1 | 0.8 | 1.5 | 5.8 | 1.9 | 3.2 | 20.0 | 2.1 | 0.7 | 9.4 | 3.5 | 1.0 |
| Calc. head grade | | | | | | | | | | | | | | | | | |
| Au | g/t | 1.48 | 3.65 | 3.76 | 4.98 | 5.13 | 1.91 | 1.81 | 9.82 | 0.96 | 7.07 | 2.59 | 3.04 | 1.88 | 16.8 | 1.52 | 1.49 |
| Ag | g/t | 0.5 | 4.4 | 2.5 | 2.2 | 3.0 | 0.8 | 1.7 | 5.6 | 1.4 | 3.0 | 20.6 | 2.4 | 0.8 | 8.0 | 3.2 | 1.5 |
| Pulp density (solids conc) | % w/w | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Pre-oxygenation | - | no | no | no | no | no | no | no | no | no | no | no | no | no | no | no | no |
| Carbon concentration | g/L | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 20 |
| Recovery to gravity con | | | | | | | | | | | | | | | | | |
| Au | % | 46.5 | 38.3 | 37.6 | 55.3 | 47.8 | 36.4 | 34.0 | 38.7 | 15.3 | 18.6 | 33.5 | 47.1 | 11.7 | 62.2 | 37.5 | 44.0 |
| Ag | % | 35.0 | 16.9 | 25.5 | 32.2 | 23.2 | 31.8 | 9.4 | 27.2 | 3.5 | 12.7 | 2.8 | 26.2 | 8.9 | 51.6 | 9.9 | 13.3 |
| Extraction at time (Au) | | | | | | | | | | | | | | | | | |
| 2 hours | % | 88.6 | 87.4 | 76.4 | 91.4 | 92.1 | 89.8 | 83.4 | 90.7 | 75.3 | 86.2 | 80.3 | 87.8 | 76.7 | 93.5 | 85.8 | 90.1 |
| 4 hours | % | 86.0 | 87.6 | 77.5 | 91.0 | 92.7 | 90.8 | 81.5 | 90.9 | 73.7 | 88.7 | 81.4 | 91.0 | 80.8 | 94.8 | 87.4 | 93.2 |
| 8 hours | % | 87.5 | 87.6 | 77.7 | 92.6 | 92.3 | 89.3 | 83.8 | 91.4 | 75.3 | 88.4 | 82.1 | 90.7 | 78.8 | 94.7 | 89.4 | 91.9 |
| 12 hours | % | 87.5 | 87.9 | 77.5 | 92.6 | 92.1 | 90.8 | 83.8 | 90.9 | 75.3 | 88.0 | 83.5 | 91.0 | 82.3 | 94.1 | 95.2 | 90.9 |
| 24 hours | % | 87.5 | 88.6 | 77.9 | 92.4 | 94.2 | 90.3 | 82.9 | 91.3 | 76.0 | 91.2 | 83.2 | 91.6 | 80.8 | 95.5 | 90.5 | 93.3 |
| Extraction at time (Ag) | | | | | | | | | | | | | | | | | |
| 2 hours | % | 74.2 | 37.6 | 49.2 | 62.9 | 48.4 | 81.0 | 29.9 | 64.7 | 29.0 | 70.2 | 18.8 | 58.2 | 61.8 | 85.9 | 40.6 | 37.1 |
| 4 hours | % | 76.2 | 40.0 | 50.0 | 61.5 | 53.3 | 81.0 | 34.7 | 70.0 | 30.4 | 72.4 | 22.2 | 60.6 | 61.8 | 87.1 | 43.1 | 39.8 |
| 8 hours | % | 84.1 | 40.5 | 51.9 | 62.9 | 53.7 | 82.2 | 36.3 | 68.6 | 33.6 | 74.6 | 25.9 | 63.4 | 65.5 | 88.0 | 46.4 | 37.7 |
| 12 hours | % | 86.0 | 43.8 | 51.9 | 62.4 | 57.1 | 90.3 | 39.4 | 72.8 | 34.9 | 75.2 | 31.0 | 65.7 | 65.5 | 87.8 | 50.8 | 41.4 |
| 24 hours | % | 89.7 | 48.2 | 55.2 | 62.8 | 55.9 | 93.7 | 50.3 | 73.0 | 38.0 | 77.0 | 39.0 | 66.8 | 67.8 | 88.7 | 55.7 | 47.4 |
| Solid residue grade | | | | | | | | | | | | | | | | | |
| Au | g/t | 0.19 | 0.42 | 0.83 | 0.38 | 0.30 | 0.19 | 0.29 | 0.85 | 0.23 | 0.62 | 0.44 | 0.26 | 0.36 | 0.76 | 0.15 | 0.10 |
| Ag | g/t | 0.1 | 2.3 | 1.1 | 0.8 | 1.3 | 0.1 | 0.9 | 1.5 | 0.9 | 0.7 | 12.6 | 0.8 | 0.2 | 0.9 | 1.4 | 0.8 |
| NaCN consumption | kg/t | 0.01 | 0.05 | 0.05 | 0.06 | 0.02 | 0.05 | 0.02 | 0.08 | 0.23 | 0.12 | 0.28 | 0.13 | 0.12 | 0.12 | 0.15 | 0.20 |
| Lime usage | kg/t | 0.52 | 0.78 | 0.76 | 0.49 | 0.48 | 0.50 | 0.61 | 0.89 | 0.81 | 0.77 | 1.32 | 0.70 | 0.62 | 0.77 | 0.98 | 0.74 |
| Terminal DO | ppm | 24.8 | 22.4 | 22.4 | 20.8 | 24.1 | 21.7 | 20.8 | 22.7 | 20.7 | 21.6 | 22.0 | 20.0 | 20.9 | 22.4 | 21.5 | 20.4 |

*Table 13-40: Gravity/cyanidation test results at optimised conditions for Nyanzaga deposit metallurgical variability samples V-MS-FR-18 to V-OX-OX-32*

| PARAMETER | UNIT | PW3447 | PW3448 | PW3449 | PW3450 | PW3451 | PW3452 | PW3453 | PW3454 | PW3455 | PW3456 | PW3457 | PW3458 | PW3459 | PW3460 | PW3461 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Composite | - | V-MS-FR-18 | V-MS-FR-19 | V-MS-FR-20 | V-MS-FR-21 | V-MS-FR-22 | V-MS-FR-23 | V-AX-FR-24 | V-AX-FR-25 | V-AX-FR-26 | V-FEF-FR-27 | V-FEF-FR-28 | V-FEF-FR-29 | V-OX-OX-30 | V-OX-OX-31 | V-OX-OX-32 |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | | | | | | | | | | |
| Au | g/t | 2.80 | 2.07 | 0.74 | 0.90 | 1.97 | 1.59 | 3.16 | 2.96 | 2.00 | 6.71 | 2.56 | 1.19 | 4.96 | 2.51 | 0.93 |
| Ag | g/t | 1.2 | 4.1 | 0.6 | 1.5 | 1.3 | 1.2 | 0.9 | 1.4 | 3.0 | 37.5 | 8.9 | 3.5 | 5.9 | 0.5 | 1.3 |
| Calc. head grade | | | | | | | | | | | | | | | | |
| Au | g/t | 2.65 | 2.12 | 0.68 | 0.92 | 1.91 | 1.43 | 3.64 | 2.67 | 1.46 | 6.63 | 2.24 | 1.12 | 4.45 | 2.12 | 0.87 |
| Ag | g/t | 2.4 | 2.4 | 1.4 | 2.1 | 1.7 | 1.6 | 1.7 | 1.8 | 3.8 | 36.3 | 8.9 | 3.9 | 6.0 | 1.0 | 1.7 |
| Pulp density (solids conc) | % w/w | 49.9 | 50.0 | 49.9 | 50.0 | 49.9 | 49.9 | 50.0 | 50.0 | 49.9 | 49.9 | 49.9 | 49.9 | 49.8 | 49.9 | 49.7 |
| Pre-oxygenation | - | no | no | no | no | no | no | no | no | no | no | no | no | no | no | no |
| Carbon concentration | g/L | 20 | 20 | 20 | 20 | 20 | 20 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Recovery to gravity con | | | | | | | | | | | | | | | | |
| Au | % | 28.5 | 21.6 | 35.6 | 26.5 | 21.2 | 16.4 | 33.5 | 24.8 | 21.5 | 26.2 | 28.4 | 27.5 | 17.6 | 44.8 | 13.3 |
| Ag | % | 11.1 | 13.1 | 4.7 | 5.8 | 10.1 | 6.3 | 14.9 | 15.6 | 5.1 | 1.5 | 3.8 | 2.5 | 1.6 | 6.5 | 0.8 |
| Extraction at time (Au) | | | | | | | | | | | | | | | | |
| 2 hours | % | 83.9 | 85.8 | 84.9 | 71.5 | 84.0 | 79.6 | 81.9 | 83.3 | 83.0 | 82.3 | 81.8 | 75.7 | 69.4 | 86.2 | 81.2 |
| 4 hours | % | 86.4 | 86.9 | 88.4 | 74.0 | 86.4 | 86.0 | 82.4 | 87.0 | 81.9 | 85.7 | 80.9 | 77.8 | 80.4 | 88.8 | 86.6 |
| 8 hours | % | 85.7 | 87.8 | 88.4 | 76.0 | 83.4 | 84.7 | 89.7 | 89.1 | 84.5 | 85.8 | 83.9 | 75.0 | 84.3 | 90.3 | 84.9 |
| 12 hours | % | 87.4 | 87.8 | 86.1 | 76.0 | 87.2 | 87.6 | 87.2 | 86.0 | 84.0 | 86.1 | 79.8 | 77.0 | 87.5 | 92.0 | 88.3 |
| 24 hours | % | 88.5 | 89.6 | 90.4 | 76.2 | 87.7 | 88.8 | 90.7 | 89.7 | 87.0 | 86.6 | 82.6 | 77.7 | 87.1 | 92.4 | 90.8 |
| Extraction at time (Ag) | | | | | | | | | | | | | | | | |
| 2 hours | % | 31.6 | 47.3 | 22.7 | 25.9 | 39.3 | 46.8 | 46.9 | 65.7 | 29.4 | 14.7 | 20.2 | 17.6 | 61.4 | 34.0 | 12.9 |
| 4 hours | % | 39.8 | 47.1 | 28.0 | 22.6 | 44.4 | 52.0 | 46.9 | 70.5 | 32.7 | 16.2 | 22.2 | 19.1 | 63.9 | 34.4 | 12.9 |
| 8 hours | % | 34.4 | 50.2 | 27.6 | 25.4 | 47.9 | 51.9 | 51.5 | 66.9 | 37.0 | 20.2 | 26.4 | 20.8 | 70.1 | 33.5 | 13.5 |
| 12 hours | % | 38.6 | 55.5 | 45.0 | 28.7 | 48.5 | 51.0 | 52.0 | 66.4 | 38.7 | 23.1 | 29.6 | 23.6 | 70.1 | 33.5 | 13.5 |
| 24 hours | % | 38.7 | 59.0 | 50.0 | 29.2 | 47.4 | 45.2 | 52.6 | 67.4 | 44.8 | 28.1 | 37.4 | 28.7 | 71.9 | 43.0 | 16.2 |
| Solid residue grade | | | | | | | | | | | | | | | | |
| Au | g/t | 0.31 | 0.22 | 0.07 | 0.22 | 0.24 | 0.16 | 0.34 | 0.28 | 0.19 | 0.89 | 0.39 | 0.25 | 0.58 | 0.16 | 0.08 |
| Ag | g/t | 1.5 | 1.0 | 0.7 | 1.5 | 0.9 | 0.9 | 0.8 | 0.6 | 2.1 | 26.1 | 5.6 | 2.8 | 1.7 | 0.6 | 1.4 |
| NaCN consumption | kg/t | 0.33 | 0.26 | 0.21 | 0.22 | 0.26 | 0.20 | 0.15 | 0.17 | 0.06 | 0.16 | 0.09 | 0.05 | 0.03 | 0.08 | 0.12 |
| Lime usage | kg/t | 0.86 | 0.76 | 0.46 | 0.62 | 0.94 | 0.62 | 0.61 | 1.00 | 0.54 | 0.52 | 0.06 | 0.50 | 0.47 | 0.98 | 2.14 |
| Terminal DO | ppm | 21.4 | 22.7 | 21.6 | 21.0 | 22.9 | 18.3 | 16.4 | 17.8 | 16.0 | 15.6 | 20.6 | 18.4 | 18.7 | 19.2 | 20.5 |

### 13.2.7 MINERALOGICAL INVESTIGATIONS

#### 13.2.7.1 MULTI-STAGE DIAGNOSTIC LEACH

Sub-samples of fresh ore type composites (mudstone, sandstone and chert), ground to a $P_{80}$ of 75 µm, were subjected to multi-stage diagnostic leach tests to determine the deportment of gold. The stages of the test are summarised as follows:

1. The ground ore was passed through a laboratory Knelson gravity concentrator and the concentrate amalgamated with 5 g of mercury. The amalgam was submitted for gold assay.
2. After recovery of the mercury amalgam, the combined tailings (amalgamation tails and gravity concentrator tails) were subjected to a standard cyanide leach. The final liquor and residue were sub-sampled and submitted for gold assay.
3. The remaining cyanidation residue was then subjected to a dilute HCl digest at 60°C for 4 h. The final pulp was filtered and the residue thoroughly washed. The final liquor and residue were sub-sampled and submitted for gold assay. A standard cyanide leach was conducted on the remaining HCl digest residue, and samples of the leach liquor and residue submitted for assay.
4. A dilute nitric acid leach test (25% $HNO_3$ at 80°C for 4 h) was conducted on the remaining residue from step 3. The final liquor and residue were sub-sampled and submitted for gold assay. A standard cyanide leach was conducted on the remaining HCl digest residue, and samples of the leach liquor and residue submitted for assay.
5. The leach residue was analysed for gold by fire assay and aqua regia digest. The difference between fire assay (total gold) and aqua regia digest (sulfide, or non-silicate occluded gold) results was considered to be silicate/gangue ± graphitic carbon encapsulated gold.

The results from the multi-stage diagnostic leach tests are presented in Table 13-41.

*Table 13-41: Diagnostic leach test results for Nyanzaga fresh ore type composite samples*

| STAGE | DESCRIPTION | UNIT | OTC-MS-FR | OTC-SS-FR | OTC-CH-FR |
|---|---|---|---|---|---|
| Gravity concentration/ amalgamation | Gravity recoverable gold | g/t Au | 0.55 | 1.10 | 0.60 |
| Direct cyanidation of gravity tails | Cyanide recoverable gold | g/t Au | 0.93 | 1.59 | 1.44 |
| Dilute HCl digest/ cyanidation | Carbonate occluded gold, gold occluded by base metal oxides/hydroxides, possibly adsorbed gold on iron oxides, possibly some labile[1] sulfide (pyrrhotite, galena) occluded gold | g/t Au | 0.08 | 0.12 | 0.07 |
| Dilute $HNO_3$ digest/ cyanidation | Mildly refractory gold. Gold associated with arsenical minerals, labile reactive sulfide minerals (including labile pyrite, pyrrhotite, sphalerite, galena and some copper sulfides), and/or telluride | g/t Au | 0.15 | 0.12 | 0.20 |
| Aqua regia digestion | Highly refractory gold. Gold associated with stable pyritic sulfide minerals, stable tellurides and iron oxides (including magnetite). | g/t Au | 0.04 | 0.05 | 0.05 |
| Total FA smelt | Silicate/gangue and/or graphitic carbon encapsulated gold | g/t Au | 0.04 | 0.05 | 0.02 |
| | Back-calculated gold content | g/t Au | 1.79 | 3.05 | 2.37 |
| | Assayed gold content | g/t Au | 1.70 | 3.07 | 2.24 |

From the data, it is noted that:

- The majority of gold (82.5% to 88.1%) is either as free gravity gold or recoverable by cyanide, and the fresh ore types tested are considered suitable for a conventional gravity/CIL circuit at a grind size $P_{80}$ of 75 µm.
- There is good correlation between back-calculated gold head grades and assayed head grades.
- For the mudstone, sandstone and chert ore type composite samples, either the largest or a significant fraction of gold lost to cyanidation tails solids was recovered after the dilute nitric acid digestion stage. It is noted from head assays that these ore type composites have low base metal and tellurium head assays, as well as elevated iron assays and enriched arsenic assays. Based on the head assay information and supporting data from mineralogical investigations in Section 13.2.7.2 and Section 13.2.7.3, it is most likely that these losses are associated with labile pyrite, pyrrhotite and arsenopyrite.
- The next most significant fraction of gold lost to cyanidation tails solids for these fresh ore samples was recovered after the hydrochloric acid digestion stage. It is noted from head assays that these ore type composites have low base metal and organic carbon head assays, as well as elevated iron and carbonate assays. It is also noted in Section 13.2.6.3 that the mudstone ore type composite observed improved cyanidation gold extraction in the presence of activated carbon, which in the case of mudstone hosted gold ores can indicate preg-borrowing associated with fine-grained iron oxides or clay minerals (due to surface adsorption). Based on the head assay information, preg-borrowing indications, and supporting data from mineralogical investigations in Section 13.2.7.2 and Section 13.2.7.3, it is most likely that the losses observed are associated with a range of mineral types including carbonates, fine-grained iron oxides, and labile sulfides (such as pyrrhotite).

[1] Unstable; easily decomposed; prone to chemical change

### 13.2.7.2 CYANIDATION TAILINGS XRD

A sample of cyanidation leach residue of the fresh bulk engineering paste fill feed composite, from bulk leach tests JR2930 and JR2931 (refer to Section 13.2.6.9), was submitted for mineralogical analysis by semi-quantitative X-ray diffraction (XRD). Particle size analysis indicated that the sample had been prepared to a grind size $P_{80}$ of 66 µm.

A sub-sample was pressed into a back-packed sample holder to minimise preferred orientation of the particles. Powder XRD was used to analyse the sub-sample and a combination of matrix flushing and reference intensity ratio (RIR) derived constants were used in the quantification of the minerals identified in the sample. Quantitative results were normalised to 100%, representing the relative proportions of crystalline minerals in the sample. Any amorphous minerals that may be present in the cyanidation leach residue of the fresh bulk engineering paste fill feed composite cannot be detected by the powder XRD method.

The sample contains 7% sulfide minerals (6% pyrite and 1% pyrrhotite). Most of the sample mass is made up of non-sulfide gangue minerals, with quartz, dolomite and clinochlore being dominant. The mineral abundance of the cyanidation leach residue of the fresh bulk engineering paste fill feed composite is shown in Table 13-42.

***Table 13-42: Mineral abundance of cyanidation leach residue of the bulk engineering paste fill feed composite***

| MINERAL GROUP | MASS (%) |
|---|---|
| Alpha quartz | 37 |
| Dolomite | 23 |
| Clinochlore | 14 |
| Pyrite | 6 |
| Albite | 5 |
| Calcite | 4 |
| Muscovite | 4 |
| Magnetite | 2 |
| Talc and Fe-rich talc | 2 |
| Biotite | 1 |
| Clay mineral (mainly smectite and vermiculite) | 1 |
| Microcline (potentially with minor rutile, titanite) | 1 |
| Pyrrhotite (likely monoclinic) | 1 |
| Illite | <1 |
| Serpentine | <1 |
| Zeolite (most likely chabazite group) | <1 |

The results from this test provide indicative tailings mineralogy for Nyanzaga deposit fresh ores.

### 13.2.7.3 MAGNETIC SEPARATION TESTS

Davis Tube magnetic separation tests were conducted on Nyanzaga comminution variability samples to assess the presence of magnetic minerals. The tests were conducted using a magnetic field stress of 2,500 G. The percentage of magnetic material determined for each Nyanzaga comminution variability sample is presented in Table 13-43.

*Table 13-43: Magnetic content of Nyanzaga deposit comminution variability samples*

| SAMPLE | ORE TYPE | MAGNETICS (% w/w) |
|---|---|---|
| C1A-CH-FR-1 | chert | 4.4 |
| C1A-SS-FR-2 | sandstone | 1.2 |
| C1A-MS-FR-3 | mudstone | 4.6 |
| C1B-CH-FR-4 | chert | 0.4 |
| C1B-CH-FR-5 | chert | 0.5 |
| C1B-SS-FR-6 | sandstone | 1.7 |
| C1B-SS-FR-7 | sandstone | 12.2 |
| C1B-SS-FR-8 | sandstone | 0.2 |
| C1B-MS-FR-9 | mudstone | 8.4 |
| C1B-MS-FR-10 | mudstone | 13.2 |
| C1B-MS-FR-11 | mudstone | 14.5 |
| C1B-CH-FR-12 | chert | 8.1 |
| C1B-CH-FR-13 | chert | 3.6 |
| C1B-CH-FR-14 | chert | 5.6 |
| C1B-SS-FR-15 | sandstone | 18.4 |
| C1B-SS-FR-16 | sandstone | 1.6 |
| C1B-SS-FR-17 | sandstone | 0.3 |
| C1B-MS-FR-18 | mudstone | 8.7 |
| C1A-OX-OX-20 | oxide | 0.1 |
| C1A-OX-OX-21 | oxide | 0.1 |

The magnetic contents of the composites ranged from 0.1% w/w to 18.4% w/w. Nyanzaga oxide comminution samples reported low levels of magnetic mineral content (0.1% w/w). The average magnetic mineral content for fresh ore tested was 9.9% w/w for mudstone samples, 5.1% w/w for sandstone samples, and 3.8% w/w for chert samples. As noted in the description on the Nyanzaga geological setting (Section 7), multi-stage diagnostic leach tests (Section 13.2.7.1), and tailings mineralogy (Section 13.2.7.1), and inferred from head assays (Section 13.2.2), it is likely that the magnetic mineral content for these samples is associated with magnetite and pyrrhotite.

### 13.2.8 CARBON ADSORPTION KINETICS

The adsorption of precious metal species from solution by activated carbon in a continuous carbon-in-pulp (CIP) adsorption train generally obeys the following empirically derived relationship:

$$\Delta[M]_C = k.[M]_S.t^n$$

Where:

- $\Delta[M]_C$ = Change in the concentration of the precious metal on carbon since time t=0 (in mg/L).
- $k$ = Empirical rate constant dependent upon slurry mixing efficiency, pulp viscosity and carbon particle size (in $h^{-1}$).
- $[M]_S$ = Equilibrium concentration of the precious metal in solution (in mg/L)
- $t$ = Elapsed time (in h)
- $n$ = Exponential constant relating to the loading capacity specific to the precious metal (typically in the range of 0.5 to 1.2).

Although the above model was derived for continuous CIP systems, experience has shown that indicative values of *k* and *n* (referred to as Fleming gold adsorption constants) can be determined by applying regression analysis to data from the first hours of a sequential batch CIP test. Slurry from Nyanzaga master composite bulk leach test PW3396 (refer to Section 13.2.6.9) was subjected to sequential triple-contact CIP leach test

work. A summary of the test work data is shown in Figure 13-27. The Fleming adsorption constants determined from regression analysis of the test work data, as well as the cumulative carbon loading from the test work, is presented in Table 13-44.

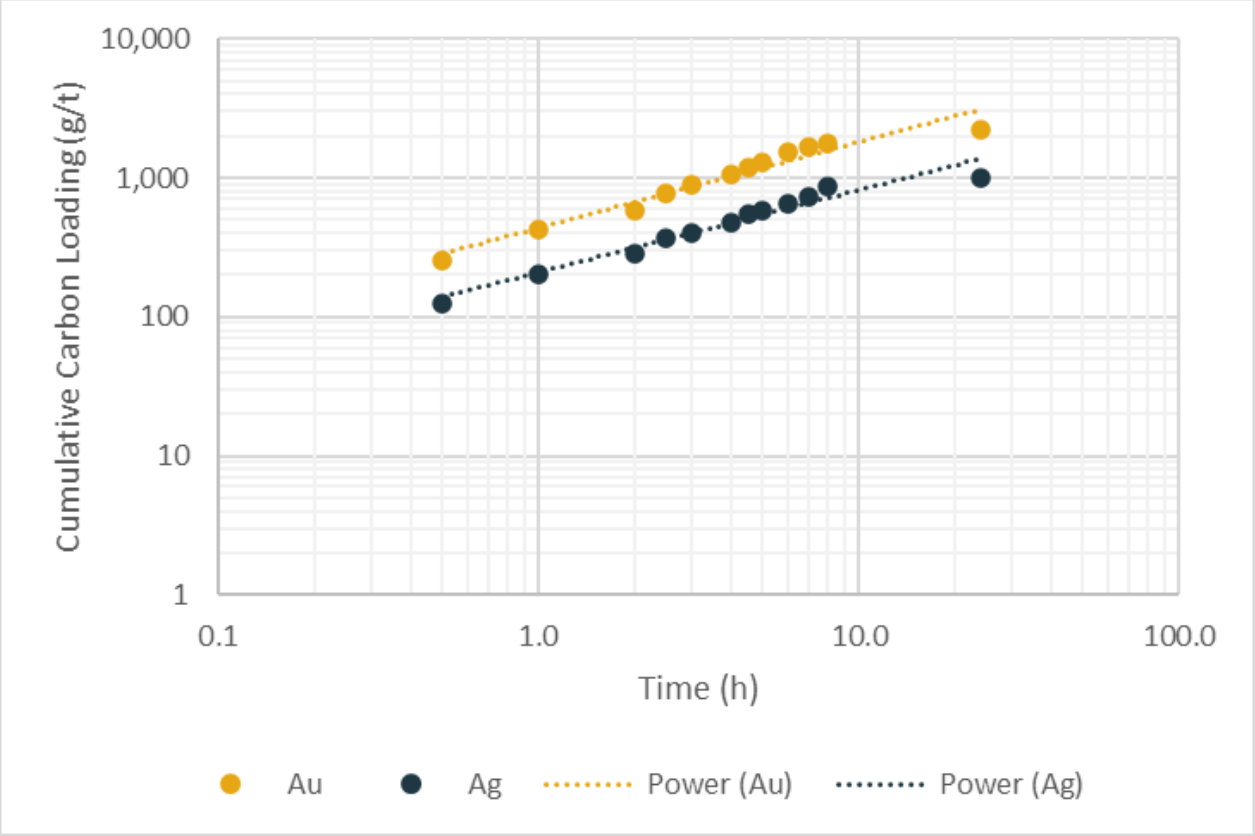



*Figure 13-27: Sequential triple contact CIP leach test work results for Nyanzaga master composite*

*Table 13-44: Fleming adsorption constants and cumulative carbon loading from sequential triple contact CIP leach test work conducted on Nyanzaga master composite*

| PARAMETER | Au | Ag |
|---|---|---|
| Fleming rate constant *k* ($h^{-1}$) | 109 | 79 |
| Fleming equilibrium constant *n* | 0.71 | 0.68 |
| Cumulative carbon loading (g/t) | 2,213 | 1,001 |

The Fleming adsorption constants are within the range typically observed in carbon-in-leach (CIL) operations. The modelling of the adsorption circuit for the process plant was based on these values. The cumulative carbon loading correlates reasonably well with the assayed final carbon loading (Table 13-45).

*Table 13-45: Final loaded carbon assays from sequential triple contact CIP leach test work conducted on Nyanzaga master composite*

| Au (g/t) | Ag (g/t) | Cu (g/t) | Fe (g/t) | Hg (g/t) | Ni (g/t) | Zn (g/t) |
|---|---|---|---|---|---|---|
| 1,660 | 727 | 61 | 6,580 | 1.7 | 652 | 41 |

### 13.2.9 OXYGEN UPTAKE RATE

Oxygen uptake rate determination tests were conducted on subsamples of the Nyanzaga ore type composites (oxide, mudstone, sandstone and chert). The samples were prepared as follows:

- Sample ground to 80% passing 75 µm ($P_{80}$ of 75 µm) and slurrified to 40% w/w solids using Perth tap water.
- Adjust initial slurry pH to 10.0 using lime.
- Adjust NaCN concentration to 0.03% w/v.

Oxygen uptake rate data, collected at ambient temperature, are presented in Figure 13-28. An additional line is plotted, in blue, showing the oxygen uptake profile considered for process plant design.

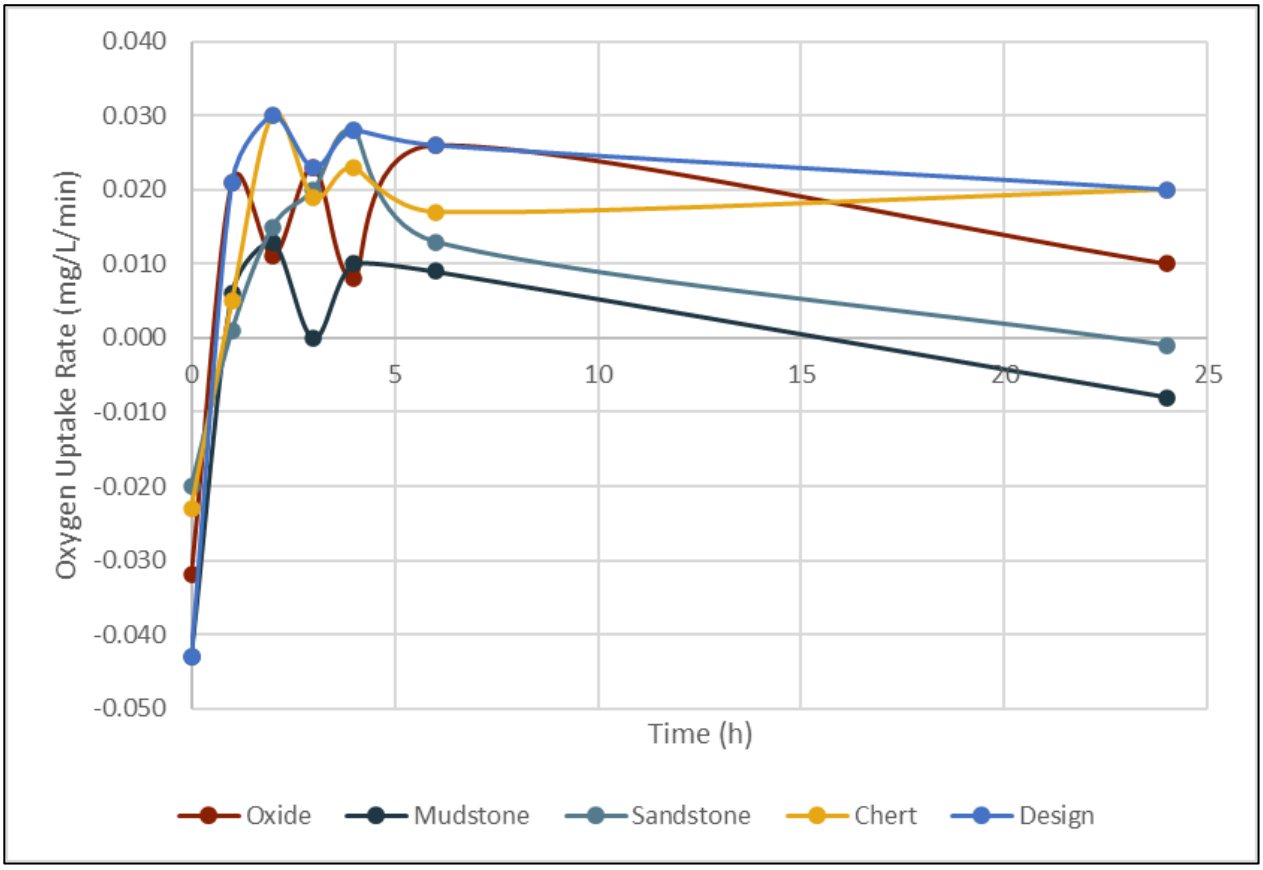



***Figure 13-28: Oxygen uptake rate for Nyanzaga ore type composite samples, and for process plant design***

Test work indicates that while the Nyanzaga ore types have a low to moderate rate of oxygen demand, composite samples with higher gold grades showed a tendency to have slightly higher demand for oxygen, and this is hypothesised to be due to the association of gold with oxygen consuming sulfide minerals. Mineralogical investigations in Section 13.2.7 identify sulfide minerals that are oxygen consumers in cyanidation, including pyrrhotite, arsenopyrite and pyrite, are present in the Nyanzaga deposit fresh ores.

Oxygen uptake rates are sustained for six hours for mudstone, sandstone and oxide ores, and 24 hours for chert. This warrants the inclusion of a pre-oxidation stage in the process design, and the preference of oxygen sparging over aeration throughout the CIL process to satisfy leaching oxygen requirements; and confirms the observations and conclusions from oxidant evaluation tests in Section 13.2.6.6.

## 13.2.10 CYANIDE DETOXIFICATION

### 13.2.10.1 $SO_2$/AIR CYANIDE DETOXIFICATION

Semi-continuous $SO_2$/air cyanide detoxification tests were undertaken on a sample of Nyanzaga master composite tailings (from bulk cyanide leach test PW3491 (refer to Section 13.2.6.9)). The slurry sample was at 50% w/w solids and grind size $P_{80}$ of 75 µm.

Addition rates of $SO_2$ (as sodium metabisulfite, $Na_2S_2O_5$ or SMBS) were varied across the range of tests to optimise reagent addition rates and weak acid dissociable cyanide ($CN_{WAD}$) concentrations in effluent. Copper sulfate pentahydrate ($CuSO_4.5H_2O$) was added as a catalyst at a target concentration of 50 mg/L Cu, lime (60% CaO) was added to control pH within the target range for this reaction (8.0 to 9.0), and the target aeration rate was 1 L/min/L reactor volume to maintain a dissolved oxygen (DO) level between 3 ppm and 8 ppm.

The results from the series of tests are summarised in Table 13-46.

***Table 13-46: Semi-continuous $SO_2$/air cyanide detoxification test results on Nyanzaga master composite cyanidation tailings slurry***

| RUN No. | STREAM | TEST TYPE | STOICH. RATIO | $SO_2$ (g/g $CN_{WAD}$) | RES. TIME (min) | SOLUTION ANALYSIS (mg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | * Est. $CN_{WAD}$ | $CN_{WAD}$ | $CN_{total}$ | $SCN^-$ | $OCN^-$ | $CN^-$ by titration |
| 1 | Feed | - | - | - | - | 95 | 91 | 120 | 75 | 35 | 90 |
| | Discharge | Batch | 315% | 7.8 | 30 | 1.0 | - | - | - | - | 0 |
| | Discharge | Batch | 260% | 6.4 | 30 | 3.3 | - | - | - | - | 0 |
| | Discharge | Semi-continuous | 215% | 5.3 | 60 | 2.2 | 1.3 | 4 | 100 | 140 | 0 |
| | Discharge | Semi-continuous | 215% | 5.3 | 90 | 1.1 | 0.4 | 2 | 99 | 130 | 0 |
| 2 | Feed | - | - | - | - | 79.5 | 81 | 130 | 100 | 38 | 71 |
| | Discharge | Batch | 190% | 4.7 | 30 | 7.5 | - | - | - | - | 0 |
| | Discharge | Batch | 170% | 4.2 | 30 | 11.6 | - | - | - | - | 0 |
| | Discharge | Semi-continuous | 100% | 2.5 | 60 | 46.1 | - | - | - | - | 8 |
| | Discharge | Semi-continuous | 100% | 2.5 | 90 | 42.5 | - | - | - | - | 5 |

* Estimated $CN_{WAD}$ was calculated using speciator with metal assays and $CN^-$ determination by ion-selective electrode (ISE).

From the results:

- All tests achieved residual $CN_{WAD}$ levels <50 mg/L, which aligns with industry guidelines for TSFs such as Standard of Practice 4.4 of International Cyanide Management Institute's *Mining Operations Verification Protocol* (2021). Therefore, the $SO_2$/air process can be successfully employed to treat the CIL tailings stream to achieve the target $CN_{WAD}$ levels.
- Low stoichiometric ratios of $SO_2$ to $CN_{WAD}$ are required to meet product solution targets for the residence times tested. Lower tailings $CN_{WAD}$ levels can be achieved at higher $SO_2$ addition rates.
- $SO_2$/air cyanide detoxification was selected as the preferred method for process plant design.

### 13.2.10.2 HYDROGEN PEROXIDE CYANIDE DETOXIFICATION

Cyanide detoxification using hydrogen peroxide was undertaken on Nyanzaga fresh bulk engineering paste fill feed composite cyanidation tailings slurry at 50% w/w solids concentration from bulk leach tests JR2930 and JR2931 (refer to Section 13.2.6.8). 30% w/w hydrogen peroxide ($H_2O_2$) solution was added as the oxidant and copper sulfate pentahydrate ($CuSO_4.5H_2O$) was added as a catalyst for the cyanide detoxification reaction.

Residual NaCN concentrations of between 0.008% and 0.015% were reported after 24 h of leach in the cyanide detoxification feed sample. $CN_{WAD}$ concentrations in solution post-cyanidation were not reported. Although $CN_{WAD}$ and $CN_{free}$ concentrations were not quantified in the ALS Metallurgy report after the cyanide detoxification step, it was noted after a 30 min reaction time than no remaining free cyanide was detected by titration. It has been back-calculated from available test work notes that an 800% stoichiometric ratio of $H_2O_2$ to $CN_{free}$ was added to achieve no detectable free cyanide after 30 min reaction time across these two tests.

150% to 300% stoichiometric ratio of $H_2O_2$ to $CN_{WAD}$ is typical in the gold mining industry. It is noted that excess oxidant was added for these tests to ensure that no remaining free cyanide was detectable, given that

the product slurry was being further tested for underground paste fill applications and the evolution of any HCN gas was to be avoided in the underground operating environment being considered.

From these test work results, it was confirmed that hydrogen peroxide in the presence of copper sulfate pentahydrate is a technically viable reagent regime for cyanide detoxification for Nyanzaga deposit fresh ore slurry post-cyanidation. Should this reagent regime be considered in the future, additional confirmatory test work to optimise reagent addition, including comprehensive cyanide speciation, is recommended.

### 13.2.11 ARSENIC PRECIPTATION

Test work was conducted on cyanide destruction test work tailings slurry, from tests described in Section 13.2.10.1, to investigate the potential for arsenic removal from tailings solution by precipitation using ferric sulfate ($Fe_2(SO_4)_3$). The slurry sample was at 50% w/w solids and grind size $P_{80}$ of 75 µm.

Prior to arsenic precipitation tests, residual cyanide was destroyed with hydrogen peroxide, and then sulfuric acid was added to obtain feed pH of approximately 9.0. Addition rates of Fe(III) were consistent across the two tests, with an Fe(III) to As ratio of 8:1 used. Air was added to the reaction vessel at a target rate of 1 L/min/L reactor volume. pH control was by the addition of sulfuric acid or lime. Given the high proportion of carbonate noted in the sample, precipitation tests were conducted at both pH 6.0 and 7.0, instead of the typical pH 6.0. A nominal reaction time of 60 minutes was chosen.

The results from the series of tests are summarised in Table 13-46.

***Table 13-47: Arsenic precipitation test results on Nyanzaga master composite cyanide detoxification tailings slurry***

| PARAMETER | TEST 1 (pH 6.0) | | | TEST 2 (pH 7.0) | | |
|---|---|---|---|---|---|---|
| | AT 0 min | AT 60 min | PRECIPITATION % | AT 0 min | AT 60 min | PRECIPITATION % |
| As | 5.3 mg/L | 0.4 mg/L | 88 | 5.3 mg/L | 0.5 mg/L | 90 |
| Fe | 22.0 mg/L | 2.0 mg/L | 86 | 22 mg/L | 16 mg/L | 22 |
| Cu | 0.05 mg/L | 0.37 mg/L | - | 0.05 mg/L | 1.07 mg/L | - |
| Ni | 3.0 mg/L | 1.9 mg/L | - | 3.0 mg/L | 3.0 mg/L | - |
| Co | 0.22 mg/L | 0.15 mg/L | - | 0.22 mg/L | 0.23 mg/L | - |
| Zn | 0.14 mg/L | 0.10 mg/L | - | 0.14 mg/L | 0.13 mg/L | - |
| Sb | 5.6 mg/L | 2.0 mg/L | 43 | 5.6 mg/L | 5.9 mg/L | 0 |
| $H_2SO_4$ | 11.3 kg/m$^3$ | - | - | 1.2 kg/m$^3$ | | - |
| $Fe_2(SO_4)_3$ | 0.014 kg/m$^3$ | - | - | 0.04 kg/m$^3$ | | - |

It was noted from the test work that whilst arsenic discharge levels of ≤0.5 mg/L are achievable at low ferric sulfate consumption rates, sulfuric acid ($H_2SO_4$) consumption rates are significant.

It is noted that soluble arsenic is unlikely to have a significant metallurgical impact at plant scale, and will be environmentally contained within either the process plant or the fully lined TSF facility, described in Section 18.9.

It is recommended that additional arsenic treatment test work is conducted in future test work programs, and considers treatment options for tailings solution effluent streams, as well of tailings slurry streams. The results from solution effluent testing can be used to inform design criteria for the sustaining capital provision for an effluent water treatment plant (discussed in Section 17.8 and Section 21.1.3), should the requirement arise in the future.

### 13.2.12 VISCOSITY

A series of rheology tests were performed at three different pulp densities on samples of the Nyanzaga oxide bulk engineering composite and the Nyanzaga (fresh) master composite ground to $P_{80}$ of 75 µm. The slurry was adjusted to pH 10.4 using lime, thereby simulating CIL operating conditions. The viscosities were measured at ambient temperature using a HAAKE Viscotester® 550 (Thermo Scientific) with A factor of 7,690 Pa/Nm and M factor of 8.403 (L/s)/(rad/s).

The slurry samples tested were subjected to simulated flow conditions by subjecting them to increasing and decreasing shear rates to generate at least two series of up and down flow curves. The samples were also subjected to a constant shearing test, to investigate in detail any possible time dependency. The constant shearing was carried out between the first and second series of up and down flow curves. Torque readings were carried out at certain intervals of time, until a final constant or peak value was achieved.

The viscosity results from these tests are presented in Table 13-48.

***Table 13-48: Viscosity results for Nyanzaga oxide bulk engineering composite and Nyanzaga master composite samples***

| SAMPLE | SOLIDS CONCENTRATION (% w/w) | ACCELERATING PLASTIC VISCOSITY (cP) | DECELERATING PLASTIC VISCOSITY (cP) | ACCELERATING BINGHAM YIELD STRESS (Pa) | DECELERATING BINGHAM YIELD STRESS (Pa) |
|---|---|---|---|---|---|
| Oxide bulk engineering composite | 41 | 13.8 | 13.5 | 0.0 | 0.0 |
| | 51 | 19.6 | 19.7 | 0.0 | 0.0 |
| | 61 | 24.0 | 25.2 | 2.0 | 1.5 |
| Master composite | 40 | 13.2 | 12.9 | 0.0 | 0.0 |
| | 50 | 20.3 | 18.6 | 0.0 | 0.0 |
| | 61 | 27.4 | 27.8 | 0.7 | 0.1 |

For centrifugal pumps, slurry pumping may become problematic due to viscosity when plastic viscosity exceeds 100 cP and/or yield stress approaches values of about 0.5–1 Pa. Based on these guidelines, it is unlikely that Nyanzaga deposit fresh ores will experience viscosity related pumping issues across the range of pulp densities tested.

Nyanzaga deposit oxide ore slurry streams may experience viscosity related pumping issues when approaching or exceeding 60% solids. This issue can be avoided by targeting operating solids concentrations below 60% w/w, blending with fresh ores, or considering the addition of viscosity modifiers.

Slurry mixing may become problematic due to viscosity when plastic viscosity exceeds approximately 40 cP and/or yield stress approaches 10 Pa. Based on these guidelines, it is unlikely that Nyanzaga deposit oxide or fresh ores will experience viscosity related slurry mixing issues across the range of pulp densities tested.

Both oxide and fresh ores tested exhibit low apparent viscosity at lower pulp densities, indicating that there may be a risk of sanding CIL tanks at lower circuit slurry solids concentrations. This viscosity test work supports the inclusion of a pre-leach thickener before the CIL circuit to elevate CIL pulp densities to approximately 50% w/w.

### 13.2.13 THICKENING AND SETTLING RATE

Nyanzaga oxide bulk engineering composite and Nyanzaga fresh bulk engineering composite slurry samples were subjected to thickening and settling rate test work. The slurry samples were at pH of 10.5 and target grind size $P_{80}$ of 75 µm (measured by laser diffraction as $P_{80}$ of 58 µm for the oxide bulk engineering composite and $P_{80}$ of 68 µm for the fresh bulk engineering composite). The objectives of the test work were to determine:

- flocculant type and dose.
- overflow clarity.
- underflow density.
- underflow yield stress.

#### 13.2.13.1 FLOCCULANT SCREENING

Flocculant screening was conducted on the oxide bulk engineering composite in 500 mL static cylinder tests at a pulp density of 10% w/w solids. Common BASF flocculants (Magnafloc® 10, 155, 333 and 5250) were tested. Results are shown in Figure 13-29.

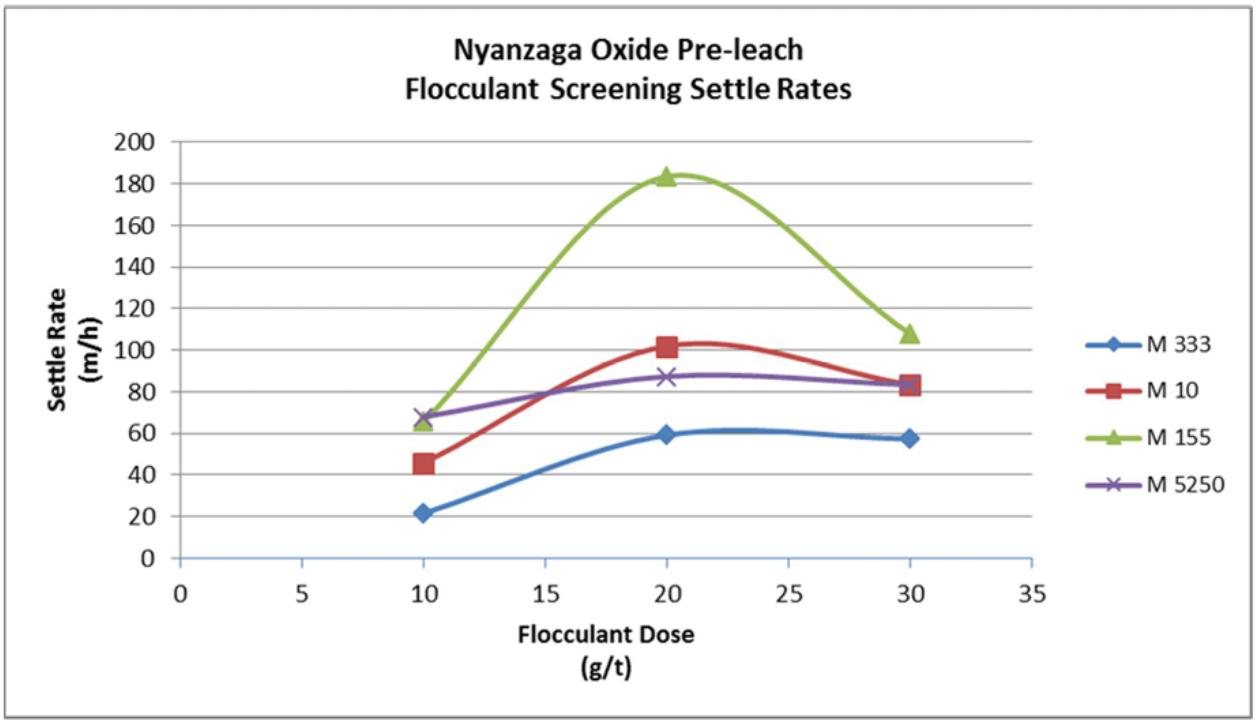



*Figure 13-29: Settling rates of Nyanzaga oxide bulk engineering composite at 10% w/w solids in static cylinder tests (Source: (Outotec, 2017))*

BASF Magnafloc® 155 (M155) was selected for dynamic thickening test work as it gave clean, robust and fast settling flocculation at a low dose.

### 13.2.13.2 DYNAMIC THICKENING TESTS

Dynamic thickening tests on the Nyanzaga oxide bulk engineering composite and Nyanzaga fresh bulk engineering composite were conducted using a 99 mm diameter Supaflo high-rate thickener test rig. Slurry was drawn from an agitated stock tank by a variable speed peristaltic pump, diluted, and pH adjusted to 10.5 with lime. Stock flocculant solution was mixed to 0.25% w/v (2.5 g/L), and then diluted as required before being dosed to the test rig at a set flow rate, which was varied across the series of tests between 2.5 and 15 g/t. Diluted flocculant was dosed half into the diluent line and half into the diluted feed line further downstream. The flocculated solids bed was raked continuously at 2 rpm with two rotating pickets, in conjunction with two stationary pickets to aid dewatering.

Overflow samples were collected and analysed to determine suspended solids content. Underflow samples were collected to determine solids concentration and a simple unsheared vane yield stress was measured using a Thermo Haake VT550 rheometer and an OK600 four blade vane to assist with thickener rake drive sizing.

A summary of results from the dynamic thickening tests is presented in Table 13-49 and Table 13-50.

*Table 13-49: Dynamic thickening test work results for the Nyanzaga oxide bulk engineering composite*

| TEST | FEED FLUX ($t/m^2/h$) | FEED LIQUOR RISE RATE (m/h) | FLOCCULANT TYPE | FLOCCULANT DOSE (g/t) | UNDERFLOW SOLIDS CONC. (% w/w) | UNDERFLOW YIELD STRESS (Pa) | OVERFLOW SOLIDS CONC. (mg/L) |
|---|---|---|---|---|---|---|---|
| 1 | 0.50 | 3.03 | M155 | 15 | 66.3 | 47 | <100 |
| 2 | 0.50 | 3.03 | M155 | 10 | 66.0 | 36 | <100 |
| 3 | 0.50 | 3.03 | M155 | 5 | 65.7 | 28 | <100 |
| 4 | 1.00 | 6.05 | M155 | 10 | 63.5 | 32 | <100 |
| 5 | 1.50 | 9.08 | M155 | 10 | 61.7 | 23 | <100 |

*Table 13-50: Dynamic thickening test work results for the Nyanzaga fresh bulk engineering composite*

| TEST | FEED FLUX ($t/m^2/h$) | FEED LIQUOR RISE RATE (m/h) | FLOCCULANT TYPE | FLOCCULANT DOSE (g/t) | UNDERFLOW SOLIDS CONC. (% w/w) | UNDERFLOW YIELD STRESS (Pa) | OVERFLOW SOLIDS CONC. (mg/L) |
|---|---|---|---|---|---|---|---|
| 1 | 0.50 | 3.02 | M155 | 10 | 68.8 | 42 | <100 |
| 2 | 0.50 | 3.02 | M155 | 5 | 68.7 | 26 | <100 |
| 3 | 0.50 | 3.02 | M155 | 2.5 | 67.1 | 10 | <100 |
| 4 | 1.00 | 6.04 | M155 | 5 | 66.3 | 12 | <100 |
| 5 | 1.50 | 9.06 | M155 | 5 | 65.1 | 11 | <100 |

The test work results show that the Nyanzaga oxide bulk engineering composite can be thickened by high-rate thickening to underflow pulp densities of 61-66% w/w solids over a flux rate range of 0.50-1.50 $t/m^2/h$, with simultaneously good overflow clarity. The Nyanzaga fresh bulk engineering composite can be thickened by high-rate thickening to underflow pulp densities of 65-68% w/w solids over a flux rate range of 0.50-1.50 $t/m^2/h$, with simultaneously good overflow clarity.

### 13.2.14 TAILINGS TESTING

Tailings characterisation test work was conducted by Knight Piésold (2017a) (2017b) on cyanidation leach residues of the Nyanzaga oxide bulk engineering composite and the Nyanzaga fresh bulk engineering composite, with cyanidation conditions and results presented in Section 13.2.6.9. The results from the tailings characterisation tests are summarised in Section 18.9.1.

### 13.2.15 PROCESSING ROUTE SELECTION

A techno-economic assessment of the following three processing routes was conducted to select the optimum flowsheet for treating Nyanzaga deposit ores:

- Gravity, flotation, cyanidation of flotation concentrate, and cyanidation of flotation tailings – all stages with target grind size $P_{80}$ of 75 µm (Section 13.2.4.4 and Section 13.2.4.6).
- Gravity ($P_{80}$ of 75 µm), flotation ($P_{80}$ of 75 µm), regrind and cyanidation of flotation concentrate ($P_{100}$ of 25 µm), and cyanidation of flotation tailings ($P_{80}$ of 75 µm) (Section 13.2.4.4 and Section 13.2.4.6).
- Gravity and cyanidation – all stages with target grind size $P_{80}$ of 75 µm (Section 13.2.6.8).

Key findings of the technical assessment were:

- The highest gold recovery is achieved with gravity, flotation, regrind and cyanidation of flotation concentrate, and cyanidation of flotation tailings. This process route also has the highest incremental capital cost (associated with flotation, regrind, concentrate thickening, an additional flotation concentrate CIL circuit, and additional reagent mixing facilities) and the highest incremental operating cost (additional power, reagents and consumables, labour, and maintenance).
- For both processing routes involving flotation, the incremental capital and operating costs were not offset by the projected revenue from additional precious metal production.
- The gravity and cyanidation processing route has a minor trade-off in gold recovery, but has no incremental capital and operating cost considerations, compared to the two flowsheet options involving flotation.

Based on this techno-economic assessment, and the findings of test work from Section 13.2 of this report, the following process flowsheet was selected for plant design:

- Target grind size $P_{80}$ of 75 µm.
- Gravity recovery.
- Pre-oxygenation (target DO of 20 ppm through the addition of oxygen gas).
- Carbon-in-leach (with target pH of 10.0-10.5, and target DO of 20 ppm through the addition of oxygen gas).

Sodium cyanide and lime addition rates are ore type dependent and have been estimated in Section 13.5.3.

## 13.3 KILIMANI DEPOSIT TEST WORK

### 13.3.1 OVERVIEW

The Kilimani deposit, as shown in Figure 16-3 and Figure 16-4, was the subject of test work programs commissioned by OreCorp, and conducted by ALS Metallurgy in Perth, Australia in 2022 (ALS Metallurgy, 2022) and Metso Outotec in Perth, Australia in 2022 (Metso Outotec, 2022). As noted in Section 15.2, the Kilimani deposit consists of 5% of tonnes and 4% of contained ounces of the Mineral Reserves for the Nyanzaga Gold Project.

ALS Metallurgy and Metso Outotec are commercial laboratories that are independent to Perseus.

Samples of oxide ore from the Kilimani deposit were tested to determine:

- the plant operating parameters for Kilimani deposit ore types for the determined processing route, specifically throughput rate, gold recovery, and reagent consumption.
- engineering parameters required for process plant design.

The metallurgical test work program included the following:

- comminution tests (SMC Test®, BWi, RWi, and Ai on three comminution variability samples).
- gravity/cyanidation tests and intensive cyanidation tests on six metallurgical variability samples.
- master composite test work for the determination of parameters necessary for process plant design and operation (viscosity, thickening and settling rate).

### 13.3.2 SAMPLE SELECTION

Three comminution variability samples, six metallurgical variability samples, and one master composite were selected from core taken from six drill holes spread across mineralised areas of the Kilimani deposit. All samples are classed as oxide. Samples were taken over an approximate range of:

- 550 m east to west
- 205 m north to south
- 60 m in RL.

Figures shown from Section 13.3.2.1 to Section 13.3.2.3 plot the metallurgical sample intervals and the current pit shell design, as described in Section 16.1.2.

#### 13.3.2.1 COMMINUTION VARIABILITY SAMPLES

Comminution variability sample drill core intervals tested are listed in Table 13-51, and are shown graphically in plan view in Figure 13-30 and in perspective view in Figure 13-31. All samples are classed as oxide.

*Table 13-51: Kilimani deposit comminution variability samples*

| SAMPLE | ORE TYPE | DRILL HOLE | FROM (m) | TO (m) |
|---|---|---|---|---|
| Comminution composite NYZDD1250 | oxide | NYZDD1250 | 106 | 128 |
| Comminution composite NYZDD1280 | oxide | NYZDD1280 | 36 | 55 |
| Comminution composite NYZDD1284 | oxide | NYZDD1284 | 52 | 71 |

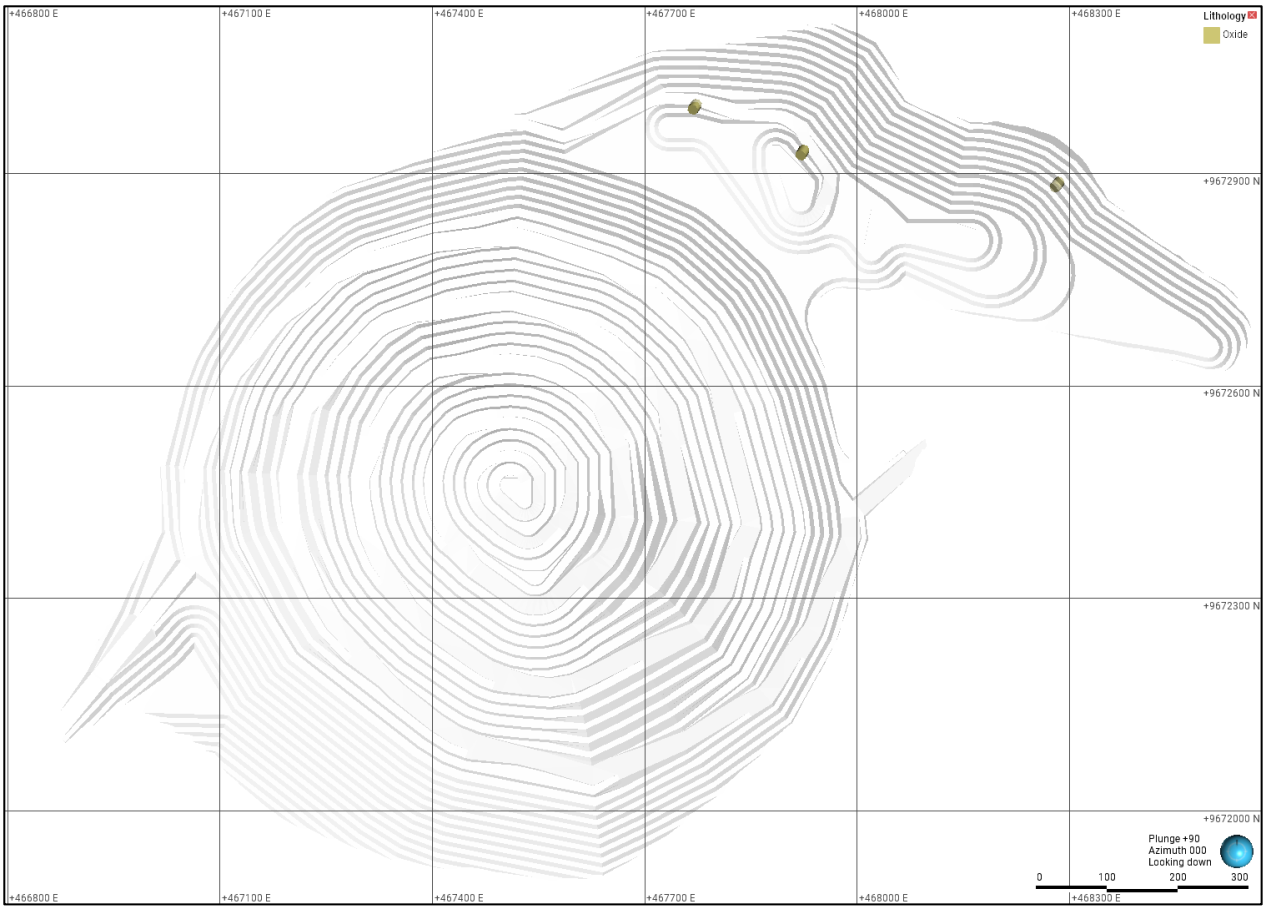



*Figure 13-30: Location of Kilimani comminution samples, plan view (Source: Perseus, 2025)*

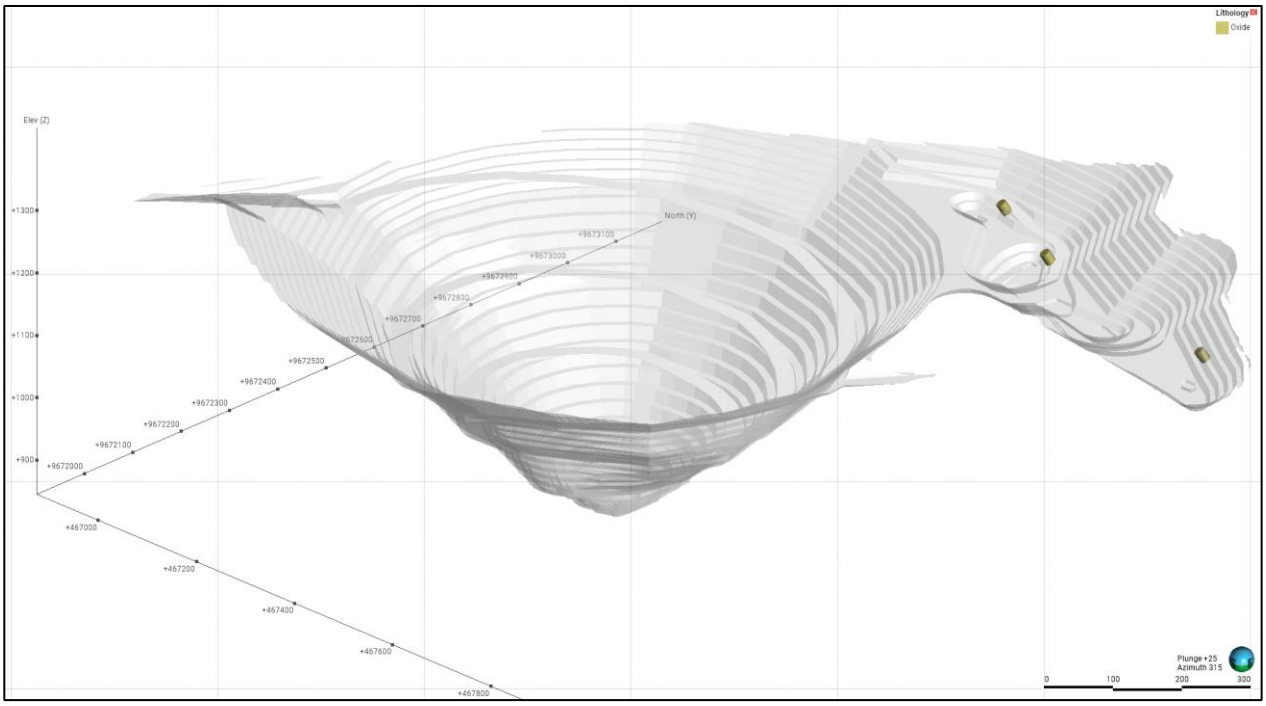



*Figure 13-31: Location of Kilimani comminution samples, perspective view looking northeast (Source: Perseus, 2025)*

### 13.3.2.2 METALLURGICAL VARIABILITY SAMPLES

Metallurgical variability sample drill core intervals tested are listed in Table 13-52, and are shown graphically in plan view in Figure 13-32 and in perspective view in Figure 13-33. All samples are classed as oxide.

*Table 13-52: Kilimani deposit metallurgical variability samples*

| SAMPLE | ORE TYPE | DRILL HOLE | FROM (m) | TO (m) |
|---|---|---|---|---|
| Leach composite NYZDD1235 | oxide | NYZDD1235 | 43 | 52 |
| Leach composite NYZDD1240 | oxide | NYZDD1240 | 59 | 67 |
| Leach composite NYZDD1250 | oxide | NYZDD1250 | 68 | 76 |
| Leach composite NYZDD1270 | oxide | NYZDD1270 | 61 | 69 |
| Leach composite NYZDD1280 | oxide | NYZDD1280 | 36 | 55 |
| Leach composite NYZDD1284 | oxide | NYZDD1284 | 20 | 28 |

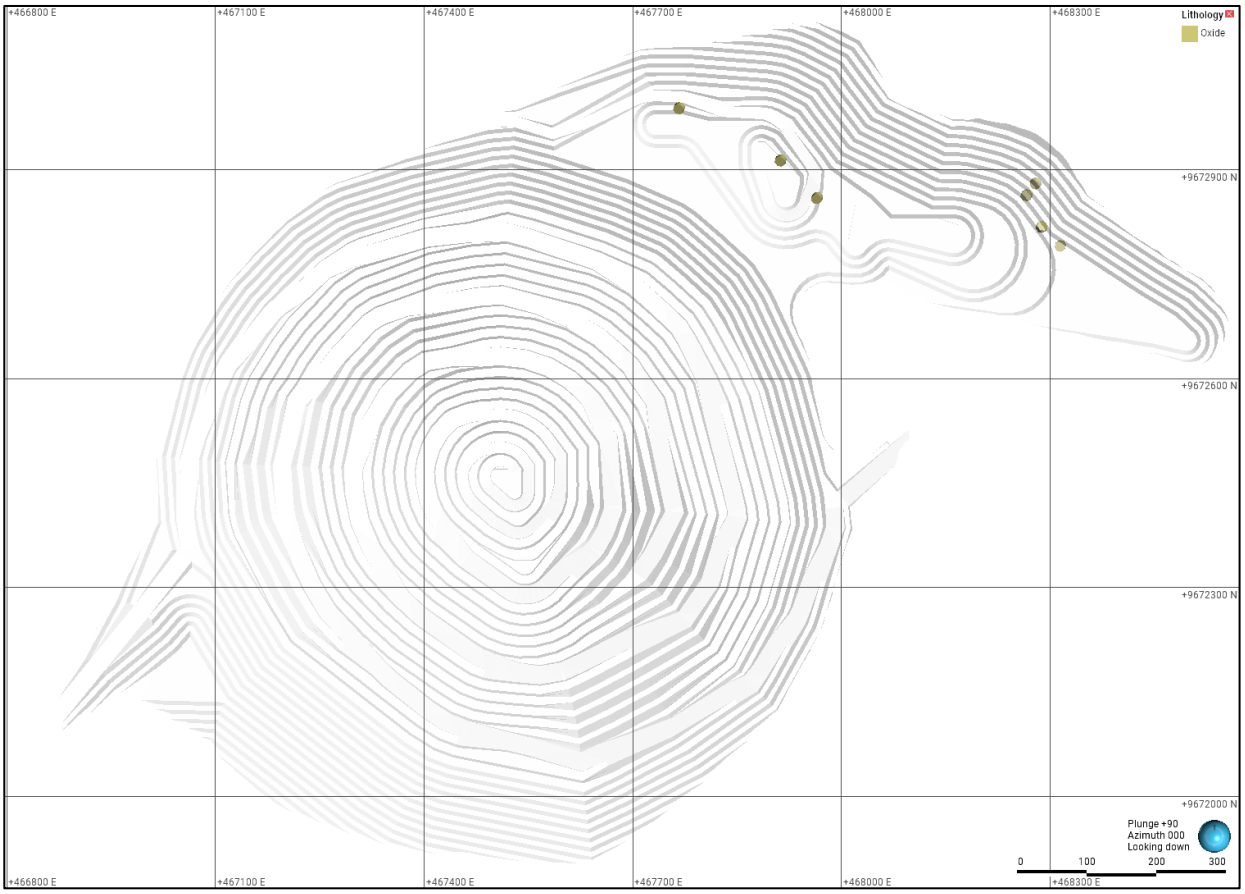



*Figure 13-32: Location of Kilimani metallurgical variability samples, plan view (Source: Perseus, 2025)*

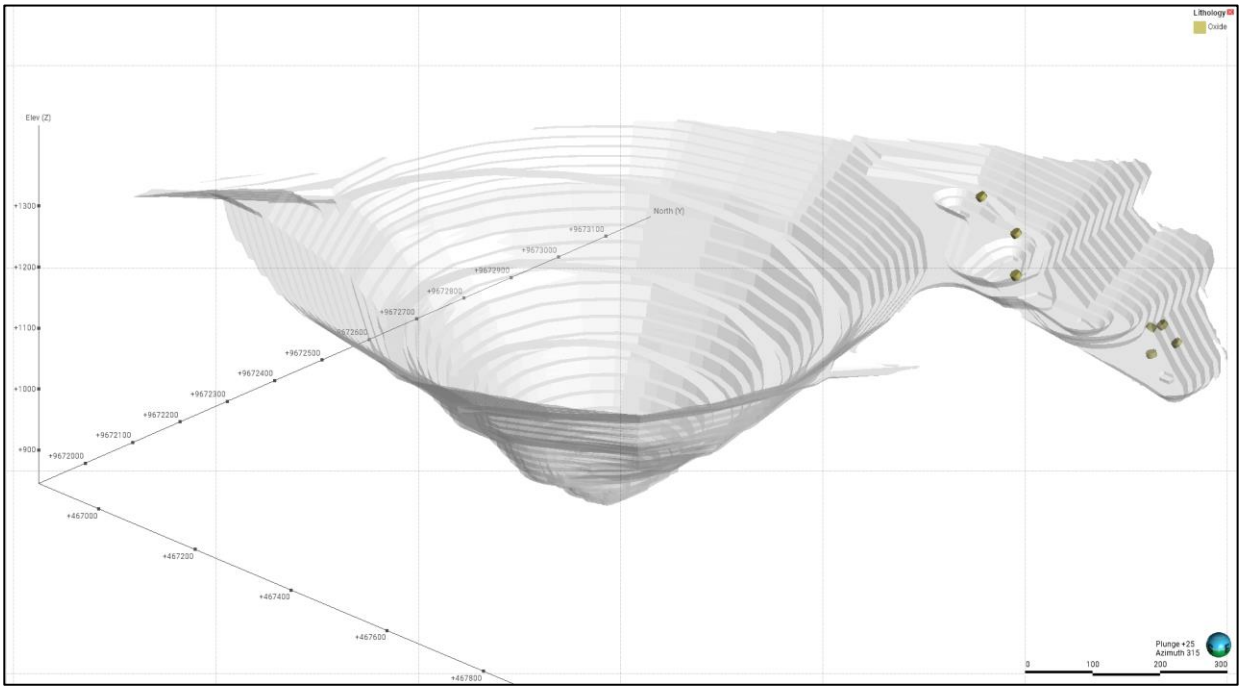



*Figure 13-33: Location of Kilimani metallurgical variability samples, perspective view looking northeast (Source: Perseus, 2025)*

### 13.3.2.3 MASTER COMPOSITE

A single Kilimani master composite was generated from metallurgical variability samples for the purpose of viscosity and thickening test work. The composition of the Kilimani master composite is listed in Table 13-53, and is shown graphically in plan view in Figure 13-34 and in perspective view in Figure 13-35.

***Table 13-53: Kilimani master composite composition***

| METALLURGICAL VARIABILITY SAMPLE | MASS (%) |
|---|---|
| Leach composite NYZDD1235 | 16.67 |
| Leach composite NYZDD1240 | 16.67 |
| Leach composite NYZDD1250 | 16.67 |
| Leach composite NYZDD1270 | 16.67 |
| Leach composite NYZDD1280 | 16.67 |
| Leach composite NYZDD1284 | 16.67 |

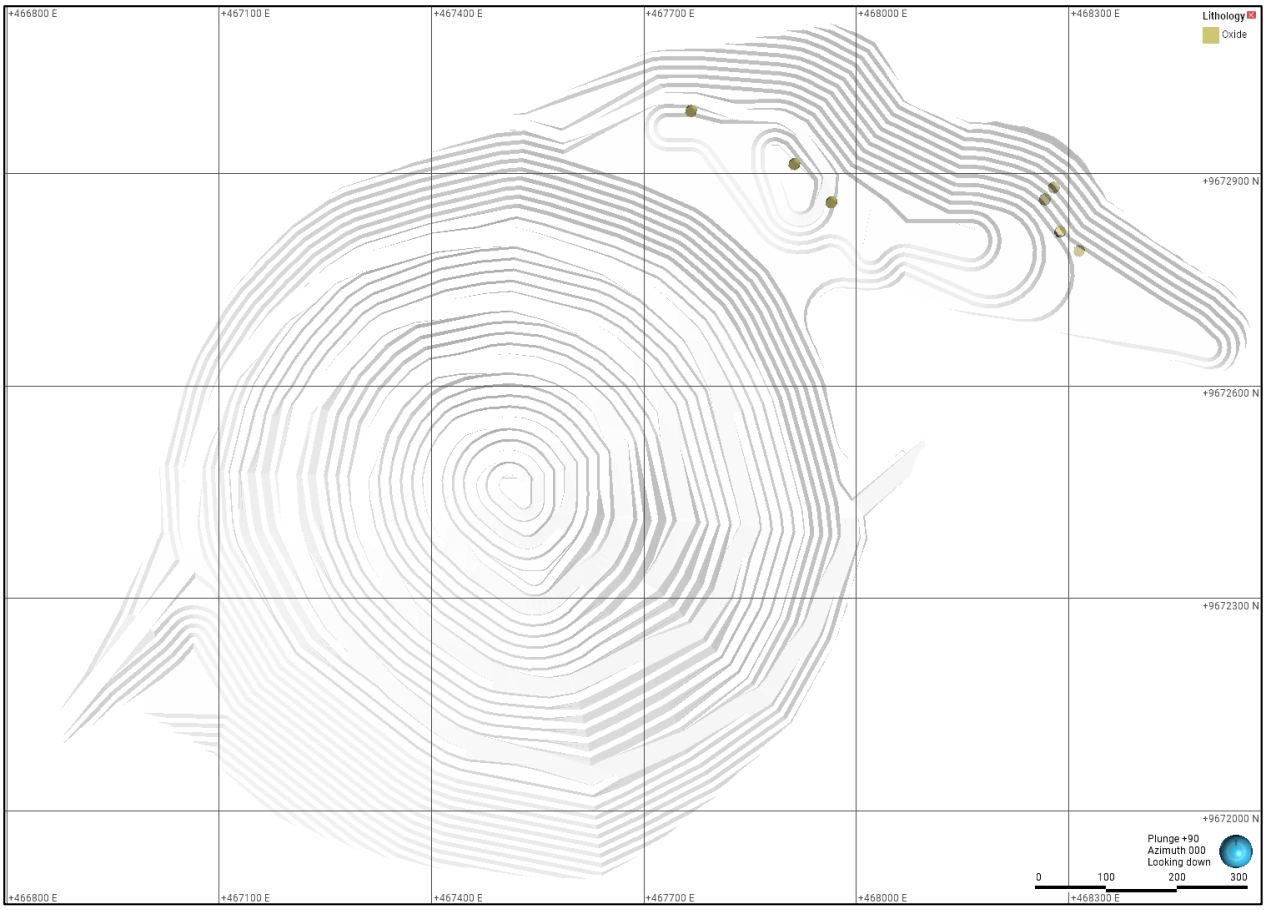



***Figure 13-34: Location of intervals selected for Kilimani master composite, plan view (Source: Perseus, 2025)***

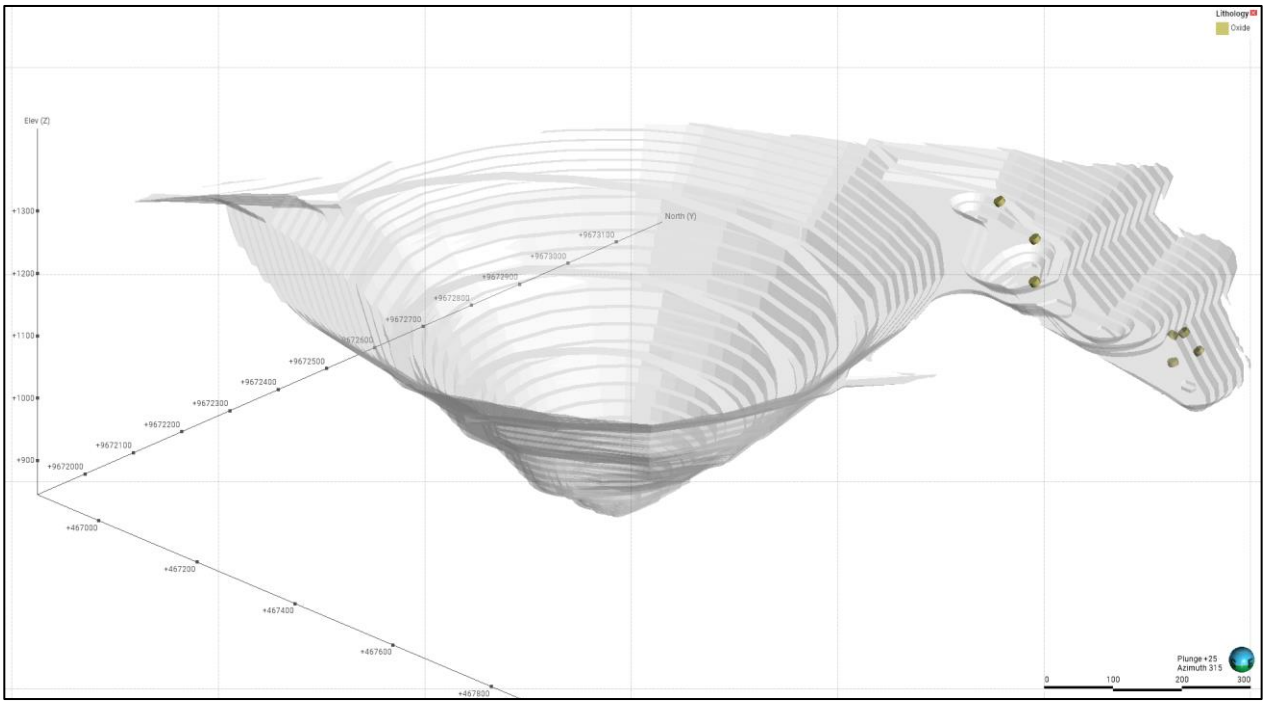



*Figure 13-35: Location of intervals selected for Kilimani master composite, perspective view looking northeast (Source: Perseus, 2025)*

### 13.3.3 HEAD GRADE AND SPECIFIC GRAVITY

Each metallurgical variability sample underwent fire assay (FA) for gold in quadruplicate, and multi-element analyses for a further 35 analytes. A summary of select assay results is shown in Table 13-54.

*Table 13-54: Head assays (select analytes) for Kilimani deposit test work composite and metallurgical variability samples*

| LEACH COMPOSITE SAMPLE | Au FA values (g/t) | Au FA average (g/t) | Ag (ppm) | As (ppm) | $C_{organic}$ (%) | Hg (ppm) | $S_{sulfide}$ (%) | Sb (ppm) | Te (ppm) |
|---|---|---|---|---|---|---|---|---|---|
| NYZDD1325 | 0.55 / 0.53 / 0.52 / 0.53 | 0.53 | 0.9 | 300 | <0.03 | 3.4 | <0.02 | 24 | 0.2 |
| NYZDD1240 | 1.56 / 1.47 / 2.35 / 2.33 | 1.93 | <0.3 | 580 | <0.03 | 1.1 | <0.02 | 29 | <0.2 |
| NYZDD1250 | 0.70 / 0.61 / 0.74 / 0.93 | 0.75 | 1.2 | 660 | <0.03 | 2.1 | 0.02 | 43 | <0.2 |
| NYZDD1270 | 0.88 / 1.08 / 1.05 / 1.05 | 1.02 | <0.3 | 200 | <0.03 | 0.3 | <0.02 | 40 | <0.2 |
| NYZDD1280 | 0.79 / 0.87 / 0.92 / 0.88 | 0.86 | 1.2 | 300 | <0.03 | 0.4 | <0.02 | 35 | <0.2 |
| NYZDD1284 | 2.15 / 1.80 / 3.32 / 2.98 | 2.56 | 1.2 | 610 | <0.03 | 0.8 | <0.02 | 46 | <0.2 |
| Master Comp* | - | 1.27 | 0.8 | 440 | <0.03 | 1.4 | <0.02 | 36 | <0.2 |

* Master composite assays are calculated based on weighted average of constituent components.

From the data:

- It can be deduced that gold is present as both coarse spotty gold and fine gold in the Kilimani deposit. Coarse spotty gold is indicated by variable replicate gold assays, which is noted for leach composite NYZDD1284. Fine gold is indicated by consistency across replicate gold assays.

- The gold grade of the Kilimani master composite (1.27 g/t) approximates the Mineral Reserves grade for the Kilimani deposit stated in Table 15-1 (1.02 g/t).
- Silver is not present in an economic quantity, though it will need to be considered in process design for the CIL, elution, electrowinning and smelting circuits. Silver extraction was monitored in subsequent test work.
- The sulfide sulfur assay data set indicates that the Kilimani samples tested are all oxide in nature.
- Organic carbon values are below detection limit, indicating that Kilimani deposit ore is unlikely to exhibit preg-robbing behaviour.
- Mercury is present in most samples– process design should consider options for mercury recovery and health monitoring of gold room personnel should be put into place to manage residual risk.
- Antimony levels are elevated, increasing the risk of gold passivation that can occur at high pH. pH control should be included in the process control design.
- Tellurium assay levels are low, indicating that refractory telluride minerals are unlikely to be present.

Indicative SG values were determined through SMC® tests for Kilimani oxide ores (Table 13-55). These tests indicate SG values between 2.2 and 2.7.

### 13.3.4 COMMINUTION TEST WORK

#### 13.3.4.1 SMC TEST®

A standard SMC Test® was conducted on each of the comminution samples. The results are summarised in Table 13-55.

*Table 13-55: SMC Test® results for Kilimani deposit comminution variability samples*

| SAMPLE | ORE TYPE | DWI (kWh/m³) | A×b | $M_{ia}$ (kWh/t) | $M_{ic}$ (kWh/t) | SG | SCSE (kWh/t) |
|---|---|---|---|---|---|---|---|
| Comminution composite NYZDD1250 | oxide | 0.8 | 287.2 | 4.2 | 1.0 | 2.15 | 5.8 |
| Comminution composite NYZDD1280 | oxide | 1.5 | 165.0 | 6.4 | 1.8 | 2.44 | 6.0 |
| Comminution composite NYZDD1284 | oxide | 4.0 | 66.9 | 12.9 | 4.5 | 2.70 | 7.9 |

As per the ore competency classification in Table 13-16, the results show Kilimani comminution variability samples to have between very low and moderately low competency, with an average A×b of 173.0 (very low competency). The Kilimani oxide comminution variability samples tested are of significantly lower competency than the Nyanzaga oxide comminution variability samples tested.

#### 13.3.4.2 BOND BALL MILL WORK INDEX

A standard BWi test was conducted on each of the comminution samples. A closing screen of 106 µm was used, to yield a $P_{80}$ of 75 µm. The target grind size $P_{80}$ of 75 µm was established from the gravity/leach grind size optimisation test work in Section 13.2.6.4. The results are presented in Table 13-56.

*Table 13-56: BWi for Kilimani deposit comminution variability samples*

| SAMPLE | ORE TYPE | BWi (kWh/t) |
|---|---|---|
| Comminution composite NYZDD1250 | oxide | 9.0 |
| Comminution composite NYZDD1280 | oxide | 11.4 |
| Comminution composite NYZDD1284 | oxide | 15.3 |

As per the ore hardness classification in Table 13-18, the results show Kilimani comminution variability samples to have between medium hard and hard, with an average BWi of 11.9 kWh/t (medium hard). The Kilimani oxide comminution variability samples tested are softer than the Nyanzaga oxide comminution variability samples tested.

#### 13.3.4.3 BOND ROD MILL WORK INDEX

A standard RWi test was conducted on each of the comminution samples. A closing screen of 1,180 µm was used. The results are presented in Table 13-57.

*Table 13-57: RWi for Nyanzaga deposit comminution variability samples*

| SAMPLE | ORE TYPE | RWi (kWh/t) |
|---|---|---|
| Comminution composite NYZDD1250 | oxide | 6.0 |
| Comminution composite NYZDD1280 | oxide | 13.5 |
| Comminution composite NYZDD1284 | oxide | 15.2 |

As per the ore hardness classification in Table 13-18, the results show Kilimani comminution variability samples to have between very soft and hard, with an average RWi of 11.6 kWh/t (medium hard).

#### 13.3.4.4 BOND ABRASION INDEX

A standard Ai test was conducted on each of the comminution samples. The results are presented in Table 13-58.

*Table 13-58: Ai for Kilimani deposit comminution variability samples*

| SAMPLE | ORE TYPE | Ai (g) |
|---|---|---|
| Comminution composite NYZDD1250 | oxide | 0.0344 |
| Comminution composite NYZDD1280 | oxide | 0.0980 |
| Comminution composite NYZDD1284 | oxide | 0.0958 |

As per the ore abrasion classification in Table 13-21, the results show Kilimani comminution variability samples to be non-abrasive, with an average Ai of 0.0761 g.

### 13.3.5 INTENSIVE CYANIDATION TEST WORK

Six metallurgical variability samples were subjected to intensive cyanidation tests to provide an indication of ultimate cyanide gold recovery at the target grind size. Intensive cyanidation test conditions were:

- 1,000 g of solids ground to target grind size of 80% passing 75 µm ($P_{80}$ of 75 µm) were tested.
- Samples were slurrified to 40% w/w solids using Perth tap supply
- 0.8% w/w NaOH addition, which achieved pH values within a range of 12.6 to 12.7.
- 5.0% w/w NaCN addition.
- 2.0% w/v LeachWELL™ addition.
- Oxygen sparged into the bottle head space, to maintain DO concentrations above 20 mg/L.
- 24 h bottle roll cyanidation, with gold analysis of solid residue.

The results of the tests are summarised in Table 13-59.

*Table 13-59: Intensive cyanidation results for Kilimani deposit metallurgical variability samples*

| SAMPLE | ORE TYPE | Au FA AVERAGE (g/t) | CALCULATED Au (g/t) | Au EXTRACTION (%) |
|---|---|---|---|---|
| Leach composite NYZDD1235 | oxide | 0.53 | 0.52 | 90.4 |
| Leach composite NYZDD1240 | oxide | 1.93 | 1.62 | 98.4 |
| Leach composite NYZDD1250 | oxide | 0.75 | 0.65 | 90.8 |
| Leach composite NYZDD1270 | oxide | 1.02 | 0.96 | 97.9 |
| Leach composite NYZDD1280 | oxide | 0.86 | 0.79 | 96.8 |
| Leach composite NYZDD1284 | oxide | 2.56 | 2.07 | 96.6 |

Key points from the data are:

- Calculated gold grades are approximately 13% lower than the quadruplicate fire assay gold head grades.
- Intensive cyanidation gold extractions for Kilimani oxide samples range between 90.4% and 98.4%, with an average of 95.2%.
- The Kilimani deposit metallurgical variability samples returned very good gold extractions under the cyanidation conditions tested. This supports the decision to proceed with gravity/cyanidation test work (Section 13.2.6).

## 13.3.6 GRAVITY RECOVERY AND CYANIDATION

### 13.3.6.1 GRAVITY/CYANIDATION TEST PROCEDURE

The following gravity/cyanidation test conditions were used for testing of the Kilimani deposit metallurgical variability samples:

1. Approximately 2,000 g of gravity feed sample, prepared to a $P_{80}$ of 75 µm in a stainless steel laboratory rod mill, was passed through a 3-inch laboratory Knelson gravity concentrator (KC-MD3) with a 0.12 kW drive, operating at 1,500 rpm with 3.5 L/min fluidisation water addition.
2. The gravity concentrate was transferred to a 1 L leach bottle with a screw-on lid. 10 g of mercury was added to the bottle, along with 0.1 g of NaOH, and the bottle was continuously rolled for 2 to 3 h. On completion of the amalgamation, the loaded amalgam was recovered by hand panning and assayed for gold. The combined gravity/amalgam tail were then combined and oven dried.
3. A 1,000 g sub-sample was taken, and the cyanidation feed was transferred into a 4 L leach bottle with a screw-on lid. Perth tap water was added to slurrify the sample to establish the 40% w/w solids.
4. No activated carbon is added to the cyanidation slurry.
5. Hydrated lime (68% w/w CaO) was added to the slurry to establish pH in the range of 10.0 to 10.5.
6. Sodium cyanide was added to the slurry to establish the target initial concentration of 0.100% w/w.
7. Oxygen was sparged to the leach bottle to achieve an elevated DO concentration of 20 ppm.
8. The leach bottle was placed on the bottle rolls. Slurry agitation was applied by mechanical rollers.
9. At regular intervals, slurry pH, DO, and sodium cyanide concentration were monitored and recorded. Solution sub-samples were taken and assayed for gold and silver.
10. If required during the test duration, lime, sodium cyanide, and oxygen were added to maintain target levels. Target pH range to maintain was >10.0; target NaCN concentration to maintain was 0.030% w/w, and target DO to maintain was 20 ppm.
11. At the conclusion of the 48 h test, the terminal pH, oxygen, and cyanide levels were determined. A solution sub-sample was taken and assayed for gold and silver. The residual slurry sample was

filtered, washed, and dried to provide leach residue solids, and a sub-sample of residue solid was assayed for gold and silver.

### 13.3.6.2 VARIABILITY SAMPLES – GRAVITY/CYANIDATION

To test the variability of the Kilimani deposit, six metallurgical variability samples were tested under the gravity/cyanidation conditions noted in Section 13.3.6.1. The metallurgical variability test results are presented in Table 13-60. Column headers prefixed with PW refer to the individual test numbers in the ALS Metallurgy report.

***Table 13-60: Gravity/cyanidation test results for Kilimani deposit metallurgical variability samples***

| PARAMETER | UNIT | PW6215 | PW6216 | PW6217 | PW6218 | PW6219 | PW6220 |
|---|---|---|---|---|---|---|---|
| Variability sample | - | Leach comp. NYZDD1235 | Leach comp. NYZDD1240 | Leach comp. NYZDD1250 | Leach comp. NYZDD1270 | Leach comp. NYZDD1280 | Leach comp. NYZDD1284 |
| $P_{80}$ grind size | µm | 75 | 75 | 75 | 75 | 75 | 75 |
| Assay head grade | | | | | | | |
| Au | g/t | 0.54 | 1.93 | 0.74 | 1.02 | 0.87 | 2.56 |
| Ag | g/t | 0.9 | <0.3 | 1.2 | <0.3 | 1.2 | 1.2 |
| Calc. head grade | | | | | | | |
| Au | g/t | 1.00 | 1.81 | 0.99 | 0.97 | 1.12 | 2.17 |
| Ag | g/t | 0.7 | 0.6 | 0.8 | 0.5 | 1.0 | 0.7 |
| Pulp density (solids conc) | % w/w | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 | 40.0 |
| Pre-oxygenation | - | no | no | no | no | no | no |
| Carbon concentration | g/L | 0 | 0 | 0 | 0 | 0 | 0 |
| Recovery to gravity con | | | | | | | |
| Au | % | 51.0 | 24.6 | 40.7 | 33.4 | 43.8 | 35.0 |
| Extraction at time (Au) | | | | | | | |
| 4 hours | % | 94.3 | 95.5 | 90.7 | 94.2 | 87.3 | 93.7 |
| 12 hours | % | 94.3 | 98.3 | 92.2 | 97.2 | 95.8 | 96.1 |
| 24 hours | % | 94.3 | 99.1 | 92.9 | 98.0 | 96.4 | 96.1 |
| 48 hours | % | 95.0 | 98.3 | 92.9 | 98.0 | 96.4 | 96.8 |
| Extraction at time (Ag) | | | | | | | |
| 4 hours | % | 28.4 | 10.7 | 31.2 | 5.7 | 47.5 | 25.4 |
| 12 hours | % | 28.4 | 10.7 | 31.2 | 11.2 | 50.4 | 25.4 |
| 24 hours | % | 32.3 | 10.7 | 31.2 | 5.8 | 53.3 | 25.4 |
| 48 hours | % | 32.3 | 10.7 | 34.9 | 5.8 | 50.5 | 29.4 |
| Solid residue grade | | | | | | | |
| Au | g/t | 0.05 | 0.03 | 0.07 | 0.02 | 0.04 | 0.07 |
| Ag | g/t | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| NaCN consumption | kg/t | 0.18 | 0.18 | 0.30 | 0.18 | 0.22 | 0.22 |
| Lime usage | kg/t | 0.44 | 0.64 | 0.57 | 0.68 | 0.50 | 0.71 |
| Terminal DO | ppm | 31.7 | 30.5 | 31.2 | 34.1 | 31.0 | 34.3 |

Key findings from the tests are:

- The Kilimani oxide metallurgical variability samples all display good gravity gold extraction, ranging between 24.6% and 51.0% (average 38.1%).
- High overall gold extraction for combined gravity and 24 h direct cyanidation was observed, ranging between 92.9% and 99.1% (average 96.2%). Gold extraction of the Kilimani oxide ores is higher than the Nyanzaga oxide ores (refer to Section 13.2.6.11).

- 24 h silver extraction ranged between 5.8% and 53.3% (average 26.5%).
- Gold and silver leaching kinetics were fast, with extraction largely complete within 12 h.
- Sodium cyanide consumptions were low to moderate and ranged between 0.18 kg/t and 0.30 kg/t (average 0.21 kg/t).
- Lime (68% CaO) consumptions were low and ranged between 0.44 kg/t and 0.71 kg/t (average 0.59 kg/t).

### 13.3.7 VISCOSITY

A series of rheology tests were performed at six different pulp densities on Kilimani master composite sample ground to $P_{80}$ of 75 µm. The slurry was adjusted to pH 10.0 using lime, thereby simulating CIL operating conditions. The viscosities were measured using a Bohlin Visco 88 bench viscometer and all tests were conducted at ambient temperature. The results are summarised in Table 13-61.

***Table 13-61: Viscosity results for Kilimani master composite sample***

| SOLIDS CONCENTRATION (% w/w) | VISCOSITY (cP) AT SHEAR RATE ($s^{-1}$) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 4.2 | 7.4 | 13.1 | 21.9 | 38.9 | 67.4 | 119.2 | 209.5 |
| 60 | 1,123 | 701 | 456 | 316 | 214 | 152 | 152 | 161 |
| 55 | 374 | 255 | 180 | 129 | 93 | 86 | 86 | 103 |
| 50 | 0 | 0 | 0 | 57 | 57 | 51 | 59 | 80 |
| 45 | 0 | 0 | 0 | 0 | 36 | 37 | 47 | 66 |
| 40 | 0 | 0 | 0 | 0 | 28 | 30 | 40 | 55 |
| 35 | 0 | 0 | 0 | 0 | 0 | 26 | 33 | 46 |

As described by (Norgaard, 2019), if viscosity:

- <100 cP at a shear rate of 119.2 $s^{-1}$, then there should be no pumping issues.
- <3,500 cP at a shear rate of 4.2 $s^{-1}$, then there should be no mixing or screening issues.

Based on these guidelines, Kilimani oxide ore slurry streams should target operating solids concentrations below 60% w/w, blend with fresh ores, or consider viscosity modifiers, to avoid viscosity related pumping issues. No viscosity related mixing or screening issues are anticipated for slurry streams with solids concentrations up to 60% w/w.

### 13.3.8 THICKENING AND SETTLING RATE

A sample of Kilimani master composite slurry was subjected to thickening and settling rate test work. The slurry sample was at pH of 10.5 and target grind size $P_{80}$ of 75 µm (measured by laser diffraction as $P_{80}$ of 41 µm). The objectives of the test work were to determine:

- flocculant type and dose.
- overflow clarity.
- underflow density.
- underflow yield stress.

#### 13.3.8.1 FLOCCULANT SCREENING

Flocculant screening was conducted on the Kilimani master composite in 500 mL static cylinder tests at a pulp density of 10% w/w solids. Common BASF flocculants (Magnafloc® 10 and 155) were tested. Magnafloc® 155 was included in the flocculant screening tests as it selected as the optimum flocculant from screening tests on Nyanzaga ore composites. Results are shown in Figure 13-36.

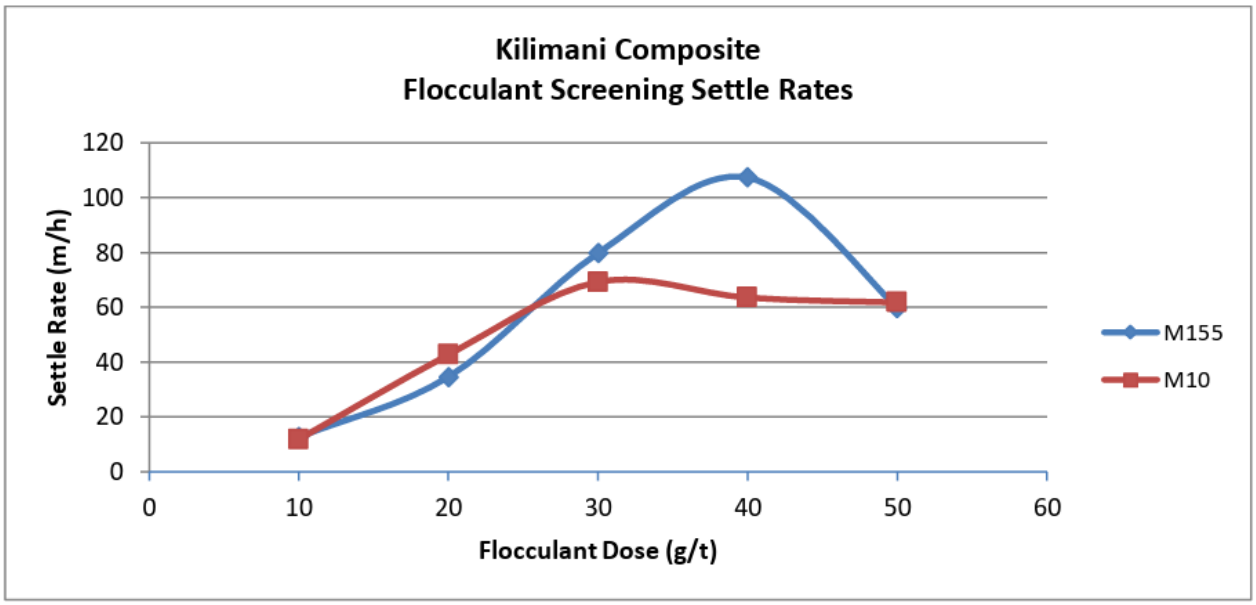



*Figure 13-36: Settling rates of Kilimani master composite at 10% w/w solids in static cylinder tests (Source: (Metso Outotec, 2022))*

It was found that both BASF Magnafloc® 155 (M155) and Magnafloc® 10 (M10) were able to produce a fast settling rate with good flocculation. Magnafloc® 155 was found to produce a better settling rate, whilst Magnafloc® 10 was found to produce better overflow clarity. Mangafloc® 155 was used for the majority of the dynamic thickening tests, to align with the flocculant selection made for Nyanzaga ore composites (Section 13.2.13.1). Magnafloc® 10 was also trialled in one test in an attempt to improve overflow clarity.

#### 13.3.8.2 DYNAMIC THICKENING TESTS

Dynamic thickening tests on the Kilimani master composite were conducted using a 99 mm diameter high-rate thickener test rig. Slurry was drawn from an agitated stock tank by a variable speed peristaltic pump, diluted, and pH adjusted to 10.5 with lime. Stock flocculant solution was mixed to 0.25% w/v (2.5 g/L) and then diluted as required before being dosed to the test rig at a set flow rate, which was varied across the series of tests between 20 and 40 g/t. Diluted flocculant was dosed half into the diluent line and half into the diluted feed line further downstream. The flocculated solids bed was raked continuously at 2 rpm with two rotating pickets, in conjunction with two stationary pickets to aid dewatering.

Overflow samples were collected and analysed to determine suspended solids content. Underflow samples were collected to determine solids concentration and a simple unsheared vane yield stress was measured using a Thermo Haake VT550 rheometer and an OK600 four blade vane to assist with thickener rake drive sizing.

A summary of results from the dynamic thickening tests is presented in Table 13-62.

*Table 13-62: Dynamic thickening test work results for the Kilimani master composite*

| TEST | FEED FLUX ($t/m^2/h$) | FEED LIQUOR RISE RATE (m/h) | FLOCCULANT TYPE | FLOCCULANT DOSE (g/t) | UNDERFLOW SOLIDS CONC. (% w/w) | UNDERFLOW YIELD STRESS (Pa) | OVERFLOW SOLIDS CONC. (mg/L) |
|---|---|---|---|---|---|---|---|
| 1 | 0.50 | 2.47 | M155 | 40 | 62.0 | 54 | 330 |
| 2 | 0.50 | 2.47 | M155 | 30 | 62.2 | 56 | 310 |
| 3 | 0.50 | 2.47 | M155 | 20 | 62.6 | 47 | 310 |
| 4 | 0.50 | 2.47 | M10 | 30 | 62.3 | 58 | 190 |
| 5 | 1.00 | 4.93 | M155 | 30 | 59.5 | 38 | 290 |
| 6 | 1.50 | 7.40 | M155 | 30 | 56.2 | 45 | 250 |
| 7 | 0.25 | 1.23 | M155 | 30 | 64.5 | 73 | 300 |

The test work results show that the Kilimani master composite can be thickened by high-rate thickening to underflow pulp densities of 56-64% w/w solids over a flux rate range of 0.25-1.50 $t/m^2/h$, with reasonable overflow clarity. The flux rate and underflow pulp density ranges for the Kilimani master composite sample are comparable to the Nyanzaga ore composites tested (Section 13.2.13.2), but the overflow stream had less clarity for the Kilimani master composite than for the Nyanzaga ore composites tested. Given that the Kilimani master composite indicates a higher operating duty, the results for this sample were used as the basis for sizing the Nyanzaga pre-leach thickener, tailings thickener and flocculant mixing plant described in Section 17.

## 13.4 SITE RAW WATER ANALYSIS

Raw water for the Nyanzaga Project will be sourced from Lake Victoria. Analyses of Lake Victoria raw water indicate that the water is suitable for a raw water supply. A summary of select analytes is shown in Table 13-63. Where a value is listed as ND, this indicates that the analyte was not detected. Where an analyte is described as total, it refers to the sum of the chemical species in the dissolved and suspended states.

The first sample was taken by OreCorp from the Bulyanhulu water pipeline in August 2016, which is supplied from Lake Victoria. This sample was analysed by SGS Mwanza (Job number EL160291). Additional sampling was undertaken by OreCorp and supporting consultants (Sotta Mining Corporation Limited, 2023). Table 13-63 includes results from both lots of sampling, which covers the period of August 2016 to December 2022. These samples were taken from sampling point NZSW 00020 on Lake Victoria, close to the settlement of Kaningu A, approximately 4.2 km east of the Nyanzaga SML boundary.

Note that no metallurgical test work was completed using site water, however based on the raw water analyses, metallurgical performance and reagent consumption is not expected to be significantly affected.

*Table 13-63: Lake Victoria raw water analysis*

| ANALYTE | UNIT | BULYANHULU PIPELINE AUG. 2016 | LAKE VICTORIA MAR. 2017 | LAKE VICTORIA FEB. 2020 | LAKE VICTORIA SEP. 2021 | LAKE VICTORIA DEC 2021 | LAKE VICTORIA MAR. 2022 | LAKE VICTORIA JUN. 2022 | LAKE VICTORIA SEP. 2022 | LAKE VICTORIA DEC. 2022 |
|---|---|---|---|---|---|---|---|---|---|---|
| pH | - | 6.8 | 7.3 | 7.5 | 8.0 | 7.7 | 7.2 | 7.6 | 8.0 | 6.9 |
| Conductivity | µS/cm | 210 | 210 | 365 | 436 | 401 | 342 | 380 | 252 | 314 |
| TDS | mg/L | 140 | 138 | 41 | 83 | 1,120 | 60 | 64 | 91 | 75 |
| TSS | mg/L | 6.0 | 16.1 | <0.1 | 12 | 380 | 460 | 76 | 13 | 11 |
| Alkalinity | $mgCaCO_3/L$ | 109 | 98 | 157 | <0.1 | 1 | 2 | 108 | 2 | 85 |
| Turbidity | NTU | 7.0 | 9.2 | <0.05 | 8 | 253 | 306 | 50 | 8 | 7 |
| Apparent colour | Pt-Co units | 141 | - | - | - | - | - | - | - | - |
| Chloride | mg/L | 3.0 | 6.2 | 26.6 | 3.5 | 5.1 | 6.0 | 10.0 | 7.5 | 7.8 |
| Fluoride | mg/L | 2.0 | 1.4 | <0.01 | 1.0 | 1.2 | 0.4 | 0.9 | 1.2 | 0.8 |
| Ammonium at $NH_3$ | mg/L | <0.003 | <0.003 | - | - | - | 0.07 | <0.03 | 0.04 | 0.14 |
| Nitrate as $NO_3$ | mg/L | <0.06 | 0.4 | 72.1 | 0.1 | <0.08 | 1.1 | 1.6 | <0.08 | 43.7 |
| Nitrite as $NO_2$ | mg/L | <0.01 | <0.01 | 0.03 | <0.08 | <0.001 | 0.06 | 0.01 | 0.003 | 0.08 |
| Sulfate | mg/L | 0.0 | 1.2 | <0.1 | <0.3 | <0.3 | 24.0 | <0.3 | 18.3 | <0.3 |
| Phosphate | mg/L | <0.005 | <0.005 | - | - | - | 0.21 | 0.64 | 0.47 | 0.43 |
| Carbonate | mg/L | - | - | - | - | <1.2 | <1.2 | <1.2 | 2.0 | <1.2 |
| Bicarbonate | mg/L | - | - | - | - | - | 19 | 52 | 75 | 40 |
| Hardness | mg/L | 26.0 | - | - | - | - | - | - | - | - |
| Ca | mg/L | 8.0 | 10.1 | 8.0 | 2.8 | 1.1 | <0.01 | 0.1 | 6.9 | 3.2 |
| Mg | mg/L | 2.0 | 2.8 | 3.6 | 2.7 | 1.1 | 1.2 | 1.6 | 4.1 | 5.2 |
| K | mg/L | 2.0 | 3.9 | 2.2 | 1.1 | 2.4 | 4.9 | 4.5 | 2.7 | 3.8 |
| Na | mg/L | 24.0 | 33.3 | 19.9 | 36.9 | 36.7 | 42.8 | 18.9 | 28.4 | 50.6 |
| P total | mg/L | <0.005 | <0.005 | <0.01 | 11.7 | <0.01 | 0.1 | 0.3 | 0.6 | 1.7 |
| S total | mg/L | - | - | - | <0.1 | 11.4 | <0.01 | <0.01 | 1.7 | 4.1 |
| Si total | mg/L | 11.0 | 15.2 | - | 6.8 | 4.8 | 53.3 | 2.9 | 4.5 | 48.1 |
| Al total | mg/L | 0.0 | 0.1 | 9.7 | 0.6 | 0.1 | 29.3 | 2.7 | 0.2 | 33.7 |
| Ag total | mg/L | <0.005 | <0.01 | <0.01 | 0.3 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Cd total | mg/L | <0.001 | <0.001 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Cr total | mg/L | <0.003 | <0.001 | 0.01 | <0.01 | <0.01 | 0.03 | <0.01 | <0.01 | 0.03 |
| Cu total | mg/L | <0.001 | <0.001 | 0.02 | <0.01 | <0.01 | 0.09 | <0.01 | <0.01 | <0.01 |
| Fe total | mg/L | 2.0 | 0.1 | 6.5 | 0.5 | 0.1 | 16.6 | 1.8 | 0.1 | 14.7 |
| Mn total | mg/L | 0.0 | <0.001 | 0.02 | 0.01 | <0.01 | 0.06 | <0.01 | <0.01 | 0.06 |
| As total | mg/L | 0.0 | <0.001 | 0.0 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | 1.8 |
| Hg total | mg/L | <0.001 | <0.001 | <0.01 | <0.001 | <0.001 | <0.001 | <0.01 | <0.001 | <0.001 |
| Ni total | mg/L | <0.004 | <0.004 | 0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Pb total | mg/L | <0.005 | <0.005 | <0.01 | 0.03 | <0.01 | <0.01 | <0.01 | <0.01 | <0.01 |
| Se total | mg/L | <0.002 | <0.001 | - | <0.01 | <0.01 | 0.1 | <0.01 | <0.01 | 13.4 |
| V total | mg/L | | <0.001 | - | <0.01 | <0.01 | 0.03 | <0.01 | <0.01 | <0.01 |
| Zn total | mg/L | <0.001 | 0.08 | - | <0.01 | <0.01 | 0.03 | <0.01 | <0.01 | <0.01 |
| $CN_{total}$ | mg/L | <0.001 | - | ND | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| $CN_{free}$ | mg/L | <0.001 | - | ND | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| $CN_{WAD}$ | mg/L | <0.001 | - | ND | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 | <0.2 |
| E. coli | CFU/100 mL | - | - | 700 | 0 | 0 | 0 | 0 | 0 | 0 |
| BOD | mg/L | - | 13 | 54 | 55 | 19 | 20 | 13 | 12 | 8 |

## 13.5 PREDICTED METALLURGICAL PERFORMANCE

### 13.5.1 ORE TREATMENT RATE

When considering historical and recent comminution testing of samples of Nyanzaga Gold Project ores, the following key findings were made:

- Nyanzaga deposit oxide ores are between low competency to competent, are medium hard to hard, and are between non-abrasive and abrasive.
- Nyanzaga deposit fresh ores are between low competency to very competent, are medium hard to very hard, and are between slightly abrasive and abrasive.
- Kilimani deposit oxide ores are between very low and moderately low competency, are between very soft and hard, and are non-abrasive.

An SAB comminution circuit (SAG milling with pebble recycle and ball milling in closed circuit with hydrocyclones) was selected for the Nyanzaga processing plant and will be able to accommodate the spectrum of material hardness and competency observed from test work (Orway Mineral Consultants, 2024). To achieve a process plant nameplate throughput of 5.0 Mt/a target grind size $P_{80}$ of 75 µm on the projected ore blend with the highest weighted 85$^{th}$ percentile specific energy values, the following mills were selected (as noted in Table 17-3):

- SAG mill: 9.75 m diameter inside shell × 5.30 m EGL, 10.5 MW motor.
- Ball mill: 7.32 m diameter inside shell × 10.75 m EGL, 10.5 MW motor.

85$^{th}$ percentile ore characteristics were used for the purposes of plant design and nameplate determination. Average ore characteristics were used for the purposes of production planning. The ore parameters, plant throughput rate, and comminution total specific energy by ore type are presented in Table 13-64. 8,000 h/a runtime is assumed for the grinding circuit. Note that for Kilimani oxide ore plant throughputs marked with *, they are predicted to be volumetrically limited rather than power limited.

***Table 13-64: 85$^{th}$ percentile and average ore parameters for Nyanzaga Gold Project ore types (Orway Mineral Consultants, 2024)***

| PARAMETER | UNIT | NYANZAGA OXIDE | NYANZAGA MUDSTONE | NYANZAGA SANDSTONE | NYANZAGA CHERT | KILIMANI OXIDE |
|---|---|---|---|---|---|---|
| 85$^{th}$ percentile | | | | | | |
| CWi | kWh/t | 20.2 | 14.9 | 14.2 | 12.8 | 12.8 |
| RWi | kWh/t | 18.4 | 20.5 | 22.3 | 20.7 | 14.7 |
| BWi | kWh/t | 16.8 | 21.7 | 22.2 | 17.8 | 14.1 |
| A×b | - | 38.1 | 38.5 | 33.4 | 38.7 | 76.2 |
| Ore SG | - | 2.64 | 2.76 | 2.83 | 2.83 | 2.43 |
| Plant throughput rate | t/h | 742 | 630 | 595 | 720 | 1,000* |
| Total specific energy | kWh/t | 24.32 | 28.63 | 30.31 | 25.06 | 17.76 |
| Average | | | | | | |
| CWi | kWh/t | 20.2 | 14.9 | 14.2 | 12.8 | 12.8 |
| RWi | kWh/t | 18.4 | 20.5 | 22.3 | 20.7 | 11.6 |
| BWi | kWh/t | 13.9 | 21.0 | 15.6 | 17.8 | 11.6 |
| A×b | - | 46.3 | 43.4 | 43.5 | 44.7 | 114.8 |
| Ore SG | - | 2.64 | 2.76 | 2.83 | 2.83 | 2.43 |
| Plant throughput rate | t/h | 890 | 665 | 811 | 753 | 1,000* |
| Total specific energy | kWh/t | 20.27 | 27.11 | 22.24 | 23.95 | 13.96 |

### 13.5.2 METAL RECOVERY

#### 13.5.2.1 DATA SET

Gravity/cyanidation test work results on metallurgical variability and ore type composites for the Nyanzaga and Kilimani deposits were used to estimate the expected plant gold recoveries over a range of plant feed head grades, and the expected plant reagent consumptions.

Due to the small data set for Nyanzaga deposit oxide ores, additional oxide leach test work results from an historical test work program (AMMTEC Ltd, 2006) were identified as being suitable for inclusion in the metal recovery analysis. This test work program was conducted at a coarser grind size ($P_{80}$ 106 µm), so gold extraction data is considered conservative.

Three Nyanzaga deposit metallurgical variability samples were excluded from gold recovery analysis. The samples, and the reason for exclusion, are presented in Table 13-65.

***Table 13-65: Nyanzaga deposit metallurgical variability samples excluded from gold recovery analysis***

| SAMPLE | ORE TYPE | REASON FOR OMISSION |
|---|---|---|
| V-CHF-FR-4 | chert/fault | Outlier from chert data set – contains fault material |
| V-SS-FR-15 | sandstone | Outlier – very high gold grade |
| V-OX-OX-30 | oxide | Outlier – high sulfide sulfur grade – not fully oxidised |

#### 13.5.2.2 GOLD RECOVERY ALGORITHMS

From test work programs conducted on ore types from the Nyanzaga and Kilimani deposits, it has been observed that both the oxide and fresh ores are typically 'free-milling' with good gold recovery achieved by a gravity extraction/cyanidation process flowsheet.

For the Nyanzaga deposit ore types, there is a moderate to strong correlation between calculated gold head and residue grades Figure 13-37. The trend line correlation coefficient ($R^2$) and linear relationships between residue grade (y) and calculated head grade (x) are shown for each ore type. For each ore type, these linear equations can be used to determine the expected residue grade based on gold head grade.

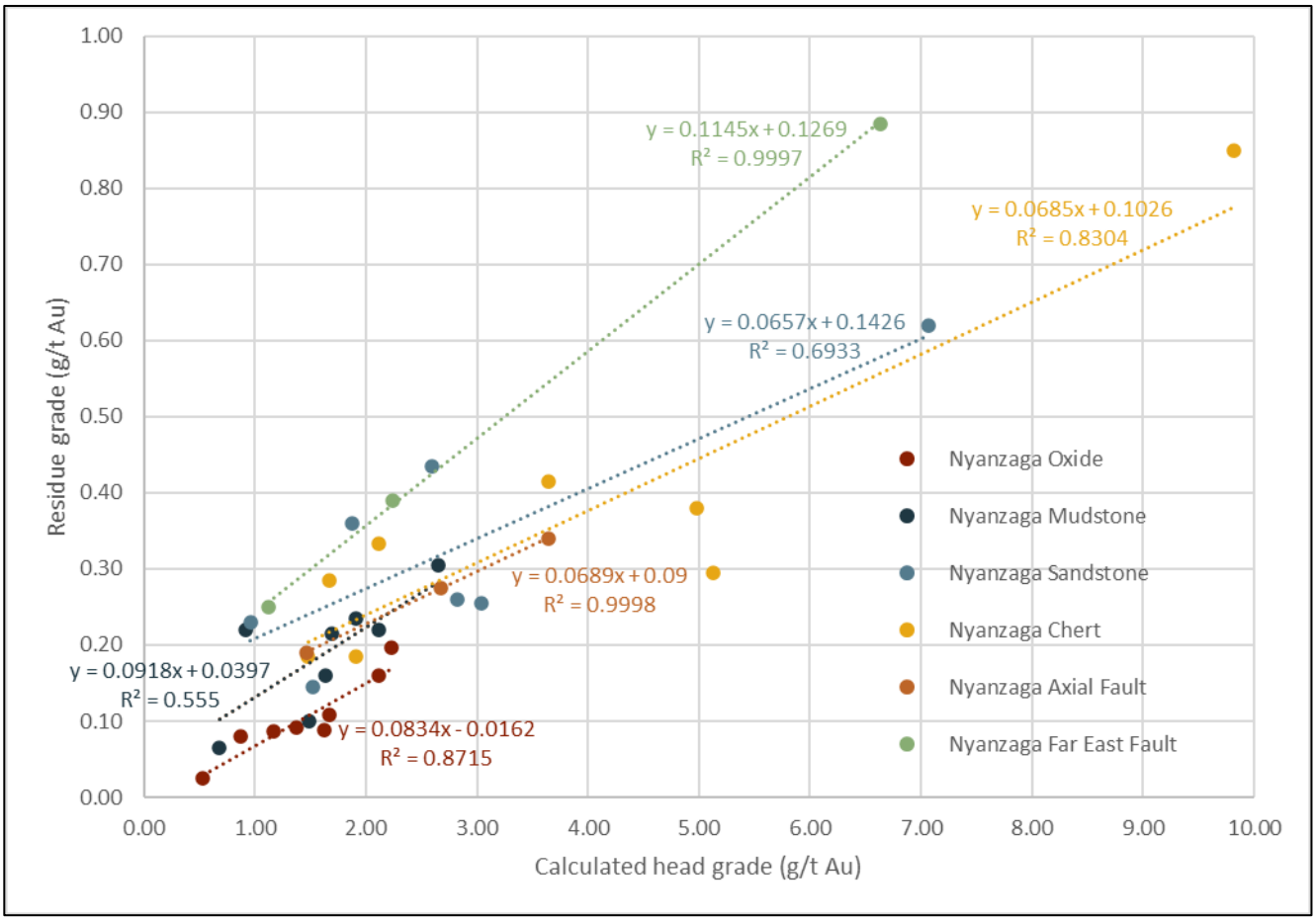



***Figure 13-37: Relationship between calculated gold head grade and residue grade for recovery estimation***

For the Kilimani oxide ore, low gold extraction variability was observed and an average gold extraction of 96% was selected. In this case, the equation to determine residue grade (y) from head grade (x) is y = 0.04 x.

The estimated plant gold recovery by ore type is calculated based on the residue gold grade equations, an assumed CIL tails solution gold tenor of 0.015 mg/L, and a CIL pulp density of 50% w/w solids. The full equations used to calculate recovery by ore type are presented in Table 13-66. There is no accounting for recovery of 'lost' soluble gold in the decant return water. As the majority of the test work calculated head grades range between 0.7 g/t Au and 5.0 g/t Au, the recovery models are valid for this range.

***Table 13-66: Nyanzaga plant gold recovery model equations***

| ORE TYPE | PLANT GOLD RECOVERY ESTIMATE (%) |
|---|---|
| Nyanzaga oxide | Recovery = (Head Grade - (Head Grade × 0.0834 - 0.0162 + 0.015))/Head Grade × 100 |
| Nyanzaga mudstone | Recovery = (Head Grade - (Head Grade × 0.0918 + 0.0397 + 0.015))/Head Grade × 100 |
| Nyanzaga sandstone | Recovery = (Head Grade - (Head Grade × 0.0657 + 0.1426 + 0.015))/Head Grade × 100 |
| Nyanzaga chert | Recovery = (Head Grade - (Head Grade × 0.0685 + 0.1026 + 0.015))/Head Grade × 100 |
| Nyanzaga axial fault | Recovery = (Head Grade - (Head Grade × 0.0689 + 0.09 + 0.015))/Head Grade × 100 |
| Nyanzaga far east fault | Recovery = (Head Grade - (Head Grade × 0.1145 + 0.1269 + 0.015))/Head Grade × 100 |
| Kilimani oxide | Recovery = (Head Grade - (Head Grade × 0.04 + 0.015))/Head Grade × 100 |

Given these gold recovery equations, the estimated gold recoveries for the ore types over a head grade range of 1.0 g/t Au to 4.0 g/t Au, are summarised in Table 13-67. Note that the design head grade for the process plant is 2.0 g/t, and the predicted plant recovery values at this grade by ore type appear in bold in Table 13-67.

*Table 13-67: Estimated Nyanzaga gold recoveries at various gold head grades*

| ORE TYPE | PREDICTED PLANT RECOVERY (%) AT GOLD HEAD GRADE (g/t) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 |
| Nyanzaga oxide | 91.8 | 91.7 | **91.7** | 91.7 | 91.7 | 91.7 | 91.7 |
| Nyanzaga mudstone | 85.4 | 87.2 | **88.1** | 88.6 | 89.0 | 89.3 | 89.5 |
| Nyanzaga sandstone | 77.7 | 82.9 | **85.6** | 87.1 | 88.2 | 88.9 | 89.5 |
| Nyanzaga chert | 81.4 | 85.3 | **87.3** | 88.4 | 89.2 | 89.8 | 90.2 |
| Nyanzaga axial fault | 82.6 | 86.1 | **87.9** | 88.9 | 89.6 | 90.1 | 90.5 |
| Nyanzaga far east fault | 74.4 | 79.1 | **81.5** | 82.9 | 83.8 | 84.5 | 85.0 |
| Kilimani oxide | 94.5 | 95.0 | **95.3** | 95.4 | 95.5 | 95.6 | 95.6 |

#### 13.5.2.3 SILVER RECOVERY

Silver is not routinely assayed in geological samples and therefore is not defined in block modelling of the orebody. For the purposes of process plant design and estimating by-product revenue, a silver feed grade of 2.5 g/t and plant recovery of 60% has been estimated.

### 13.5.3 REAGENT ADDITION

From test work programs conducted on ore types from the Nyanzaga and Kilimani deposits, low to moderate reagent consumptions have been observed.

It is noted from a detailed review of the data set to determine sodium cyanide consumption and lime addition rates, that tests including a gravity recovery stage could result in biasing of reagent consumptions. In the case of tests where mercury amalgamation was conducted on the gravity concentrate, mercury contamination of leach feed can occur, which can positively bias cyanide consumption. Where gravity concentrate is treated by intensive cyanidation, residual sodium cyanide and alkaline reagent can report to the leach feed, which can negatively bias reagent consumption. For these reasons, it was considered that the sodium cyanide and lime consumptions for the ore type composite demonstration test work conducted without a gravity stage are representative of likely full scale plant reagent consumption. Where this data is unavailable for an ore type (e.g., Kilimani oxide ore), then reagent consumptions from gravity/cyanidation tests have been considered.

Estimated CIL plant reagent addition rates by ore type are presented in Table 13-68. Note that test work lime additions (at 60% w/w CaO or 68% w/w CaO) have been converted to the anticipated plant supply reagent concentration (90% CaO quicklime) for the estimated CIL plant lime addition rates. Sodium cyanide addition rates assume a residual concentration in CIL tailings of 100 mg/L NaCN. The estimated sodium cyanide and quicklime addition rates are typical of gold processing operations conducted with good quality water treating clean non-refractory oxide and fresh ores.

*Table 13-68: Estimated CIL plant reagent addition rates by ore type*

| SAMPLE | NaCN CONSUMPTION (kg/t) | QUICKLIME ADDITION (kg/t) |
|---|---|---|
| Nyanzaga oxide | 0.25 | 0.85 |
| Nyanzaga mudstone | 0.33 | 0.93 |
| Nyanzaga sandstone | 0.35 | 0.77 |
| Nyanzaga chert | 0.38 | 0.97 |
| Nyanzaga axial fault | 0.23 | 0.48 |
| Nyanzaga far east fault | 0.20 | 0.24 |
| Kilimani oxide | 0.31 | 0.45 |

## 13.6 DELETERIOUS ELEMENTS

The Nyanzaga and Kilimani deposit ores contain elevated concentrations of mercury, arsenic and antimony. It is noted that some ore samples also contained detectable concentrations of organic carbon.

In general, mercury, arsenic and antimony concentrations in test work leach solutions did not vary with grind size, indicating that the solubility of these elements is not grind sensitive. Extraction of these elements was noted to increase with increasing cyanide concentration in leach. At optimised cyanide concentrations, leach tailings solutions reported indicative concentrations of 6-13 ppm As and 4-6 ppm Sb. Mercury was noted to preferentially load onto the activated carbon in CIL tests. Comparison tests between direct cyanidation and CIL indicated that negligible preg-robbing or preg-borrowing occurred for most ore types, and for Nyanzaga deposit mudstone ores, the activity of carbon in CIL is sufficient to compete with observed preg-borrowing effects. The preg-borrowing effects observed for Nyanzaga deposit mudstone ores may be due to organic carbon, or due to the presence of fine-grained iron oxides or clay minerals (due to surface adsorption).

The process design includes a mercury handling circuit, due to the low-level presence of mercury across the Nyanzaga ore types, to mitigate the health hazards associated with mercury exposure. Provision has been made in sustaining capital for a water treatment plant should arsenic or antimony present operational challenges in the future. pH control is included in the process control design to mitigate gold passivation that can occur at high pH due to elevated antimony levels.

Test work and modelling indicates that organic carbon, soluble arsenic and soluble antimony will not have a significant effect on potential economic recovery of gold in a carbon-in-leach cyanidation process. It is noted that soluble arsenic and soluble antimony will be contained within the tailings and process water systems.

# 14. MINERAL RESOURCE ESTIMATES

## 14.1 OVERVIEW

The Nyanzaga Gold Project Mineral Resource estimate consists of two discrete but adjacent deposits: Nyanzaga and Kilimani. The data cut-off date for this latest resource update is September 1, 2024. Mineral Resources are inclusive of Mineral Reserves.

Geological and mineralisation wireframes and the estimation for the Nyanzaga resource model were prepared by Mr Daniel Saunders, as an employee of Perseus in the role of Group Resource Geologist Business Growth. Mr Saunders assumes responsibility for the Mineral Resource estimates disclosed in this report.

The Nyanzaga Gold Project Mineral Resource estimate has an Effective Date of October 1, 2024 and has been disclosed in accordance with NI 43-101 and prepared using the CIM Definition Standards and CIM Best Practice Guidelines. This Report summarises the work completed by Perseus to prepare the Mineral Resource models and Mineral Resource estimates.

Previous (historical) Mineral Resource estimates for the Nyanzaga Gold Project are described in Section 6.

## 14.2 METHODS SUMMARY

Mineral Resources reported herein have been estimated using a geostatistical block modelling approach, informed from gold assay data obtained from predominantly core and RC drill chip samples. The geological wireframes consider structural and lithological interpretations of the gold mineralisation.

The Nyanzaga Mineral Resource estimate used Seequent Leapfrog Geo software for the geological and mineralisation interpretation and associated drill hole coding, while Maptek Vulcan software was used for block model creation, editing and reporting. The grade interpolation of the Nyanzaga component of the resource model was completed in Isatis, with the ordinary kriged estimates for Kilimani completed in Vulcan.

The evaluation of the Nyanzaga Mineral Resource involved the following procedures:

- Database compilation and verification.
- Generation and verification of three-dimensional geological models.
- Data conditioning (including compositing and grade capping), statistical analysis and variography.
- Selection of estimation strategies and estimation parameters.
- Block model generation, grade estimation and validation.
- Mineral Resource classification.
- Preparation of the Mineral Resource estimate and reporting.

## 14.3 DATA

### 14.3.1 DRILLING DATABASE

The Nyanzaga Gold Project geological database as of September 1, 2024, comprised a combination of exploration and resource definition stage data sourced from RC and DD drilling for a total of 239,564 m as summarised in Table 14-1. The spatial distribution of the exploration and resource definition drilling is shown in Figure 14-1.

All geological data are captured and stored in an acQuire™ SQL geological database hosted securely through Azure cloud servers managed by Perseus staff. User access to the database is regulated by specific user permissions.

*Table 14-1: Nyanzaga Gold Project drilling summary*

| HOLE TYPE | NO. HOLES | TOTAL METRES |
|---|---|---|
| Reverse Circulation | 751 | 90,533 |
| RC/Diamond Tail | 232 | 106,665 |
| Diamond | 174 | 42,366 |
| **Total** | **1,157** | **239,564** |

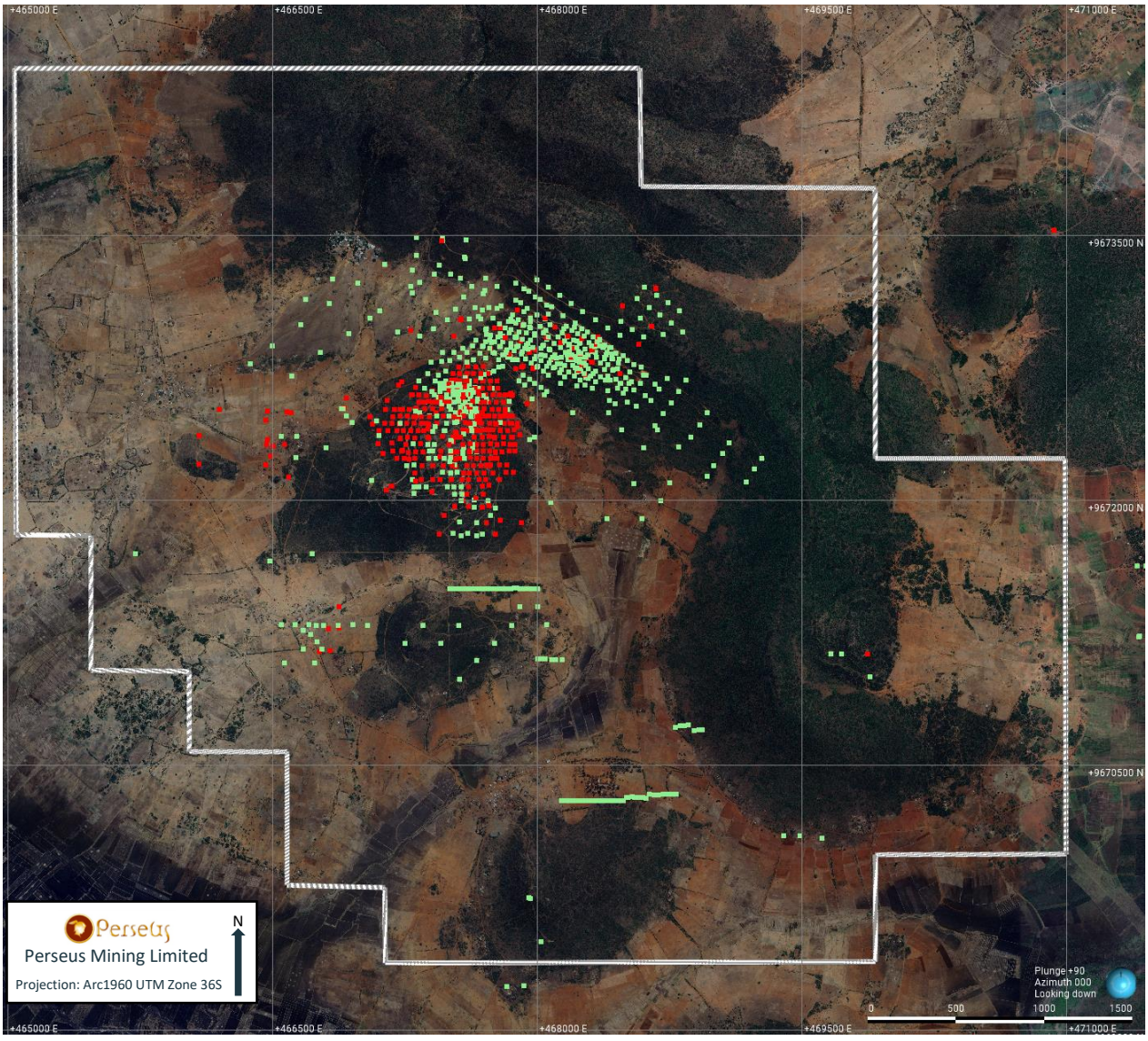



*Figure 14-1: Location and spatial distribution of drill hole collars at Nyanzaga Gold Project with SML boundary (Source: Perseus, 2025)*

### 14.3.2 TOPOGRAPHIC SURVEYS

The topographic surface used for the Nyanzaga Gold Project Mineral Resources is based on an aerial LiDAR survey conducted in 2019 (Figure 14-2). The LiDAR survey is reliable to ±0.2 m and considered appropriate for use in estimating the Mineral Resources.

All estimates are conducted in the UTM coordinate system based on Arc 1960 Zone 36S.

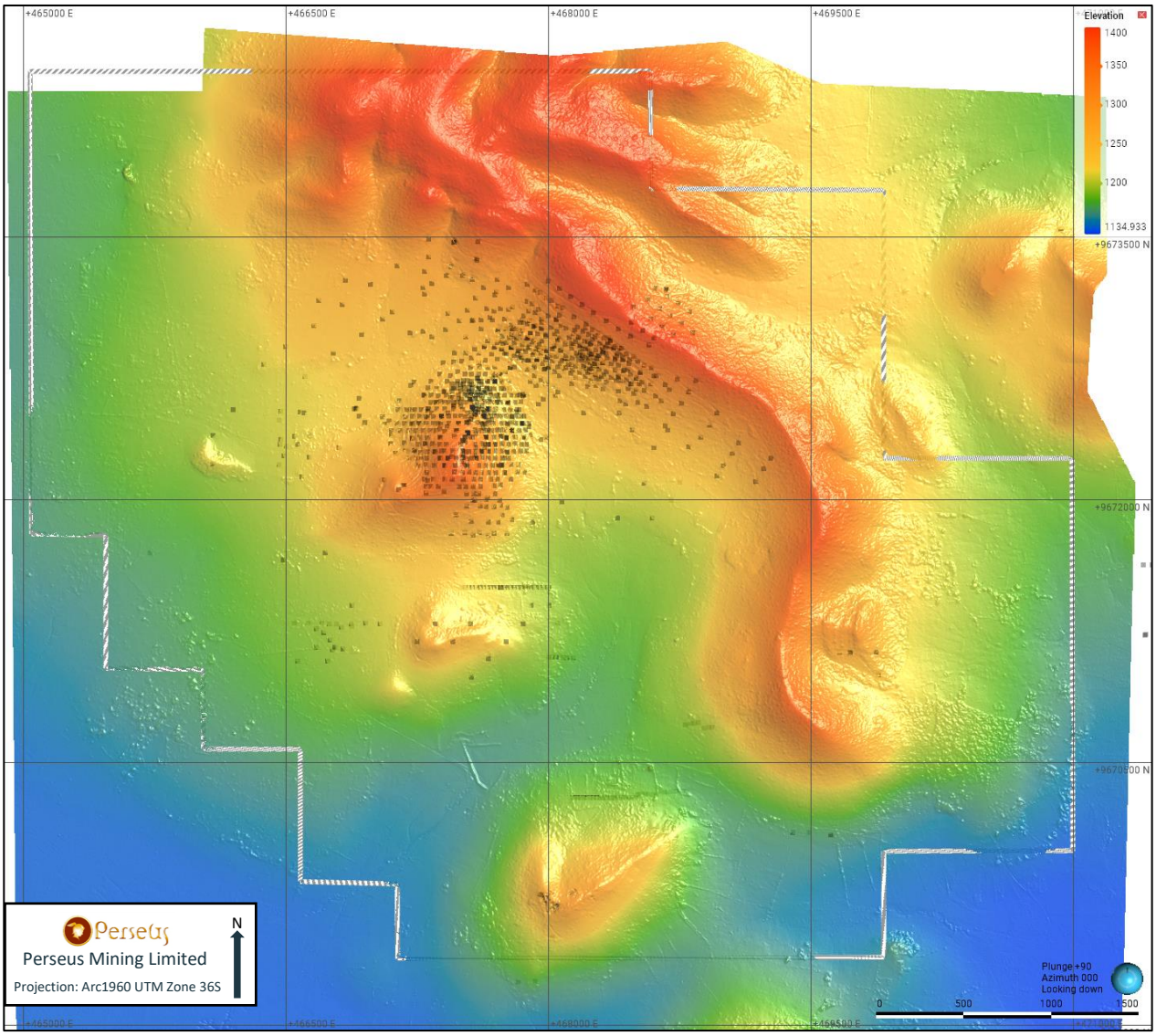



*Figure 14-2: Topographic surface applied at Nyanzaga Gold Project with SML boundary (Source: Perseus, 2024)*

## 14.4 GEOLOGICAL INTERPRETATION AND MODELLING

### 14.4.1 LITHOLOGY INTERPRETATION

The lithological model of the Nyanzaga Gold Project Mineral Resource was constructed with consideration of the stratigraphic sequence originally defined by ABG and updated by OreCorp as outlined in Section 7.2. The drill hole data coded with the respective member units used for the 2017 estimate (referred to as "cycles") were imported into Leapfrog along with the other drill hole information.

The members were then assessed spatially and adjustments made to the coding to generate consistent units across the block model area. Where available, structural data reflecting bedding observations were incorporated into the lithology model to guide the locations of folding, particularly the interpreted anticlinal hinge, and the asymmetric steep eastern limb, and the flatter western limb. The bedding measurements also indicated presence of a synclinal fold in the deeper portions of the deposit intersected by drilling. Where the interpretation was not supported by drill information it was extrapolated using control strings. An example of the coded members is presented in Figure 14-3.

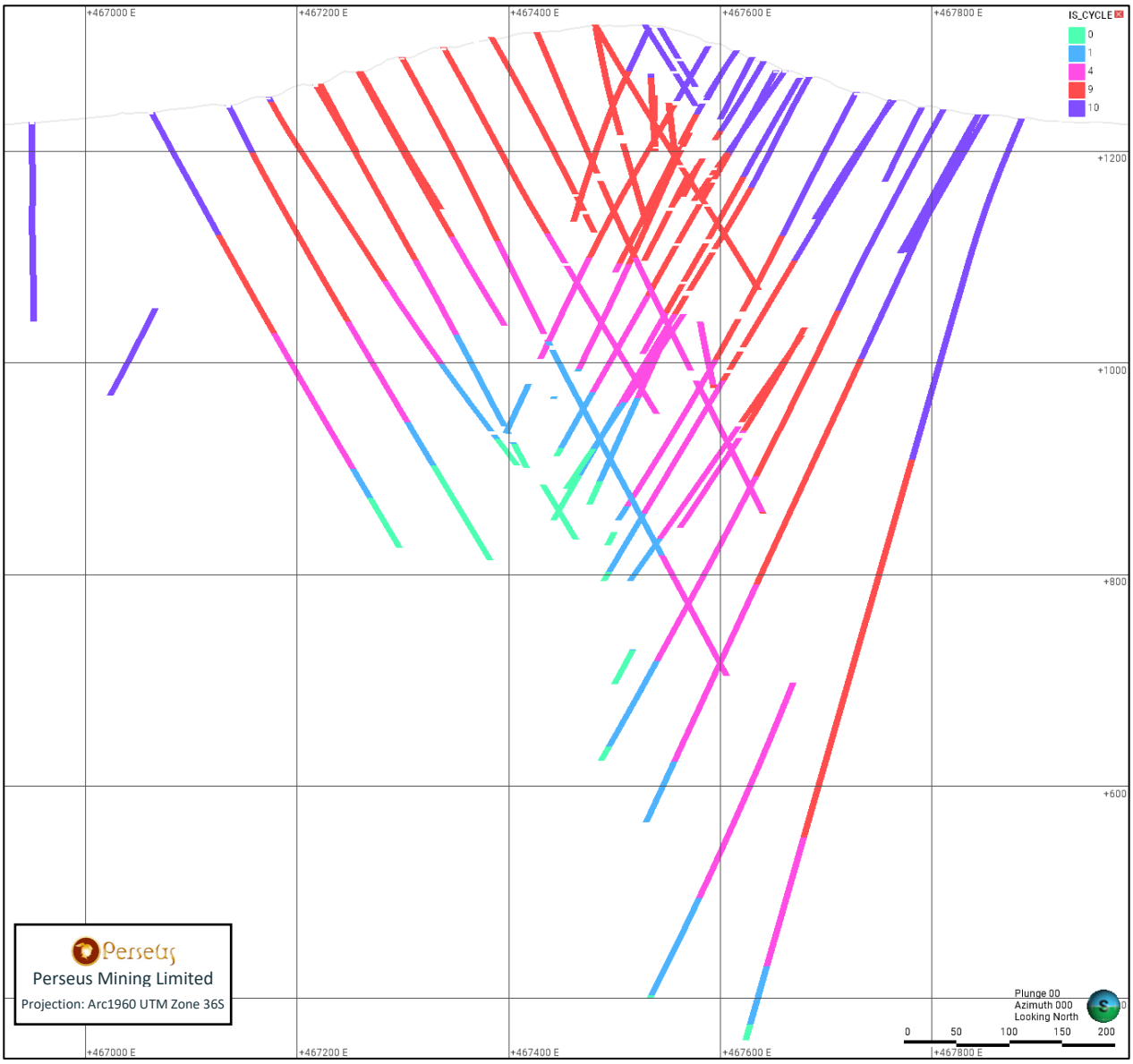



*Figure 14-3: Cross-section 9,672,440 mN (±20 m) looking north showing drill holes coded by member (Source: Perseus, 2024)*

### 14.4.2 STRUCTURAL MODELLING

The Nyanzaga Mineral Resource block model was built on the basis of fault blocks which were used to separate faulted portions of the model. The 2017 Mineral Resource included interpretations for 19 individual faults. Some of these were interpreted to extend across the entire deposit, while others were modelled as relatively local features. The revised interpretation completed by Perseus assessed these faults against direct evidence of their location, such as mapped outcrop positions, or inferred by changes in the stratigraphic sequence (thickness, repetitions etc.). This resulted in a simplified fault model for the project which utilised seven different faults, with the assigned interaction priorities of each generating 16 individual fault blocks. A representation of the faults is presented Figure 14-4.

The two most significant faults, with respect to the lithology and mineralisation interpretation, are the axial fault (AF) and the far east fault (FF1). The AF has previously been interpreted to host structural controlled mineralisation associated with brecciation. The FF1 is significant as it serves to terminate the extension of

the other faults past it to the east, while is also interpreted to control mineralisation in the upper mudstones in its proximity.

The presence of faults in the Kilimani area is uncertain given that most drilling has been within the weathered zone and limited diamond drilling has been completed.

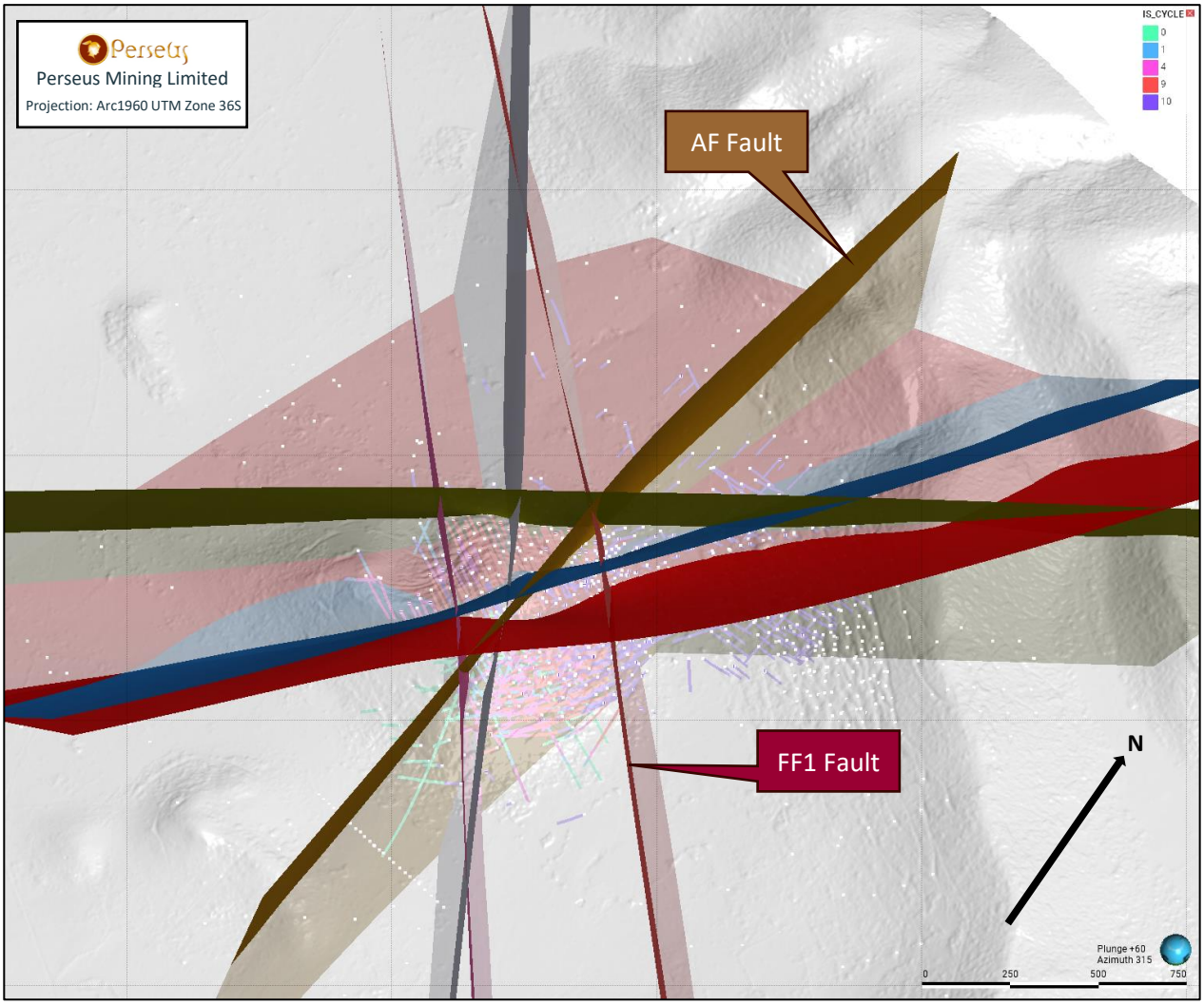



*Figure 14-4: Oblique view from above looking northwest showing Perseus faults relative to drilling (Source: Perseus, 2025)*

### 14.4.3 MINERALISATION MODELLING

#### 14.4.3.1 NYANZAGA DEPOSIT

Mineralisation at the Nyanzaga Gold Project is interpreted as a combination of lithology hosted within favourable units, and structurally hosted associated with faulting and associated brittle zones. As a result of the complex interactions between lithology and faults, definition of discrete mineralisation envelopes is difficult, and attempts to do so are likely to overstate mineralisation continuity, particularly for zones of higher grades.

To mitigate this risk, and to better reflect the anticipated large scale open pit mining method, the mineralisation interpretation instead aimed to define the limits of the mineralisation within the deposit, with the distribution of high-grade mineralisation within this shape reflected in the estimation parameters.

To define an appropriate grade threshold all assay data was assessed in a log probability plot and localised inflections were investigated. This indicated a change in slope at approximately 0.3 g/t Au reflecting the boundary between the mineralised envelope and the background (Figure 14-5).

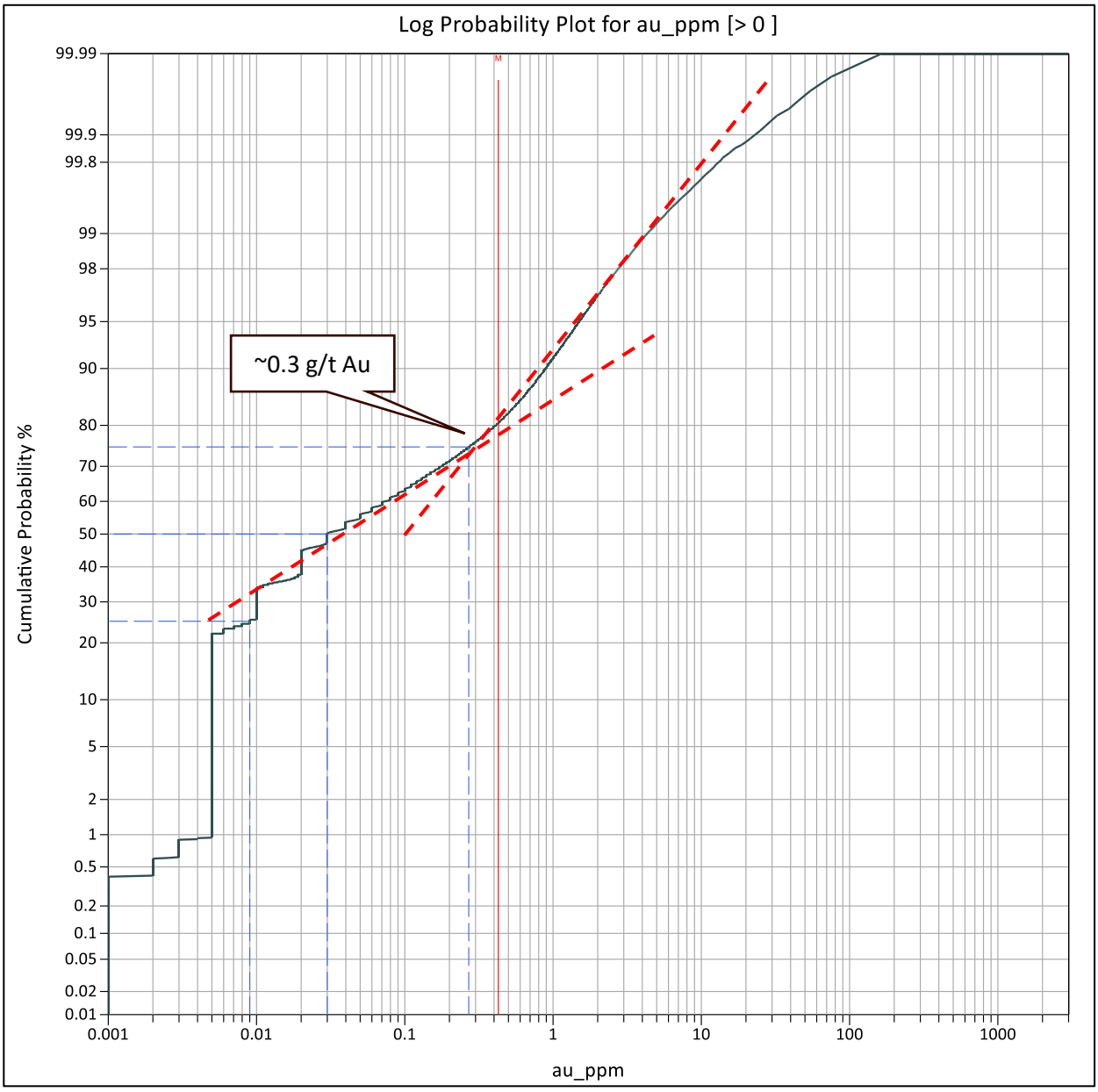



*Figure 14-5: Log probability plot for all Nyanzaga assays showing inflection point at ~0.3 g/t Au (Source: Perseus, 2025)*

An economic compositing routine was run within Leapfrog using a grade threshold of 0.3 g/t Au and a minimum downhole length of five metres. This length was selected as it was broadly aligned with the expected bench height for the project, while also generating consistent shapes with limited individual internal waste zones which were unlikely to be realistically excluded from the overall domain. Figure 14-6 shows the economic composite output, with intervals categorised as “ore” or “waste”.

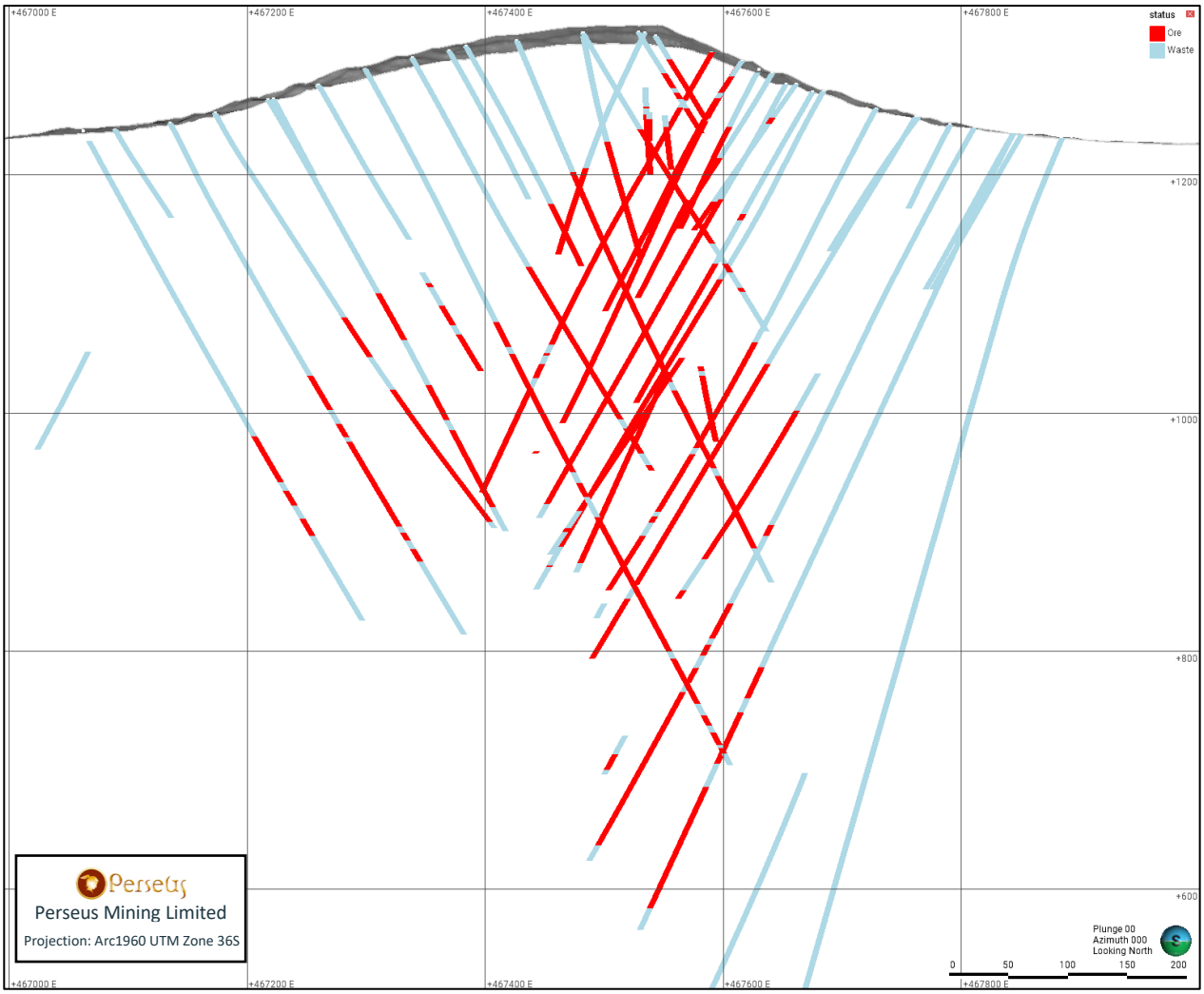



***Figure 14-6: Cross-section 9,672,440 mN (±20 m) looking north showing economic composite categories (Source: Perseus, 2024)***

The “ore” category was used as the base lithology and an intrusion model created in Leapfrog. To reflect the interpreted mineralisation associations with lithology trends and the AF fault, surfaces representing these features were used to define a structural trend and guided the intrusion modelling. The resulting mineralisation shape is presented in Figure 14-7 and forms the basis of the domain coding for the Nyanzaga deposit area.

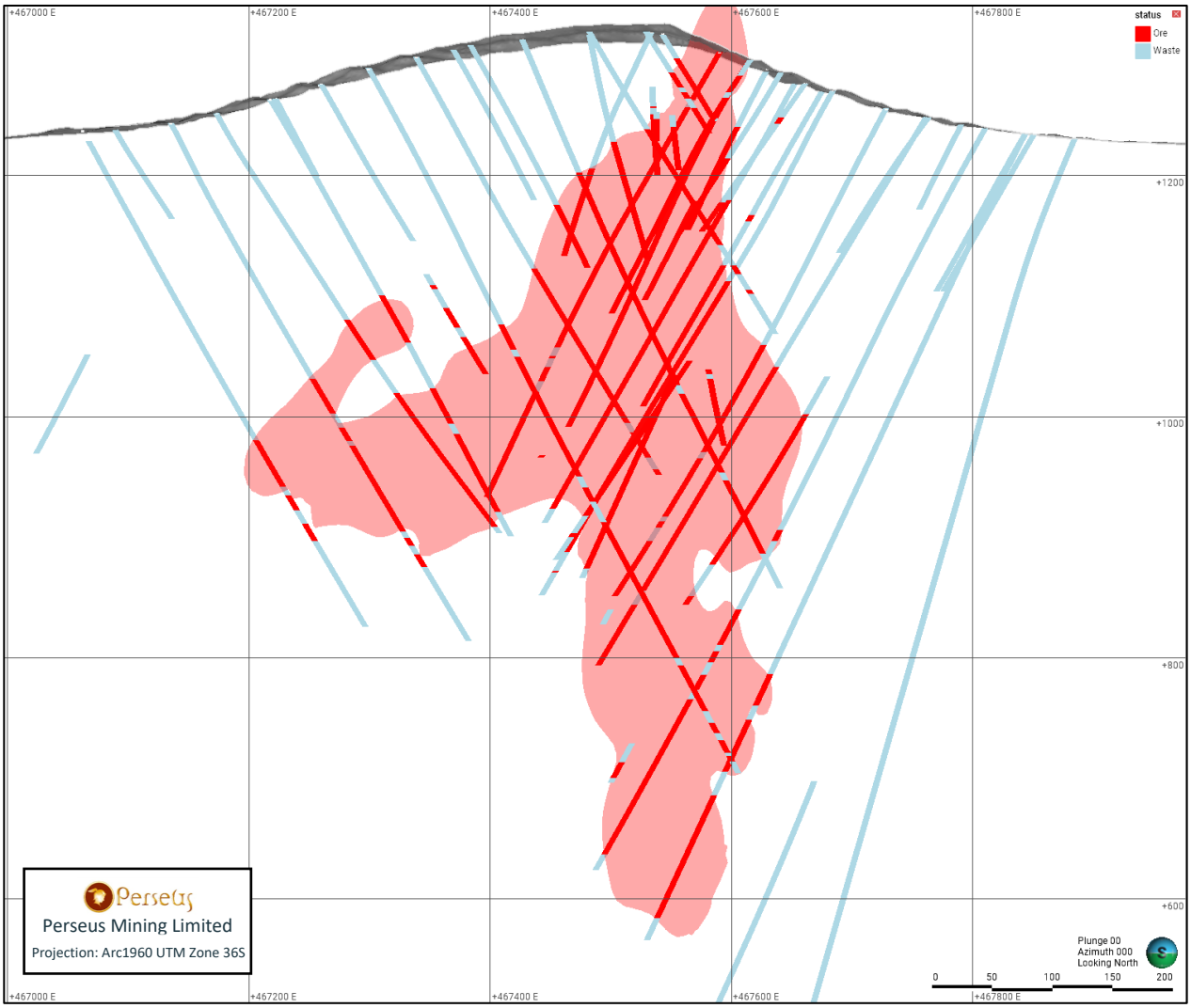



*Figure 14-7: Cross-section 9,672,440 mN (±20 m) looking north showing Nyanzaga mineralisation envelope (Source: Perseus, 2025)*

#### 14.4.3.2 KILIMANI

Mineralisation at Kilimani is similarly interpreted as associated with favourable stratigraphic horizons within the overall lithology package. Given the extensive weathering and shallow mineralisation defined to date at Kilimani, the interpretation of the specific favourable units is difficult. To assist, a series of hand-interpreted cross sections were imported and used to digitise a series of structural discs across the Kilimani deposit area (Figure 14-8). This fold surface was subsequently employed as a structural trend in the interpretation of the Kilimani mineralisation.

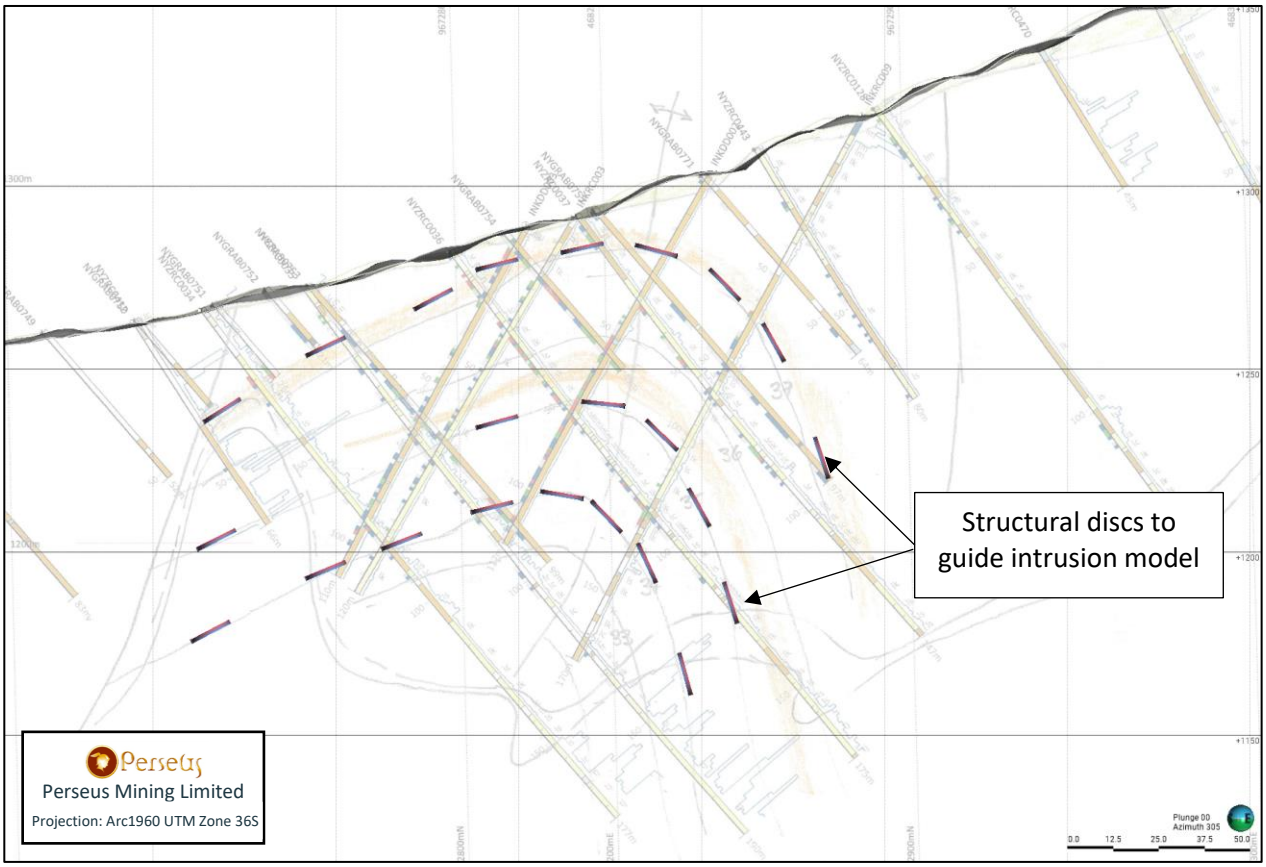



***Figure 14-8: Oblique-section looking northwest showing Kilimani sectional interpretation and structural discs (Source: Perseus, 2025)***

As for Nyanzaga an economic composite routine was completed using a threshold of 0.3 g/t Au. The minimum downhole length was reduced from five metres to three metres, reflecting the more discrete nature of mineralised intervals observed in drilling, and the likely reduced scale of mining in the Kilimani area. The "ore" category material was modelled using an intrusion model with the structural trend previously described. An example of the resulting mineralisation domain is presented in Figure 14-9.

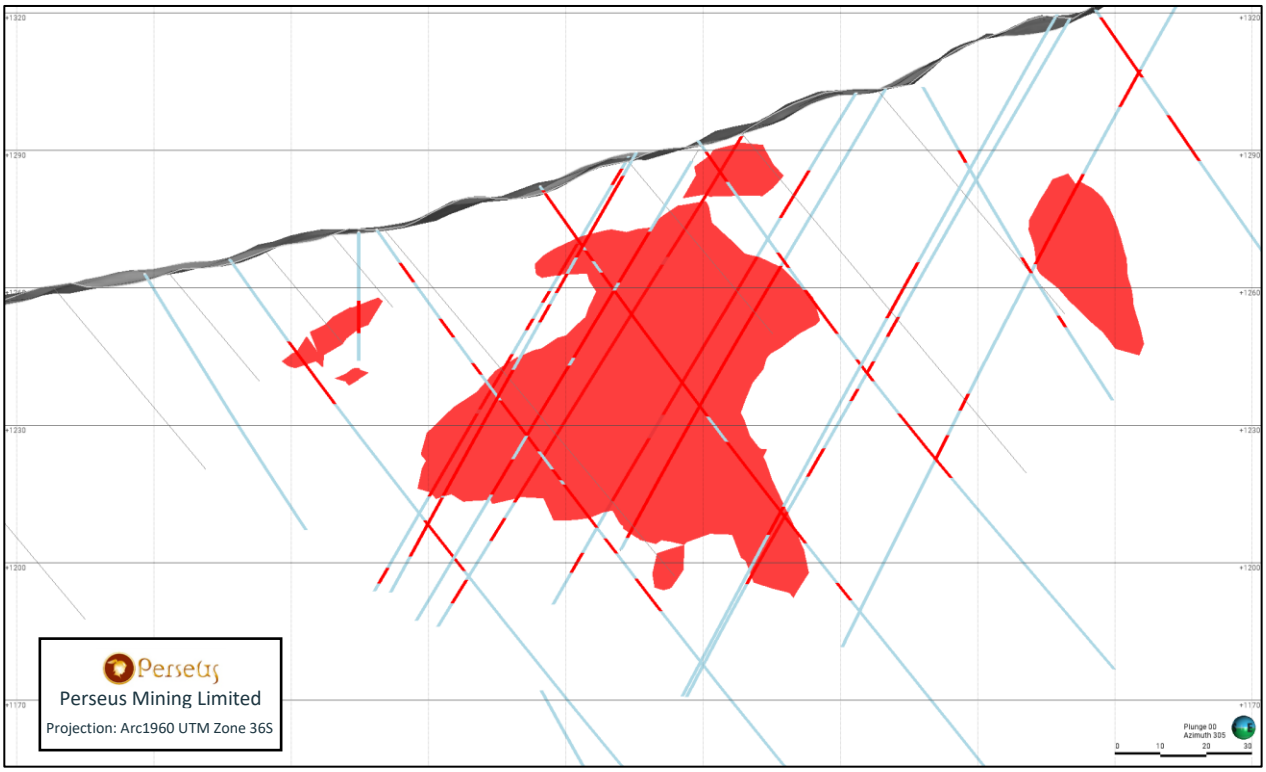



*Figure 14-9: Oblique-section looking northwest showing Kilimani mineralisation domain (Source: Perseus, 2025)*

## 14.5 BULK DENSITIES

Bulk density measurements have been routinely collected from diamond core across both the Nyanzaga and Kilimani deposit areas. Core samples were measured dry and measurements were separated for lithology and mineralisation. Oxide and transition samples were wax coated. Density, or the in-situ dry bulk density, is determined by the water immersion method and defined by the formula:

$$Density\ (gcm^{-3}) = \frac{Weight\ in\ Air\ (g)}{(Weight\ in\ Air\ (g) - Weight\ in\ Water\ (g))}$$

Statistical analysis of the density data demonstrated minimal variance based on host rock, mineralisation or stratigraphic unit. The key variable in determining density is the intensity of weathering, with minor differences observed between geological units.

Review of the raw data indicates some outliers present in the data, as such these bulk density measurements were filtered to a minimum of 1.5 g/cm$^3$ and a maximum of 4.0 g/cm$^3$. Statistics for both the raw and filtered density measurements coded against the weathering surfaces are presented in Table 14-2 and shown spatially in Figure 14-10.

*Table 14-2: Nyanzaga Gold Project bulk density measurements by weathering type*

| WEATHERING | RAW DATA | | | | FILTERED DATA | | | |
|---|---|---|---|---|---|---|---|---|
| | No. Measurements | Average Density (g/cm$^3$) | Min. Density (g/cm$^3$) | Max. Density (g/cm$^3$) | No. Measurements | Average Density (g/cm$^3$) | Min. Density (g/cm$^3$) | Max. Density (g/cm$^3$) |
| Oxide | 1,309 | 2.01 | 1.00 | 4.65 | 1,206 | 2.06 | 1.50 | 3.83 |
| Transition | 877 | 2.24 | 1.41 | 6.13 | 864 | 2.24 | 1.51 | 3.74 |
| Fresh | 52,878 | 2.87 | 1.00 | 9.10 | 52,737 | 2.88 | 1.50 | 4.00 |
| **Total** | **55,064** | **2.84** | | | **54,807** | **2.85** | | |

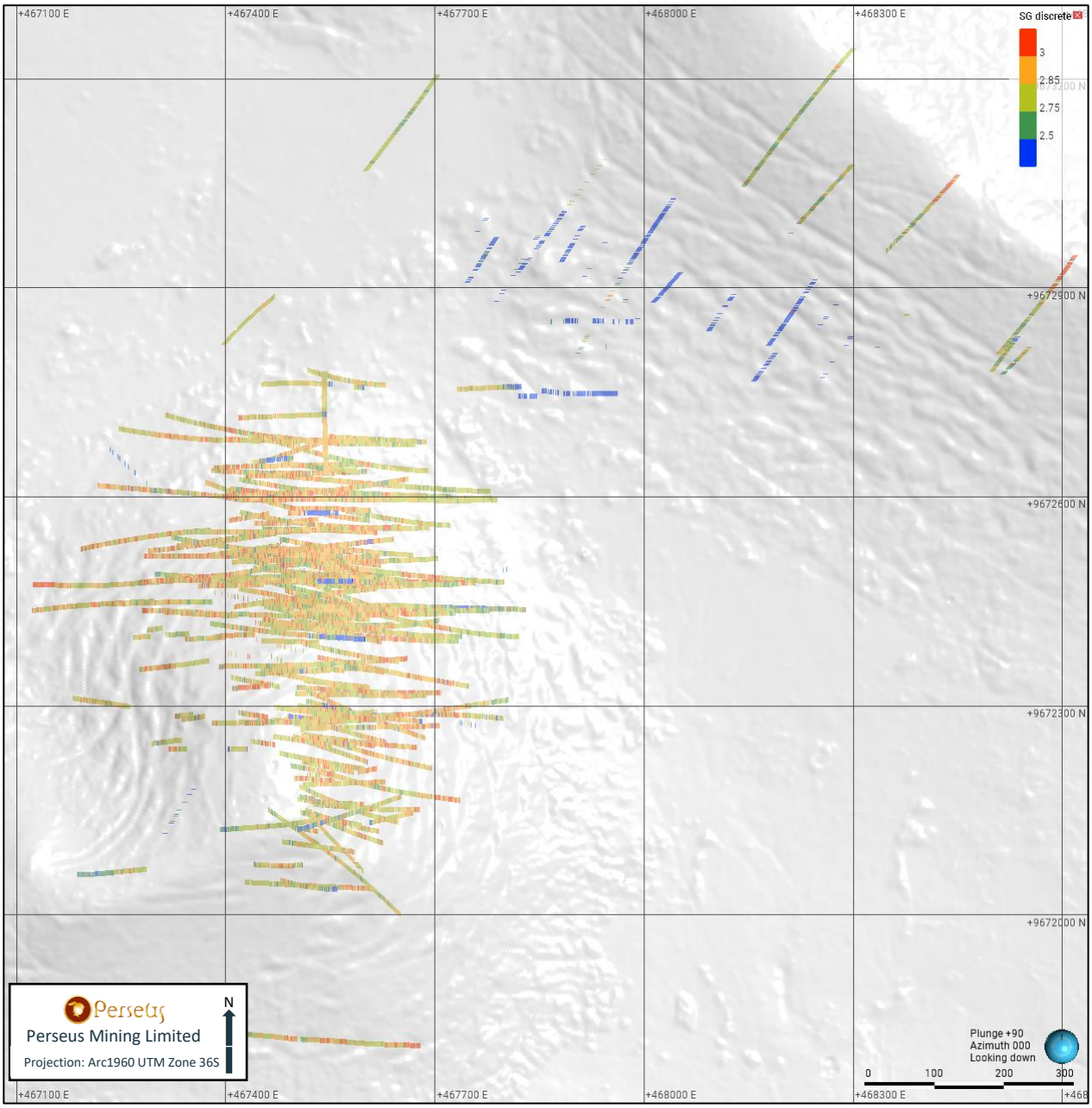



*Figure 14-10: Plan view of Nyanzaga and Kilimani bulk density measurements (Source: Perseus, 2025)*

## 14.6 STATISTICAL ANALYSIS, COMPOSITING AND GRADE CAPPING

The coded drill hole data was exported from Leapfrog including the respective intervals captured in the Nyanzaga and Kilimani mineralisation envelopes. This was imported into Vulcan and a coded drillhole database developed. To support subsequent assessments a coding variable was assigned to the composite data using a combination of fault block code, lithology unit, and mineralisation flagging. A summary of the various coding is presented in Table 14-3.

***Table 14-3: Explanation of domain coding***

| COMPOSITE FIELD | DESCRIPTION | CODING |
|---|---|---|
| geocod | Lithology domain | 0 – Lower volcanics<br>1 – Chert<br>4 – Sandstone<br>9 – Mudstone<br>10 – Upper volcanics |
| geocd2 | Mineralisation flag | 1 – Un-mineralised<br>2 – Nyanzaga mineralisation<br>3 – Kilimani mineralisation |
| bound | Fault block code | 1 to 16 |
| minzon | Merged coded variable | XYYZZ where;<br>X = Mineralisation flag<br>YY = Fault block<br>ZZ = Lithology<br>99999 = Background |

The raw sample data within each mineralisation domain was extracted and distributions of grade and sample lengths were assessed as shown in Figure 14-11 and Figure 14-12 for the Nyanzaga and Kilimani deposits respectively. Descriptive statistics for the raw samples of each deposit are presented in Table 14-4.

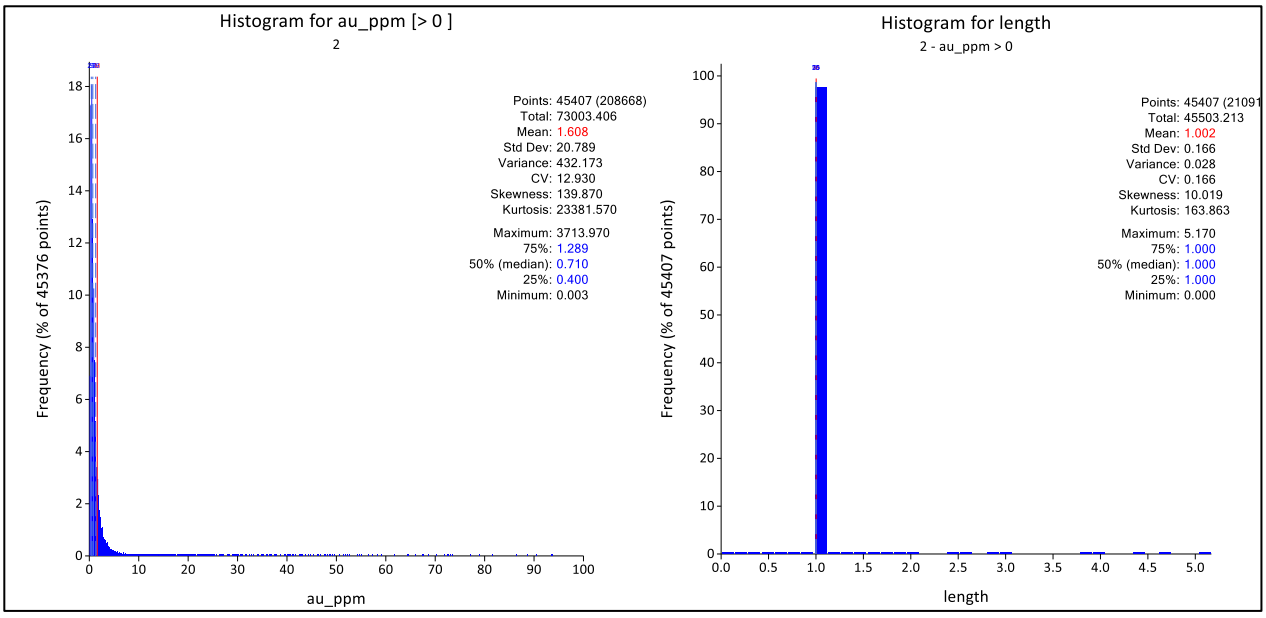



***Figure 14-11: Frequency histogram showing gold grade (left) and sample length (right) – Nyanzaga deposit (Source: Perseus, 2025)***

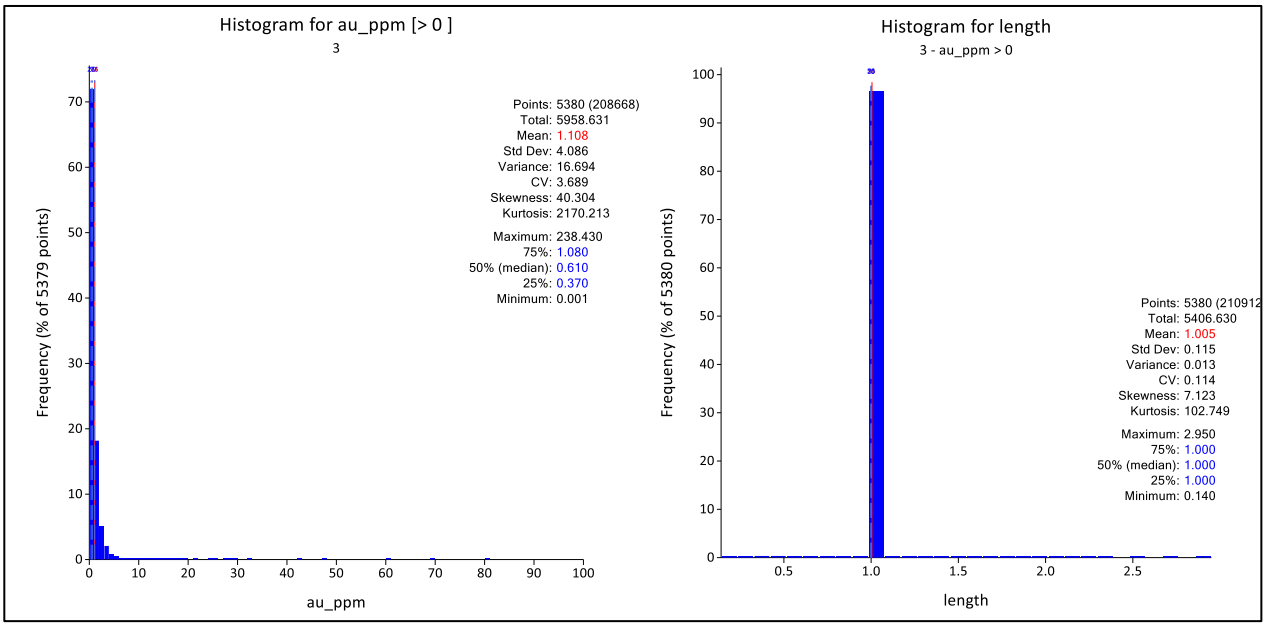



***Figure 14-12: Frequency histogram showing gold grade (left) and sample length (right) – Kilimani deposit (Source: Perseus, 2025)***

***Table 14-4: Nyanzaga Gold Project raw sample statistics by deposit***

| ASSAY | DEPOSIT | NO. SAMPS. | MEAN | MIN. | MEDIAN | MAX. | STD. DEV. | CV |
|---|---|---|---|---|---|---|---|---|
| Au (g/t) | Nyanzaga | 45,407 | 1.61 | 0.003 | 0.71 | 3,713.97 | 20.79 | 12.93 |
| | Kilimani | 5,380 | 1.11 | 0.001 | 0.61 | 238.43 | 4.09 | 3.69 |
| Length (m) | Nyanzaga | 45,407 | 1.00 | 0.1 | 1 | 5.17 | 0.17 | 0.17 |
| | Kilimani | 5,380 | 1.01 | 0.14 | 1 | 2.95 | 0.12 | 0.11 |

From review of the dominant sample interval across the deposit a composite length of one metre was selected. Compositing employed the distribute function within Vulcan whereby short intervals were equally distributed across the respective composite interval where possible to maintain equal support for samples. The composited statistics for each of Nyanzaga and Kilimani are presented in Table 14-5.

***Table 14-5: Nyanzaga Gold Project composited sample statistics by deposit***

| ASSAY | DEPOSIT | NO. SAMPS. | MEAN | MIN. | MEDIAN | MAX. | STD. DEV. | CV |
|---|---|---|---|---|---|---|---|---|
| Au (g/t) | Nyanzaga | 45,636 | 1.60 | 0.003 | 0.73 | 2,976.63 | 18.19 | 11.36 |
| | Kilimani | 5,412 | 1.09 | 0.001 | 0.61 | 143.20 | 3.16 | 2.89 |
| Length (m) | Nyanzaga | 45,636 | 1.00 | 0.1 | 1.00 | 1.49 | 0.037 | 0.04 |
| | Kilimani | 5,412 | 1.00 | 0.1 | 1.00 | 1.18 | 0.024 | 0.02 |

Following compositing, the data was assessed against each of the coded lithology units via a series of contact plots. The objective was twofold; to validate the construction of the mineralisation envelope by comparing the transition from background to mineralisation; and to test if further sub-domaining of the mineralisation based on lithology was required.

Plots of the mineralisation contacts for each of the chert (SCT) and sandstone (SST) are presented in Figure 14-13 and Figure 14-14 for fault block 3 and fault block 6 respectively. These plots show a clear boundary between the un-mineralised and mineralised domains with significant change in average grades across the contact.

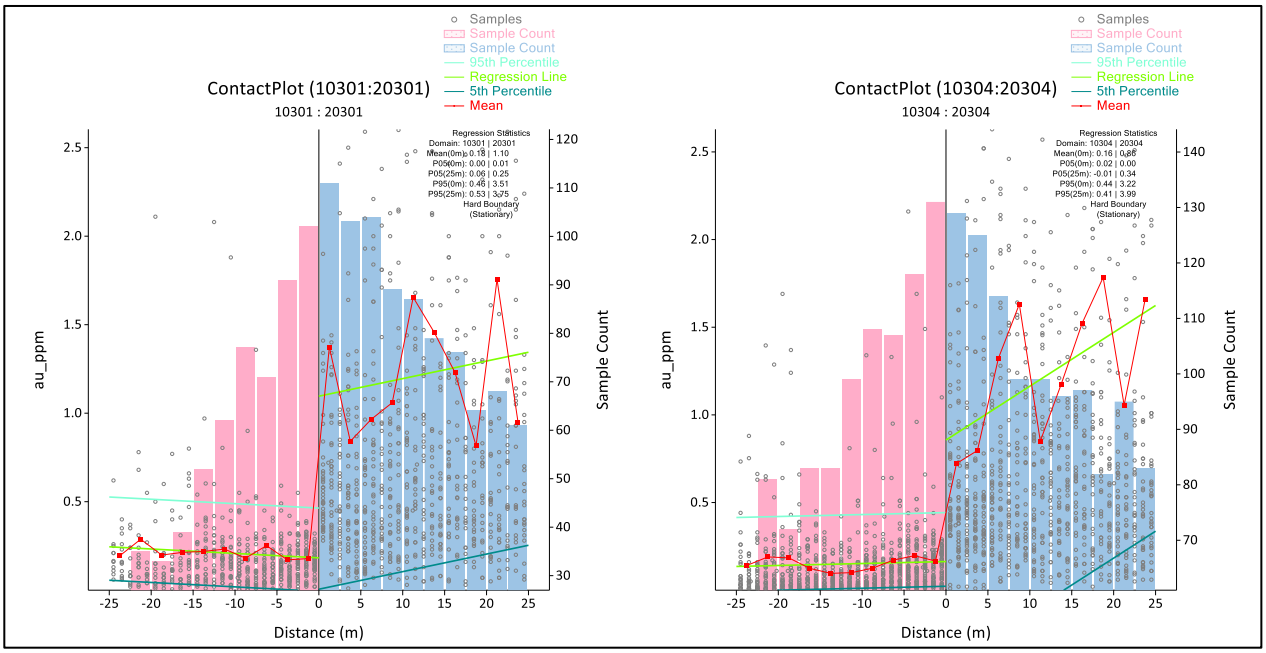



*Figure 14-13: Contact plots for unmineralised and mineralised chert (SCT) member (left) and the unmineralised and mineralised sandstone (SST) member (right) within fault block 3 (Source: Perseus, 2025)*

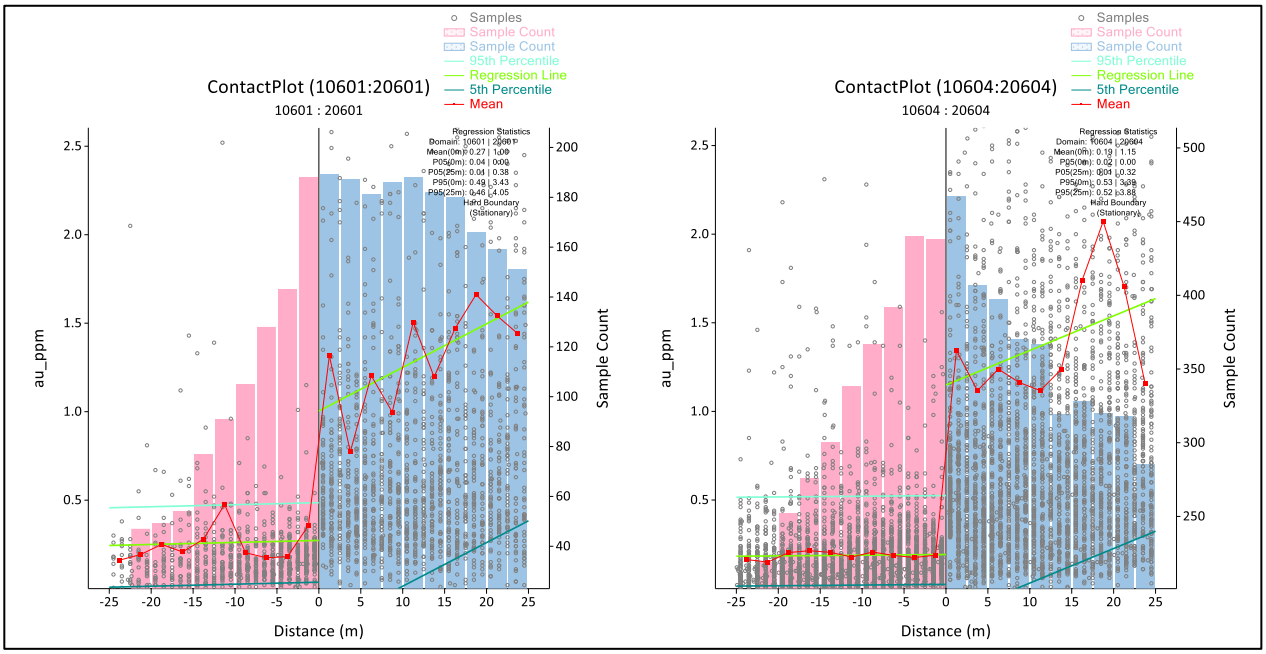



*Figure 14-14: Contact plots for unmineralised and mineralised chert (SCT) member (left) and the unmineralised and mineralised sandstone (SST) member (right) within fault block 6 (Source: Perseus, 2025)*

A series of contact plots were then reviewed for transitions across the lithology units within the mineralisation domain. These are presented in Figure 14-15 for the lower volcaniclastics, chert, and sandstone contacts, and in Figure 14-16 for the sandstone, mudstone, and upper volcaniclastics. These charts show there is no material change in grades across either of these lithology boundaries, and therefore sub-domaining of the mineralisation based on lithology is not supported.

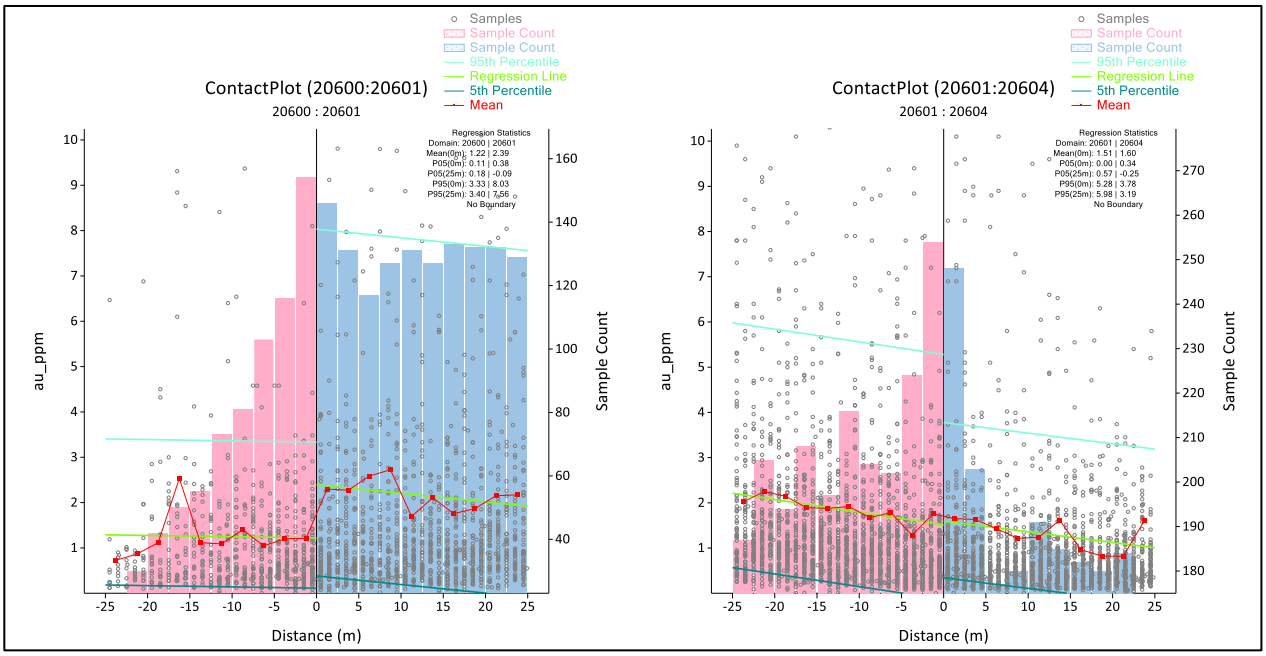



*Figure 14-15: Contact plots for mineralised lower volcanics (LVS) and chert (SCT) (left), and the chert (SCT) and sandstone (SST) member (right) within fault block 6 (Source: Perseus, 2025)*

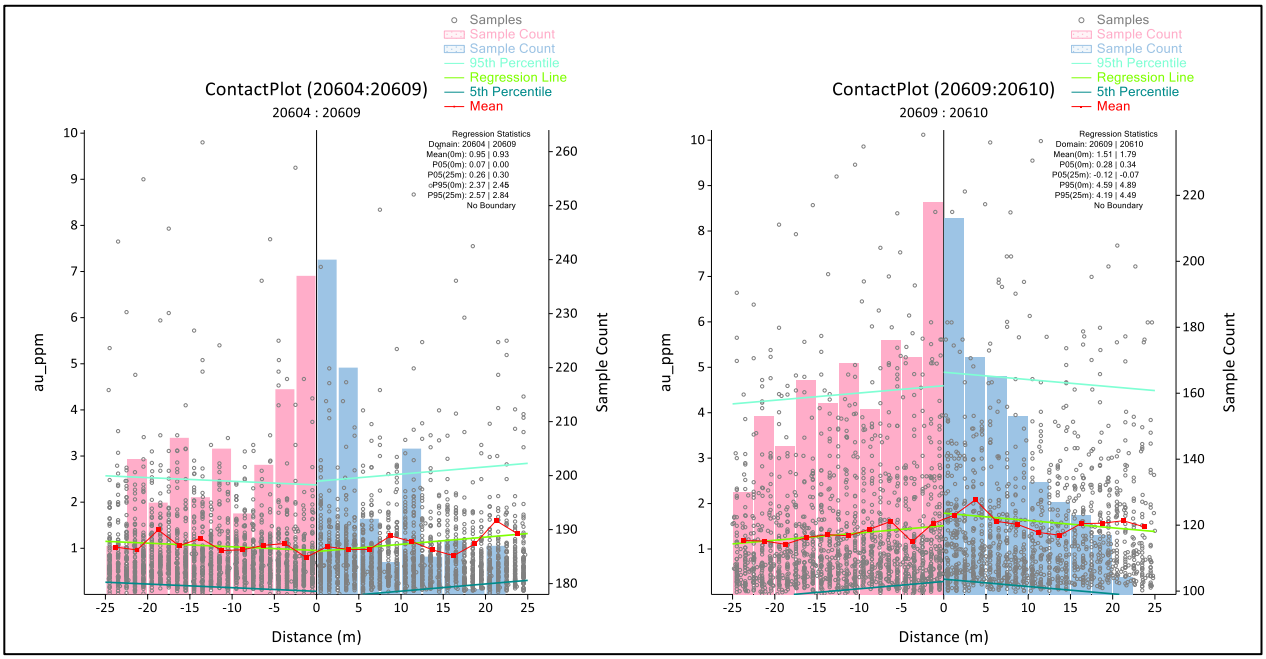



*Figure 14-16: Contact plots for mineralised sandstone (SST) and mudstone (SMS) (left), and the mudstone (SMS) and upper volcanics (UVS) member (right) within fault block 6 (Source: Perseus, 2025)*

Assessment of grade caps was completed separately for each of Nyanzaga and Kilimani. Selection of cap values considered the relevant log probability plots, the frequency histogram, and the point at which the relationship of composite grades to the next larger composite value begins to break down. Nominal selections were then reviewed spatially to ensure they were not clustered in a specific location requiring separate treatment. Frequency histograms and log probability plots for each of Nyanzaga and Kilimani are presented in Figure 14-17 and Figure 14-18 respectively. Summary statistics for the capped composite data are presented in Table 14-6.

*Table 14-6: Nyanzaga Gold Project capped composite statistics by deposit*

| DEPOSIT | RAW MEAN (g/t Au) | RAW CV | CAP VALUE (g/t Au) | NO. CAPPED | CAPPED MEAN (g/t Au) | CAPPED CV |
|---|---|---|---|---|---|---|
| Nyanzaga | 1.60 | 11.36 | 60 | 53 | 1.36 | 2.39 |
| Kilimani | 1.09 | 2.89 | 20 | 16 | 1.02 | 1.59 |

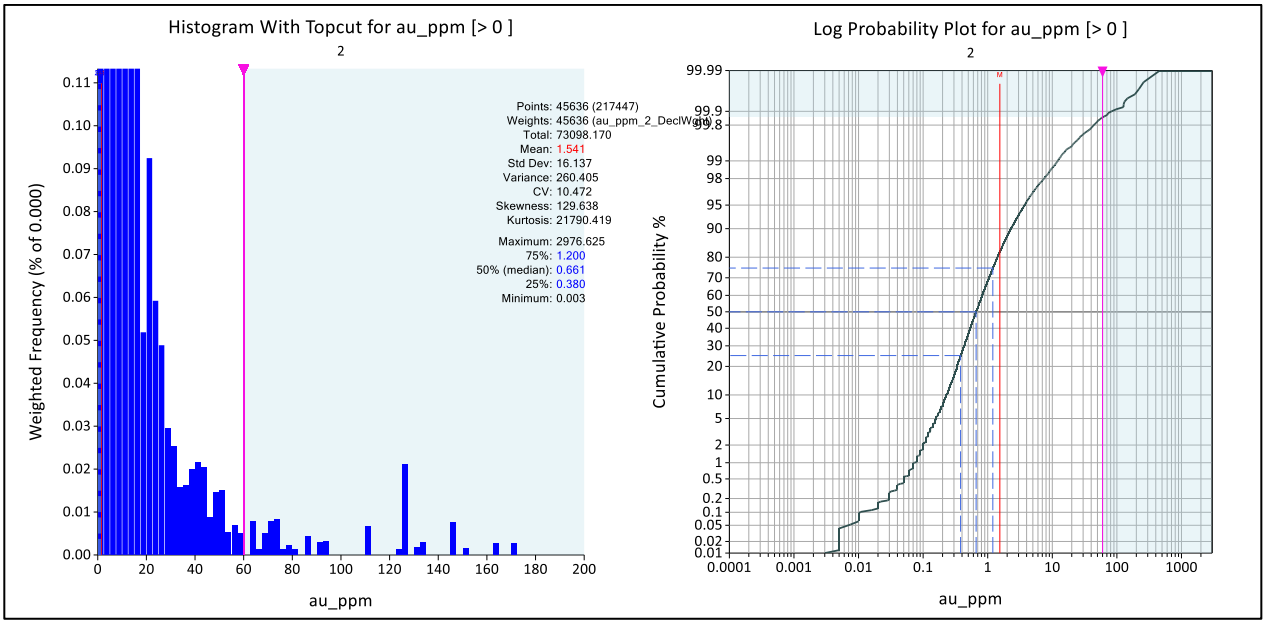



*Figure 14-17: Frequency histogram (left) and log probability plot (right) for Nyanzaga deposit (Source: Perseus, 2025)*

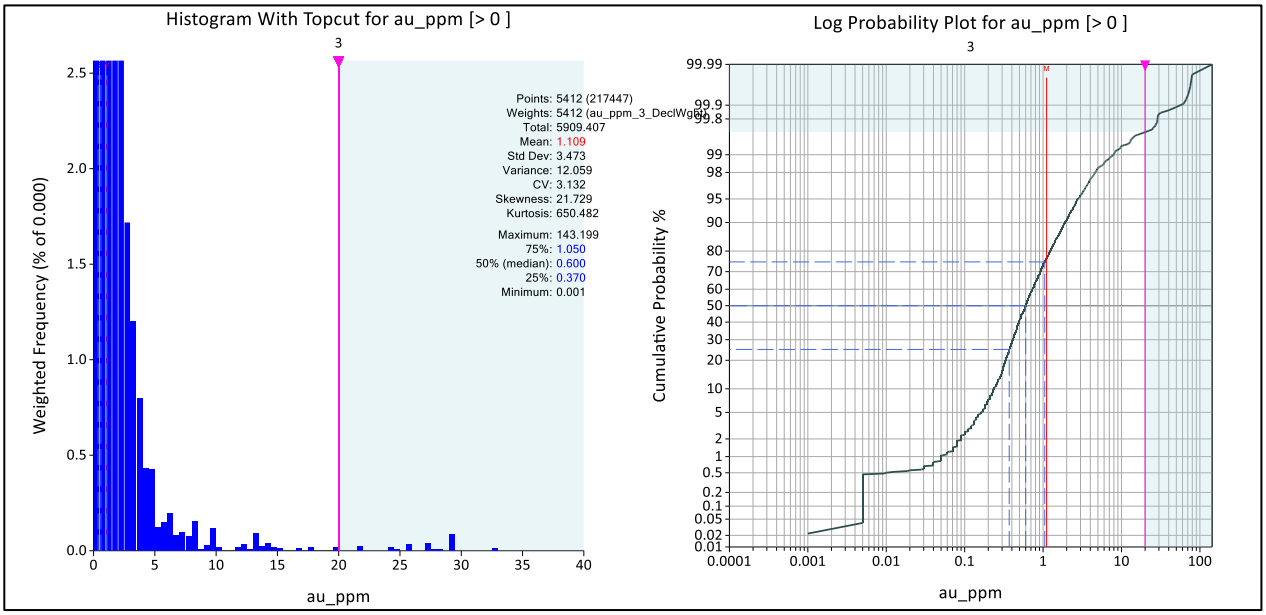



*Figure 14-18: Frequency histogram (left) and log probability plot (right) for Kilimani deposit (Source: Perseus, 2025)*

In addition to the application of grade caps, it was considered necessary to implement distance restrictions for the Nyanzaga deposit. Distance restrictions in Vulcan work by excluding grades above a nominated threshold from being "visible" in grade estimates outside of a specified range of the cell being estimated.

This is done to limit the spatial influence of the high-grade values to a local area, minimising smearing of grades. This reflected the relatively wide spaced drilling and the large volumes sometimes informed by limited numbers of samples.

An initial restriction was selected at a threshold of 15 g/t Au within a distance restriction of 20 m (major), 20 m (semi-major), and 10 m (minor). A preliminary estimate was completed and the resulting block estimates compared to the underlying composite data. This showed that the global block average reported approximately 11% below the global composites. The distance restriction was modified to generate a closer alignment in the global means for composites and blocks. Details of the final distance restriction parameters are presented in Table 14-7. No distance restriction was employed for Kilimani.

***Table 14-7: Distance restriction applied to composite data***

| DEPOSIT | GRADE THRESHOLD (Au g/t) | MAJOR (m) | SEMI (m) | MINOR (m) |
|---|---|---|---|---|
| Nyanzaga | 20 | 40 | 40 | 20 |

## 14.7 VARIOGRAPHY

### 14.7.1 GOLD ESTIMATE

The flagged composite data was imported in Supervisor and experimental semi-variograms developed for various domains. Composite data was transformed to normal scores prior to modelling, with the subsequent variogram models back transformed prior to export for use in the estimation process.

Due to the folded nature of the mineralisation and the fault blocks sometimes truncating mineralisation continuity, the variogram assessment for the Nyanzaga mineralisation was constrained to mineralised composites within a single fault block, namely fault block 6. This represents the largest number of composites and contains the largest proportion of mineralisation of all the modelled fault blocks. It also includes the full stratigraphic sequence with mineralisation across each of the major members. A dynamic search was employed to follow the folded trend as described in Section 14.8.

The Kilimani mineralisation was modelled as a single domain, however the underlying interpretation infers the presence of a fold in the project area. Splitting of the composites into the respective fold limbs was assessed however the generation of robust variograms on this basis was not possible. As such all mineralised composites were used to develop the model with the search parameters applying a dynamic trend to follow the interpreted fold as for the Nyanzaga mineralisation.

The final models are presented in Table 14-8 and shown graphically in Figure 14-19 for Nyanzaga and in Figure 14-20 for Kilimani.

***Table 14-8: Variogram model parameters – Gold (Vulcan rotations)***

| DOMAIN | BEARING | PLUNGE | DIP | NUGGET | STRUCTURE 1 | | | | STRUCTURE 2 | | | | STRUCTURE 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Sill | Maj. (m) | Sem. (m) | Min. (m) | Sill | Maj. (m) | Sem. (m) | Min. (m) | Sill | Maj. (m) | Sem. (m) | Min. (m) |
| Nyanzaga (ore_flag = 2) | 358.3 | -39.3 | -77.0 | 0.56 | 0.35 | 20 | 15 | 5 | 0.06 | 60 | 50 | 30 | 0.03 | 300 | 265 | 70 |
| Kilimani (ore_flag = 3) | 176.3 | -25.7 | -16.1 | 0.50 | 0.37 | 15 | 10 | 10 | 0.13 | 100 | 40 | 20 | - | - | - | - |

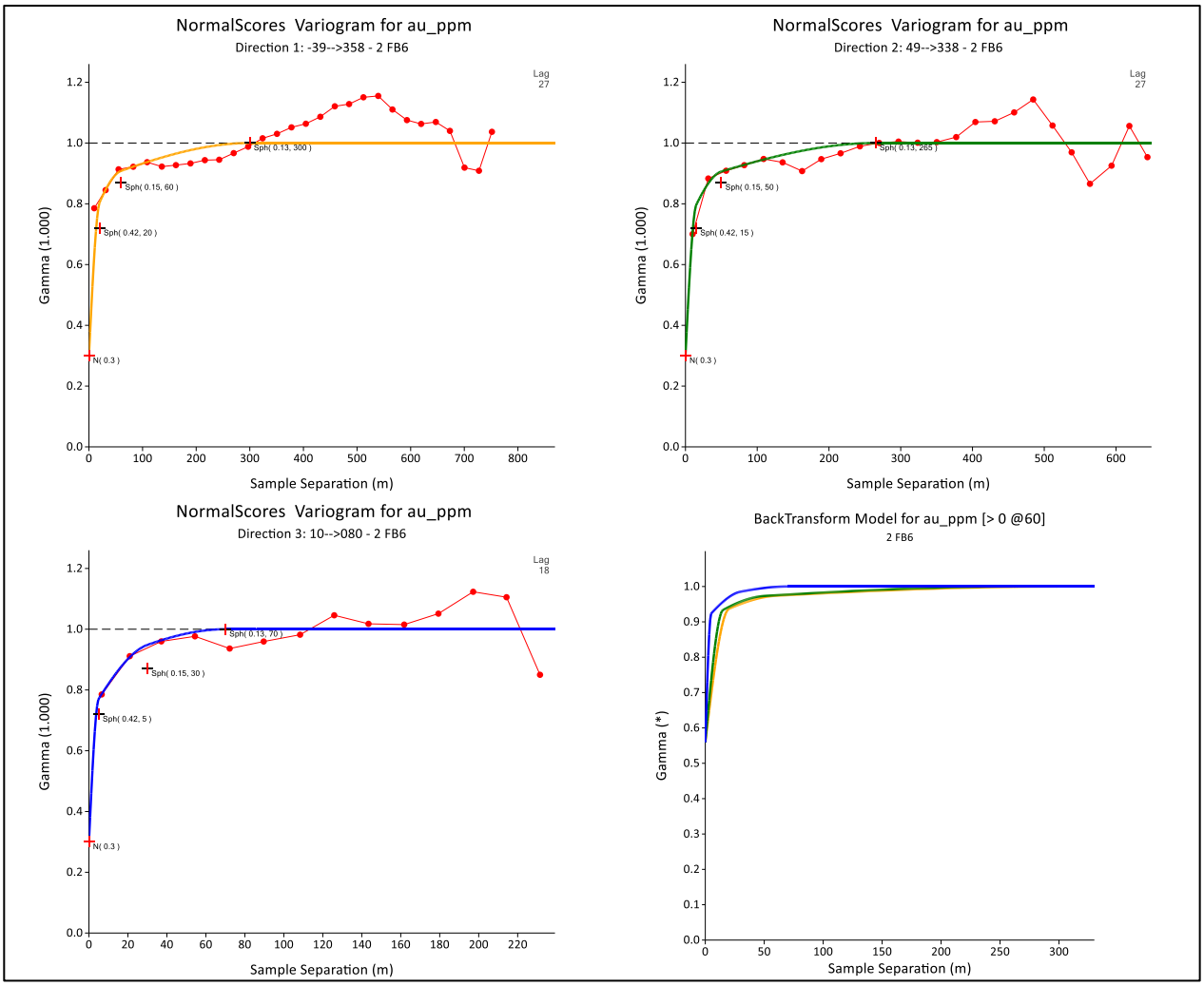



*Figure 14-19: Nyanzaga variogram models and back transform (Source: Perseus, 2025)*

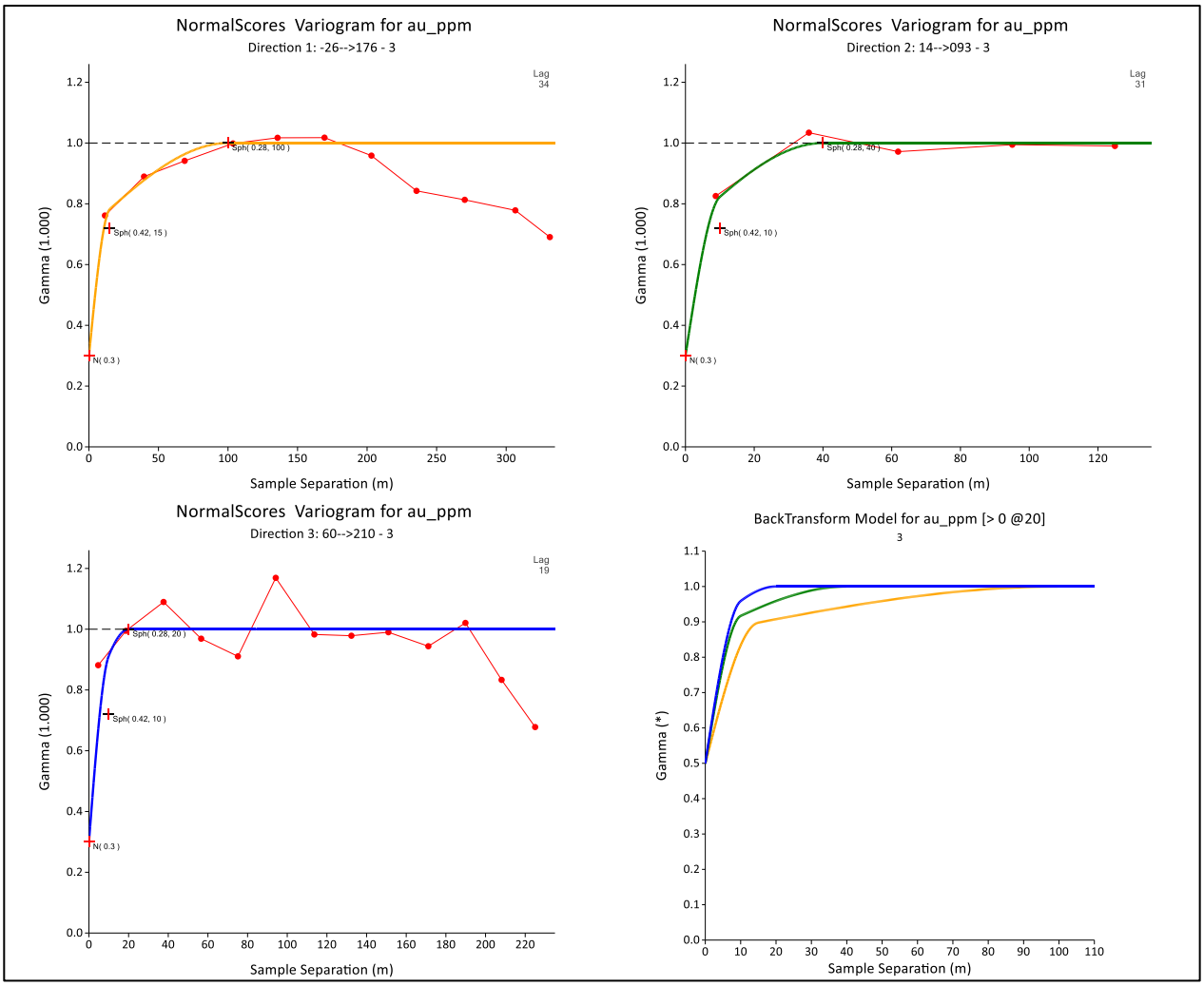



*Figure 14-20: Kilimani variogram models and back transform (Source: Perseus, 2025)*

### 14.7.2 BULK DENSITY ESTIMATE

Given the large number of density measurements collected across the project, interpolation of the density into the model was completed. The data was exported to Supervisor and continuity models developed for the fresh and oxide material. The final model parameters are presented in Table 14-9 and shown graphically in Figure 14-21 and Figure 14-22 for oxide and fresh material respectively.

*Table 14-9: Variogram model parameters – Bulk density (Vulcan rotations)*

| DOMAIN | BEARING | PLUNGE | DIP | NUGGET | STRUCTURE 1 | | | | STRUCTURE 2 | | | | STRUCTURE 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Sill | Maj. (m) | Sem. (m) | Min. (m) | Sill | Maj. (m) | Sem. (m) | Min. (m) | Sill | Maj. (m) | Sem. (m) | Min. (m) |
| Oxide | 90 | 0 | 0 | 0.21 | 0.15 | 50 | 50 | 50 | 0.64 | 330 | 330 | 100 | - | - | - | - |
| Fresh | 161.5 | 9.4 | -69.7 | 0.14 | 0.59 | 25 | 25 | 15 | 0.13 | 90 | 60 | 40 | 0.14 | 860 | 250 | 250 |

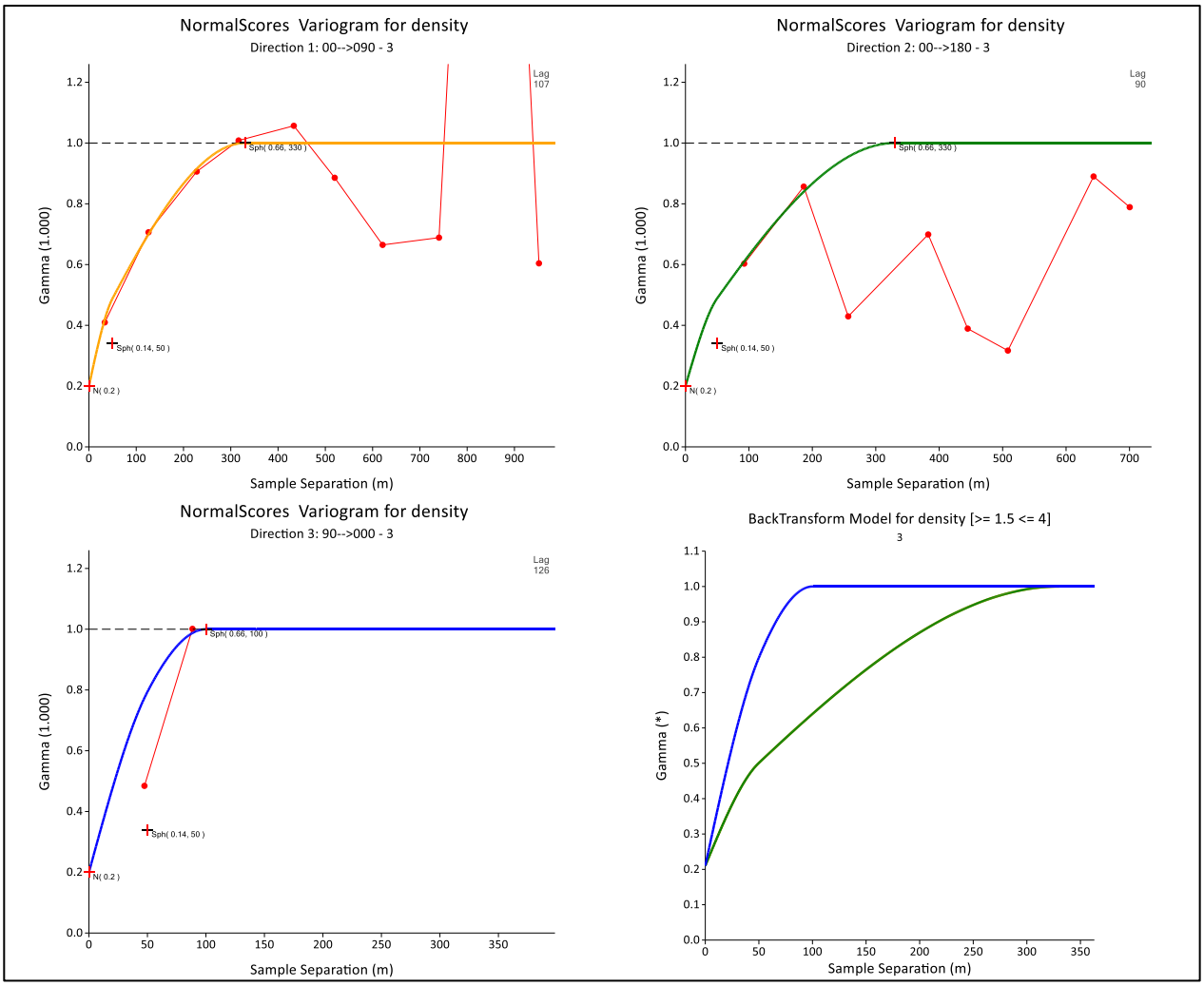



***Figure 14-21: Variogram models and back transform – Density – Oxide (Source: Perseus, 2025)***

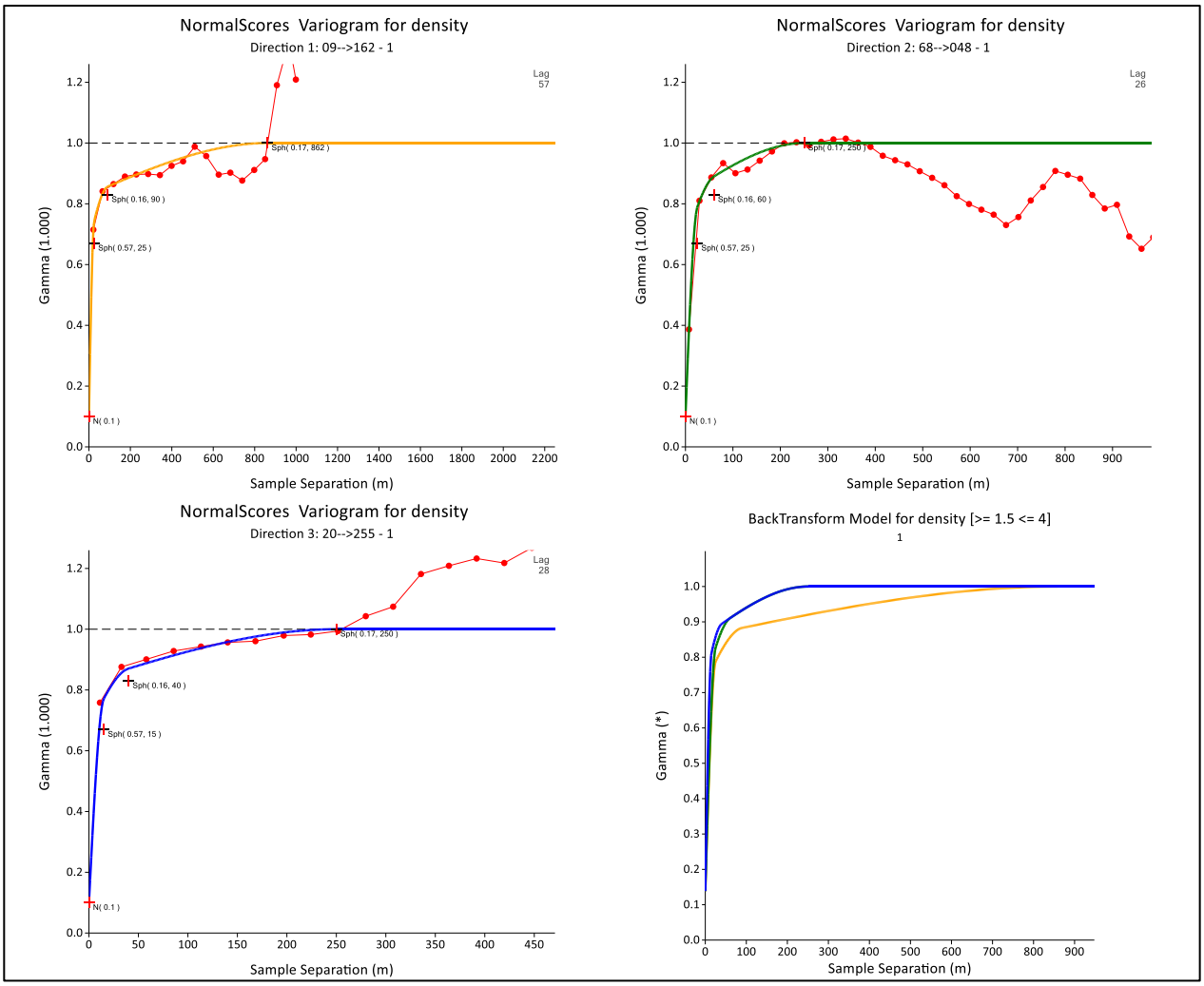



*Figure 14-22: Variogram models and back transform – Density – Fresh (Source: Perseus, 2025)*

## 14.8 BLOCK MODEL PARAMETERS

The block model was developed based on the project coordinate system referenced to Arc1960 Zone 36N UTM grid. A single block model covering the extents of both the Nyanzaga and Kilimani mineralisation was developed with the model architecture presented in Table 14-10, while details of the block model variables are presented in Table 14-11.

*Table 14-10: Block model dimensions*

| PARAMETER | EASTING (m) | NORTHING (m) | ELEVATION (m) |
|---|---|---|---|
| Block Model File | | nyz_bm_202409.bmf | |
| Origin | 466,300 | 9,671,200 | 0 |
| Extents | 3,200 | 2,700 | 1,500 |
| Rotation (X-axis Bearing, Plunge, Dip) | 90 | 0 | 0 |
| Parent Cells | 5 | 10 | 5 |
| Sub Cells | - | - | - |

*Table 14-11: Block model variables*

| VARIABLE | DEFAULT | TYPE | DESCRIPTION |
|---|---|---|---|
| au_ppm_ok | -99 | Double | Gold estimate for Kilimani using ordinary kriging |
| density | -99 | Double | Bulk density estimated by weathering using ordinary kriging |
| weathering | -99 | Integer | 1-fresh, 2-trans, 3-oxide, 0-air |
| rescat | -99 | Integer | 1-measured, 2-indicated, 3-inferred, 4-unclassified |
| faultb | -99 | Integer | Fault block code – 1 to 16 |
| member | -99 | Integer | 0-lower volc, 1-chert, 4-sandstone, 9-mudstone, 10-upper volc |
| domzon | -99 | Integer | Combined fault block and member |
| ore_flag | -99 | Integer | 3-KIL inside 0.3 g/t Au shell 2-NYZ inside 0.3 g/t Au shell, 1- outside, 0-air |
| minzon | -99 | Integer | 10000 series - domzon outside ore flag, 20000 series - domzon inside ore flag |
| dyn_brg | -99 | Double | Dynamic bearing |
| dyn_plg | -99 | Double | Dynamic plunge |
| dyn_dip | -99 | Double | Dynamic dip |
| est_pass | -99 | Integer | Estimation pass |
| est_ns | -99 | Integer | Number of samples for Kilimani OK estimate |
| est_avgdist | -99 | Double | Average cartesian distance to samples for Kilimani OK estimate |
| est_kv | -99 | Double | Kriging variance for Kilimani OK estimate |
| est_ke | -99 | Double | Kriging efficiency for Kilimani OK estimate |
| est_sor | -99 | Double | Slope of regression for Kilimani OK estimate |
| est_pass_dens | -99 | Integer | Estimation pass for density estimate |
| est_ns_dens | -99 | Integer | Number of samples for density estimate |
| est_avgdist_dens | -99 | Double | Average cartesian distance to samples for density estimate |
| est_kv_dens | -99 | Double | Kriging variance for density estimate |
| est_ke_dens | -99 | Double | Kriging efficiency for density estimate |
| est_sor_dens | -99 | Double | Slope of regression for density estimate |
| est_sumneg_dens | -99 | Double | Sum of negative weights for density estimate |
| cube_au_smu | -99 | Double | Cube LUC check estimate |
| cube_au_panel | -99 | Double | Cube panel check estimate |
| cube_au_final | -99 | Double | Cube LUC merged with Kilimani estimate |

Details of the various surfaces and wireframes used to flag the applicable variables are summarised in Table 14-12. Values within square brackets [ ] represent variable references.

*Table 14-12: Block model coding constraints*

| ATTRIBUTE | CONSTRAINT | TYPE | CONDITION | BLOCK MODEL VALUE |
|---|---|---|---|---|
| weathering | weathering_20240909_TOFR.00t | Surface | Below | 1 |
| | weathering_20240909_TOFR.00t | Surface | Above | 2 |
| | weathering_20240909_BOCO.00t | Surface | Above | 3 |
| | Nyanzaga_Topo_DTM_Mar2019Rev2a.00t | Surface | Above | 0 |
| faultb | Fault_Block_Boundary_[1-16].00t | Solid | Inside | 1 to 16 |
| member | Nyanzaga_Geology_0.00t | Solid | Inside | 0 |
| | Nyanzaga_Geology_1.00t | Solid | Inside | 1 |
| | Nyanzaga_Geology_4.00t | Solid | Inside | 4 |
| | Nyanzaga_Geology_9.00t | Solid | Inside | 9 |
| | Nyanzaga_Geology_10.00t | Solid | Inside | 10 |
| ore_flag | GM_Econ_Comp_5m_0pt3_Ore_001.00t | Solid | Inside | 2 |
| | GM_Econ_Comp_5m_0pt3_Ore_002.00t | Void | Inside | 1 |
| | GM_Econ_Comp_5m_0pt3_Ore_003.00t | Void | Inside | 1 |
| | GM_Kil_Econ_Comp_0pt3_Ore.00t | Solid | Inside | 3 |

## 14.9 GRADE ESTIMATION

### 14.9.1 GOLD ESTIMATES

The Nyanzaga Gold Project used a combination of ordinary kriging (OK) and localised uniform conditioning (LUC) estimation methods to interpolate gold grades into the block model. Hard boundaries were used within each of the overall mineralisation domains.

A prerequisite for a LUC estimate is to first perform standard uniform conditioning (UC). This is achieved by running an OK estimate on a large block size termed the 'panel' (10 mE × 20 mN × 20 mRL), and then applying a 'change of support' correction based on the composite sample distribution and variogram model, conditioned to this panel grade estimate, to predict the likely grade tonnage distribution at the selective mining unit (SMU, being 5 mE × 10 mN × 10 mRL) within each panel.

LUC requires initially that local 'ranking' (i.e. highest to lowest grade) of the SMU blocks is available with OK used to generate the SMU ranking within each panel. A quantile-quantile type matching of the SMU grade distribution, as determined by UC, with the ranked SMUs is then made. This yields the LUC SMU-scale grade estimates, which conform exactly to the SMU grade distribution predicted by the UC in panels.

The LUC estimate was performed by Cube Consulting Pty Ltd (Cube) using Geovariances Isatis software. The flagged composite data, variogram parameters, search details and coded block model with mineralisation domains and dynamic anisotropy directions were prepared by Perseus and provided to Cube to complete the interpolation.

Oriented search ellipsoids were used to define the local input data for estimation at each block. Search ellipsoid dimensions and anisotropy were based on orientations derived from semi-variogram analysis. Both the Nyanzaga and Kilimani mineralisation domains employed dynamic anisotropy, aligning the rotation of the search ellipsoid to the local dip and dip direction of the mineralisation for each block. Estimation and search parameters for each area are provided in Table 14-13.

***Table 14-13: Block model search parameters – gold estimates***

| DOMAIN | METHOD | PASS | ROTATIONS (°) | | | ELLIPSOID DIMENSIONS (m) | | | MIN. SAMPS. | MAX SAMPS. | USE OCTANTS | OPTIMUM SAMPLES PER OCTANT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | BEARING | PLUNGE | DIP | MAJ. | SEMI | MIN. | | | | |
| **Nyanzaga** | LUC | 1 | Dynamic | | | 120 | 100 | 60 | 6 | 24 | Y | 3 |
| **Kilimani** | OK | 1 | Dynamic | | | 100 | 40 | 20 | 6 | 16 | Y | 4 |
| | | 2 | | | | 150 | 60 | 30 | 6 | 16 | N | - |

For the LUC estimate in Nyanzaga, a total of four panels remained unestimated, with the values in these panels assigned zero grade. In the Kilimani area, over 91% of blocks were estimated in the first pass, with the second pass filling all but 126 blocks (<1%). Blocks unfilled after the second pass were assigned zero grade.

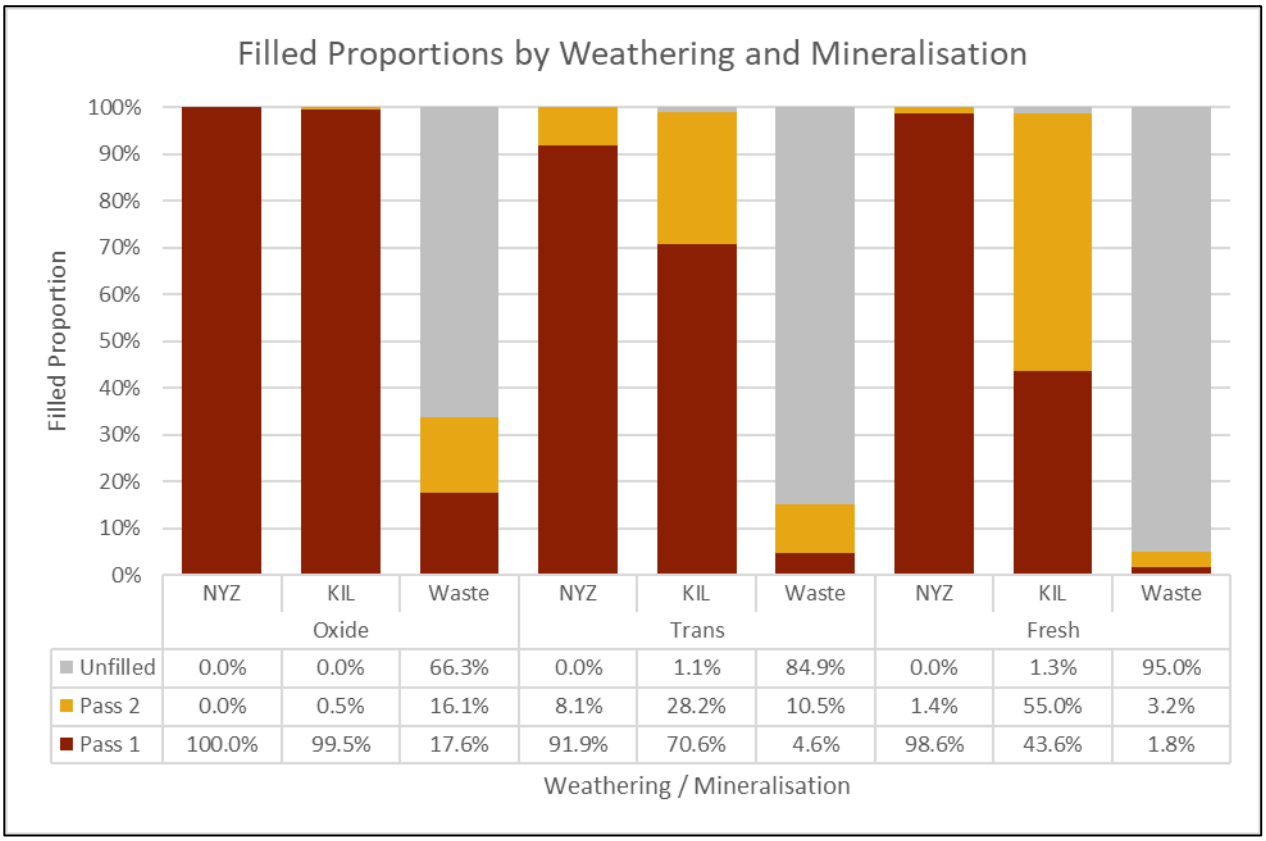
### 14.9.2 BULK DENSITY ESTIMATE

Interpolation of bulk density values into the block model was done using OK. The fresh and transitional material was estimated as a single domain due to the limited data in the transitional zone. The oxide material was estimated separately using a hard boundary. Search parameters for the density estimate are presented in Table 14-14.

***Table 14-14: Block model search parameters – density estimate***

| DOMAIN | METHOD | PASS | ROTATIONS (°) | | | ELLIPSOID DIMENSIONS (m) | | | MIN. SAMPS. | MAX SAMPS. | USE OCTANTS | MAX. SAMP. PER OCTANT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | BEARING | PLUNGE | DIP | MAJ. | SEMI | MIN. | | | | |
| **Oxide** | OK | 1 | 90 | 0 | 0 | 330 | 330 | 100 | 6 | 16 | Y | 4 |
| | | 2 | | | | 500 | 500 | 150 | 6 | 16 | N | - |
| **Fresh** | OK | 1 | 161.5 | 9.4 | -69.7 | 90 | 60 | 40 | 6 | 16 | Y | 4 |
| | | 2 | | | | 180 | 120 | 80 | 6 | 16 | N | - |

All blocks within the Nyanzaga mineralisation area were filled with density values after the second pass, with only ~1% of Kilimani mineralisation remaining unfilled. A large proportion of the waste material was not filled due to the extents of the block model and the distances from drilling with associated bulk density measurements. A breakdown of the filled proportions by weathering and mineralisation type is presented in Figure 14-23. Unfilled blocks were assigned the average estimated bulk density reported from the first pass estimate, specifically 2.15 g/cm$^3$ for oxide, 2.34 g/cm$^3$ for transitional, and 2.85 g/cm$^3$ for fresh.




| | NYZ | KIL | Waste | NYZ | KIL | Waste | NYZ | KIL | Waste |
|---|---|---|---|---|---|---|---|---|---|
| | Oxide | | | Trans | | | Fresh | | |
| Unfilled | 0.0% | 0.0% | 66.3% | 0.0% | 1.1% | 84.9% | 0.0% | 1.3% | 95.0% |
| Pass 2 | 0.0% | 0.5% | 16.1% | 8.1% | 28.2% | 10.5% | 1.4% | 55.0% | 3.2% |
| Pass 1 | 100.0% | 99.5% | 17.6% | 91.9% | 70.6% | 4.6% | 98.6% | 43.6% | 1.8% |

***Figure 14-23: Filled proportions by weathering and ore type - Density (Source: Perseus, 2025)***

## 14.10 VALIDATION

Validation of the estimates for the Nyanzaga Gold Project were completed using various methods.

- Visual inspection of block grade and density estimates versus composites from drill holes in 3D or on a section-by-section basis
- Global comparison of the estimated block grades to the capped mean grades of informing composite grades, on a domain-by-domain basis.
- Semi-local validation checks using multi data relationship plots (Swath plots) comparing the local composite grades (by easting, northing and RL), to the block model estimate grades for each domain.

There has been no commercial scale mining at the property so there are no mine reconciliation records in order to assess past performance comparing Mineral Resources against mine production.

### 14.10.1 VISUAL VALIDATION

The respective gold grade estimates were displayed graphically in cross section against the underlying composite data, with the Nyanzaga and Kilimani areas reviewed separately. Due to the nature of the LUC interpolation process, the block grades often demonstrate increased randomness than for OK estimates, however when reviewed against the underlying mineralised trends a broad relationship can typically be inferred. Example sections for Nyanzaga and Kilimani are presented in Figure 14-24 and Figure 14-25 respectively.

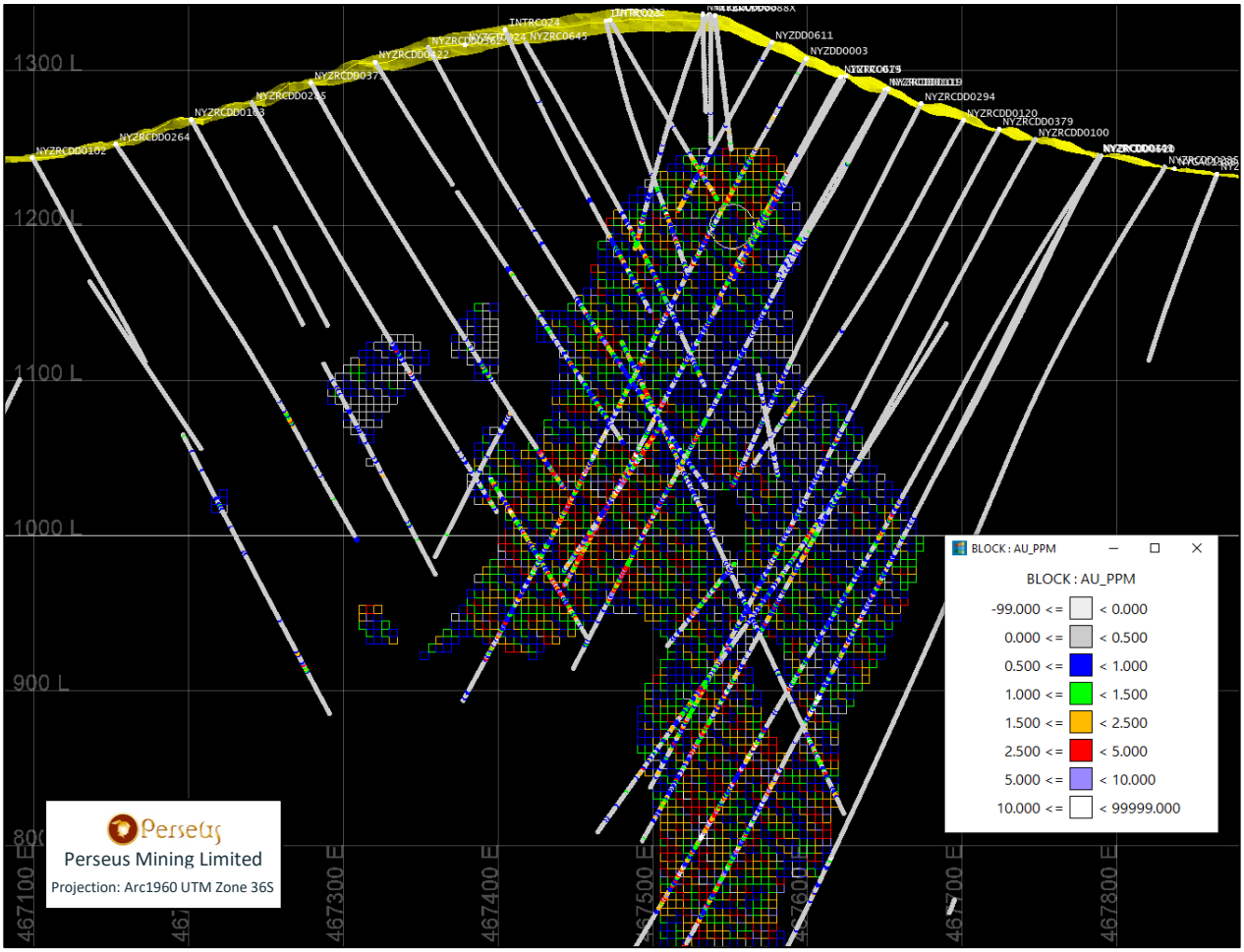



*Figure 14-24: Cross section 9,672,400 mN (±20 m) looking north with block grades and composites - Nyanzaga (Source: Perseus, 2025)*

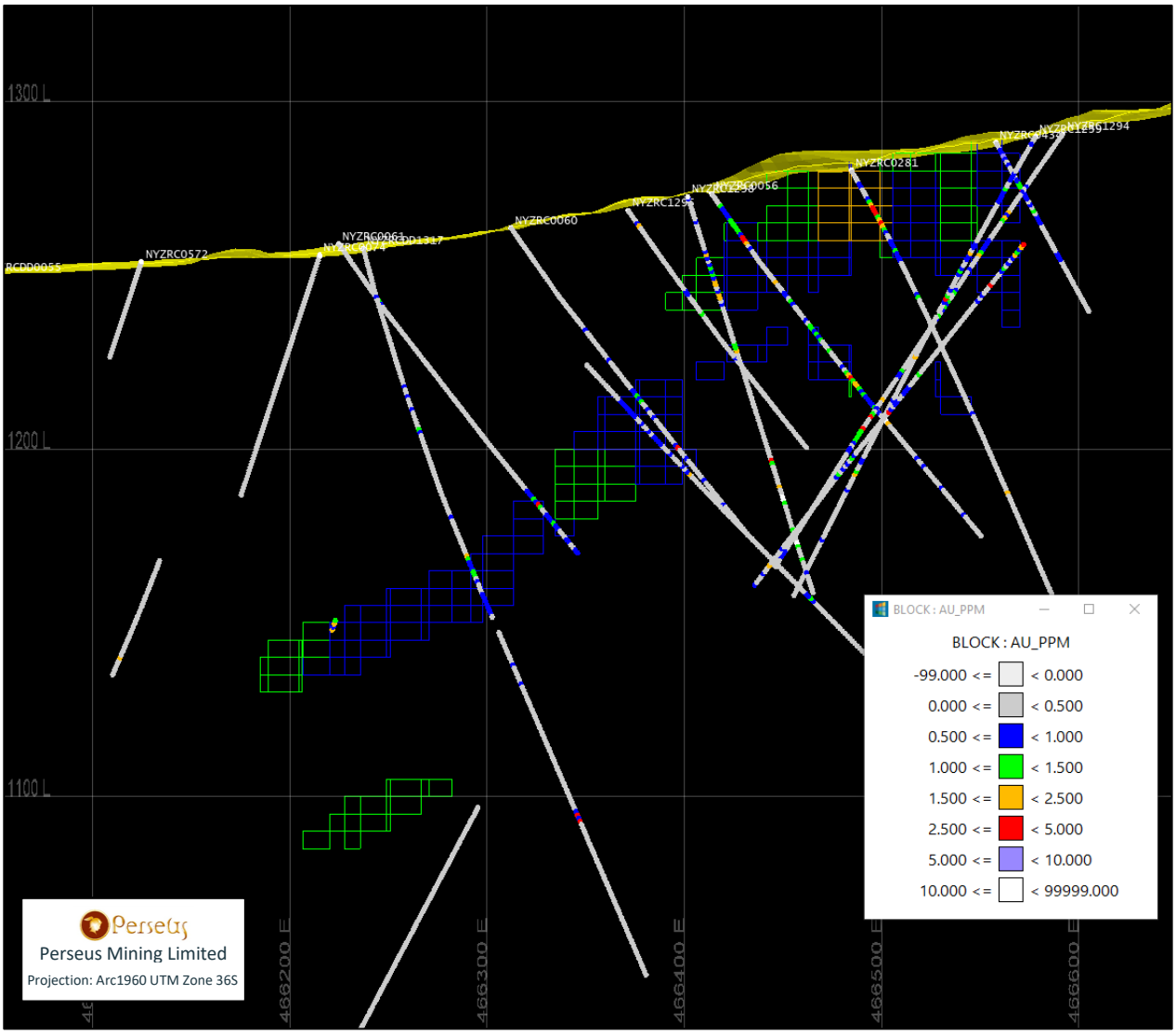



*Figure 14-25: Oblique section looking northwest with block grades and composites - Kilimani (Source: Perseus, 2025)*

### 14.10.2 GLOBAL STATISTICS

The estimated block grades were compared to the capped composite grades for the gold and density variables. The results of these comparisons are presented in Table 14-15. The elevated difference for the density values in the transitional is related to the combination of this material with the fresh domain for estimation (i.e. soft boundary).

*Table 14-15: Global statistics comparisons – blocks versus composites*

| VARIABLE | DOMAIN | MEAN | | ABS. DIFF. | % DIFF. |
|---|---|---|---|---|---|
| | | Composites | Blocks | | |
| Au (g/t) | Nyanzaga | 1.32 | 1.30 | -0.02 | -1.6% |
| | Kilimani | 1.01 | 0.97 | -0.04 | -4.5% |
| Density (g/cm$^3$) | Fresh | 2.88 | 2.81 | -0.06 | -2.2% |
| | Trans. | 2.24 | 2.45 | 0.20 | 9.1% |
| | Oxide | 2.06 | 2.15 | 0.09 | 4.6% |

### 14.10.3 TREND PLOTS

Trend plots comparing average block grades to underlying composites were developed for the mineralisation and density domains. Overall, review of the charts shows the estimated block grades broadly follow the underlying composites satisfactorily for the gold estimates, allowing for the influence of distance restrictions on the estimated grades, and considering the smoothing nature of the estimates. For the density estimate, the influence of the soft boundary in the upper portions (i.e., associated with the transitional material) is observable in the elevation trend plot, with the average block grades plotting lower than the average density composites. Further review also highlights the influence of localised high bulk density values on the respective average density values which do not present in blocks due to the smoothed estimation output. Charts for gold and density are presented in Figure 14-26 to Figure 14-28.

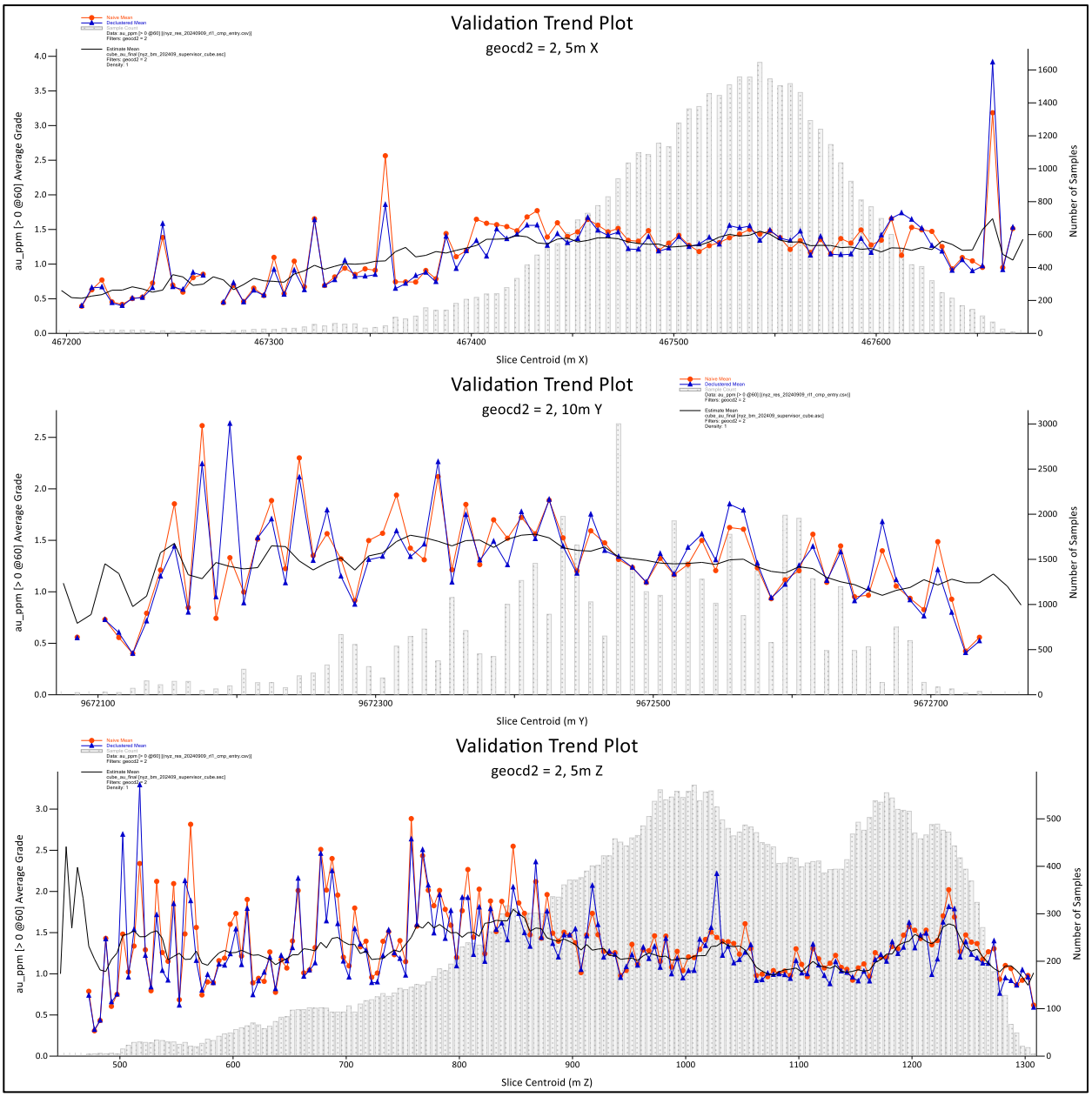



*Figure 14-26: Trend Plot by Easting (top), Northing (middle) and RL (bottom) - Composites (red) versus declustered composites (blue) versus Blocks (black) – Nyanzaga mineralisation (Source: Perseus, 2025)*

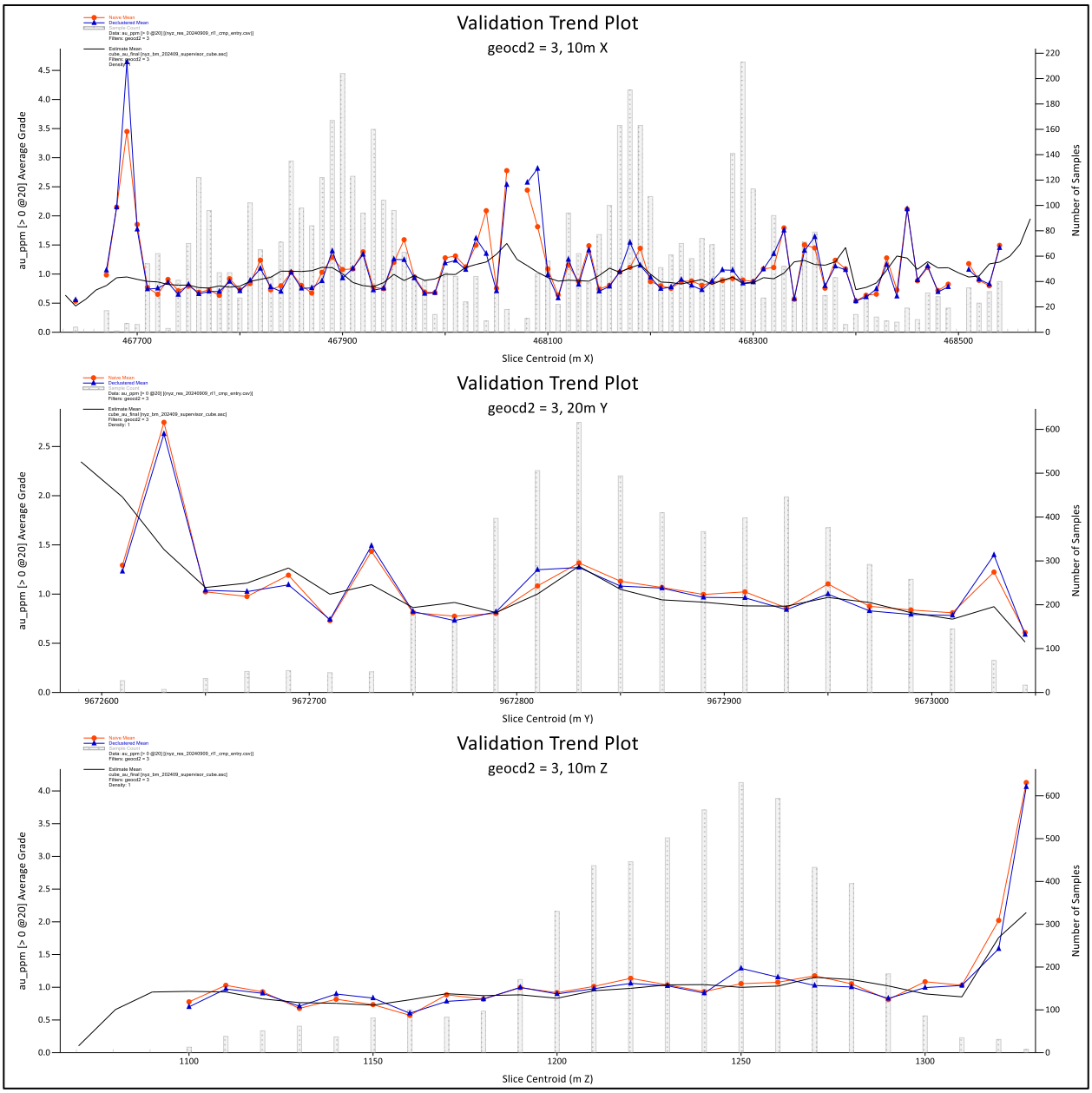



***Figure 14-27: Trend Plot by Easting (top), Northing (middle) and RL (bottom) - Composites (red) versus declustered composites (blue) versus Blocks (black) – Kilimani mineralisation (Source: Perseus, 2025)***

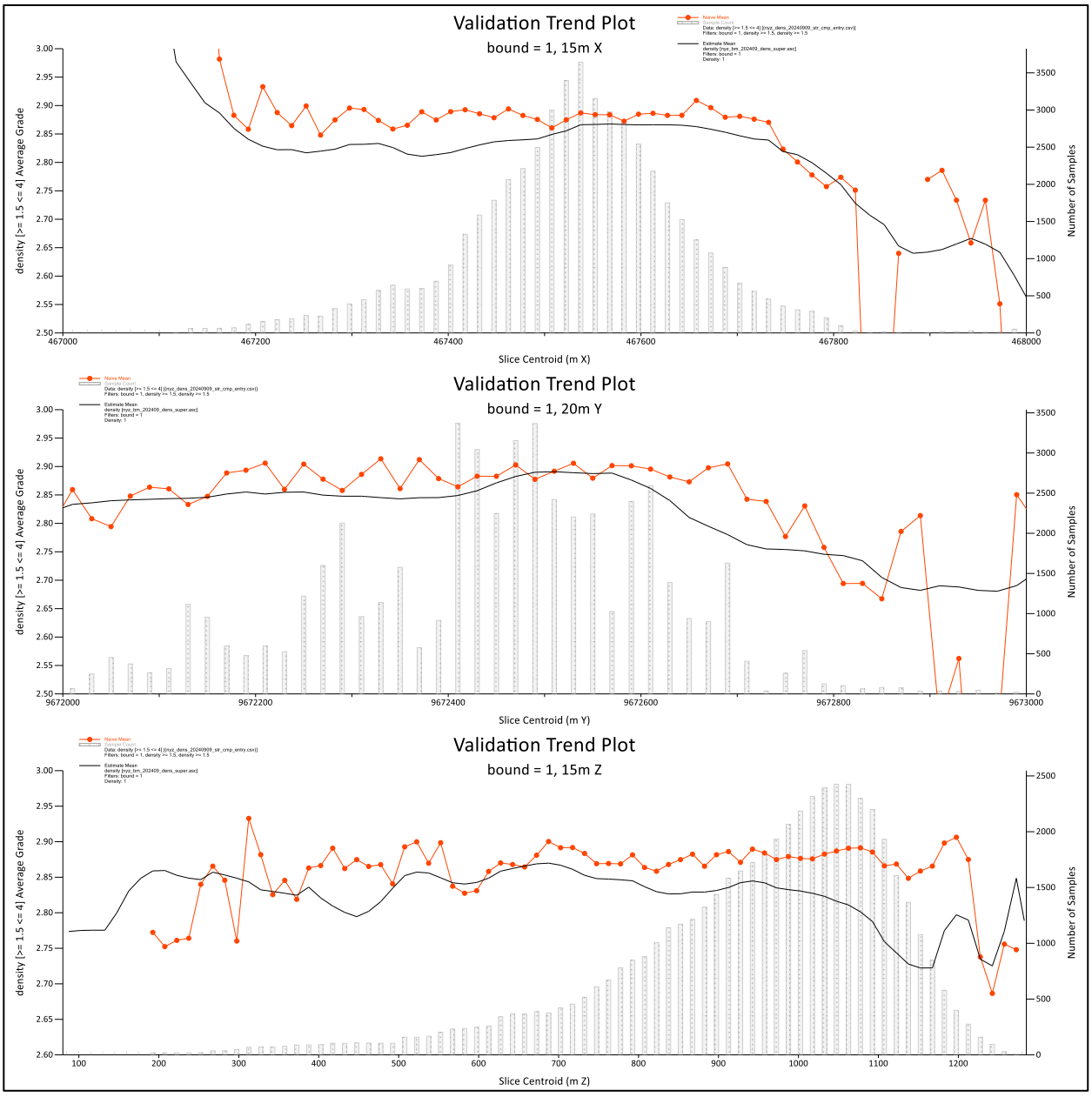



***Figure 14-28: Trend Plot by Easting (top), Northing (middle) and RL (bottom) - Composites (red) versus Blocks (black) – Density - Fresh (Source: Perseus, 2025)***

## 14.11 CLASSIFICATION OF MINERAL RESOURCES

Classification of the Nyanzaga Gold Project Mineral Resource was completed with consideration of the following criteria.

- Resource drilling – the confidence in the interpretation boundaries and related mineralisation volumes related to the number, spacing, and orientation of the available drilling.
- Continuity modelling – the spatial continuity of respective domains based on variogram analysis.
- Estimation quality – the assessment of key estimation output statistics including slope of regression and average distance to samples.

- Validation results – the consideration of how well the underlying domain data is reflected in the estimated blocks as assessed by statistics globally and trend plots locally.

A series of polygons were developed for the assignment of the applicable resource classification. In general, the classification criteria applied can be summarised as follows:

- Indicated Resources
  - Areas with broadly regular drilling approximating 40 metre centres with average distance to samples generally less than 25 metres.
  - Domains defined by sufficient numbers of holes along strike and down dip to infer a suitable level of geological continuity.
  - Maximum extrapolation outside of drilling area of approximately 40 metres.
- Inferred Resources
  - Areas with sufficient drilling to infer continuity along strike and down dip as supported by geology.
  - Maximum extrapolation of 80 metres.
- Unclassified
  - Mineralised domains not otherwise classified.

This general classification approach was adjusted to ensure consistent zones of equivalent classified resources were generated. The distribution of average sample distances by classification is presented in Figure 14-29 for Nyanzaga and Figure 14-30 for Kilimani.

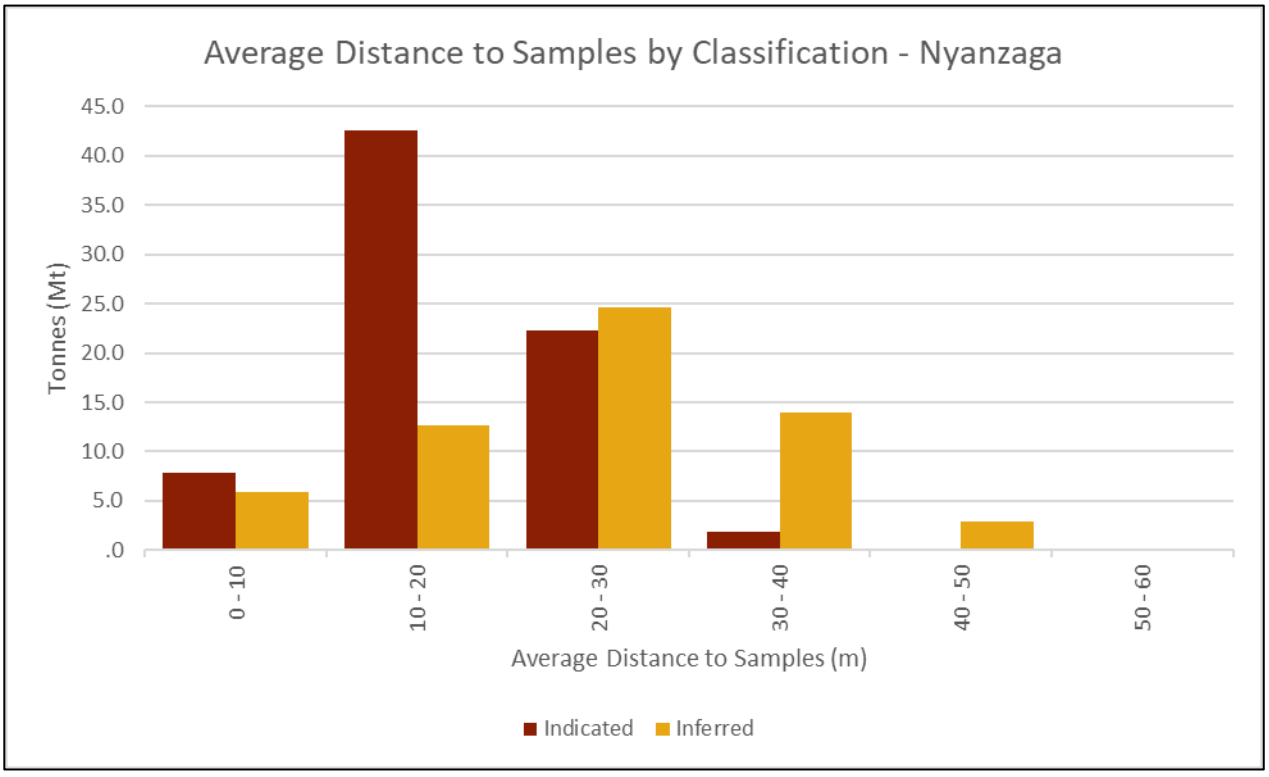



*Figure 14-29: Average distance to samples by classification – Nyanzaga mineralisation (Source: Perseus, 2025)*

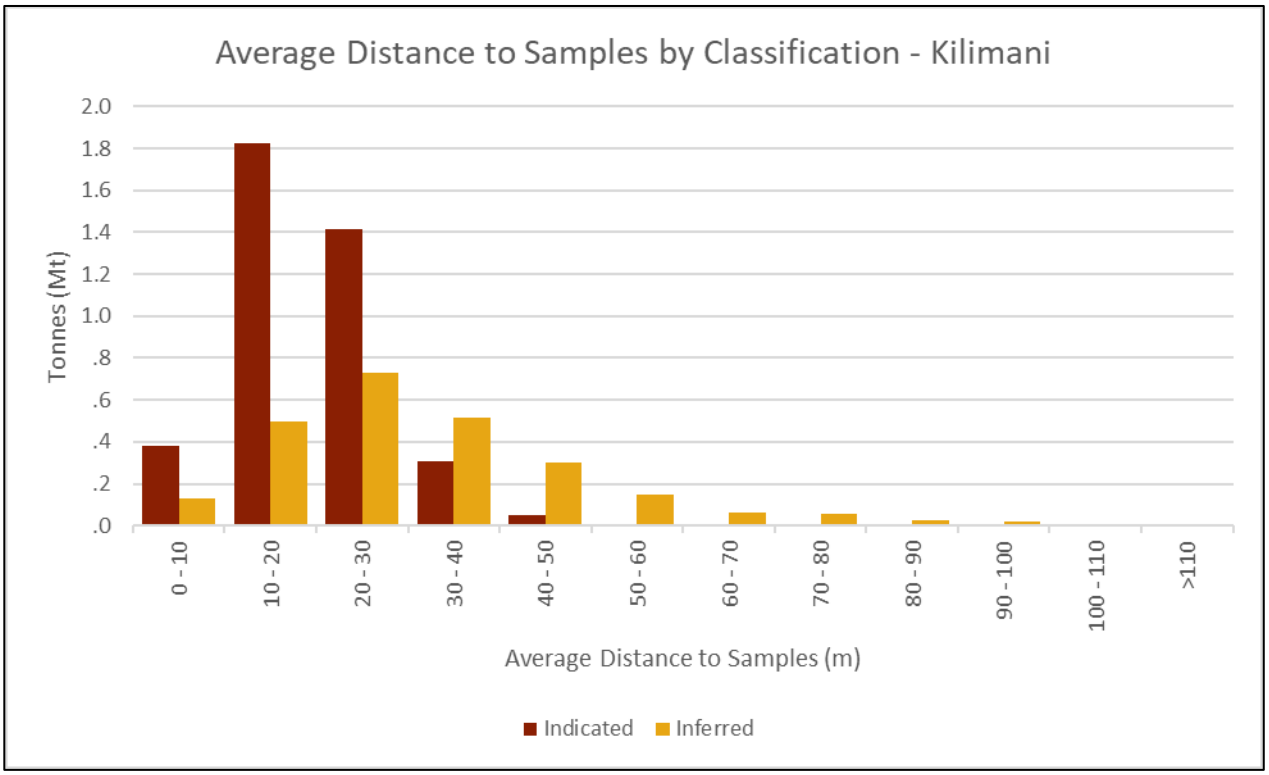



*Figure 14-30: Average distance to samples by classification –Kilimani mineralisation (Source: Perseus, 2025)*

## 14.12 REASONABLE PROSPECTS OF EVENTUAL ECONOMIC EXTRACTION

CIM Definition Standards require that resources have reasonable prospects for eventual economic extraction (RPEEE). This generally implies that the quantity and grade estimates meet certain economic thresholds and that the Mineral Resources are reported at an appropriate cut-off grade taking into account possible extraction scenarios and processing recoveries.

To assist in defining reasonable prospects of economic extraction, the Nyanzaga Gold Project Mineral Resources were subject to an optimisation process, whereby the in-ground value of each block was calculated using nominated values for gold price ($/oz), metal recoveries, mining dilution, mining costs, processing, and selling costs as detailed in Table 14-16. Ranges reflect different processing characteristics such as hardness and weathering conditions. These values were then used to generate a theoretical open pit via the Lersch-Grossman algorithm (a universally accepted methodology of open pit mine optimisation).

***Table 14-16: RPEEE optimisation summary parameters***

| ITEM | | UNITS | PARAMETER VALUE |
|---|---|---|---|
| Gold Price | | $/oz | 2,000 |
| Mining Cost | | $/t | 3.90 to 4.10 |
| Ore Processing Cost | | $/t | 19.60 to 19.90 |
| Metallurgical Recovery | | % | 82.8 to 91.8 |
| Overall Wall Angles | Weathered | degrees | 32 |
| | Transition | degrees | 38 |
| | Fresh | degrees | 36 to 43 |

## 14.13 MINERAL RESOURCE STATEMENT

The statement of Mineral Resources for the Nyanzaga Gold Project is presented in Table 14-17 and Table 14-18.

The Nyanzaga Gold Project Mineral Resources are reported in-situ and reflect global estimates for the Nyanzaga and Kilimani deposits. All open-pit Mineral Resources are reported at a 0.3 g/t gold cut-off and constrained to a $2,000/oz pit optimisation shell based on the parameters provided in Section 14.12.

***Table 14-17: Nyanzaga Gold Project Measured and Indicated Mineral Resource effective as at 1 October 2024[4,5,6]***

| DEPOSIT | DEPOSIT TYPE | MEASURED | | | INDICATED | | | MEASURED & INDICATED | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Mt | g/t Au | '000 oz Au | Mt | g/t Au | '000 oz Au | Mt | g/t Au | '000 oz Au |
| Nyanzaga[1,2,3] | Open Pit | - | - | - | 71.1 | 1.34 | 3,061 | 71.1 | 1.34 | 3,061 |
| Kilimani[1,2,3] | Open Pit | - | - | - | 3.1 | 1.00 | 101 | 3.1 | 1.00 | 101 |
| **TOTAL** | | **-** | **-** | **-** | **74.2** | **1.33** | **3,162** | **74.2** | **1.33** | **3,162** |

***Table 14-18: Nyanzaga Gold Project Inferred Mineral Resource effective as at 1 October 2024[4,5,6]***

| DEPOSIT | DEPOSIT TYPE | INFERRED | | |
|---|---|---|---|---|
| | | Mt | g/t Au | '000 oz Au |
| Nyanzaga[1,2,3] | Open Pit | 14.6 | 1.2 | 571 |
| Kilimani[1,2,3] | Open Pit | 0.4 | 1.2 | 13 |
| **Total** | | **15.0** | **1.2** | **584** |

Notes for Table 14-17 and Table 14-18:

1. Based on October 2024 Mineral Resource estimate.
2. 0.3 g/t gold cut-off applied to in-situ open pit material.
3. In situ open pit resources are constrained to $2,000/oz pit shells.
4. Rounding of numbers to appropriate precision may result in summary inconsistencies.
5. Mineral Resources are reported inclusive of Mineral Reserves.
6. Mineral Resources are reported on a 100% basis.

Mineral Resources are prepared using the CIM Definition Standards and CIM Guidelines.

Reported Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no guarantee that all or part, of a Mineral Resource will be converted into a Mineral Reserve.

The QP is not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors that could materially affect the Mineral Resource estimate. In the QP's opinion, the estimates of Measured and Indicated Mineral Resources are sufficiently reliable to support estimation of Mineral Reserves.

# 15. MINERAL RESERVE ESTIMATES

## 15.1 INTRODUCTION

The Nyanzaga Mineral Reserve is supported by the NGP Feasibility Study which establishes the technical and economic viability of the Nyanzaga Gold Project. Studies include metallurgical, geotechnical and hydrogeological test work and confirmatory drilling, as well as individual analysis and investigations in relation to the impact of changes to the project size and scope on capital and operating cost estimates. Studies have been undertaken by Perseus technical staff and expert consultants.

All Mineral Reserves are reported in accordance with the CIM Definition Standards and CIM Guidelines and are reported by category, deposit and type, above cut-off grades calculated after applying modifying factors. The classification categories of Proven and Probable Mineral Reserves under the CIM Definition Standards are equivalent to the JORC Code Proved Ore Reserves and Probable Ore Reserves respectively.

The QP is of the opinion that Mineral Reserves were estimated using industry-accepted practices and conform to the CIM Definition Standards and the JORC Code. Mineral Reserves stated in this report are based on open pit mining methods. The Mineral Reserves are acceptable to support mine planning.

## 15.2 MINERAL RESERVE STATEMENT

Mineral Resources are reported inclusive of Mineral Reserves (that is, Mineral Reserves are not additional to Mineral Resources). Mineral Reserves may be subdivided into Proven Mineral Reserves and Probable Mineral Reserves categories to reflect the confidence in the underlying Mineral Resource data and modifying factors applied during mine planning. The Nyanzaga Gold Project estimate comprises Proven and Probable Mineral Reserves.

The Proven and Probable Mineral Reserves for Nyanzaga Gold Project are supported by a Feasibility Study and are estimated as 52.0 Mt, grading 1.40 g/t gold and containing 2.3 Moz of gold and are reported current as at April 28, 2025. Details of the estimate are shown in Table 15-1.

***Table 15-1: Nyanzaga Gold Project Mineral Reserve Statement[1,2,3,4,5,6]***

| PROJECT | PROVEN | | | PROBABLE | | | PROVED AND PROBABLE | | |
|---|---|---|---|---|---|---|---|---|---|
| | QUANTITY Mt | GRADE g/t Au | GOLD '000 oz | QUANTITY Mt | GRADE g/t Au | GOLD '000 oz | QUANTITY Mt | GRADE g/t Au | GOLD '000 oz |
| Nyanzaga | - | - | - | 49.4 | 1.42 | 2,255 | 49.4 | 1.42 | 2,255 |
| Kilimani | - | - | - | 2.6 | 1.02 | 86 | 2.6 | 1.02 | 86 |
| **Total** | **-** | **-** | **-** | **52.0** | **1.40** | **2,342** | **52.0** | **1.40** | **2,342** |

Notes for Table 15-1:

1. Based on October 2024 Mineral Resource estimate
2. Based on April 2025 Mineral Reserve estimate
3. Pit designs are based on US$1,700/oz gold metal price
4. Variable gold grade cut-offs for each material type, ranging from 0.33 g/t to 0.6 g/t
5. Inferred Mineral Resource is considered as waste for optimisation purposes
6. Rounding of numbers to appropriate precision may have resulted in apparent inconsistencies

There are no other environmental, legal, title, taxation, socioeconomic, marketing, political or other relevant factors known to the QP and not discussed in this report that would materially affect the estimation of Mineral Reserves.

## 15.3 OPEN PIT

### 15.3.1 MINERAL RESERVE CUT-OFF GRADES

Cut-off grades for the Nyanzaga Gold Mine Mineral Reserve range from 0.33 g/t to 0.60 g/t depending upon material type and weathering profile (Table 15-2). Cut-off calculation revenues are estimated at a gold price of $1,700/oz.

***Table 15-2: Nyanzaga open pit Mineral Reserve cut-off grades***

| ROCK TYPE | SCHEDULED CUT-OFF GRADE (Au g/t) |
|---|---|
| Oxide | 0.33 |
| Transitional and Fresh – Mudstone, Volcanoclastic | 0.50 |
| Transitional and Fresh - Sandstone | 0.60 |
| Transitional and Fresh - Chert | 0.56 |

### 15.3.2 MINERAL RESERVE DILUTION AND ORE LOSS

In any mining operation, a degree of ore loss and dilution can be expected. This has the effect of altering the ore tonnages and grades predicted in the geological model. Factors influencing ore loss and dilution include deposit geometry, mining method, mining equipment size, mining practices and grade control processes.

Based on the size and selectivity of the proposed mining equipment, the block size in the resource model (5.0 mE × 10.0 mN × 5.0 mRL) was considered suitable for the mining model and no re-blocking was required, with no additional ore loss or dilution applied.

### 15.3.3 MINERAL RESERVE MODIFYING FACTORS

#### 15.3.3.1 MINING LEASE AND PHYSICAL MINING CONSTRAINTS

Physical constraints are typically surface features that limit the allowable extent of mining. Examples include critical infrastructure, mining titles, property ownership and environmentally sensitive areas.

The current exploitation permit covers a sufficient surface extent and does not constrain the mining or dumping limits. An allowance has been made for a 200 m buffer zone, inside the lease boundary, in which no mining activities will take place.

Existing homes that fall within the mining lease will be rebuilt outside the lease in a location agreed on by both parties. An estimate of costs required for housing relocation and diversion of a perimeter road to outside of the lease boundary have been included in Perseus cost estimates.

No geological constraints were applied to the pit optimisation, with Measured and Indicated Mineral Resources used to determine the pit limits.

#### 15.3.3.2 GEOLOGICAL BLOCK MODEL AND TOPOGRAPHY

Mineral Resource models used for the estimation of Mineral Reserves provide material classifications based upon rock type (chert, mudstone, sandstone, upper volcanoclastic, lower volcanoclastic) and weathering surface (oxide, transitional or fresh). Different pit slopes, production rates, mining costs, processing parameters (throughputs, costs and recoveries) are applied to open pit Mineral Reserves at Nyanzaga, based upon different material types. These varying cost and rates are based upon feasibility level test work and studies.

#### 15.3.3.3 GEOTECHNICAL PARAMETERS

Initial geotechnical investigation for the Nyanzaga deposit was completed during 2011 and 2012 by Golder Associates (Golder Associates, 2012). The program included geotechnical rock mass and structure data collection from 14 dedicated inclined diamond drill holes through the Nyanzaga (Tusker) deposit. Field and laboratory tests were completed on select diamond core samples and included point load, unconfined

compressive stress (UCS) and triaxial compressive stress tests to characterise the mechanical properties of the rock mass in line with the major geological unit and weathering subdivisions developed as part of the geology model. Using the same dataset, a geotechnical PFS study was undertaken by Mining Plus that evaluated the project based on a combined mining method incorporating both open pit and underground mining (Mining Plus, 2016).

An additional geotechnical drilling program to support a Feasibility Study for the previously proposed open pit and underground mine was completed in 2017, which was based on a proposed drilling program by Mining Plus, with support from Peter O'Bryan & Associates (Mining Plus, 2016). The program included ten diamond drillholes targeting the underground mine design, supporting mine infrastructure, and sub-surface investigation to support the proposed box cut. A laboratory testing program was also completed, which consisted of UCS tests with elastic property determinations, direct shear tests of defects (bedding, joints, etc.) and acoustic emissions tests to estimate the in-situ stress regime. The tests were performed at Curtin University's Western Australian School of Mines (WASM) in Kalgoorlie, Western Australia (Western Australian School of Mines, 2018).

The combined dataset of 24 geotechnical drillholes were supported by geotechnical logging of additional resource diamond drillholes to complete a geotechnical Feasibility Study for the combined open pit and underground mining option in 2022 by Peter O'Bryan and Associates (2022).

The investigation programs included geotechnical rock mass and structural logging of the diamond core to classify the rock mass using industry standard classifications techniques, including rock mass rating (RMR), mining rock mass rating (MRMR) and the Q-system dependent on the mining method being evaluated. This information was used to provide a set of recommendations for appropriate slope angles for an open pit mine, and for inputs into underground mine design (for example, to provide recommended stope dimensions).

Following completion of the acquisition by Perseus, the deposit has been further evaluated for a large stand-alone open pit mine through a geotechnical assessment undertaken by MineGeoTech (MGT) in 2024 (MineGeoTech, 2025). The geological model and weathering profile largely remained unchanged from the OreCorp DFS. The assessment focused on review of existing geotechnical data, but also included the following additional items:

- Manual relogging of drill core from the 2011-2012 and 2017 geotechnical programs for structural measurements in the fresh rock, excluding NYZGT005, NYZGT006, NYZGT012, NYZGT013, NYZGT018, NYZGT020 and NYZGT021.
- Assessment and inclusion of geotechnical logs from diamond holes NYZDD1329 and NYZDD1330 from the 2024 resource drilling program.
- Additional sampling and test work from existing fresh rock diamond drill core selected during the 2024 relogging campaign.

Manual relogging was undertaken on available drill holes to validate structural measurements and to rectify an identified systematic error in the measurement of structures recorded in the 2017 geotechnical program. This also allowed additional sample collection in the fresh rock units, as noted above. Sample intervals were selected to allow multiple labs to evaluate the mechanical properties of similar geotechnical domains. A batch of samples was transported for Hoek triaxial and Brazilian indirect tensile strength testing at E Precision laboratory in Perth, Western Australia. Smaller batches were sent to in-country laboratories to conduct similar testing for evaluation and validation of results across the program. The evaluation program is ongoing.

The geotechnical assessment by MGT classified the rock mass based on the main geological units and weathering sub-divisions for oxide, transitional and fresh rock. Structural kinematic analysis was used to assist the design of the slopes in the transitional and fresh sub-groups where structure orientation and interaction is expected to govern the design of appropriate batter and berm configurations.

A high-level kinematic review of the various faults in the model was completed to assess potential for large-scale interaction with the slope design. This review did not flag any significant foreseeable issues based on the modelled fault interpretations. Initial review of the modelled intersections of these structures against

core photography and geotechnical logging also indicated these regions to have a weak association with poorer mechanical behaviour.

MGT provided two sets of recommendations for slope angles based on different risk profile considerations: low consequence and high consequence. The low consequence recommendations that were adopted by Perseus are provided in Table 15-3. These slope angles were used to evaluate the Mineral Reserve.

***Table 15-3: Geotechnical slope design recommendations – Low consequence risk acceptance criteria***

| LITHOLOGY MEMBER | DOMAIN | DESIGN SECTOR | WALL DIP DIRECTION (°) | | BENCH HEIGHT (m) | BFA (°) | BERM WIDTH (m) | IRA (°) |
|---|---|---|---|---|---|---|---|---|
| | | | FROM | TO | | | | |
| All Members | Transitional [1] | A | Entire Domain | | 10 | 60 | 7 | 38.1 |
| Lower Volcaniclastic and Chert | Fresh | B | Entire Domain | | 20 | 85 | 13 | 53.6 |
| Sandstone | Fresh | C | Entire Domain | | 20 | 85 | 12 | 55.5 |
| Mudstone | Fresh | D | 30 | 80 | 20 | 60 | 8 | 45.7 |
| | | E | 80 | 140 | 20 | 75 | 11 | 50.7 |
| | | F | 140 | 290 | 20 | 80 | 12 | 52.2 |
| | | D | 290 | 330 | 20 | 60 | 8 | 45.7 |
| Upper Volcaniclastic | Fresh | G | Entire Domain | | 20 | 80 | 12 | 52.2 |

[1] The oxide and transitional weathering domains were combined into a single, simplified 'Transitional' domain for design given the indication of a shallow (less than 10 m depth on average) complete weathering profile from review of core drilling data by MGT.

Batter Face Angles (BFA) were determined based on review of logged structure data and kinematic analysis to limit the likelihood of undercutting of the batter from structures. Berm widths were determined based on empirical rockfall criteria and assessment of batter failure spill-width requirements.

Global stability of the pit design was assessed through a 3D numerical model using the Rocscience software, RS3, which uses a finite element analysis approach for the assessment of slope stability. The model used homogeneous, isotropic material strengths for each of the different modelled geological unit and weathering subdivisions and included a simplified combination of the weathered and transitional materials. No faults were explicitly included in the model due to having low confidence in their interpretations as modelled, the modelled orientations being largely favourable for slope stability, and due to limited material characterisation for these regions.

Sensitivity analysis was performed for the transitional unit that demonstrated the slope design to be sensitive in this slope region when the UCS strength of the material was below 15 MPa. Elsewhere, the design was shown to be stable for all scenarios modelled.

The most recent geotechnical study completed by MGT confirms a PFS level of accuracy for the Perseus large open pit design. Additional work has been planned to address identified outstanding gaps in-line with a more detailed understanding of the geotechnical environment.

#### 15.3.3.4 METALLURGICAL FACTORS

Gold recovery and ore treatment rate is a function of the metallurgical properties of each ore type. The metallurgical factors used for Mineral Reserves are as described in Section 13.5.

#### 15.3.3.5 OPERATING COSTS

Operating cost estimates used for Mineral Reserves are as described in Section 21.2.

## 15.4 ECONOMIC MODELLING

The Nyanzaga Mineral Reserve has been scheduled in a discounted cashflow model as part of the Perseus Nyanzaga Gold Project Feasibility Study. Results of this discounted cashflow modelling show that the

Nyanzaga Mineral Reserve is economically as well as technically viable. Further information on this work is detailed in Section 22 of this report.

## 15.5 FACTORS AFFECTING MINERAL RESERVE ESTIMATES

The Nyanzaga Gold Project is a Feasibility level project. Perseus is not aware of any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant issues that could potentially affect this Mineral Reserve estimate. The reported Mineral Reserve may be affected by future study assessments of mining, processing, environmental, permitting, taxation, socio-economic and other factors.

Additional technical factors which may affect the Mineral Reserve estimate include:

- Metal price assumptions.
- Changes to the technical inputs used to estimate gold content (e.g., bulk densities, grade estimation strategies, and interpolation methodologies).
- Changes to the geological interpretation (e.g., intrusive dykes and structural offsets such as faults and shear zones) and mineralisation (domain) geometry and continuity of mineralised zones and grade assumptions.
- Changes to geotechnical and mining assumptions, including the minimum mining thickness; or the application of alternative mining methods.
- Changes to process plant recovery estimates.
- Changes to the assumptions used to calculate the gold cut-off grades.

# 16. MINING METHODS

The Nyanzaga Gold Project is proposed to be mined by open pit mining methods. Such mining methods are well established in Tanzania, and across other African operations of Perseus Mining Limited. This Section outlines the key parameters and assumptions for mining of the Nyanzaga Mineral Reserve.

## 16.1 OPEN PIT

### 16.1.1 INTRODUCTION

The Nyanzaga Gold Project open pits will use a conventional hydraulic excavator and rigid off-highway rear dump truck fleet, with drill and blast where required in oxide (38% blasted), transitional and fresh rock material. Mining bench heights are 10 m with 2.5 m flitches for selective mining to minimise ore loss and waste rock dilution. Bulk waste mining is also completed on 10 m benches.

Open pit mining will be undertaken with medium to large scale off-highway equipment, including 180 t – 350 t class excavators and 90 t – 150 t class dump trucks. Trucks haul ore to surface ore stockpiles, with waste being hauled to, and disposed in, waste rock dumps. Stockpile rehandle is by front-end loader.

Drill and blast practices are employed to break competent rock. Drill and blast techniques, including pre-split and trim shots, are applied to minimise open pit wall damage, and blasting is configured to minimise ore loss and waste dilution.

### 16.1.2 MINE DESIGN

#### 16.1.2.1 PARAMETERS AND MODIFYING FACTORS

The following parameters were used for final mine designs and operating parameters:

- Only Measured and Indicated resources were used in the pit optimisation.
- The slope angle varied depending on the degree of weathering of the material. For pit optimisation, a slope angle of 32° was applied for oxide material; 38° for transitional material; and slope angles ranging from 36° to 43° were applied in the fresh materials, depending on lithology and wall orientation. Table 16-1 summarises the slope angles used in the pit optimisation. These are based on the pit design parameters provided by MGT and include an allowance to account for ramps and slope estimation errors in Whittle.

***Table 16-1: Pit optimisation and design slope angles by weathering domain***

| WEATHERING DOMAIN | SLOPE ANGLE USED IN OPTIMISATION (°) | PIT DESIGN INTER RAMP SLOPE ANGLE (°) [1] |
|---|---|---|
| Oxide | 32 | 38.1 |
| Transitional | 38 | 38.1 |
| Fresh | 36-43 | 45.7-52.2 |

[1] Adopts the MGT low consequence slope design parameters

- Based on the size and selectivity of the proposed mining equipment, the block size in the resource model was considered suitable for the mining model and no re-blocking was required. The block sizes in the model were 5.0 mX × 10.0 mY × 5.0 mZ. No ore loss or dilution was thought to be necessary. There is an assumption of zero additional dilution and 100% mining recovery.
- A nameplate processing rate of 5.5 Mt/a was used in the optimisation, which aligns with process plant production scheduling that considers average specific energy for each ore type as the basis of calculating instantaneous mill throughput and 8,000 h/a runtime (91.3% of total hours per year).

- Preliminary recoveries were assigned by rock type as per Table 16-2, with Au denoting the gold feed grade.

***Table 16-2: Pit optimisation processing recovery by rock type***

| ROCK TYPE | RECOVERY CALCULATION |
|---|---|
| Oxide | [(Au-(Au×0.0834-0.0162+0.015))/Au] ×100 |
| Transitional - Upper Volcaniclastics | [(Au-(Au×0.0927+0.0414+0.015))/Au] ×100 |
| Transitional - Mudstone | [(Au-(Au×0.0927+0.0414+0.015))/Au] ×100 |
| Transitional - Sandstone | [(Au-(Au×0.0657+0.1427+0.015))/Au] ×100 |
| Transitional - Chert | [(Au-(Au×0.0685+0.1025+0.015))/Au] ×100 |
| Transitional - Lower Volcaniclastics | [(Au-(Au×0.0927+0.0414+0.015))/Au] ×100 |
| Fresh - Upper Volcaniclastics | [(Au-(Au×0.0927+0.0414+0.015))/Au] ×100 |
| Fresh - Mudstone | [(Au-(Au×0.0927+0.0414+0.015))/Au] ×100 |
| Fresh - Sandstone | [(Au-(Au×0.0657+0.1427+0.015))/Au] ×100 |
| Fresh - Chert | [(Au-(Au×0.0685+0.1025+0.015))/Au] ×100 |
| Fresh - Lower Volcaniclastics | [(Au-(Au×0.0927+0.0414+0.015))/Au] ×100 |

- Mining costs applied were based on contactor pricing supplied by Majesso Consulting (2024a) and benchmarked against Perseus existing operations. Mining costs were based on ore and waste and elevation within pit stages that were defined using earlier work as per Table 16-3.

***Table 16-3: Mining costs by stage***

| PIT STAGE | ORE | | WASTE | |
|---|---|---|---|---|
| | Bench Range (mRL) | Mining Costs ($/bcm) | Bench Range (mRL) | Mining Costs ($/bcm) |
| NYZ_1 | 1325 – 945 | $4.61 – $11.13 | 1375 – 950 | $4.17 – $11.37 |
| NYZ_2 | 1250 – 820 | $4.18 – $11.79 | 1345 – 835 | $4.65 – $11.73 |
| KIL_1 | 1305 – 1200 | $4.37 – $5.84 | 1305 – 1200 | $3.69 – $4.68 |
| NK_3/Other | 1325 – 705 | $4.17 – $15.42 | 1395 – 710 | $4.67 – $16.11 |

- Blasting costs applied within the pit optimisation were based on the weathering profile, material type (ore or waste) and bench height, as per Table 16-4.

***Table 16-4: Drill and blast costs by type***

| MATERIAL | ORE DRILL AND BLAST COST($/bcm) | WASTE DRILL AND BLAST COST ($/bcm) |
|---|---|---|
| Oxide | 0.77 | 0.54 |
| Transitional | 2.99 | 2.00 |
| Fresh | 4.59 | 3.04 |
| Presplit – Transitional and Fresh only | 0.44 | 0.44 |

- A royalty of 7.3% and a selling cost of $2.24/oz was applied to the optimisation. The selling cost was later updated in the financial model.
- A gold price of $1,700/oz was used.
- Using the parameters and modifying parameters outlined above, cutoff grades were applied based on rock type as per Table 15-2.

Table 16-5 shows selected optimisation run was used as a basis for the pit design and various pit stages. Pit shell 52 was selected for the basis of the Nyanzaga Mineral Reserve pit design.

*Table 16-5: Base case optimisation results*

| ITEM | NYANZAGA SHELL 29 | NYANZAGA SHELL 38 | KILIMANI SHELL 52 | NYANZAGA SHELL 52 |
|---|---|---|---|---|
| **General** | | | | |
| Revenue factor | 0.66 | 0.79 | 1.0 | 1.0 |
| Apparent gold price ($/oz) | 1,700 | 1,700 | 1,700 | 1,700 |
| Pit shell bottom (mRL) | 1,060 | 915 | 1,190 | 845 |
| **Physicals** | | | | |
| Ore (Mt) | 17.3 | 34.5 | 2.6 | 50.4 |
| Waste (Mt) | 59.2 | 161.8 | 9.4 | 281.1 |
| Total (Mt) | 76.6 | 196.3 | 12.0 | 331.8 |
| Strip ratio (waste:ore) | 3.4 | 4.7 | 3.6 | 5.6 |
| Au grade (g/t) | 1.39 | 1.42 | 1.05 | 1.4 |
| Recovery (%) | 87.5 | 86.5 | 94.1 | 86.1 |

The various selected stage optimisation shells in plan view for Nyanzaga and Kilimani are shown in Figure 16-1 and in oblique section view in Figure 16-2.

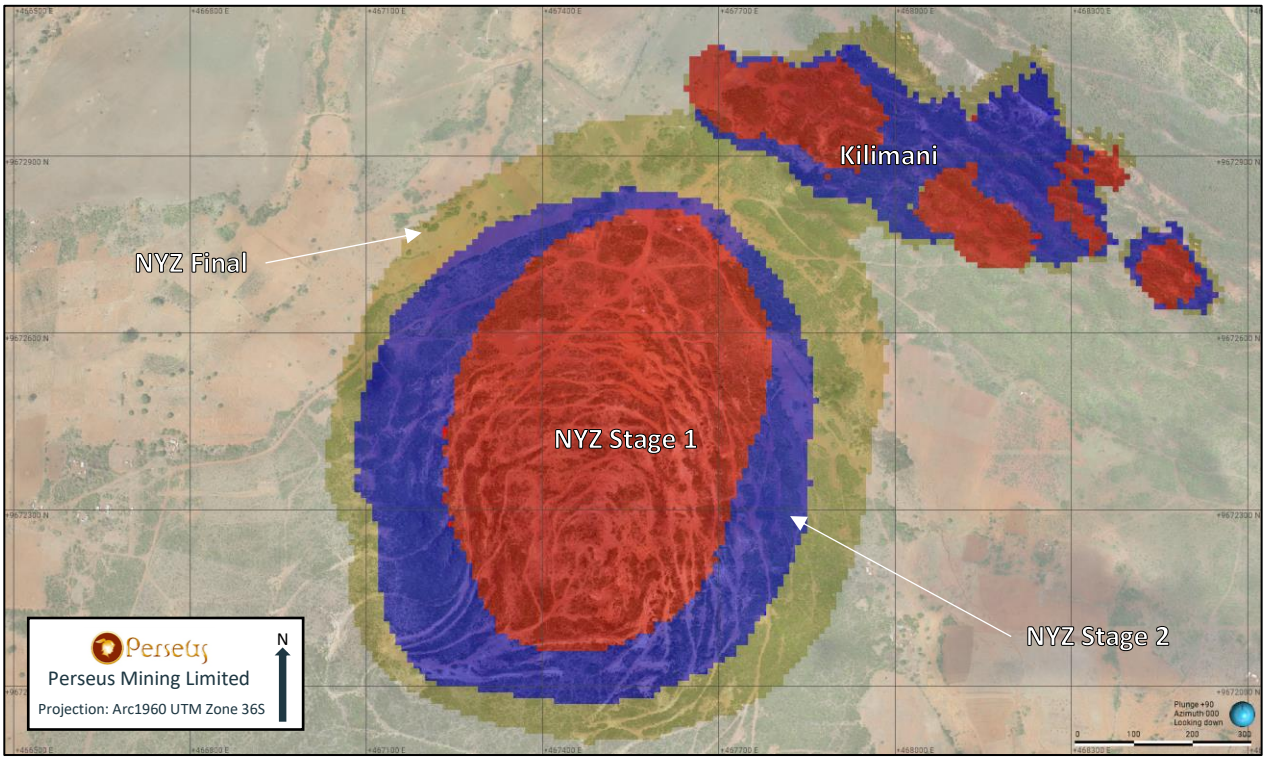



*Figure 16-1: Nyanzaga optimisation stage shells – plan view (Source: Perseus, 2025)*

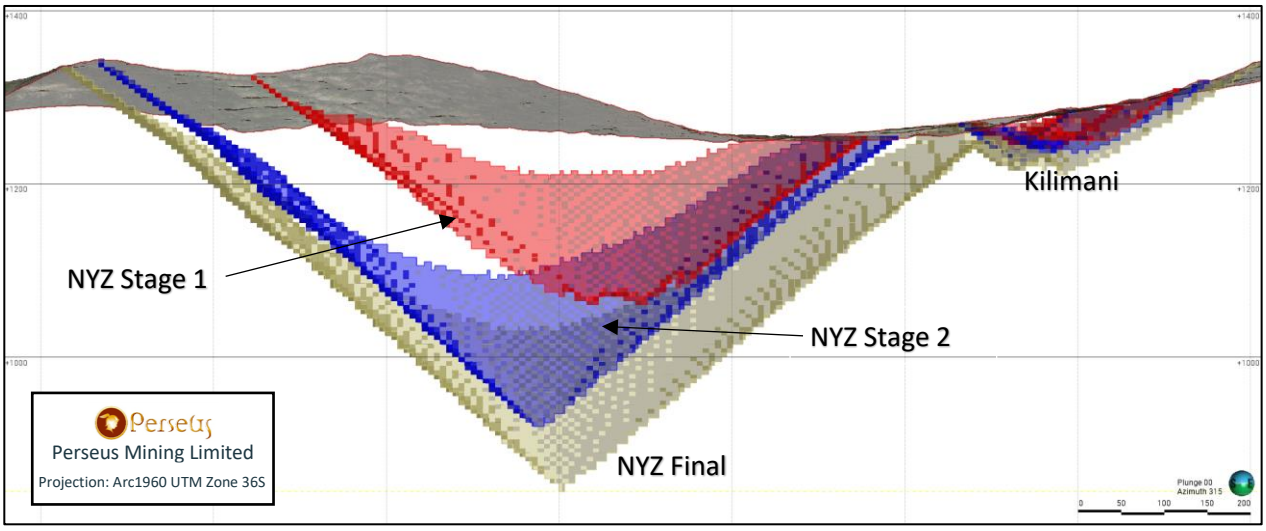



*Figure 16-2: Nyanzaga optimisation stage shells - oblique section looking northwest (Source: Perseus, 2025)*

#### 16.1.2.2 PIT DESIGNS

Pit designs for each weathering domain were based on the criteria listed below in Table 16-6.

*Table 16-6: Pit design criteria by weathering domain*

| PARAMETER | OXIDE-TRANS | FRESH MUDSTONE | FRESH MUDSTONE | FRESH OTHER |
|---|---|---|---|---|
| WALL DIP DIRECTION (°) | 0-360 | (080-140) | 030-080<br>290-330 | 0-360 |
| Batter angle (°) | 60 | 60 | 75 | 80 |
| Batter height (vertical m) | 10 | 20 | 20 | 20 |
| Berm width (m) | 7 | 8 | 11 | 12 |
| Inter-ramp slope (toe to toe, no ramp) (°) | 38.1 | 45.7 | 50.7 | 52.2 |
| Geotechnical berm interval (vertical m) | n/a | n/a | n/a | n/a |
| Geotechnical berm width (m) | n/a | n/a | n/a | n/a |
| Ramp width (dual) | 26 | 26 | 26 | 26 |
| Ramp width (single) | 16 | 16 | 16 | 16 |
| Ramp Gradient 1 in: | 10 | 10 | 10 | 10 |

The stage pit designs, in plan and long section view, for Nyanzaga are shown in Figure 16-3 and Figure 16-4.

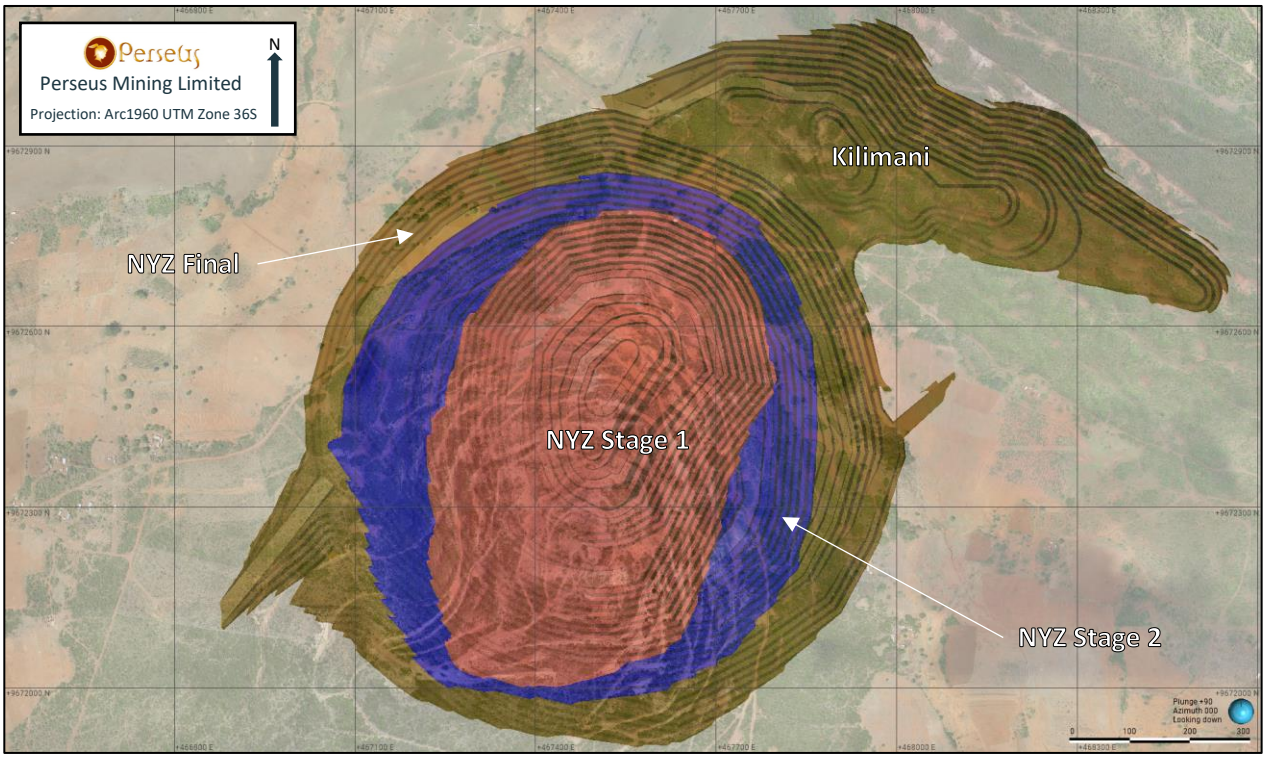



*Figure 16-3: Nyanzaga pit design stages – plan view (Source: Perseus, 2025)*

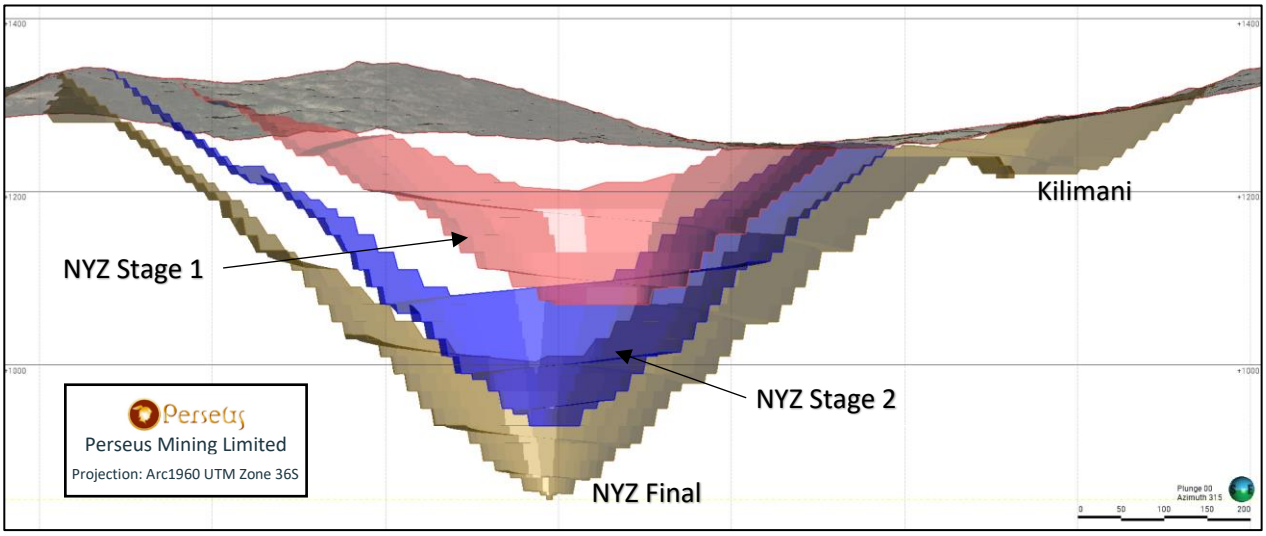



*Figure 16-4: Nyanzaga pit design stages – oblique section looking northwest (Source: Perseus, 2025)*

### 16.1.2.3 WASTE DUMP DESIGN PARAMETERS

The Nyanzaga project consists of two primary waste dump facilities which are designed with 10 m bench heights, 5 m berms and 18° batter angles. The waste dumps were designed to have an overall slope gradient of approximately 1:3.6.

### 16.1.3 MINING METHOD

A conventional open pit mining method using excavators and rigid dump trucks was selected as the preferred mining method. Experienced mining contractors will undertake all aspects of the mining operation. Supervision, grade control and planning will be undertaken by an owner's team. All fresh material will be blasted. Bulk waste will be blasted on 10 m benches and the ore zones will be blasted on 5 m benches and mined in two flitches for greater selectivity (depending on the point in the mine schedule) with ore delivered to blend fingers on the ROM pad.

Mining activities are by a mining contractor, whose activities include stripping free dig material such as topsoil, clays and highly weathered rock near surface. Some oxide, transitional and fresh rock, which is the dominant material type, requires drilling and blasting, before being mined by the mining contractor.

To balance waste stripping and ore grades, the pits are mined to the ultimate boundary limit using cutbacks. Access to the pit is by 26 m wide haul roads and ramps, incorporating a 10% gradient, with windrows and drains. Twin dual lane ramps are incorporated from the surface to 160 m from the base of the Pit. One dual lane ramp is incorporated from 160 m to 60 m to the base of the pit and single lane ramps, 16 m wide, are included for the final 60 m of the pit, as required towards the end of pit life to maximise ore recovery and minimise waste mining. Rock is hauled to the surface, with ore either direct tipped to the primary crusher or placed on stockpiles at the ROM pad, and waste dumped to waste rock dumps.

Ore and waste in some of the oxide and all of the transition and fresh rock is drilled and blasted prior to excavation. The mine undertakes conventional drilling and blasting activities with pre-splitting in all transition and fresh rock to ensure stable wall conditions.

### 16.1.4 MINING SCHEDULE

The mining schedule for Nyanzaga is shown in Figure 16-5 and extends for 10 years, with total material movement forecast to peak during the period FY28 to FY32. The open pit mining operation has a current mining rate of approximately 50 Mt/a total material movement, and across the LOM, to deliver ore feed to support the target average processing rate of 5.5 Mt/a. Over the life of the open pit, 52.0 Mt of ore and 297.8 Mt of waste will be mined at an average strip ratio of 5.7.

A key constraint with respect to mining at Nyanzaga is the vertical advance rate, which is limited to a maximum of 80 m/a.

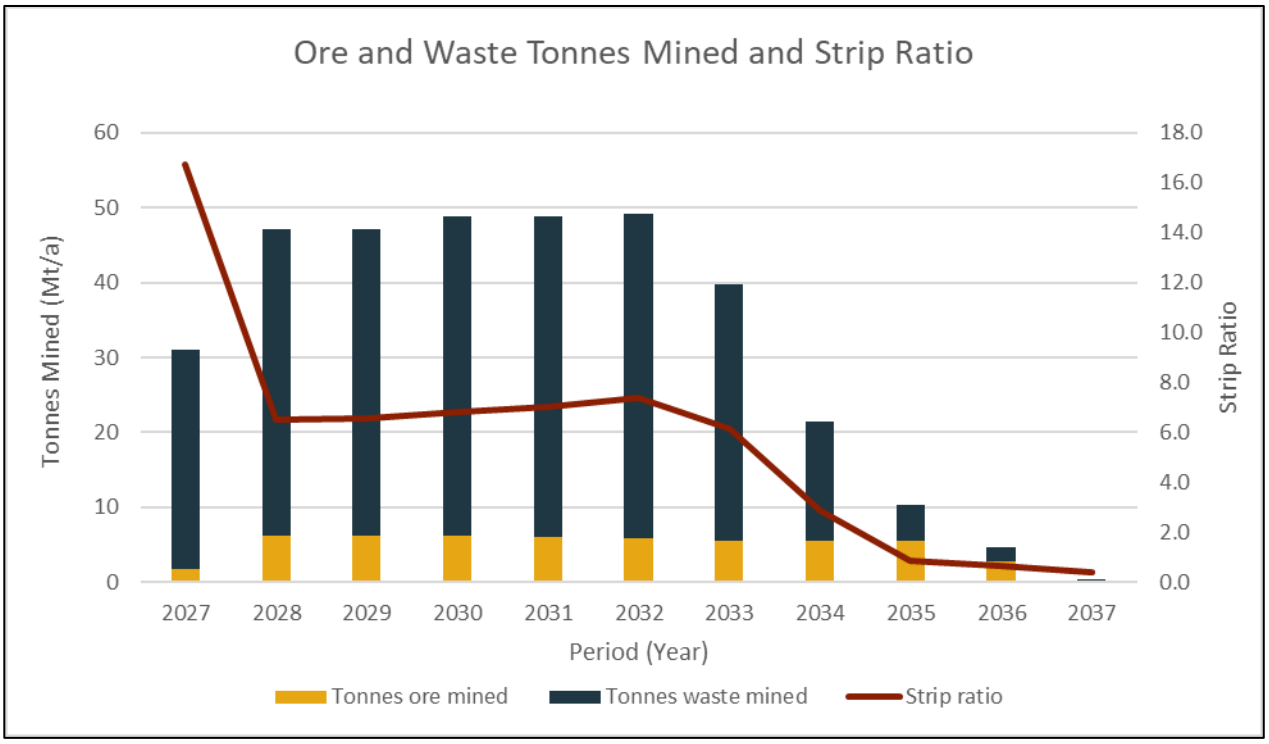



*Figure 16-5: LOM mining production schedule (Source: Perseus, 2025)*

Note that the mining production schedule is based on Mineral Reserves only.

### 16.1.5 OPEN PIT MINING OPERATIONS

A tender process is underway to select a mining contractor for open pit mining. The mining contractor is responsible for:

- Clearing and grubbing.
- Topsoil stockpiling.
- Waste stripping.
- Drilling and blasting.
- Excavating and haulage of ore and waste.
- Ore stockpile and waste dump management.
- Ancillary services including dewatering, pumping and haul road construction/maintenance.

Grade control drilling will be completed under a separate contract. Grade control samples will be processed at the site laboratory operated by a yet to be determined commercial laboratory contractor.

Technical services and mine management activities, including mining geology, survey, and mining engineering (design, scheduling, and drill and blast) will be conducted by Perseus.

# 17. RECOVERY METHODS

## 17.1 INTRODUCTION

The Nyanzaga gold processing plant has been designed by Lycopodium Minerals Pty Ltd with a nameplate ore treatment rate of 5.0 Mt/a (based on the projected ore blend with the highest weighted 85$^{th}$ percentile specific energy values) (Orway Mineral Consultants, 2024). Perseus notes the optionality to run at higher throughput rates based on ore specific comminution parameters, and major equipment selection and engineering has considered achieving higher volumetric throughput.

This section summarises key technical data for the recovery of gold from Nyanzaga Gold Project ore types within the Nyanzaga processing plant facility. Section 17.3 summarises the development of design criteria for the Nyanzaga processing plant, based on findings from metallurgical test work, circuit modelling and design engineering. Section 17.4 presents a simplified version of the Nyanzaga processing plant flowsheet and highlights major equipment specifications. Section 17.5 describes the gold recovery process and the process flowsheet in greater detail by plant area. Sections 17.7 and 17.8 summarise power and water requirements for processing Nyanzaga Gold Project ore deposits.

## 17.2 SITE LOCATION AND LAYOUT

The plant layout was developed based on an appropriate level of engineering effort required to support a Feasibility Study level capital cost estimate. The plant has been located to suit the available usable area within a restrictive topography, whilst providing appropriate access for all supporting infrastructure including mining, power supply and tailings storage. Due consideration for the interaction of these activities is critical for the effective operation of the processing plant and is captured in the overall site and plant layout.

The design approach adopted reflects typical industry good practice, which will be continued and further developed during the detailed engineering of the Project. The Feasibility Study design incorporates Lycopodium's extensive experience in gold plant design and project implementation in Africa. As the site and plant layout is aligned to the approach used for other African gold projects executed by Lycopodium Minerals Pty Ltd, the capital cost estimate presented in Section 21.1 inherently represents the cost of gold plant designs operated by international mining companies and designed to Australian standards.

As shown in Figure 17-1, project facilities, including the mine services area, administration and the accommodation village, have been located within close proximity of the process plant site to maintain a single centre of operations. The plant area will be surrounded by a double security fence provided with perimeter lighting and camera monitoring. The plant layout provides ease of access to all equipment for operating and maintenance requirements while maintaining a compact footprint to minimise construction costs. All fixed plant and infrastructure facilities are located outside the 500 m blast radius of a conceptual $3,000/oz pit shell.

A geotechnical investigation was conducted by Knight Piésold Pty Ltd during 2024 (Knight Piésold, 2025e) to confirm the location of the process plant and provide necessary information for process plant earthworks, concrete and structural design. Geotechnical investigations included test pits, borehole drilling, field testing, sampling and laboratory testing for key locations with major static and dynamic equipment loads.

The typical sub-surface ground profile, based on logged ground conditions from the site investigation, is as follows:

- Topsoil, comprising soft to firm sandy clay; soft to very stiff sandy and clayey silt; loose to medium dense silty and clayey sand; and medium dense to dense sandy gravel, with depths ranging from 0.3 m to 1.5 m.
- Colluvium, comprising stiff to very stiff gravelly and sandy clay; dense to very dense gravelly sand; and medium dense to very dense sandy and clayey gravel, to depths ranging from 7.5 m to 12.95 m.
- Residual soil, comprising stiff to hard gravelly and sandy clay; dense to very dense clayey and sandy gravel; loose to very dense clayey sand; and very stiff to hard clayey silt, to depths ranging from 7.5 m to 40 m.

- Extremely weathered material comprising hard sandy clay with gravel; dense to very dense clayey gravel; and hard sandy and clayey silt to depths ranging from 17 m to 59 m.
- Rock (dacite, sandstone, and siltstone), fine to medium grained, with strength increasing and weathering decreasing with depth from 28 m to the end of the boreholes.

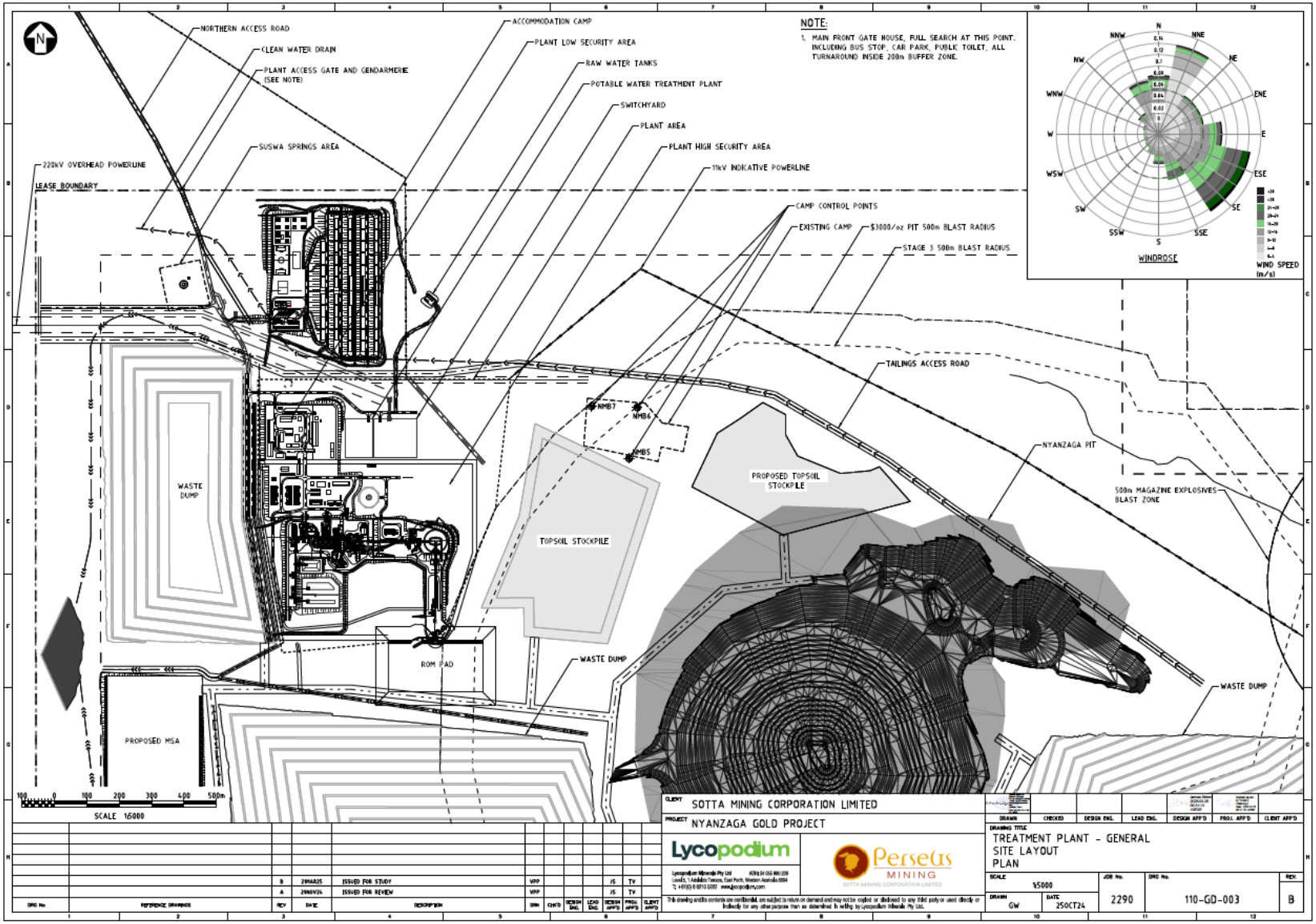



*Figure 17-1: Nyanzaga site layout plan, with single centre of key operations located close to the process plant (Source: (Lycopodium, 2025b))*

## 17.3 DESIGN CRITERIA DEVELOPMENT

The mineral processing and metallurgical testing programs, detailed in Section 13, have provided information about the physical characteristics and metallurgical response of the Nyanzaga Gold Project ore deposits and ore types. Test work outcomes, along with typical industry design parameters, preliminary vendor data, Perseus instruction and Lycopodium experience have informed the process and engineering design criteria. The key criteria for equipment selection are the suitability for duty and the projected mine life of the operation without unnecessarily compromising reliability and ease of maintenance.

The Nyanzaga plant will process a range of ore types (predominantly oxide and fresh) with variable ore characteristics and head grades. The relative contributions of each material type and their proposed sequence of treatment over the LOM were considered during the sizing of the comminution circuit and subsequent modelling of plant throughput parameters. Predicted ore blend grades for both gold and silver have been considered when sizing the CIL and elution circuits and gold room. The presence of low concentrations of soluble mercury have also been considered, and mercury treatment circuits have been included in the process flowsheet.

The plant feed for the Nyanzaga Gold Project will consist of about 11.7% oxide and 88.3% fresh ore, with the majority of oxide ore processed in the first two years. The three main fresh ore lithologies are mudstone, sandstone and chert, with the more competent mudstone and sandstone ores making up the majority of the plant feed from year 2 onwards. The ore types, and their proportion of the LOM blend based on the plant feed schedule developed by Perseus, are shown in Table 17-1.

***Table 17-1: Ore types and life of mine (LOM) blend***

| DEPOSIT | ORE TYPE | PROPORTION OF LOM BLEND |
|---|---|---|
| Nyanzaga | Oxide | 6.6 |
| | Mudstone | 45.6 |
| | Sandstone | 26.8 |
| | Chert | 15.9 |
| Kilimani | Oxide | 5.1 |

An SAB comminution circuit (SAG milling with pebble recycle and ball milling in closed circuit with hydrocyclones) was selected for the Nyanzaga processing plant and will be able to accommodate the spectrum of material hardness and competency observed from test work (Orway Mineral Consultants, 2024). Grind sensitivity and subsequent variability test work suggests that all material types are grind sensitive with gold extraction increasing with fineness of grind. The techno-economic grind optimisation evaluations identified that a grind size $P_{80}$ of 75 µm is optimal for Nyanzaga Gold Project ores. Diagnostic leach test work and mineralogical investigations indicate that most of the residual gold that is not recoverable by cyanide at the target grind size is fine grained and associated with predominantly arsenopyrite, pyrite, pyrrhotite, carbonates, or silicates. Even though additional gold may be liberated with finer grinding, the incremental quantity of gold that would be liberated does not justify the incremental cost.

Test work programs indicated that the gravity recovery stage added marginal benefit to the final gold extraction for most ore types. A gravity circuit has been included in the Nyanzaga process plant flowsheet for the following reasons:

- Variable head assays for samples indicate that coarse gold or spotty mineralisation is present across Nyanzaga Gold Project ore deposits and ore types. This is best mitigated by inclusion of a gravity circuit, whereby potential spikes of high-grade material presenting to the CIL circuit are limited, allowing more consistent operation of the adsorption and elution circuits.
- Leach kinetics are improved, particularly at the start of the leach, by removing the gravity recoverable gold. This improves the carbon profile and promotes lower gold solution losses.

- Intensive cyanidation of the gravity concentrate has improved potential of leaching gold from semi-refractory minerals that may be present.
- Removing gravity recoverable gold in a dedicated circuit reduces the amount of coarse gold that may accumulate in gravity traps across the comminution circuit, improving gold accountability and security outcomes.
- Marginally reduced consumption of cyanide and lime were noted from test work.

Gravity/cyanidation variability test work on Nyanzaga Gold Project ore samples at optimised flowsheet conditions determined that average gold extractions by ore type ranged between 82.3% and 96.1%, and average silver extractions by ore type ranged between 26.5% and 66.1%. Gold leach kinetics were rapid, with most gold leaching occurring within four to eight hours. Silver leach kinetics were slower, with silver leaching being largely complete within 12 h, but continuing through to 24 h for some samples. Some mudstone samples exhibited mild preg-robbing characteristics, but these were demonstrated to be overcome by utilising a CIL circuit design. Mineralogical test work and multielement head assays across all ore types indicated that some samples contained elevated levels of sulfide minerals (e.g., pyrite, pyrrhotite, arsenopyrite), which increase oxygen demand in cyanide leach. Consequently, the plant design comprises a single pre-oxidation stage ahead of a six-stage CIL circuit. Oxygen addition was shown to promote leach kinetics across test work programs, so the pre-oxidation and CIL tanks will be fitted with oxygen addition down shaft of agitators. The CIL circuit has been designed to have a nameplate residence time of 24 h.

Oxide ore samples tested in rheology, thickening and settling rate tests exhibited performance limitations once 60% w/w solids is reached, whereas fresh ore samples did not exhibit performance limitations up to the maximum pulp density tested at 60% w/w solids. Pre-leach and tailings thickeners have been included in the Nyanzaga Gold Project flowsheet to maximum water recycle, with CIL design pulp density of 50% w/w solids selected and supported by test work.

It was noted that the Nyanzaga and Kilimani deposit ores contain elevated concentrations of mercury, arsenic and antimony. The ore processing flowsheet has been designed to capture mercury through a range of mercury abatement technologies, described in Section 17.5.12. Test work and modelling indicates that soluble arsenic and soluble antimony will not have a significant effect on potential economic recovery of gold in CIL and that soluble arsenic and soluble antimony will be contained within the tailings and process water systems. Provision has been made in sustaining capital for a water treatment plant should arsenic or antimony present operational challenges in the future. pH control is included in the process control design to mitigate gold passivation that can occur at high pH due to elevated antimony levels.

Cyanide detoxification of the tails stream is included in the Nyanzaga plant flowsheet to ensure that TSF supernatant concentrations achieve $CN_{WAD}$ levels <50 mg/L, which aligns with industry guidelines for TSFs such as Standard of Practice 4.4 of International Cyanide Management Institute's Mining Operations Verification Protocol (2021).

Table 17-2 summarises key process design and operating criteria for the Nyanzaga processing plant (Lycopodium, 2025a); (Orway Mineral Consultants, 2024).

*Table 17-2: Summary of key process design and operating criteria*

| CRITERIA | UNITS | VALUE |
|---|---|---|
| Plant throughput – nameplate | t/a | 5,000,000 |
| Plant throughput - ore specific range | t/a | 4,760,000 to 6,000,000 |
| Head grade – design | g/t Au | 2.00 |
| | g/t Ag | 2.50 |
| | g/t Hg | 1.10 |
| Total metal recovery – design | % Au | 86.0 |
| | % Ag | 60.0 |
| Extraction – design | % Hg | 20.0 |
| Crushing plant run time | % | 80.0 |
| Grinding/process plant run time | % | 91.3 |
| Grind size $P_{80}$ | µm | 75 |
| Gravity recovery | % Au | 30 |
| Number of pre-oxidation tanks | - | 1 |
| Pre-oxidation tank volume | $m^3$/tank | 3,250 |
| Number of CIL tanks | - | 6 |
| CIL tank volume | $m^3$/tank | 3,250 |
| CIL residence time | h | 24 |
| CIL solution loss | mg/L Au | 0.015 |
| | mg/L Ag | 0.030 |
| Elution circuit type | - | Split AARL |
| Elution circuit – mass of carbon batch | t | 16.0 |
| Frequency of elution | strips/week | 6 |
| TSF supernatant $CN_{WAD}$ concentration | mg/L | <50 |

## 17.4 PROCESS FLOWSHEET

The process plant design for the Nyanzaga Gold Project is based on a robust metallurgical flowsheet designed for optimum recovery with minimal operating costs. The flowsheet is based on unit operations that are well proven in industry. A simplified process flow diagram for the Nyanzaga process plant is shown in Figure 17-2, and consists of the following unit processes:

- Primary crushing with a single gyratory crusher to produce a coarse crushed product.
- A live stockpile from which ore is reclaimed to feed the milling circuit.
- SAG milling with pebble recycle and ball milling in closed circuit with hydrocyclones (SAB comminution) to produce a grind size of 80% passing ($P_{80}$) of 75 µm.
- Gravity concentration and removal of coarse gold from the circulating load within the milling circuit, and treatment of gravity concentrate by intensive cyanidation and electrowinning.
- Trash screening of the cyclone overflow stream, to remove wood and plastic trash or oversize material prior to cyanidation.
- Pre-leach thickening of the trash screen underflow to increase the slurry density feeding the carbon-in-leach (CIL) circuit and optimise water recycle within the process.
- A pre-oxidation/CIL circuit to leach and adsorb gold and silver from the milled ore onto activated carbon. This circuit consists of one pre-oxidation tank, and six CIL tanks, providing a total of 24 hours leach and adsorption time.
- A split AARL elution circuit for recovery of precious metals from loaded CIL carbon.
- Electrowinning.

- Carbon regeneration.
- Smelting of electrowinning sludge, producing doré for sale.
- Mercury recovery from electrowinning sludge, and electrowinning cell, smelting furnace and carbon reactivation kiln off gases.
- Thickening of CIL tailings to produce a higher solids concentration slurry for tailings storage facility (TSF) deposition and optimise water recycle within the process.
- $SO_2$/air detoxification of cyanide in tailings thickener underflow slurry.
- Pumping of cyanide detoxification tailings to the TSF.
- Return of TSF decant water for process use.

Section 17.5 describes the Nyanzaga gold recovery process and the process flowsheet in greater detail by plant area.

A summary of major equipment proposed for the Nyanzaga processing plant, with indicative specifications, is provided in Table 17-3 (Lycopodium, 2025c). Equipment specifications will be confirmed during the tendering and procurement processes. The unit operations and equipment proposed are typical of the industry and are suitable for the required duty and projected mine life. The maintenance requirements and costs of the proposed equipment installed are well understood.

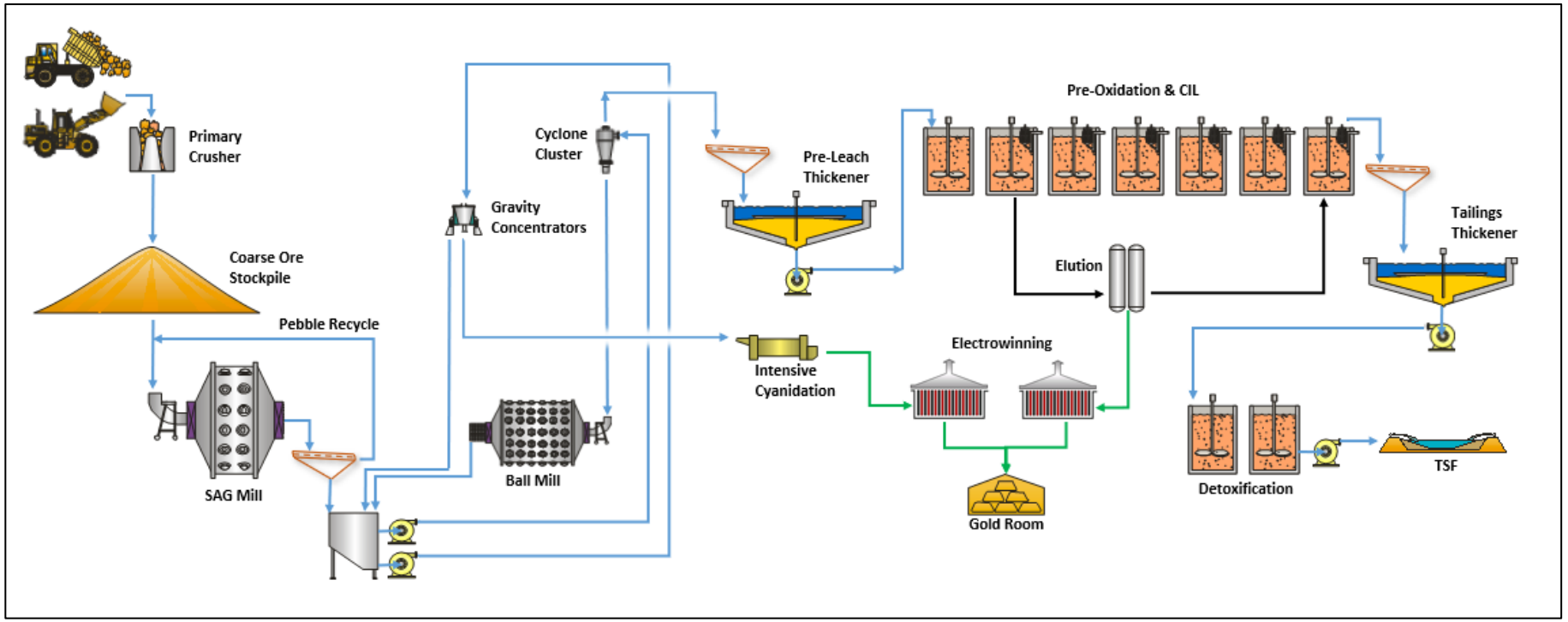



*Figure 17-2: Simplified processing plant flowsheet (Source: Lycopodium 2024)*

*Table 17-3: Summary of major process equipment*

| EQUIPMENT | INDICATIVE SPECIFICATIONS | QUANTITY INSTALLED |
|---|---|---|
| Primary crusher | Metso Superior™ MKIII 42-65 gyratory crusher, 375 kW motor | 1 |
| SAG mill | Metso, 9.75 m diameter inside shell × 5.30 m EGL, 10.5 MW motor | 1 |
| Pebble dewatering screen | 3.05 m wide × 7.32 m long, 15×50 mm aperture, 55 kW motor | 1 |
| Ball mill | Metso, 7.32 m diameter inside shell × 10.75 m EGL, 10.5 MW motor | 1 |
| Hydrocyclone cluster | 14 installed 500 mm diameter cyclones | 1 |
| Gravity scalping screen | 3.05 m wide × 7.32 m long, 2×11.5 mm aperture, 55 kW motor | 2 |
| Gravity concentrator | Batch/semi-batch concentrator, 400 t/h feed solids capacity | 2 |
| Intensive cyanidation reactor | Batch reactor, treating 5,360 kg gravity concentrate/day | 1 |
| Trash screen | 3.66 m wide × 7.32 m long, 0.8×8.8 mm aperture, 55 kW motor | 1 |
| Pre-leach thickener | 28.0 m diameter, high-rate | 1 |
| Leach feed samplers | Two-stage metallurgical sampler | 1 |
| Pre-oxidation tank | 3,250 $m^3$ live capacity, 15.76 m diameter × 18.0 m high | 1 |
| CIL tanks | 3,250 $m^3$ live capacity, 15.76 m diameter × 18.0 m high | 6 |
| Pre-oxidation/CIL tank agitators | 132 kW motor | 7 |
| CIL intertank screens | 2.4 m diameter, mechanically swept, 0.83 mm aperture wedgewire, 11 kW motor | 6 |
| Loaded carbon recovery screen | 2.44 m wide × 4.88 m long, 0.63×8.8 mm aperture, 37 kW motor | 1 |
| Acid wash column | Rubber lined carbon steel, 16 t capacity, 34 $m^3$ total volume | 1 |
| Elution column | Stainless steel, 16 t capacity, 34 $m^3$ total volume | 1 |
| Strip solution heater | 4,830 kW, diesel fuel | 1 |
| Carbon dewatering screen | 1.22 m wide × 2.44 m long, 0.8×8.8 mm aperture, 12 kW motor | 1 |
| Carbon regeneration kiln | Horizontal kiln, 800 kg/h carbon treatment rate, direct diesel fired | 1 |
| Carbon sizing screen | 1.22 m wide × 2.44 m long, 0.8×8.8 mm aperture, 12 kW motor | 1 |
| Electrowinning cell (gravity) | Stainless steel, 22 × cathodes (1,000 mm × 1,000 mm); 4,500 A, 7 V rectifier | 1 |
| Electrowinning cell (elution) | Stainless steel, 22 × cathodes (1,000 mm × 1,000 mm); 4,500 A, 7 V rectifier | 3 |
| Smelting furnace | 102 L capacity, direct diesel fired, electromechanical tilt, cascade moulds | 1 |
| CIL tails samplers | Two-stage metallurgical sampler | 1 |
| Carbon safety screen | 3.66 m wide × 7.32 m long, 1.0×8.8 mm aperture, 55 kW motor | 1 |
| Tailings thickener | 28.0 m diameter, high-rate | 1 |
| Cyanide detoxification tanks | 460 $m^3$ live capacity, 8.59 m diameter × 8.4 m high | 2 |
| Cyanide detoxification tank agitators | 185 kW motor | 1 |

## 17.5 PROCESS AND PLANT DESCRIPTION

### 17.5.1 CONTROL SYSTEM

#### 17.5.1.1 GENERAL

The general control philosophy for the plant will be one with a high level of automation and remote control facilities. Instrumentation will be provided within the plant to measure and control key process parameters.

The main control room will house two PC based operator interface terminals (OIT). Two additional servers will also be located here to act as the control system supervisory control and data acquisition (SCADA) servers in a redundant configuration. The control room is intended to provide a central area from where the plant is operated and monitored and from which the regulatory control loops can be monitored and adjusted. All key process and maintenance parameters will be available for trending and alarming on the process control

system (PCS). An additional OIT will be located at the top of the crusher building, to provide a secondary location for crushing circuit monitoring and control.

The PCS that will be used for the plant will be a programmable logic controller (PLC) and SCADA based system. The PCS will control the process interlocks and PID (proportional-integral-derivative) control loops for non-packaged equipment.

Vendor supplied packages will use vendor standard control systems throughout the project. Vendor packages will generally have limited interfaces with the PCS such that control and set-point changes may have to be adjusted locally. General equipment fault alarms from each vendor package will be monitored by the PCS system and displayed on the OIT. Fault diagnostics and troubleshooting of vendor packages will be performed locally.

#### 17.5.1.2 FIELD INPUT / OUTPUT

All instrumentation and field controls will be captured by the PCS via remote input/output (I/O) modules, generally located at each process module of the plant, primarily to minimise extended cable run lengths back to the switchroom. These remote I/O modules are electrical field enclosures housing power supplies, network equipment, marshalling terminals and PLC remote I/O nodes. All remote I/O nodes will be linked to the PLC via a PCS Ethernet network, supported over the site fibre optic cabling between switchrooms, remote I/O modules and key infrastructure buildings.

#### 17.5.1.3 DRIVE CONTROL

In general, the plant process drives will report their ready, run and start push button status to the PCS and will be displayed on the OIT. Local control stations will be in the field in proximity to the relevant drives. These will, as a minimum, contain start and latch-off-stop (LOS) pushbuttons which will be hard-wired to the drive starter. Plant drives will predominantly be started by the control system in automatic operation.

The OITs will allow drives to be selected to Auto, Local, Remote or Out-of-Service modes via the drive control pop up. Statutory interlocks, such as emergency stops and thermal protection, will be hardwired and will apply in all modes of operation. All PLC generated process interlocks will apply in Auto and Remote modes. Process interlocks will be disabled or bypassed in Local mode, except for critical interlocks such as lubrication systems on grinding mills.

Local selection will allow each drive to be operated by the operator in the field via the local start push button. Remote selection will allow the equipment to be started from the control room via the drive control pop up. Status indication of process interlocks, as well as the selected mode of operation, will be displayed on the OIT.

#### 17.5.1.4 CONTROL LOOPS

Regulatory control loops will be provided for all key process circuits to provide optimal functionality without regular operator intervention.

There will be two modes for loop-controlled set points available in the OIT. These are 'Loop Auto Mode' and 'Loop Manual Mode'. In Loop Auto Mode (analogous to cascade control), the set point will be predominantly controlled by the applicable master PID loop (e.g., for thickener underflow pumping control, the bed pressure PID controller output will supply a set point for the thickener underflow flow control loop, which ultimately controls the speed of the thickener underflow pump). In Loop Manual Mode, set point may be entered manually from the loop set point pop up in the OIT.

Where required, analogue set points from the PCS to vendor supplied control panels can be done either via the OIT or via vendor control panels.

### 17.5.2 ROM PAD

The run-of-mine (ROM) pad is used to provide a buffer between the mine and the plant. ROM stockpiles allow blending of ore types and grades to ensure a consistent feed type and feed rate to the plant.

Mining haul trucks operating from the open pit mine will deliver run-of-mine (ROM) ore to the ROM pad, where it will be direct tipped to the ROM bin or dumped to blending stockpiles. A front-end loader (FEL) will be used to reclaim ore from the various ROM pad stockpiles to the ROM bin.

The ROM bin will be equipped with raw water sprays to provide dust suppression whilst ore is fed to the ROM bin.

### 17.5.3 CRUSHING CIRCUIT

ROM ore will be loaded into the ROM bin by direct tipping from mining haul trucks or reclaimed by FEL from the ROM pad stockpiles. A mobile rock breaker will be utilised to break oversize rocks on the ROM pad, whilst a fixed rock breaker will be utilised to break oversize rocks that report to the ROM bin.

Ore that is delivered to the ROM bin will report to the primary gyratory crusher. Crusher product will be drawn from the primary crusher discharge bin by the crusher discharge conveyor. The crusher discharge conveyor will transfer onto the stockpile feed conveyor. A weightometer located near the discharge end of the crusher discharge conveyor will indicate the instantaneous and totalised crushing circuit tonnage.

A dust collector will be installed to capture dust from material transfer points within the crushing circuit.

The crushing circuit will be primarily monitored and controlled from the plant control room, with secondary monitoring and control available from an OIT located at the upper level of the primary crusher. Two-way radio communication between the control room operator and the ROM pad vehicles will ensure that a minimum inventory is maintained within the ROM bin.

### 17.5.4 COARSE ORE STOCKPILE AND RECLAIM

The stockpile feed conveyor will discharge crushed ore onto the coarse ore stockpile (COS). The COS has a live capacity of 14.5 h and is supplemented by a further approximately three days' worth of ore that is side cast and can be reclaimed by FEL. Raw water sprays will be installed for dust suppression as required.

Crushed ore will be reclaimed from the COS at a controlled rate by the variable speed stockpile reclaim feeders, which will discharge onto the stockpile reclaim conveyor. The crushed ore will then be transferred to the grinding circuit via the SAG mill feed conveyor. Crushed ore can also be reclaimed by FEL from the COS into the emergency reclaim feeder bin. The variable speed emergency reclaim feeder will withdraw and transfer ore from the emergency reclaim feeder bin to the emergency reclaim conveyor and then to the SAG mill feed conveyor. A weightometer beneath the SAG mill feed conveyor will indicate the instantaneous and totalised mill feed tonnage and will be used to control the speed of the stockpile reclaim feeders or the emergency reclaim feeder.

The reclaim circuit will be controlled from the plant control room.

### 17.5.5 GRINDING AND CLASSIFICATION CIRCUIT

Crushed ore will be milled to achieve the required grind size for effective gold recovery by cyanidation. The grinding circuit will consist of a SAG mill with pebble recycle and a ball mill in closed circuit with a cluster of hydrocyclones (SAB comminution circuit).

Ore feeding the SAG mill is slurrified with mill water and subjected to primary grinding in the presence of SAG mill grinding media. The SAG mill will be equipped with a variable speed drive to assist in managing variations in ore competency and hardness. Slurry discharging from the SAG mill will feed to a pebble dewatering screen. The oversize, consisting of pebbles and worn steel grinding media, will discharge onto the pebble transfer conveyor and will then be transferred to the SAG mill feed conveyor via the pebble discharge conveyor. If required, pebble dewatering screen oversize can be diverted to the milling area sump. A weightometer will be fitted beneath the pebble discharge conveyor to indicate the mass of pebbles being recycled. Should the competency and hardness of future ore sources increase, sufficient space has been allowed for retrofitting a pebble crushing circuit.

Undersize from the pebble dewatering screen will gravitate to the mill discharge hopper. Cyclone feed pumps will pump mill discharge hopper slurry to the hydrocylone cluster for size classification. The cyclone underflow (coarse material) will be collected in the cyclone underflow launder and gravitate to the mill feed splitter box, from where it will be split between the ball mill and the SAG mill to achieve a power draw balance across the mills. Slurry reporting to the ball mill will be subjected to further grinding in the presence of ball mill grinding media. Slurry will discharge from the ball mill via the ball mill trommel. Trommel undersize reports to the mill discharge hopper. The trommel oversize (being worn grinding media and small pebbles) will report to the ball mill scats bunker and will be cleaned out periodically using a FEL. Cyclone overflow (product sized material) will gravitate to the trash screen.

A separate gravity feed pump will pump mill discharge hopper slurry to the gravity circuit.

Drive in sumps and sump pumps will be located at the feed and discharge ends of the mills to collect area spillage.

A jib crane will be provided for maintenance of the cyclones. Maintenance lifts around the mills will be done by mobile crane. The mill building layout will accommodate crane access to all heavy lifts. A mill liner handler and bolt removal tool will be provided for mill liner changeouts.

### 17.5.6 GRAVITY CIRCUIT

A dedicated gravity feed pump will pump mill discharge hopper slurry to the gravity circuit, which will consist of two gravity scalping screens and two centrifugal gravity concentrators. An intensive cyanidation reactor will process the gravity concentrate.

Slurry feeding the gravity circuit will report to the gravity scalping screens, with screen oversize reporting to the mill discharge hopper. Undersize slurry from each screen will report to a centrifugal gravity concentrator beneath each screen. Each gravity concentrator will be operated as a semi-batch process with periodic discharge of coarse, high SG material (gravity concentrate) to the feed hopper of the intensive cyanidation reactor. The tails slurry from the centrifugal gravity concentrators will gravitate to the mill discharge hopper.

The intensive cyanidation reactor will process one batch of gravity concentrate per day under intensive cyanidation conditions. Sodium cyanide, caustic soda and oxygen will be introduced into the slurry, with the leach cycle lasting for up to 20 h. Flocculant will be added at the end of the leach cycle to settle the leach solids. The pregnant solution will be separated from the solids and pumped to a dedicated gravity pregnant solution tank adjacent to the gold room. Intensive cyanidation tails will be pumped back to the mill discharge hopper for additional grinding to recover any remaining entrained gold.

A dedicated water pump from the process water pond will provide filtered fluidisation water for the centrifugal concentrators, at the required constant pressure and flow.

The centrifugal concentrators and intensive cyanidation reactor will be located in a separate building enclosed with secure mesh.

### 17.5.7 TRASH SCREENING

Milled slurry will gravitate from the cyclone cluster overflow to the trash screen feed box and will be fed to the vibrating trash screen. The trash screen will remove any misreporting coarse ore particles, wood fragments and plastics that may adversely affect the performance of the CIL and elution circuits.

Trash material will gravitate to the trash bunker and will be cleaned out periodically using a FEL. The trash bunker area will be bunded with a sump provided to pump any spillage to the tails hopper.

Trash screen underflow slurry will gravitate to pre-leach thickening.

### 17.5.8 LEACH FEED SAMPLING AND PRE-LEACH THICKENING

Trash screen underflow slurry will gravitate to the pre-leach thickening area, where the slurry will be thickened to the target pulp density for the leach circuit.

Flocculant will be diluted using a static mixer and mixed with the pre-leach thickener feed slurry in the pre-leach thickener feed box to facilitate effective settling. The flocculant addition rate will be adjusted to control the bed level of the settled solids and clarity of the thickener overflow water.

Pre-leach thickener underflow will be pumped by the leach feed pumps to a two-stage leach feed sampler, that will produce shift composite samples from incremental sample cuts at timed intervals. Sampler discharge will report to the leach feed distribution launder. If the thickener underflow density is too low or the downstream processes have stopped, the thickener will be put into recirculation mode with thickener underflow pumped to the pre-leach thickener feed box.

Pre-leach thickener overflow will gravitate to the mill water tank for distribution as dilution water to the grinding circuit. Process water will be added to the mill water tank as required to make up the mill water requirements.

The pre-leach thickening area sump pump will pump any spillage to the pre-leach thickener feed box or to the leach feed distribution launder.

### 17.5.9 LEACH AND ADSORPTION CIRCUIT

The leach and adsorption circuit will consist of one pre-oxidation and six CIL tanks, all with identical live volumes. The six leach tanks will provide a nameplate residence time of 24 h. The tanks will be interconnected with launders and slurry will flow by gravity through the tank train. Each tank will be fitted with an agitator to ensure that the slurry is thoroughly mixed and homogenised. Each CIL tank will be equipped with a mechanically swept intertank screen to retain carbon within the tank, and a recessed impeller carbon transfer pump to facilitate carbon transfer between adjacent CIL tanks. All tanks will be fitted with bypass facilities to allow any tank to be removed from service.

Pre-leach thickener underflow will be pumped by the leach feed pumps to the leach feed distribution launder via a two-stage leach feed sampler and then gravitate to the pre-oxidation tank. Oxygen gas will be sparged down the shaft of the pre-oxidation tank agitator to pre-treat leach feed slurry. This step will promote oxidation of sulfide minerals, such as pyrite, arsenopyrite and pyrrhotite. The oxidation of minerals in the pre-oxidation tank will allow for enhanced gold leaching, reduced consumption of sodium cyanide and improved gold recovery in the CIL tanks.

After pre-oxidation, gold will be leached from the slurry in the CIL tanks and recovered from the leach solution by adsorption onto activated carbon. Quicklime will be added to the SAG mill feed conveyor to ensure that the leach slurry pH is sufficiently elevated and suitable for cyanidation. Sodium cyanide solution will be metered into the CIL tanks. Oxygen gas will be sparged down the shafts of the CIL tank agitators to provide the required dissolved oxygen concentration for the leach reaction.

Sodium cyanide can also dissolve deleterious elements that may occur in low concentrations in ore. In the case of Nyanzaga Gold Project ores subjected to metallurgical test work, it has been identified that mercury will also be leached in the CIL tanks. Any leached mercury will adsorb onto activated carbon along with gold. The recovery and handling of mercury is discussed further in Section 17.5.12.

Regenerated barren carbon will be added to the final CIL tank (CIL tank 6) via the carbon sizing screen overflow and will be advanced counter-current to the slurry flow. Carbon will be advanced by pumping slurry and carbon from the downstream tank to the upstream tank. Any carbon will be retained in the upstream tank by the intertank screen whilst the slurry will flow by gravity back to the downstream tank. This counter-current process will be repeated until the carbon eventually reaches the first CIL tank (CIL tank 1).

Loaded carbon will be removed from the circuit by pumping CIL tank 1 slurry and carbon to the loaded carbon recovery screen. The loaded carbon will be washed on the screen to remove fine ore particles and will report as screen oversize to the acid wash column. The screen undersize slurry will gravitate back to CIL tank 1.

Slurry from the last CIL tank will leave the CIL circuit and will gravitate to the CIL tails samplers and the carbon safety screen.

Fine carbon and quench/transfer water is removed via the carbon sizing screen undersize stream.

A gantry crane mounted on rails on top of the train of pre-oxidation and CIL tanks will provide ready access for maintenance, particularly for intertank screen changeout and cleaning.

Four CIL area sump pumps will pump any spillage back into the pre-oxidation/CIL circuit.

### 17.5.10 ACID WASH, ELUTION AND CARBON REGENERATION

The following operations will be carried out in the elution area:

- Acid washing of loaded carbon.
- Desorption of gold from loaded carbon using split AARL elution.
- Regeneration of barren carbon.

The elution area will be designed to treat one batch of carbon per day and a total of six batches of carbon per week, though back-to-back stripping can treat seven batches of carbon per week when required. The elution area will include an acid wash column, an elution column, a strip solution heater and a carbon regeneration kiln.

Loaded carbon will be recovered from slurry in the first CIL tank via the loaded carbon recovery screen and reports to the acid wash column. The loaded carbon will be washed with a dilute hydrochloric acid solution to remove inorganic contaminants prior to being rinsed with water. Acid wash solution effluent reports to the tails hopper.

Acid washed loaded carbon will be hydraulically transferred to the elution column where it will be eluted with a hot dilute cyanide/caustic solution followed by a hot water wash. The gold will be recovered from the carbon into pregnant solution that will report to one of the pregnant solution tanks located adjacent to the gold room. Mercury will also desorb from the carbon during the elution cycle and will report to the pregnant solution.

After elution, the barren carbon will be hydraulically transferred to the carbon dewatering screen, where it will be dewatered before reporting to the horizontal rotating carbon regeneration kiln. The barren carbon will be heated to 750°C in an oxygen deficient and steam rich atmosphere to remove organic contaminants prior to being cooled in the carbon quench hopper. During the high temperature regeneration reaction, the portion of mercury remaining on barren carbon will be vaporised, recovered and contained (see Section 17.5.12). The regenerated barren carbon will be hydraulically transferred back to the carbon sizing screen, where it will be dewatered before reporting to the last CIL tank.

### 17.5.11 GOLD RECOVERY

The following operations will be carried out in the gold room area:

- Electrowinning of gold from gravity pregnant solution.
- Electrowinning of gold from elution pregnant solution.
- Smelting of electrowinning products.

Pregnant solution, recovered from the gravity circuit, will be pumped from the gravity pregnant solution tank to the dedicated gravity electrowinning cell. Gold will be recovered onto stainless steel cathodes, and solution will be circulated back to the gravity pregnant solution tank. Recirculation of the pregnant solution through the gravity electrowinning cell will continue until the precious metal tenor is sufficiently depleted. Spent electrolyte will be recycled to the head of the CIL circuit.

Pregnant solution, recovered from the elution circuit, will be pumped from one of the elution pregnant solution tanks to dedicated elution electrowinning cells. Gold will be recovered onto stainless steel cathodes, and solution will be circulated back to the elution pregnant solution tank. Recirculation of the pregnant

solution through the elution electrowinning cells will continue until the precious metal tenor is sufficiently depleted. Spent electrolyte will be recycled to the head of the CIL circuit.

Cathodes from the gravity electrowinning cell will be treated separately from cathodes from the elution electrowinning cells to assist with metallurgical accounting. Gold will be removed from the cathodes by high pressure spray wash water, with the gold sludge being filtered and dried in the retort oven. As the sludge is drying, any contained mercury will be vaporised, recovered and contained (see Section 17.5.12). The dried sludge will be mixed with fluxes and smelted in a smelting furnace to produce doré bars. Slag from smelting operations will be returned to the milling circuit via the emergency reclaim feeder bin.

Fume extraction equipment will be provided to remove electrowinning cell gases and off gas from the smelting furnace. Handling of these gases is discussed further in Section 17.5.12. In addition to this, ventilation fans will be provided to ensure there is adequate fresh air recycling inside the gold room.

An overhead crane within the gold room will be provided to assist with handling of electrowinning cell cathodes and anodes.

The gold room area sump pump will pump any spillage from the electrowinning cells and sludge pan filter into the pre-oxidation/CIL circuit.

### 17.5.12 MERCURY HANDLING

Mercury, a deleterious element that can occur in low concentrations in Nyanzaga Gold Project ore, can be dissolved by sodium cyanide solution in CIL tanks and concentrate in process streams. As mercury is a health hazard, controls to limit exposure will be required.

Mercury that may be dissolved by sodium cyanide in CIL tanks will adsorb onto activated carbon along with gold. Some mercury will desorb from loaded carbon during elution cycles and will report to pregnant solution. Mercury contained in this stream will report to electrowinning cell sludge. The filtered electrowinning sludge will be dried in a retort oven so that any contained mercury is recovered safely. The mercury retort will be located within a separate room within the gold room, with the retort room maintained at negative pressure when the retort is operational to ensure mercury containment. The retort oven consists of the retort oven chamber, retort water chiller, retort condenser tube, retort collection tank, retort aftercooler condenser, retort oven aftercooler air filter, retort oven aftercooler carbon filters and retort vacuum pump.

Filtered electrowinning sludge will be loaded onto the retort oven trays and placed inside the retort oven chamber. On heating, any water and mercury contained in the sludge will vaporise, with oven off-gases pulled from the chamber by the retort vacuum pump. The gases will pass through the retort condenser tube, where chilled water will be used to cool the gases and condense the water vapour and the majority of the mercury, which will gravitate to the retort collection tank. The cleaned off gases will pass through the retort aftercooler condenser, retort oven aftercooler air filter, and sulfur impregnated aftercooler carbon filters for residual mercury vapour removal prior to venting to atmosphere. At the end of each retort cycle, the mercury will be drained from the separator into a mercury storage flask and the water will be drained to the retort area sump and pumped to the tails hopper.

The mercury transfer area will have a steel floor pan, allowing any spillage to be contained and recovered. The mercury storage flasks will be stored in the retort room until they are removed from site for downstream treatment by others. Sulfur impregnated carbon in the retort oven aftercooler carbon filters will be replaced with fresh carbon as required, with the mercury laden carbon placed into a drum and stored.

Off gases and vapour will be drawn through fume ducting systems placed above electrowinning cells, the smelting furnace and the retort oven by fume fans. The off gases will pass through the gold room fume wet scrubber, where filtered water will be used to cool the gases and condense vapours, dust and mercury, which will gravitate to the gold room fume wet scrubber hopper. The cleaned off gases will be drawn through to the gold room carbon filter feed heater and then pass through the sulfur impregnated gold room fume carbon filter for residual mercury vapour removal prior to venting to atmosphere. Mercury will be periodically drained from the gold room fume wet scrubber hopper into a mercury storage flask and the

water will be drained to the retort area sump and pumped to the tails hopper. Sulfur impregnated carbon in the gold room fume carbon filter will be replaced with fresh carbon as required, with the mercury laden carbon placed into a drum and stored.

Mercury that is not desorbed from loaded carbon during elution cycles will report to barren carbon. During the high temperature carbon regeneration reaction in the carbon regeneration kiln, mercury remaining on barren carbon will be vaporised and report to the kiln off gases. The kiln off gases will be treated in a mercury vapour scrubbing plant. The mercury scrubbing circuit will be located adjacent to the carbon regeneration kiln and will consist of a mercury venturi wet scrubber, a mercury scrubber mist eliminator, a mercury carbon filter booster fan, a mercury carbon filter feed heater, mercury carbon filters, a carbon filter fan, a mercury carbon filter discharge stack, a mercury wet scrubber discharge hopper, and a mercury wet scrubber discharge pump.

Off gases and vapour will be drawn through ducting from the regeneration kiln. The off gases will pass through the mercury venturi wet scrubber, where raw water will be used to cool the gases and condense vapours and mercury, which will gravitate to the mercury wet scrubber discharge hopper. The cleaned off gases will be drawn through to the mercury carbon filter feed heater and then pass through the sulfur impregnated mercury carbon filter for residual mercury vapour removal prior to venting to atmosphere. Effluent from the mercury wet scrubber discharge hopper will be pumped to the tails hopper. Sulfur impregnated carbon in the mercury carbon filter will be replaced with fresh carbon as required, with the mercury laden carbon placed into a drum and stored.

A dedicated sump pump in the kiln mercury vapour scrubbing plant area will pump to the tails hopper.

### 17.5.13 TAILINGS SAMPLING, THICKENING, TREATMENT AND DISPOSAL

CIL tailings will gravitate to a two-stage CIL tails sampler, that will produce shift composite samples from incremental sample cuts at timed intervals. Sampler discharge will report to the carbon safety screen, that will prevent coarse carbon from being lost to the TSF. Screen oversize (recovered carbon) will be collected in bags for subsequent return to the CIL circuit. The screen underflow will gravitate to the tailings thickening area, where the slurry will be thickened to the target pulp density for cyanide detoxification and tailings deposition.

Flocculant will be diluted using a static mixer and mixed with the tailings thickener feed slurry in the tailings thickener feed box to facilitate effective settling. The flocculant addition rate will be adjusted to control the bed level of the settled solids and clarity of the thickener overflow water. Tailings thickener underflow will be pumped to the cyanide detoxification circuit by the cyanide detoxification feed pumps. If the thickener underflow density is too low or the downstream processes have stopped, the thickener will be put into recirculation mode with thickener underflow pumped to the tailings thickener feed box.

Tailings thickener overflow will gravitate to the process water tank for distribution primarily downstream of the grinding circuit. Raw water will be added to the process water tank as required to make up the process water requirements serviced by this tank.

The tailings thickening area sump pump will pump any spillage to the tailings thickener feed box.

The cyanide destruction circuit will consist of a feed distribution box and two cyanide detoxification tanks. Each tank will be fitted with an agitator to ensure that the slurry is thoroughly mixed and homogenised and oxygen gas will be sparged down the shaft of the cyanide detoxification tank agitators. Sodium metabisulfite (SMBS) and copper sulfate are added to the tanks, as required, to reduce the weak acid dissociable (WAD) cyanide concentration in solution below target values. Provision has been made for online WAD cyanide analysis to monitor the effectiveness of the cyanide detoxification circuit on reducing the WAD cyanide concentration being discharged to the tailings storage facility (TSF). Both the cyanide detoxification feed and tailings streams will be sampled and measured for WAD cyanide concentration.

Tailings slurry from the cyanide destruction circuit will then report to the tails hopper, where it will be combined with various other process effluent streams. The final tailings slurry will then be pumped via the tails pumps to the TSF for disposal.

The cyanide detoxification and tails hopper area will have one sump pump to pump any spillage to either the tails hopper or the cyanide detoxification tanks.

Tailings will be deposited sub-aerially into the TSF from the southern perimeter using multiple spigots. The full TSF storage area and upstream batter slopes of embankments will be HDPE lined, and an underdrainage system will be installed to limit seepage. Tailings deposition will be controlled to maximise tailings desiccation and consolidation from drying and direct supernatant water from the settled tailings towards the TSF decant area. Supernatant water will be removed by a decant turret system and pumped back to the process water dam via decant return pumps for re-use as process water. The decant return pump capacity has been designed for maximum water recycle flow rates from the TSF.

## 17.5.14 REAGENTS AND CONSUMABLES

### 17.5.14.1 STORAGE

Reagents will be received on site either in bulk or in shipping containers, with a 28 to 60 days' worth of stock stored on site, depending on the reagent and source of supply. This will ensure that supply interruptions due to port, transport or weather delays do not restrict production.

### 17.5.14.2 GRINDING MEDIA

SAG and ball mill grinding media will be delivered to site either in bulk, in drums or in bulk bags. SAG mill grinding media will be reclaimed by FEL from the SAG mill ball bunker and loaded into the SAG mill ball charger. The SAG mill ball charger will periodically meter SAG mill grinding media onto the SAG mill feed conveyor.

Ball mill grinding media will be reclaimed by FEL from the ball mill ball bunker and loaded into the ball mill ball charger. The ball mill ball charger discharges ball mill grinding media to fill the ball mill ball charging kibble, which is lifted and discharged into the ball mill feed box.

Grinding media charging will be carried as required to maintain the target power draw in the SAG mill and ball mill.

### 17.5.14.3 QUICKLIME

Quicklime will be delivered to the site as a dry powder in bulk lime tankers and pneumatically transferred into the lime silo using a lime blower. The lime silo will be equipped with a reverse pulse bag filter, to minimise dust emissions during loading, and a bin activator.

Quicklime will be metered from the lime silo via a variable speed rotary valve directly onto the SAG mill feed conveyor to achieve the desired pH downstream in the cyanide leach circuit.

### 17.5.14.4 FLOCCULANT

Flocculant will be delivered to site in bulk bags as a dry powder and will be added to the flocculant bag breaker. The vendor supplied flocculant mixing plant will automatically mix batches of flocculant with raw water and transfer the mixed flocculant to the flocculant storage tank after each mixing cycle is complete. Dedicated pumps will meter the flocculant solution to the pre-leach thickener and tailings thickener, where the flocculant solution will promote settling of solids and improve solid-water separation within the thickeners.

Liquid flocculant will be delivered to site in 1,000 L intermediate bulk containers (IBCs) and pumped to the intensive cyanidation reactor as required using a dedicated dosing pump.

### 17.5.14.5 CYANIDE

Sodium cyanide (NaCN) will be delivered as dry briquettes in bulk bags. The cyanide bags will be lifted into the cyanide bag breaker above the agitated cyanide mixing tank and dissolved in process water to achieve

the required solution concentration. The mixed cyanide solution will be transferred to the storage tank for use in the process.

Cyanide will be reticulated via a ring main from the cyanide storage tank to the intensive cyanidation reactor and the CIL circuit to act as a gold lixiviant, and to the elution circuit for the desorption of gold from loaded carbon.

#### 17.5.14.6 OXYGEN

Pressure Swing Adsorption (PSA) oxygen plants will be installed to provide the oxygen requirements for gold leaching and cyanide detoxification. The oxygen rich stream (>90% $O_2$) will discharge to the oxygen receiver and will then be reticulated to the plant.

Oxygen will be added to the slurry in the pre-oxidation, CIL and cyanide detoxification tanks down the tanks' agitator shafts, and acts as an oxidative reagent. Oxygen will be supplied to the intensive cyanidation reactor as required.

#### 17.5.14.7 ACTIVATED CARBON

Activated carbon will be delivered in bulk bags and will be added via the carbon quench hopper to top up the inventory of activated carbon within the CIL circuit as required. This addition point will allow any fine carbon particles to be removed via the carbon sizing screen prior to entering the CIL circuit. Activated carbon will act as the adsorbent for precious metal species dissolved by cyanide in the CIL circuit.

#### 17.5.14.8 HYDROCHLORIC ACID

Concentrated hydrochloric acid (HCl) will be delivered to site in intermediate bulk containers (IBCs). The concentrated hydrochloric acid will be pumped into the HCl acid mixing and storage tank where it will be diluted with filtered water to achieve the required acid wash solution concentration. The dilute acid solution will be pumped to the acid wash column to remove inorganic impurities from loaded carbon into an effluent solution stream.

#### 17.5.14.9 CAUSTIC SODA

Caustic soda (sodium hydroxide, NaOH) will be delivered to site as dry pearl pellets in bulk bags. The caustic soda bags will be lifted into the caustic bag breaker above the agitated caustic mixing tank. The pellets will be metered into the caustic mixing tank via a screw feeder and dissolved in raw water to the required solution concentration.

Caustic dosing pumps will meter the caustic soda solution, as required, to the intensive cyanidation reactor, cyanide mixing and cyanide detoxification for pH control, to pregnant solution tanks to adjust solution conductivity for electrowinning, and into the elution circuit for the desorption of gold from loaded carbon.

#### 17.5.14.10 SODIUM METABISULFITE

Sodium metabisulfite (SMBS, $Na_2S_2O_5$) flake will be delivered to site in bulk bags. The SMBS bags will be lifted into the SMBS bag breaker above the agitated SMBS mixing tank and dissolved in raw water to achieve the required solution concentration. The mixed SMBS solution will be transferred to the SMBS storage tank.

Sodium metabisulfite solution will be metered to the cyanide detoxification circuit and is the chemical source of $SO_2$ required, in combination with oxygen, to react with WAD cyanide species to reduce the TSF supernatant WAD cyanide solution concentrations below target levels.

#### 17.5.14.11 COPPER SULFATE

Copper sulfate pentahydrate ($CuSO_4.5H_2O$) will be delivered to site as a powder in bulk bags. The copper sulfate bags will be lifted into the copper sulfate bag breaker and discharged into the agitated copper sulfate mixing tank. Copper sulfate will be dissolved by mixing with raw water to achieve the required solution

concentration. Copper sulfate solution will be metered to the cyanide detoxification circuit where it will act as a catalyst for the cyanide detoxification reactions.

#### 17.5.14.12 FLUXES

Sodium tetraborate (anhydrous borax, $Na_2B_4O_7$), silica flour ($SiO_2$), potassium nitrate (nitre, $KNO_3$) and sodium carbonate (soda ash, $Na_2CO_3$) will be used as fluxes for gold smelting. The fluxes will be delivered in 25 kg bags and mixed in small quantities with the gold sludge prior to smelting.

#### 17.5.14.13 SULFUR IMPREGNATED CARBON

Sulfur impregnated carbon (SIC) will be delivered in bulk bags and will be added to the gold room fume carbon filter and the mercury carbon filter by mobile equipment. Cleaned off gases (post-scrubber) from the gold room and regeneration kiln will pass through beds of SIC, which facilitates the conversion of any remaining mercury vapour into a stable, solid form. SIC will be replaced with fresh carbon as required, with the mercury laden carbon placed into drums and stored.

### 17.5.15 SERVICES

#### 17.5.15.1 RAW WATER

Raw water for the Project will be sourced from Lake Victoria and will be pumped to the raw water pond, located at the process plant. Details of the raw water supply are included in Section 18.8.

The raw water pond will be sized with sufficient capacity to minimise the impact of short-term supply interruptions. Raw water pumps will distribute raw water to the process plant and other surface infrastructure for use. Raw water will also be used as feed to the filtered and potable water treatment plants.

#### 17.5.15.2 MILL WATER

Overflow from the pre-leach thickener will gravitate to the mill water tank for distribution as dilution water to the grinding circuit. Process water will be added to the mill water tank as required to make up the mill water requirements.

#### 17.5.15.3 PROCESS WATER

Overflow from the tailings thickener will gravitate to the process water tank for distribution primarily downstream of the grinding circuit, predominantly servicing vibrating screen sprays, cyanide mixing and tails pumping. Raw water will be added to the process water tank as required to make up the process water requirements serviced by this tank. Raw water will be added to the process water tank as required to make up the process water requirements serviced by this tank.

Decant return water from the TSF and excess water from thickener overflow streams report to the process water pond for distribution by the process water pumps to service other process water demands within the plant. Raw water will be added to the process water pond as required to make up the process water inventory as required.

Provision will be made to allow for the addition of antiscalant to process water to reduce fouling of the pipelines, spray nozzles and screen decks.

#### 17.5.15.4 FLUIDISING WATER

Fluidising water to the gravity centrifugal concentrators will be provided by dedicated fluidising water pumps. The pumps will draw water from the process water pond, and the water will be filtered inline to remove excess particulates.

#### 17.5.15.5 FILTERED WATER

Filtered water for the process plant will be produced by treating raw water in the filtered water treatment plant to remove any suspended solids and bacterial contaminants. The filtered water treatment plant will be of a multi-stage particulate filtration design, producing filtered water product suitable for use within the process plant. The filters will be periodically backwashed to remove solids, with the effluent stream transferred to the tails hopper.

Filtered water will report to the filtered water tank and will be distributed to the plant by the filtered water pumps for use as required, predominantly for SAG and ball mill seal water and in elution, mercury abatement packages, the gold room, and reagent mixing.

#### 17.5.15.6 GLAND SEAL WATER

Water from the filtered water storage tank will be used as gland seal water to slurry pumps and will be pumped at the required service pressures by gland water pumps.

#### 17.5.15.7 FIRE WATER

Fire water for the process plant and surrounding surface operations will be sourced from the raw water pond. The fire water suction from the raw water pond will be at a lower level than the raw water supply suction to ensure a fire water reserve always remains in the pond.

The firewater pumping system will contain:

- An electric fire water jockey pump to maintain fire water ring main pressure.
- An electric fire water pump to supply fire water at the required pressure and flow rate.
- A diesel driven fire water pump that will automatically start in the event that power is not available for the electric fire water pump, or if the electric pumps fails to maintain pressure in the fire water system.

Fire hydrants and hose reels will be placed throughout the process plant and surrounding surface operations at intervals that ensure complete coverage in areas where flammable materials are present.

#### 17.5.15.8 POTABLE WATER

Potable water will be produced by treating raw water in two identically sized potable water treatment plants. Each plant will include feed pumps, micro filtration, ultra-violet sterilisation and chlorination equipment.

Potable water will report to the potable water tank and will be reticulated to the plant (including safety showers), administration facilities, site ablutions and the MSA. Potable water will also be pumped to a camp potable water tank located on the hill above the permanent accommodation camp, and will be gravity fed to the camp accommodation and service facilities.

The potable water demand for the Project has been estimated on a per capita usage basis, with 70 L/person/day used for operational areas of the Project, and 300 L/person/day used for camp residents.

#### 17.5.15.9 COOLING WATER

Cooled water for the SAG and ball mills will be provided using an evaporative cooling tower and heat exchanger. Filtered water will be added to the cooling tower sump to supplement the water loss from evaporation and blow down. Antiscalant and biocide will be dosed into the cooling water system to maintain water quality.

#### 17.5.15.10 SEWAGE TREATMENT

Grey water and effluent from all plant, MSA and camp areas will drain to sewage transfer stations in their respective areas. The sewage transfer stations will pump effluent to the sewage treatment plant (STP) located to the north-west of the process plant.

Treated grey water from the STP will be pumped to the tails hopper and subsequently discharge into the TSF. Treated sludge will be stored in the STP sludge tank and periodically disposed of by sewage truck.

#### 17.5.15.11 PLANT AND INSTRUMENT AIR

Plant and instrument air will be supplied from air compressors. The air will be filtered and dried before distribution to separate area specific air receivers that will then supply air to the plant.

#### 17.5.15.12 DIESEL

Diesel will be delivered to site by bulk tankers and transferred to bulk storage tanks in the MSA, for use by the heavy and light vehicle fleet. The bulk fuel storage facility is discussed in further detail in Section 18.5.1.

Diesel will be pumped from the bulk storage facility (refer to Section 18.5.1) to the process plant diesel day tank, which will supply fuel to the strip solution heater, carbon regeneration kiln, and gold room smelting furnace.

## 17.6 PREDICTED METALLURGICAL PERFORMANCE

Section 13.5 discusses the parameters selected by Perseus for predicting the metallurgical performance when processing different Nyanzaga Gold Project ore sources over the LOM. Parameters have been selected based on metallurgical test work and modelling.

The life of mine modelled processing production schedule (presented in Figure 17-3) has been informed by the predicted metallurgical performance parameters in Section 13.5 and the mining schedule presented in Figure 16-5. Note that the mining and processing production schedules are based on Mineral Reserves only.

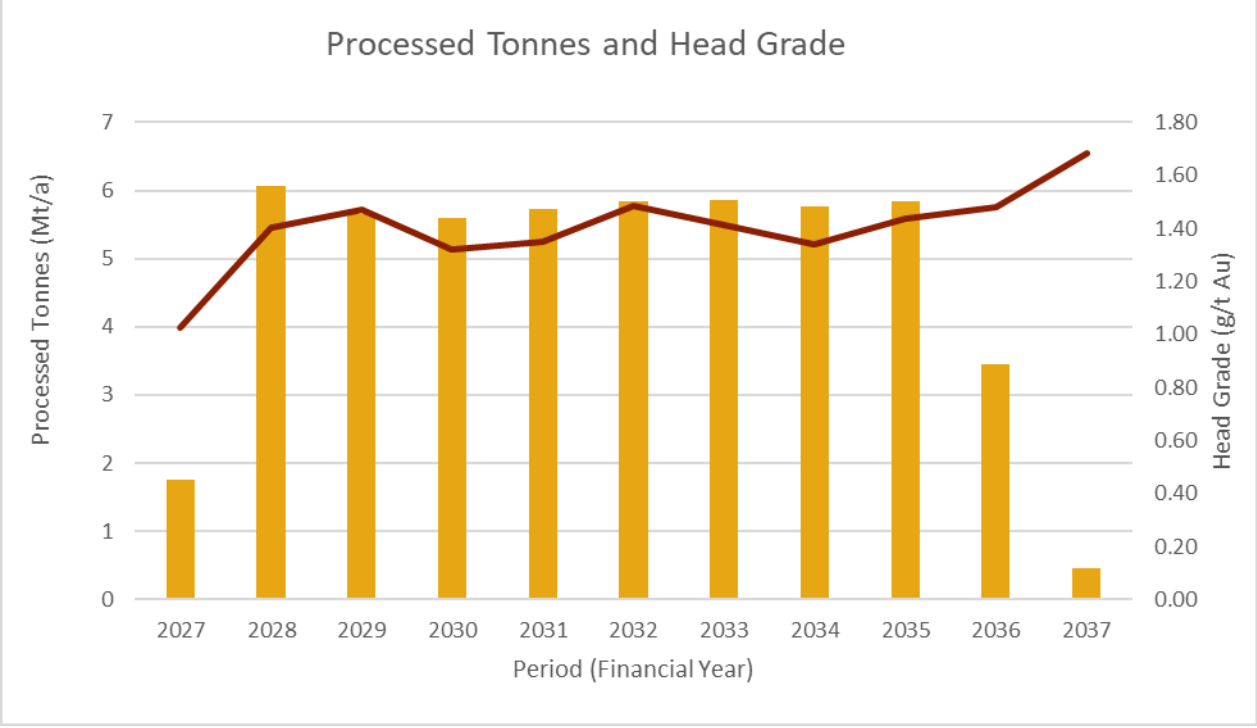



*Figure 17-3: LOM processing production schedule (Source: Perseus, 2025)*

The life of mine recovered gold ounce profile is presented in Figure 22-1.

## 17.7 POWER REQUIREMENTS

Power is supplied to the Nyanzaga Gold Project from the national grid by TANSECO, as described in Section 18.6. 220 kV grid power is stepped down with site transformers to 11 kV and 415 V for plant drives. Emergency diesel-fired backup power generation services will be installed to maintain power to critical drives and services, as described in Section 18.6.6.

The site-wide electrical power requirement, covering the processing plant, mining and site infrastructure has been calculated based on equipment sizing and demand. The connected load, average draw and average annual electrical energy consumption for the Project is summarised in Table 17-4.

***Table 17-4: Project electrical power demand***

| AREA | INSTALLED kW | AVERAGE CONTINUOUS DRAW kW | ANNUAL CONSUMPTION GWh/a |
|---|---|---|---|
| Crushing | 1,468 | 1,030 | 9.0 |
| Stockpile and reclaim | 841 | 617 | 5.4 |
| SAG and ball mill | 21,000 | 18,100 | 158.6 |
| Grinding and classification | 3,307 | 1,603 | 14.0 |
| Gravity and intensive cyanidation | 593 | 307 | 2.7 |
| Pebble recycling | 864 | 44 | 0.4 |
| Trash screening/pre-leach thickening | 494 | 254 | 2.2 |
| CIL | 1,622 | 1,157 | 10.1 |
| Elution, gold room, mercury handling | 945 | 580 | 5.1 |
| Tailings thickening and treatment | 498 | 439 | 3.8 |
| Tails pumping | 500 | 431 | 3.8 |
| Reagents | 119 | 48 | 0.4 |
| Service – water | 1,078 | 574 | 5.0 |
| Services – air, oxygen | 1,327 | 1,000 | 8.7 |
| TSF, decant return | 414 | 200 | 1.8 |
| Lake water extraction | 576 | 332 | 2.9 |
| Plant, mining and admin buildings | 1,448 | 1,322 | 11.6 |
| Camp | 1,200 | 600 | 5.3 |
| **TOTAL** | **38,294** | **28,638** | **250.8** |

## 17.8 WATER REQUIREMENTS

The Nyanzaga processing plant will use water sourced from Lake Victoria or recycled water. Water will be recycled from the TSF supernatant pond via the TSF decant, as well as from pre-leach thickener overflow and tailings thickener overflow. Water that is in excess of operating requirements within mining operations (from pit runoff or open pit dewatering) may also be directed to the process water pond. The processing plant water services are described in further detail in Section 17.5.15.

Mass balance modelling (Lycopodium, 2025a), (Knight Piésold, 2025a) indicates that raw water abstraction requirements from Lake Victoria will range from 50 $m^3/h$ to 350 $m^3/h$ once TSF decant return water flow has been established, which is equivalent to between 0.08 $m^3/t$ and 0.56 $m^3/t$ ore treated. In the first approximately five months of operation, before TSF decant return water flow has been established, raw water abstraction requirements from Lake Victoria will be approximately 550 $m^3/h$ (equivalent of 0.88 $m^3/t$ ore treated).

In consideration of variable water demands by ore type, variable ore treatment rates by ore type, downtime required for pump and pipeline maintenance, and design margin, installed lake abstraction pumping capacity will be 600 $m^3/h$.

Within the process plant, the process water pond will have an installed capacity of 18,000 $m^3$ and the raw water pond will have an installed capacity of 10,000 $m^3$.

Potable water treatment plants will be predominantly supplied by filtered raw water (reclaimed from Lake Victoria) but may also be supplemented by dedicated ground water bores during construction.

Mine water requirements are estimated to be in the range of 50 $m^3$/h to 200 $m^3$/h, depending on mining operations and the season (Knight Piésold, 2025a). Pit runoff and dewatering will be used for the mining water dust suppression requirements. If there is insufficient water within the mining operations, this will be supplemented by raw water from the process plant.

Perseus has allowed a sustaining capital provision for a water treatment plant to treat any excess water to discharge quality, should this requirement be confirmed during ongoing technical studies. Perseus's priority is to optimise water consumption and surface water management through ongoing technical studies.

# 18. PROJECT INFRASTRUCTURE

Figure 18-1 shows the proposed layout of the Nyanzaga Gold Project and highlights key infrastructure including the site access road and gate, process plant area (which includes administration buildings), ROM pad, mine services area (MSA), accommodation camp, stockpiles, waste dumps, explosives magazine, indicative electrical HV powerline corridor, TSF, water abstraction from Lake Victoria, internal roads and perimeter fences. The site layout plans are based on supplied contour data and satellite images of the area and are sufficiently representative of the project development concepts for a Feasibility Study. All fixed plant and infrastructure facilities will be located outside the 500 m blast radius of a conceptual $3,000/oz pit shell. Key infrastructure is discussed in further detail in Section 18.

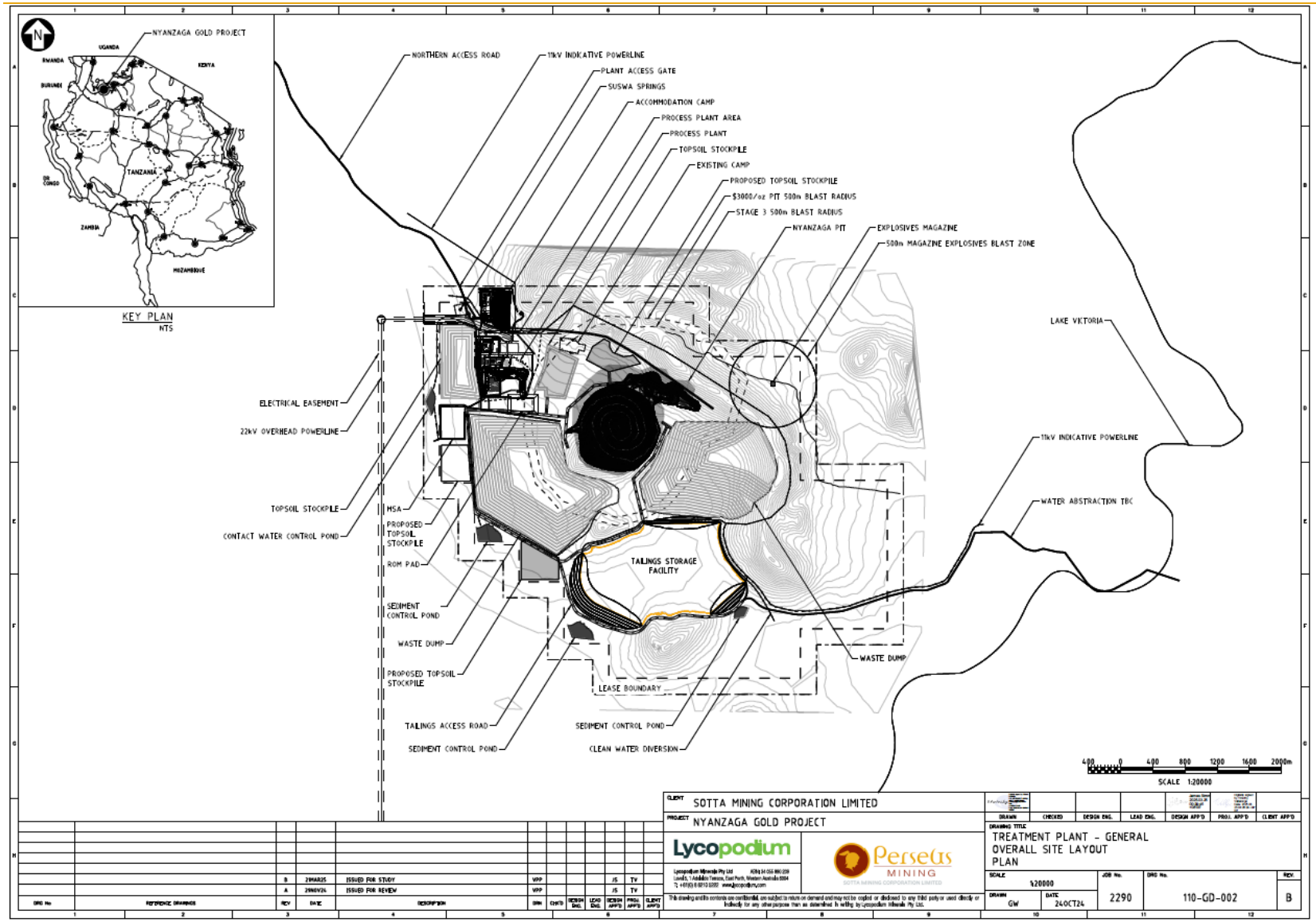



*Figure 18-1: Nyanzaga overall site layout plan (Source: (Lycopodium, 2025d))*

# 18.1 TRANSPORTATION AND LOGISTICS

## 18.1.1 OFF-SITE TRANSPORTATION INFRASTRUCTURE

Supply and delivery of major equipment and contract works during Project construction, as well as supplies and consumables during operations, will require a significant amount of freight to be delivered to the Nyanzaga Gold Project site. During construction, delivery of significantly sized equipment (e.g., crusher, grinding mills, heavy vehicles) will require out of gauge transportation. Supply of other equipment, materials and consumables for construction, and especially during operations, will typically be handled by standard trucks (such as prime movers and semi-trailers, flatbed trucks, etc.).

Where possible, equipment, materials and consumables will be sourced within Tanzania and will likely be transported from Mwanza (as described in Section 18.1.2.1) or Dar es Salaam (as per the routes shown in Figure 18-2) by road. Large specialist equipment required for the process plant or mining fleet, and certain materials and consumables not available within Tanzania, will generally need to be sourced from out-of-country suppliers and delivered to a Tanzanian port (primarily Dar es Salaam). Dar es Salaam has been considered as the Tanzanian delivery port for the purposes of the Project capital cost estimate in Section 21.1.

As part of a transport study (Mainline Carriers Ltd and Freight Forwarders Tanzania Ltd, 2022), a route review for the delivery of cargo, including out of gauge cargo, was conducted between the Port of Dar es Salaam and the Nyanzaga Gold Project. The transportation routes identified are shown in Figure 18-2, with distances between 1,250 km and 1,350 km.

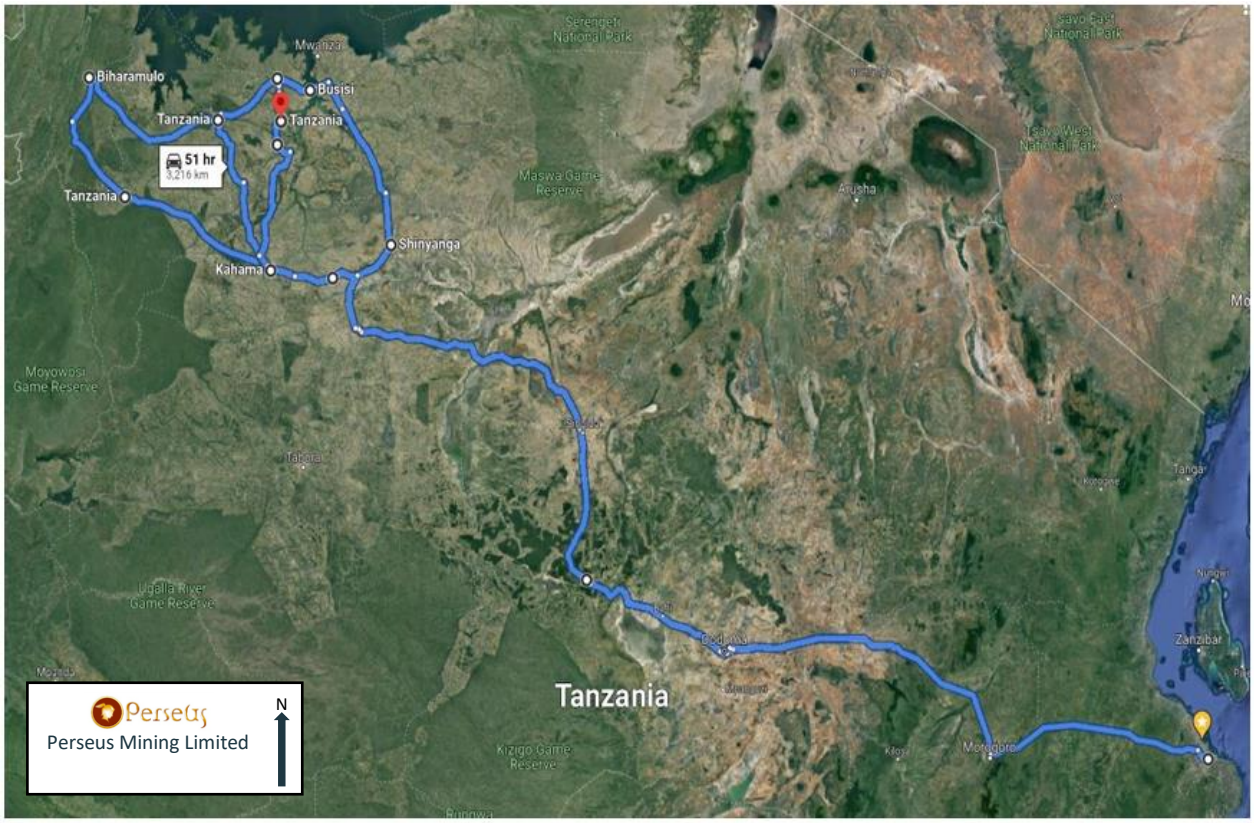



*Figure 18-2: Road transportation routes identified between Port of Dar es Salaam and Nyanzaga Gold Project (Mainline Carriers Ltd and Freight Forwarders Tanzania Ltd, 2022)*

Road transport within Tanzania is governed by specific gazetted government legislation, including:

- Road Traffic (Maximum Weight of Vehicles) Regulations (2001).

- The East African Community Vehicle Load Control Act (2016).

In this legislation, there are scheduled overloading fees for maximum gross vehicle weight and maximum axle load, and specifications for vehicle width, length and height as the maximum permissible transport envelope. Permits for abnormal/wide loads will be required for the transport of all components which exceed the defined limitations, and are issued by the Permanent Secretary, Ministry of Works, Transport and Communication. Loaded trucks will be weighed and assessed by TANROADS regional offices, and any overloads fees will be charged according to the Regulations.

The capital cost estimate, detailed in Section 21.1, includes a baseline provision of $10M for overload penalties, as well as an additional $20M of contingency for overload penalties and associated fees and costs. The Project will consider, and implement where practical, repackaging bulk construction materials and/or breaking down oversize equipment into smaller package sizes to meet weight, length and/or height specifications.

The national road network is generally well maintained by the Tanzania National Roads Agency (TANROADS) as far as Ngoma. Rural roads are managed by TARURA.

### 18.1.2 SITE TRANSPORTATION INFRASTRUCTURE

#### 18.1.2.1 SITE ACCESS ROADS

The Project will be accessed from Mwanza, Tanzania's second largest city, by the sealed Mwanza – Geita Highway, crossing Smith Sound (an arm of Lake Victoria) via ferry or the recently constructed Kigongo – Busisi Bridge (John Pombe Magufuli Bridge), and then travelling on the unsealed regional road network for 35 km from Sengerema to Ngoma. The Project area is approximately 9 km southeast of Ngoma, and an unsealed road is currently under construction to bypass Ngoma township and reach the Nyanzaga site. This road construction is key enabling infrastructure for Project delivery and operations, and the upgrades are being conducted with TARURA agreement.

To the south of the Project site, approximately 65 km of gravel roads link the Project site to Bulyanhulu Gold Mine via Ngoma, Nyundu and Karumbwa. It is an alternate route that could be used for transportation of goods; however, it was considered a less favourable route due to already high truck traffic and a narrow road width.

#### 18.1.2.2 SITE ROADS

Roads within the Project SML will be fit for purpose and will comprise haul roads for mining use, full width gravel roads for frequent traffic by site light and heavy vehicles, and basic access tracks for infrequent access by light vehicles to more remote site infrastructure. The network of site roads will provide access to the accommodation camp, administration buildings, process plant, TSF, pit, waste dumps, and site infrastructure. Roads will be designated as light or heavy vehicle roads to ensure separation of LVs and HVs and to prevent unintended and unsafe vehicle interactions.

#### 18.1.2.3 HELIPAD

A helipad will be located within the process plant high security area. Gold doré product will be transported off-site by helicopter, via the helipad.

## 18.2 SECURITY AND FENCING

Site security is based on the concept of concentric lines of fencing and control.

Areas of the lease where operations are actively taking place or where items of decentralised infrastructure are located will be patrolled by the security team.

The capital cost estimate includes a provision to enclose the SML boundary with a 2 m high chain link fence to discourage casual entry to the SML.

The process plant, MSA and administration area will be enclosed within a patrolled 2 m high chain link fence line to control entry. The main point of entry will be where the main access road enters the site. This point of entry will be provided with a gate and staffed security post. Access from the mine haul road through the mine services area will also be monitored by a staffed security post. The permanent accommodation camp will also be fenced and provided with a manned entry gate to prevent unauthorised access. Entry into the fenced areas will require a security access card and/or proof of legitimate business beyond that point.

The process plant will be enclosed by a double line of security fencing monitored by closed circuit cameras. The fence line will be provided with perimeter lighting. Entry will be via a single monitored security post and will be strictly controlled. Exit from the plant area will be subject to a search of vehicles, search of toolboxes, and pat down and/or metal detector search of all persons.

The gold room and the pregnant solution tanks within the process plant will be fenced with 2 m high anti-climb fence and include a high security access control gate. Access to the gold room will be restricted and strictly controlled. Extensive camera surveillance will be installed, and entry points will be monitored and alarmed. All personnel permitted to enter the area will be accompanied and monitored by members of the security team. Persons leaving the area will be subject to a comprehensive search of themselves and any tools or equipment leaving the building.

Barracks will be constructed on site to accommodate Perseus and third-party security personnel.

## 18.3 OPERATIONAL BUILDINGS

### 18.3.1 PROCESS PLANT

As outlined in Section 18.2, the process plant area will be surrounded by a double security fence provided with perimeter lighting and camera monitoring. The secure process plant area will contain the following buildings and facilities:

- A security gatehouse for access control to the plant high security area and all security monitoring functions; incorporating change rooms and ablution facilities.
- Process plant administration office of block work construction, incorporating the plant control room, ablutions and lunchroom.
- Process plant training room of block work construction, incorporating ablutions and lunchroom.
- Process plant maintenance offices of block work construction, incorporating a meeting room, ablutions and lunchroom.
- Process plant combined mechanical and electrical workshop/warehouse of clad steel frame construction with external hardstand.
- Process plant boilermaking workshop/warehouse of clad steel frame construction with external hardstand.
- Process plant oil storage shed of clad steel frame construction with external hardstand.
- Process plant staff mess.
- Toilets at crusher station of prefabricated container construction.
- Toilets at the maintenance workshops of block work construction.
- Plant ablution toilets at process plant of block work construction.
- Appropriate reagent storage sheds with concrete floors and facilities to isolate, separate and handle hazardous goods (including quicklime, flocculant, cyanide, carbon, hydrochloric acid, caustic soda,

sodium metabisulfite, and copper sulfate). All reagent storage sheds will be of clad steel frame construction with external hardstand.

- Primary crushing control room.
- Titration room, for handling process control samples, on the top of CIL tanks.
- Gold room.
- Substations servicing the crushing, reclaim, grinding, CIL and plant services within the main plant area.
- Lockout tagout containers for crusher area and process plant.
- Assay laboratory of clad steel frame block work construction with sample preparation, fire assay and wet laboratory facilities to process grade control and plant process control samples.

### 18.3.2 ADMINISTRATION

The site administration area will be located adjacent to the process plant, and outside of the process plant high security area. Warehouses and the like will be of structural steel frame and metal cladding construction on concrete slabs. Office and amenity areas associated with the main structures will generally be of transportable/prefabricated style construction although concrete blockwork construction will be considered to provide additional local content if the schedule allows. The facilities are summarised below:

- Site low security gatehouse for access control to the plant security area and all security monitoring functions; the facility will include change rooms, washrooms and laundry for plant staff.
- Main site administration building.
- Medical clinic/HSE/ERT building.
- Warehouse administration building.
- Plant warehouse, including critical spares shed.
- Plant warehouse toilet facility (containerised).
- Site low security area staff mess.
- Prayer room.

### 18.3.3 MINE SERVICES

The MSA will be located to the west of the SML, as shown in Figure 18-1. Mine services buildings and facilities are discussed in Section 18.5.

### 18.3.4 OTHER FACILITIES

Other facilities to be constructed for the Project, located remote to the process plant, administration and MSA include:

- Nursery (including office and toilet facilities).
- Waste management facility.

## 18.4 WORKFORCE ACCOMMODATION

### 18.4.1 PERMANENT ACCOMMODATION

Where possible, employment will be offered to suitably qualified and experienced Tanzanians. All unskilled and semi-skilled positions will be filled by residents of local towns and villages. It is also anticipated that a significant number of skilled Tanzanians from outside the immediate area will secure their own

accommodation in local towns. A bus service will be provided to and from local population centres for workers.

Expatriate and selected senior Tanzanian employees from outside the local area will be provided with accommodation in the permanent accommodation camp. The camp will provide accommodation for 400 personnel and has considered future footprint and services expansion for up to 500 personnel. The permanent accommodation camp will comprise the following:

- Camp administration and IT room.
- Junior, senior and VIP accommodation blocks.
- Combined junior and senior dry mess.
- Recreation/wet mess building.
- Barbecue area.
- TV / training room.
- Camp prayer room.
- Gym with change rooms.
- Sporting field.
- Toilet block (male and female).
- Kitchen (including cold storage rooms and dry stores).
- Shower, toilet and change room block for kitchen staff.
- Laundry.
- Camp workshop.
- Bus shelter.

A conceptual layout drawing of the permanent accommodation camp is shown in Figure 18-3. Buildings within the camp will be primarily constructed from blockwork with steel truss roof systems. A commitment to local content will drive the use of local blockwork construction where the building is not schedule critical. Satellite television and internet connection will be provided across the accommodation camp.

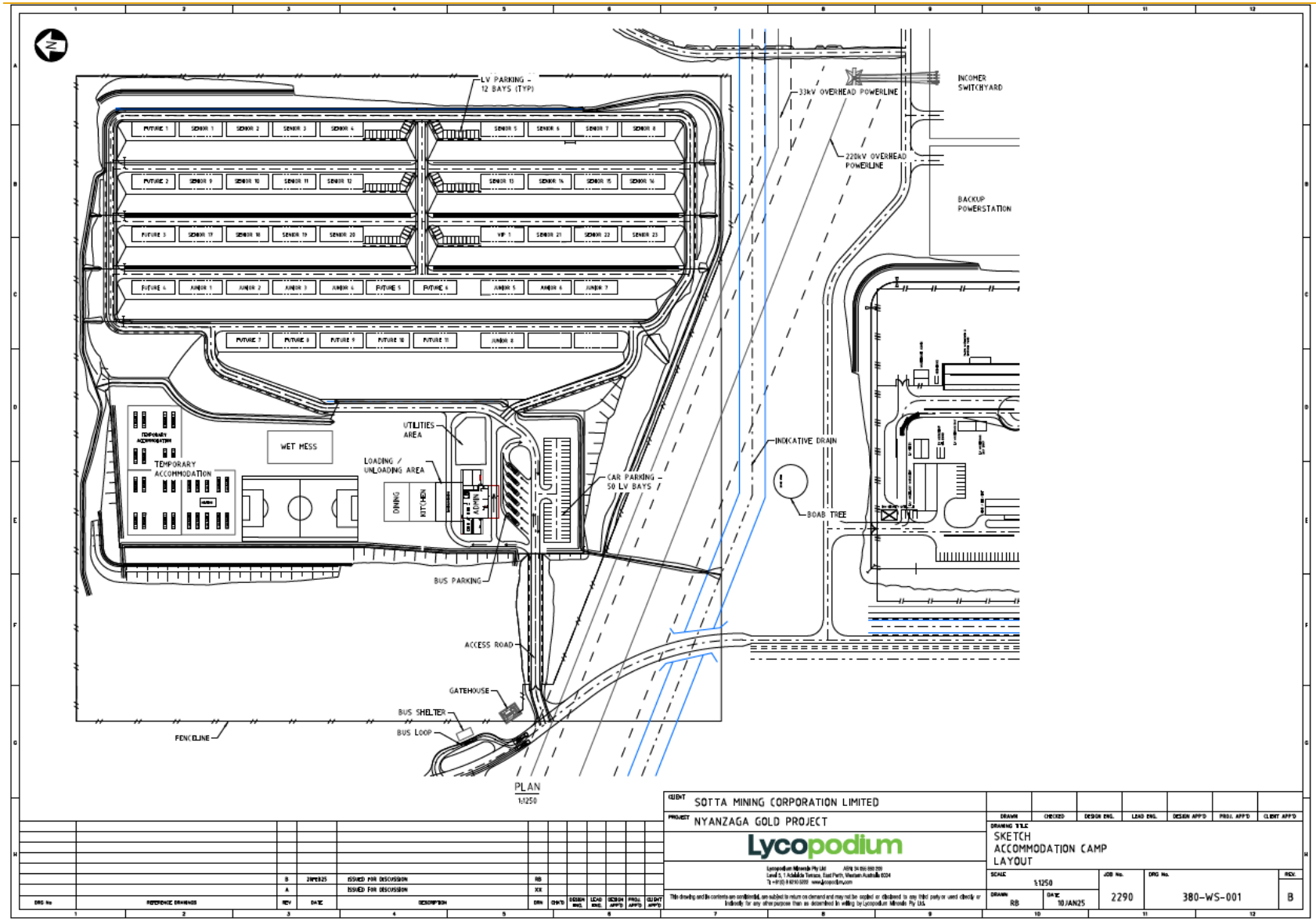



*Figure 18-3: Conceptual layout of the permanent accommodation camp (Source: (Lycopodium, 2025g))*

### 18.4.2 CONSTRUCTION ACCOMMODATION

The existing exploration camp, shown in plan view in Figure 18-4, will be used for pioneer accommodation pending early completion of elements of the permanent camp and the preparation of a suitable site for construction contractors to establish their workforce accommodation. The existing exploration camp currently has accommodation, messing and office capacity for approximately 120 persons but can be easily expanded with the addition of transportable buildings and/or safari tent style accommodation.

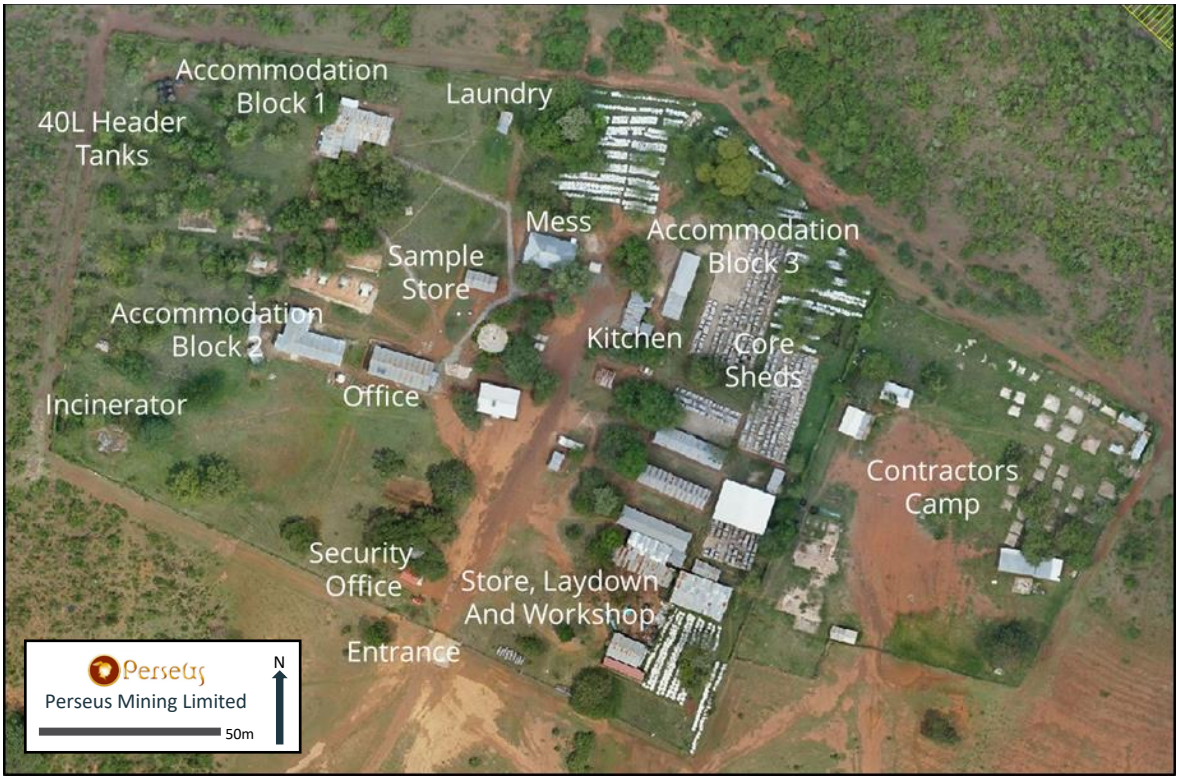



*Figure 18-4: Existing exploration camp, with north to the top of the photograph (Source: OreCorp, 2022)*

Construction contractors will be required to provide their own accommodation for their workforces based around portable accommodation units or sourcing temporary accommodation in nearby towns and villages. The permanent accommodation camp will be used by Perseus, EPCM contractor staff, and senior contractor personnel subject to completion and availability.

At the conclusion of construction activities, the existing exploration camp will be refurbished and used as a permanent base for the exploration geology team.

## 18.5 MINE SERVICES

A Mine Services Area (MSA) will be provided for the open pit mining contractor to establish their offices, workshops and other facilities. Power, communications, potable water, fire water, and connection to the site sewage facilities will be provided by Perseus. The area will also have an office for Perseus's geology and mining technical team.

It is anticipated that the MSA will include the following facilities:

- Perseus mining and geology office.
- Mine contractor's offices.
- Mine contractor's training room.

- Mine contractor's ablutions.
- Light vehicle/ancillary workshop.
- Light vehicle workshop office.
- Heavy vehicle workshop and warehouse.
- Heavy vehicle workshop office.
- Shift change building, with showers and ablutions.
- Mine staff mess/crib room.
- Light vehicle washdown bay, with water management and oil/water separation.
- Heavy vehicle washdown bay, with water management and oil/water separation.

### 18.5.1 FUEL AND LUBRICANT SUPPLY

A fuel and lubricant storage and dispensing facility will be constructed and operated by a reputable national fuel supplier under contract to Perseus and will be located adjacent to the MSA. Whilst provision was made in the development capital cost estimate for a fuel and lubricant storage and dispensing facility, it is anticipated that the fuel supplier will construct the facility and recover capital costs through a mark-up on the fuel supply price under a build-own-operate (BOO) or build-own-operate-transfer (BOOT) type contract.

Diesel will be delivered to site by bulk tankers and transferred to bulk storage tanks in the MSA, for use by the heavy and light vehicle fleet. The site fuel depot will have a storage capacity of 1 ML to avoid supply interruptions due to inclement weather or similar events. The facility will incorporate unloading pumps, fuel filters, transfer pumps with certified flow meters, a fire suppression system, and a lubricant storage facility. Fuel will be invoiced to Perseus upon transfer to vehicles, with the majority of fuel held on consignment by the supplier.

### 18.5.2 EXPLOSIVE STORAGE

It is anticipated that a contract will be entered into with a recognised supplier of mining explosives to establish their own facilities on site and supply emulsion explosives, initiators, detonators and other blasting consumables as needed. Perseus will provide power and communications to the explosive magazine. The anticipated location of the magazine is shown at the northeast of the SML in Figure 18-1.

### 18.5.3 WASTE DUMPS AND STOCKPILES

As shown in Figure 18-1, waste rock from mining operations will be dumped to one of two primary waste dump facilities, located to the southeast and southwest of the pit. Locations for topsoil stockpiles, for preserving topsoil generated during stripping for progressive rehabilitation, have also been identified and will be located at the periphery of the SML.

The technical design parameters of the waste dump facilities are discussed in Section 16.1.2.3. As discussed in Section 20.7.1, test work has identified that some waste rock generated from the open pit will be potentially acid forming (PAF) material, and the waste rock facilities and dumping schedules will be designed and operated to manage the risk of ARD.

## 18.6 POWER SUPPLY

The connected load, average draw and average annual electrical energy consumption for the Project is summarised in Table 17-4. The supply and reticulation of power for the Project is described in the following sections.

### 18.6.1 GRID POWER SUPPLY

ECG Engineering (2022) conducted a Feasibility Study of the power supply options for the Project, focusing on the ability of the national grid to meet the Project power demands. This Study concluded that a grid connection is a cost-effective power supply option and that power quality in the north of Tanzania will support Nyanzaga during the life of Project.

The maximum demand requires a grid connection to the 220 kV transmission system that is owned and operated by TANESCO. The 220 kV supply will be fed from the existing 220 kV Bulyanhulu substation. Electrical infrastructure required includes an additional 220 kV feeder bay at the Bulyanhulu substation, approximately 53 km of 220 kV single circuit transmission line, and a substation at the Nyanzaga receiving end. The transmission line route and distance will be finalised during detailed design.

The Nyanzaga substation will contain two duty 220/11 kV 25/33 MVA transformers, with one spare only energised at 11 kV, and an additional 220/33 kV 30 MVA transformer for TANESCO, as shown in Figure 18-5.

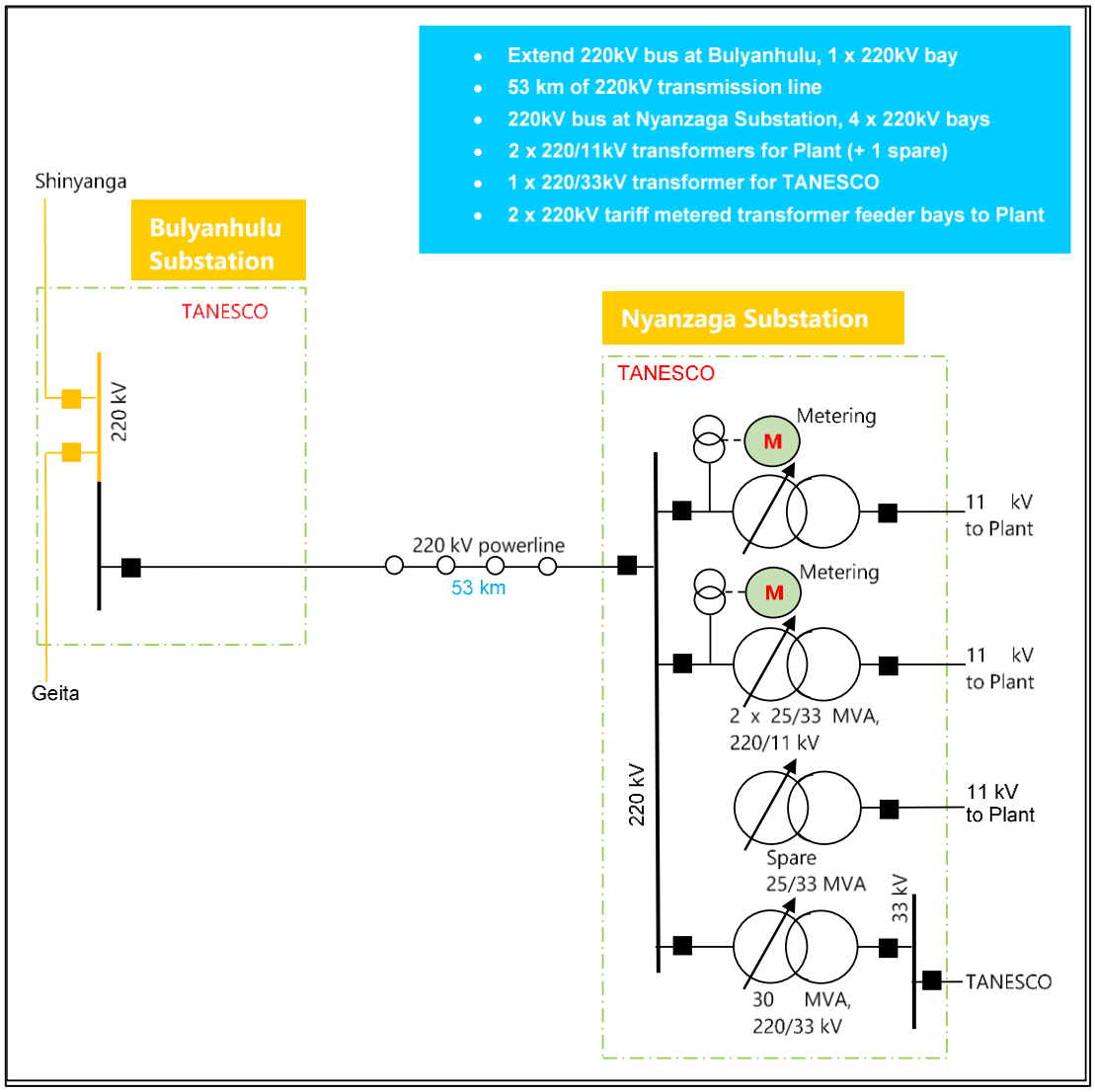



*Figure 18-5: Bulyanhulu to Nyanzaga power connection (Source: ECG Engineering, 2024)*

### 18.6.2 POWER QUALITY CONSIDERATIONS

Poor power quality in the north of Tanzania has historically been an issue as a result of the high concentration of power generation in the south of the country and the large loads (including those associated with the mining industry) in the north. There have been significant efforts undertaken by TANESCO to strengthen the

supply in the north, including a 220 kV fixed series compensator (FSC) at Dodoma, a 220 kV static VAR (volt-ampere reactive) compensator (SVC) at Shinyanga, and some shunt capacitor installations.

One of the projects that has been completed is the implementation of a 400 kV double circuit twin bundle BlueJay conductor transmission line and substation upgrades between Iringa and Shinyanga – significantly strengthening the power system in the north of the country. With the improvements in the grid stability, the reliability and power quality of the supply is vastly improved and is now suitable to meet the requirements of the site total mining load.

### 18.6.3 POWER FACTOR CORRECTION

Power factor correction is necessary to meet the minimum power factor requirement of 0.95 lagging for a grid connected load. High voltage power factor correction units will be installed at the Site 11 kV switchboard to control the power factor at the incomer supply to the main plant 11 kV switchboard.

### 18.6.4 NYANZAGA SUBSTATION

The receiving end substation at Nyanzaga will consist of two 25/33 MVA ONAN/ONAF transformers to step down the voltage from 220 kV to the 11 kV site distribution voltage. A third spare transformer will be installed in the switchyard; however, this will only be energised at 11 kV and is a spare only. The transformers will connect to an 11 kV switchboard to be located adjacent to the substation. The plant switchboard will be directly supplied from this 11 kV switchboard. Separate feeders for the auxiliary supply transformer will also be fed from this switchboard.

A separate 220/33 kV 30 MVA transformer will be installed for TANESCO.

The 11 kV system will be impedance earthed at the transformer 11 kV star-point through a neutral earthing resistor. This will ensure adequate design of the plant earthing system for compliance with step and touch potentials.

### 18.6.5 ELECTRICAL DISTRIBUTION

The electrical system for the Project is based on an 11 kV high voltage distribution system; 400 V drive voltage in the plant, raw water abstraction pumps and decant return pumps; and 400 V supply to the mine services area and camp. The system frequency is designed at 50 Hz.

The main 11 kV switchboard will be located outside of the plant on the northern side of the process plant site with incoming supply cabling installed on ladder from the 220/11 kV switchyard and outgoing feeders installed in underground conduits to plant and infrastructure loads.

The main site 11 kV switchboard will supply the process plant 11 kV switchboard via a dedicated feeder. An 11 kV overhead powerline will feed the external infrastructure. An overhead powerline will reticulate power along the northern edge of the plant to the mine services area, main camp, explosive magazine, and continues to the raw water abstraction pumping station, with a spur to the decant return pump station. The overhead lines will be strung with optical ground wire (OPGW) to facilitate connection of remote facilities via fibre optic.

The plant 11 kV switchboard will supply power to the SAG and ball mills, the mill discharge pumps, and the plant 11/0.4 kV transformers.

### 18.6.6 EMERGENCY POWER GENERATION

To prevent equipment damage and extended downtime following power outages, critical site drives and feeders have been identified in the load list as essential services. Within the process plant, this includes agitators (including CIL tanks), thickeners, the process control system and all lighting and small power. Infrastructure such as administration buildings, workshops, CCTV and security have also been included in this allowance.

Emergency generation capacity will be installed consisting of a series of 2,000 kVA (standby rated) high speed generators connected at the plant 11 kV switchboard. The system will detect an outage in mains supply and automatically restore limited power at 11 kV to the site distribution network. Provision for additional generator units has been made. The generators will be supplied by a local gravity fed fuel system with capacity for 24 hours run time.

Perseus is currently conducting a study considering a full-capacity power station located adjacent to the 220 kV switchyard. This study will evaluate meeting the process plant's peak demand through the deployment of high-speed generators connected to the 11 kV switchboard on-site. The concept will consider operation in parallel with the grid supply, accommodating both reduced load conditions and total outages. This configuration will allow for seamless transitions between grid and station power without experiencing a total blackout.

In the event of a grid supply failure, the conceptual full-capacity backup power station will be equipped with an automated detection system that will restore full power to the site distribution network at 11 kV. The generator setup will follow an N+1 redundancy model, ensuring that total demand can be met even in the case of a unit failure.

Perseus is also considering renewable energy options as part of the backup power strategy.

A full-capacity backup power station is not included in the capital cost estimate presented in Section 21.1.

### 18.6.7 ELECTRICAL BUILDINGS

The electrical equipment will be housed in either containerised buildings (up to two containers wide) or flat pack prefabricated switchroom buildings (where the required size exceeds two containers wide). Containerised buildings have been selected as these can be partially fitted out at the factory, reducing the need for skilled installation labour on site. Larger buildings will be supplied as flat pack and assembled on site.

The electrical buildings will be installed with air-conditioners and suitably sealed to prevent ingress of dust.

## 18.7 COMMUNICATIONS

### 18.7.1 NETWORK TOPOLOGY

Internal communications and IT services will be via a site wide fibre optic network. The fibre optic network will be installed in underground conduits, cable tray and via the overhead power line. The services that will use the common fibre optic backbone include:

- Corporate LAN including telephony (voice over internet protocol – VoIP).
- Plant control system.
- CCTV and security services.

### 18.7.2 EXTERNAL CONNECTIVITY

A local microwave ground station will be installed at the site communications tower, currently under construction as shown in Figure 18-6, to provide global satellite voice and data connection, and a local telecommunications provider will be contracted to upgrade infrastructure to provide connection to the local, national and international telecommunications network. Satellite television services will be installed to service the permanent accommodation camp.



*Figure 18-6: Communications tower under construction (Source: Perseus, 2025)*

### 18.7.1 RADIO

Cost allowances have been made to provide a site-wide private mobile radio (PMR) system supported by the site communications tower. The network will be established with dedicated channels for mining operations, plant operations, security, and emergency response. Heavy and light vehicles will be equipped with radios.

## 18.8 WATER SUPPLY

### 18.8.1 RAW WATER

The Project water supply will be drawn from the southwest tip of Smith Sound, the southern inlet of Lake Victoria, and delivered to the raw water pond at the process plant. Vegetation is required to be cleared and the clearance around the abstraction area maintained during the life of the Project, with establishment of the cleared area shown in Figure 18-7. The discharge point at the raw water pond is 66 m higher than the pump station, and the pipe route is approximately 13.5 km long.



*Figure 18-7: Cleared area for water abstraction intake, looking WNW (Source: Perseus, 2025)*

As noted in Section 17.8, the raw water demand for the Project varies depending on the operational state of the process plant and availability of decant water from the TSF. In consideration of variable water demands by ore type, variable ore treatment rates by ore type, downtime required for pump and pipeline maintenance, and design margin, installed lake abstraction pumping capacity will be 600 $m^3$/h. Raw water will be extracted on an intermittent basis as required to maintain the level of the raw water pond.

The water depth at the point of abstraction is estimated to be approximately 3 m. An access causeway will be established from the lake shore to access the abstraction point. Water will be abstracted from the surface of the lake via a turret intake system, a floating water intake device on the end of a hose that avoids drawing in sediment or floating material, and will be delivered by two self-priming pump sets to a common pipeline. During start up, both pumps will be required to meet requirements. Once a decant return flow has been established, one pump can meet demand whist the other becomes a standby pump.

A HDPE pipeline will deliver raw water from the abstraction pumps to the raw water pond at the process plant. The pipe specification will change along the route to meet pressure rating requirements.

The lake water abstraction pipeline route will be alongside existing roads and tracks for the purposes of the FS capital cost estimate. The pipeline will be buried outside of the SML to reduce the risk of unauthorised water use. The pipeline located inside the SML will not be buried.

Power supply to the raw water abstraction infrastructure will be via an overhead powerline from the process plant, following the same route as the pipeline. A small MCC/switchroom, constructed on the shore of Smith Sound near the water abstraction infrastructure, will provide power and control for the abstraction pumps.

### 18.8.2 POTABLE WATER

Potable water supply is discussed in Section 17.5.15.

## 18.9 TAILINGS STORAGE FACILITY

As described in Section 17.5.13, tailings thickener underflow will undergo a cyanide detoxification process before being combined with any other effluent streams in the tails hopper and pumped to the tailings storage

facility (TSF) for disposal. The TSF is designed to store all tailings produced during the life of the Project, as per the ore production schedule presented in Figure 17-3.

The TSF has been designed in accordance with ANCOLD Guidelines on Tailings Dams – Planning, Design, Construction, Operation and Closure (ANCOLD, 2019a), ANCOLD Guidelines on the Consequence Categories for Dams (ANCOLD, 2012), ANCOLD Guidelines for Design of Dams and Appurtenant Structures for Earthquake (ANCOLD, 2019b), the Global Industry Standard on Tailings Management (GISTM) (Global Tailings Review, 2020), the International Cyanide Management Institute's Mining Operations Verification Protocol (2021), and the United Republic of Tanzania Ministry of Water's Dam Safety Guidelines (2020).

The TSF design will be reviewed and approved by the Chief Inspector of Mines to allow TSF construction to commence. The National Environment Management Council (NEMC) and Ministry of Water are also involved in TSF design reviews.

The Feasibility Study design layout for the TSF is shown in Figure 18-8. This general arrangement drawing corresponds to the final stage of the TSF, based on the process plant production schedule shown in Figure 17-3.

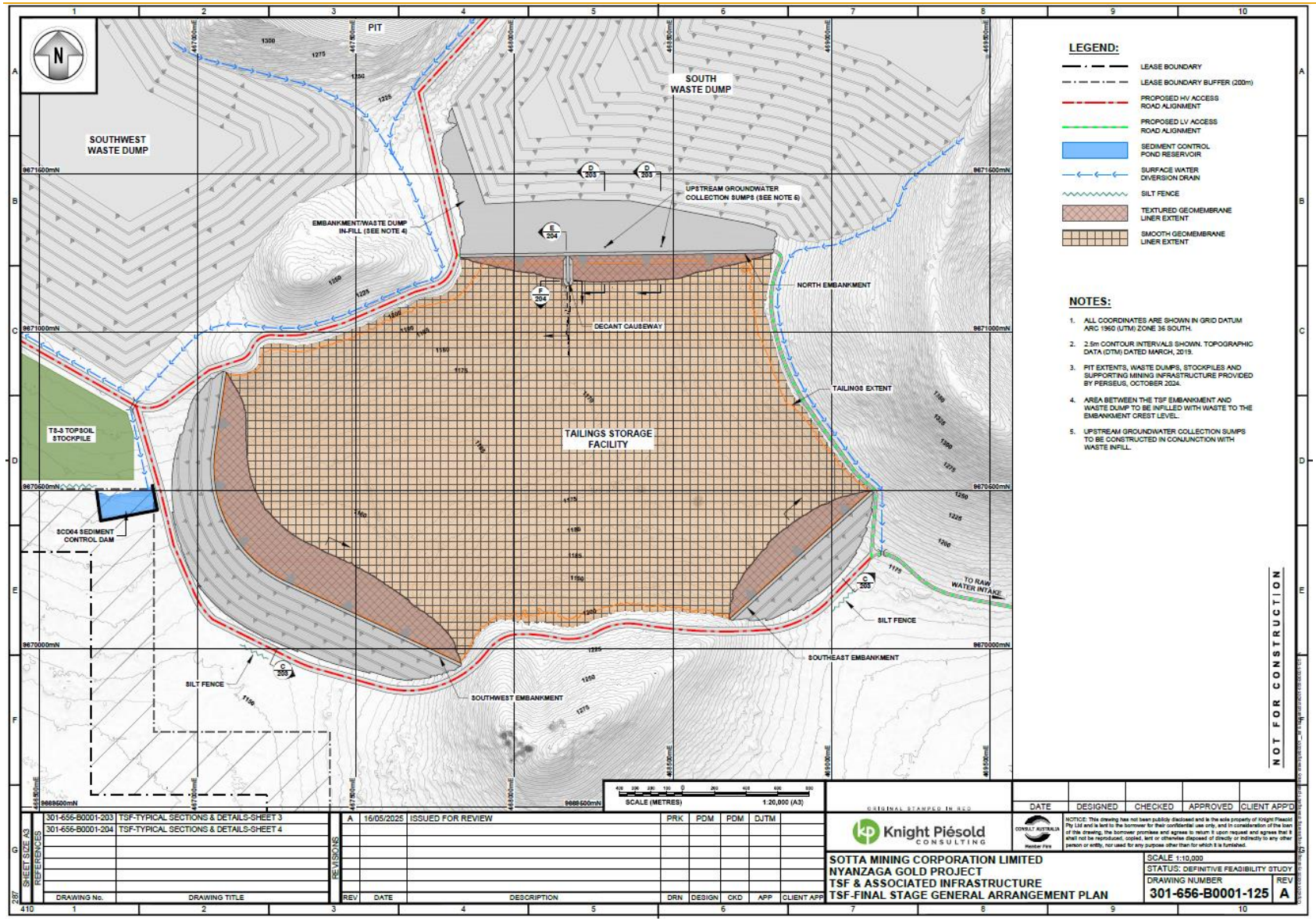



*Figure 18-8: Conceptual Nyanzaga TSF at final stage, in plan view (Source: (Knight Piésold, 2025d))*

### 18.9.1 TAILINGS CHARACTERISATION

Two cyanidation tailings samples (solids and associated process liquor) were generated by SGS from bulk cyanidation tests on the Nyanzaga deposit oxide bulk engineering composite and the Nyanzaga deposit fresh bulk engineering composite, as described in Section 13.2.6.9.

Tailings characterisation testing (Knight Piésold, 2017a) indicates that oxide tailings solids are a non-plastic silt with sand, and fresh tailings solids are a low plasticity silt with trace sand. The expected supernatant release from 57-58% w/w solids content tailings slurry is in the range of 39-44% of the water in slurry. An underdrainage recovery rate between 5% and 10% is expected. A settled tailings density of 1.4 t/m$^3$ to 1.6 t/m$^3$ is expected in the facility.

Tailings geochemical tests (Knight Piésold, 2017b) indicate that oxide tailings will be potentially acid forming (low capacity), but the subsequent deposition of fresh tailings, characterised as acid consuming, should result in excess alkalinity within the TSF.

The testing reported a moderate number of elemental enrichments, with arsenic and antimony characterised as highly enriched (in terms of geochemical abundance indices) and silver, boron and mercury significantly enriched. This finding aligns with the head grade observations from metallurgical test work programs, as described in Section 13.2.2. Molybdenum enrichment varied from significant in the oxide material to high in the fresh material. Sulfur enrichment varied from high in the fresh material to slightly in the oxide material.

Geochemistry of the tailings supernatant samples was found to be of a poor quality with several metals detected at elevated concentrations when compared to Tanzanian guidelines for municipal and industrial effluent and drinking water standards.

### 18.9.2 GEOTECHNICAL INVESTIGATIONS

A number of geotechnical investigations have been undertaken at the TSF site between 2017 and 2024 (Knight Piésold, 2025e). Geotechnical investigations for the TSF comprised test pits across the full internal storage area, borehole drilling, field testing, sampling, and laboratory testing. Investigations were also undertaken to determine the available construction materials and inform the embankment and foundation design.

A high-level summary of the TSF area ground conditions is as follows:

- The TSF basin area comprises colluvium/alluvium predominantly clay/silt materials observed to depths ranging from 0.0 m to 2.1 m. The valley sides are predominantly colluvium comprising gravel with silt and clay exhibiting medium-dense to dense consistency, to depths up to 2.6 m.
- A high plasticity silt/clay alluvium is present towards the centre of the valley which tends to be black, becoming brown and grey.
- The ground conditions below the colluvium/alluvium typically comprise residual soil with consistency varying from very stiff to hard, transitioning to weathered rock. The weathered rock is typically extremely weathered with parent rock structure evident.

The investigations indicated that the foundations were suitable for construction of the TSF embankments. Any unsuitable material will be removed from the foundation during construction as directed by the site engineer. It is expected that structural fill for the embankments will be primarily sourced from mine waste rock.

### 18.9.3 TAILINGS STORAGE FACILITY DESIGN

The TSF will be located south of the open pit and will be constructed as a single cell storage facility consisting of a multi-zoned earthfill downstream constructed embankment designed to store the LOM processing production profile of tailings, as indicated in Figure 17-3. The total footprint area (including the basin area)

will be approximately 130 ha for Stage 1 of the TSF, increasing to approximately 225 ha for the final stage of the TSF. The facility will be constructed as a paddock type storage facility utilising natural ridges to reduce the volume of embankment fill, and the waste dump to buttress the northern embankment.

Given that the cyanidation process leads to the presence of cyanide, cyanide complexes and dissolved metals in tailings supernatant, and the geochemistry of the tailings as described in Section 18.9.1, the full internal basin area and upstream batter slopes of embankments will be fully lined with HDPE liner.

The TSF embankment footprint and internal storage area will be cleared, grubbed and topsoil stripped. A compacted soil liner (CSL) will be constructed in the TSF basin area, comprising either reworked in-situ material or imported low permeability material. All embankment materials will be moisture conditioned and compacted in accordance with site specific QAQC requirements, which will be verified by the site engineer.

An underdrainage system will be installed over the HDPE liner and beneath deposited tailings to reduce the pressure head acting on the geomembrane liner, reduce seepage, and improve the geotechnical stability of the embankments. The underdrainage system will drain by gravity to collection sumps located at the lowest points in the basin. Solution recovered from the underdrainage system will be released to the top of the deposited tailings and will report to the supernatant pond.

A leakage collection and recovery system (LCRS) will be installed beneath the compacted soil liner. Solution recovered from the LCRS will be released to the top of the deposited tailings and will report to the supernatant pond.

The TSF will be designed with sufficient capacity and freeboard to completely contain design storm events. ANCOLD criteria have been adopted for pond freeboard over the Tanzanian *Dam Safety Guidelines*, as the freeboard requirements of ANCOLD are more stringent.

An emergency spillway will be constructed for each stage to protect the embankments from overtopping. Under normal operating conditions, the available stormwater storage capacity will be in excess of the design storm event and therefore no discharge is expected throughout the life of the facility, provided that the TSF is managed in accordance with standard operating procedures.

Tailings will be discharged into the TSF by sub-aerial deposition methods, using multiple spigots at regular intervals along the southern perimeter. Tailings will be deposited following the deposition plan, developed to locate the supernatant pond towards the decant area in the northern part of the facility and away from the embankments.

A bunded and lined corridor will be constructed for both the tailings delivery pipeline and decant return pipeline between the process plant and TSF to contain any spills. Supernatant water will be removed from the TSF by a decant pumping system with a turret intake. The turret system acts as a floating water intake device that can operate at relatively shallow pond depths. Water drawn from the turret will be pumped back to the process water pond at the process plant for reuse. During the early stages of operation, when the risk of water shortages is highest, the deposition plan will be managed to improve water recovery.

The TSF will be raised annually using the downstream method of construction. Raising annually will allow designs to be updated based on actual performance and up-to-date mine planning. TSF construction will be integrated with the mine waste schedule where possible. The HDPE liner will be extended and spillway raises conducted as a part of annual TSF raises.

### 18.9.4 TSF DAM BREACH ASSESSMENT

A preliminary TSF consequence assessment was undertaken in accordance with the requirements of ANCOLD guidelines, the GISTM and the Tanzanian Dam Safety Guidelines (Knight Piésold, 2025b).

The assessment analysed both “sunny day failure” (normal conditions) and “flood failure” (extreme flooding conditions). The sunny day failure condition considers when the supernatant pond is operating under typical or average conditions. The flood failure conditions consider a scenario where failure occurs during a flood event, therefore accounting for coincidental flooding of external catchment areas and assessed the

incremental impacts of a dam failure under these conditions. The assessment was undertaken assuming failure without considering the likelihood or probability of the failure.

The failure of the TSF was modelled at the final embankment height and full capacity, where the potential for volumetric outflow is the highest and inundation area the greatest.

The TSF has the following ratings based on current guidelines:

- An ANCOLD Dam Failure Consequence Category of High C for breaches resulting from flooding, and Extreme for all other failure modes.
- A GISTM Dam Failure Consequence Category of Extreme.
- A rating of Very High A, per the Tanzanian Dam Safety Guideline.

The consequence categories and classifications were used to determine the design criteria for pond storage and freeboard conditions, spillway requirements, seismic loading, and factors of safety for stability.

### 18.9.5 MONITORING AND SURVEILLANCE

A monitoring and surveillance program will be developed for the TSF to allow for the safety and performance of the TSF to be verified against the design assumptions. The monitoring and surveillance program will allow for early identification and mitigation of any potential issues. The surveillance program will include routine (daily) TSF safety inspections and regular TSF reviews by management. The monitoring programme will include groundwater monitoring bores and surface water sampling stations to monitor water quality, piezometers within the embankments and foundations to monitor the phreatic surface, and survey monitoring of embankment crests to monitor embankment movements.

### 18.9.6 CLOSURE

At the end of the TSF operation, the external embankments will be shaped to be stable under both normal and seismic loading conditions, to provide a stable drainage system, and allow for revegetation.

The TSF closure cover capping is envisaged to comprise a waste rock layer, a low permeability fill layer, and a topsoil cover to form a water shedding landform. The closure cover for the tailings surface will be confirmed during operations based on ongoing operational tailings geochemistry test results and closure cover system trials.

A closure spillway will be constructed to allow rainfall run-off from the finished surface and to minimise ponding of rainfall on the facility post-closure. The closure spillway will allow conveyance of PMP storm events without any attenuation.

## 18.10 SURFACE WATER AND SEDIMENT MANAGEMENT

A sediment control and surface water management plan has been developed for the Project (Knight Piésold, 2025c). The technical assessment considered rainfall events, topography, ground conditions and other environmental factors and was based on the ultimate extent of key infrastructure such as the pit, waste dumps and the TSF.

Surface water management will be separated into three categories:

- Clean water diversions (CWDs) that will divert clean water away from the site to minimise sediment control dam (SCD) size.
- Mine waste diversions (MWDs) that will collect contaminated runoff from the mineralised waste stockpile, reporting to a specific SCD called the contact water control pond.
- Sediment laden water diversions (SWDs) that will report to one of three remaining SCDs.

The contact water control pond and other SCDs are shown in Figure 18-1. The SCDs are designed to reduce flow velocities to promote sediment settling and mitigate the following:

- Adverse effect on the quality of water, e.g., increased turbidity, contaminants and nutrients flowing downstream.
- Impacts to flora and fauna and their habitat by filling in deep holes and pools, impacting wetlands and aquatic vegetation and exacerbating flooding.

Diversion channels have generally been designed to convey the critical duration of 50-year average recurrence interval (ARI) storm event off the mine site area into the natural drainage pathway or a SCD. The SCDs are designed to manage sediment for a 2-year ARI event, with spillways capable of conveying a 100-year ARI event.

As part of the surface water management strategy, culvert crossings have been identified based on the proposed internal road alignments. Sizing and quantities of culverts are to be confirmed during detailed design.

The earthworks and drainage design of the process plant facility ensures that any chemically contaminated water and process spillage will be contained in bunded areas or the event pond within the plant site.

The design of these facilities will be finalised in parallel with the broader site infrastructure design.

# 19. MARKET STUDIES AND CONTRACTS

## 19.1 MARKETS

Tanzania permits export of gold doré. Perseus intends to enter into a contract for refining doré produced at Nyanzaga. Under the intended contract, the refiner will arrange transport for the doré bars to its refinery, where it will refine the gold to the purity accepted in international markets (generally 99.8% to 99.95%). The refined gold will be credited to the Company's gold account with its bank, to enable it to be sold on international markets or delivered into forward sales contracts. The refiner will invoice Perseus for costs relating to transportation, insurance, refining and other charges.

As noted in Table 4-1, the royalty payable to the Tanzanian government attracts a reduced rate of 4% in the case of gold sold to the Bank of Tanzania at refinery centres in Tanzania, compared to 6% for gold sold to offshore refineries.

As gold bullion is freely traded at prices that are widely known, Perseus did not conduct a market study for the sale of gold doré. Given the freely traded nature of gold, the prospects for sale of any production are virtually assured.

## 19.2 GOLD PRICE

The gold price for cut-off calculations for Mineral Reserves is $1,700/oz. Financial evaluations of the mining schedule have been undertaken at $2,100/oz.

A gold price of $2,000/oz was used for shells to limit Mineral Resource estimates, and a gold price of $2,100/oz has been used as the revenue price for the economic analysis of the Project in Section 22. Metal price assumptions for studies, project development and financial analysis within Perseus are reviewed annually and are approved by the Technical Committee of the Perseus Board.

## 19.3 BULLION TRANSPORT

Gold doré will be transported by a contracted security company from the Nyanzaga Project site.

## 19.4 CONTRACTS

Perseus is proposing the following key contracts for the development of the Nyanzaga Gold Project:

- Engineering, Procurement and Construction Management (EPCM) contract for the process plant and supporting infrastructure.
- Major equipment supply contracts.
- Bulk materials supply contracts.
- TSF engineering and construction supervision contract.
- Powerline engineering and construction supervision contract.
- 220 kV Power Services Agreement.

Perseus is proposing a large number of service and supply contracts to support the Nyanzaga Gold Project during the operational phase, including:

- Open pit mining services.
- Explosives supply.
- Fuel supply.
- Camp catering and maintenance.
- Doré transport and refining.

# 20. ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

## 20.1 INTRODUCTION

An Environmental and Social Impact Assessment (ESIA) was undertaken and submitted to the National Environment Management Council (NEMC) for approval in late 2017 (MTL Consulting, 2017). The ESIA comprises several management plans which describe how Project activities might impact on the natural environment in which it occurs and set out clear commitments from the company taking the action on how those impacts will be avoided, minimised and managed so that they are environmentally acceptable. The National Environment Management Council (NEMC) granted an Environmental Certificate (EC) (EC/EIA/2018/0001) to Nyanzaga Mining Company Limited (NMCL) for the Project in February 2018. An EC issued by the NEMC is a mandatory legal document that authorises a developer to commence a project after successfully completing an Environmental Impact Assessment (EIA).

Since the granting of the original EC in 2018, additional studies and engineering works were undertaken by OreCorp via their subsidiary SMCL as part of the Definitive Feasibility Study (DFS) on the Project. As a result of changes in the site layout, SMCL submitted an updated Environmental and Social Management Plan (ESMP, (Sotta Mining Corporation Limited, 2023)) to NEMC in July 2023, as per requirements.

With Perseus's acquisition of the project and update to the proposed mining methods and site layout, an updated ESMP is currently being developed incorporating the results of various associated studies. Once complete, this will be submitted to the NEMC for approval. Perseus does not expect any delays or impediments to receiving this approval.

In late 2021, the project commenced a detailed Resettlement Action Plan (RAP) planning process (Digby Wells Environmental, 2021) which contains an accurate delineation of affected landholdings, details of eligibility criteria, proposed compensation and measures to mitigate the impacts of resettlement as per the requirements of Section 52 of the Mining Act. The surveys and studies to support the RAP were completed in February 2023. Additional details on the RAP can be found in Section 20.10.

Although several environmental and social impacts have been identified, it is expected that these will be successfully mitigated through implementation of a range of measures. Concurrently, there are a number of positive impacts expected as a result of the Project, mainly related to community development and opportunities for local community members.

Part XIV of the Mining Regulations (2010) relates to Reclamation Requirements, Rehabilitation Bond and Mine Closure. Regulation 206 stipulates the requirement for preparation of a Mine Closure Plan (MCP), with a conceptual mine closure plan prepared and submitted as part of the ESIA. Regulation 196 requires continuous site rehabilitation during the life of the Project and prior to closure, while Regulation 204 requires that a post-operational state of mine facilities and post-operational monitoring plan to be submitted to the Commissioner of Minerals and the Minister responsible for environment prior to closure. Furthermore, Regulation 207 provides guidance for provision of adequate financial assurance for mine closure by the holder of a special mining license or mining license.

A detailed MCP will be required to be submitted to Ministry of Minerals for approval, with updates required to be submitted every three years. Perseus is in the process of updating the MCP to support the updated project configuration and will submit to the Ministry of Minerals for approval once complete. Perseus does not expect any delays or impediments to receiving this approval.

Material project approvals are outlined in Section 4.7 and summarised in Table 4-4.

## 20.2 ENVIRONMENTAL STUDIES

### 20.2.1 INTRODUCTION

The Project's ESIA specialist studies, and in particular the baseline field surveys, were undertaken to be consistent with national requirements of the Environmental Impact Assessment and Audit Regulations 2007 and International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (2012) and Good International Industry practice (GIIP). The initial ESIA (MTL Consulting, 2017) approved by the NEMC was not fully complaint with IFC performance standards and as a result additional surveys, studies and reports were required.

ERIAS Group conducted a review of the ESIA against the Equator Principles (EPs) and current, relevant, IFC and World Bank Group standards and guidelines. Several gaps and areas for improvement were identified with the following additional environmental surveys, studies and reports completed and incorporated into the 2023 ESIA update (Sotta Mining Corporation Limited, 2023). Specialist baseline surveys were completed for:

- Soils.
- Air quality (greenhouse gas and decarbonisation).
- Terrestrial flora.
- Terrestrial fauna.
- Aquatic ecology.
- Aquatic critical habitat assessment.
- Terrestrial critical habitat assessment.

Additional details related to these, and other, investigations are presented in the following sections, while the survey footprint of this work relative to the Project licences and SML is presented in Figure 20-1. As outlined in Section 20.1, Perseus is currently preparing an update to the ESMP. Any additional or expanded assessments required to support this process will be initiated with the results to be incorporated in the updated submission.

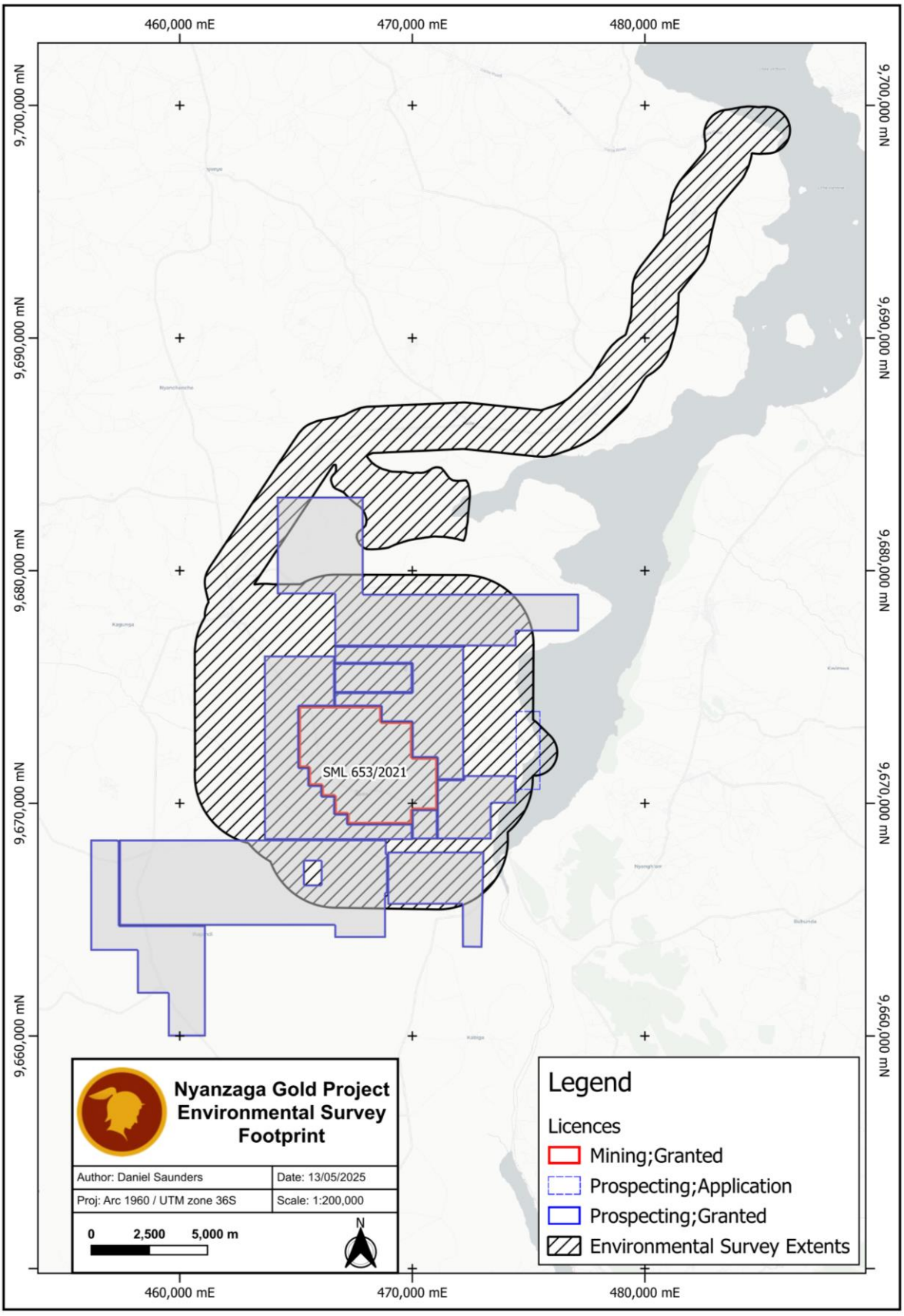



*Figure 20-1: Principal area of interest for environmental studies (Source: Perseus, 2025)*

### 20.2.2 BIODIVERSITY

In 2016 and 2017 a biodiversity survey was undertaken by MTL Consulting (MTL Consulting, 2017) to record a baseline state of terrestrial fauna, terrestrial flora and aquatic ecology. Updated surveys were completed within the SML operating perimeter and areas of influence, namely the Wingi River and Lake Victoria, by a team of experts from the University of Dar es Salaam. These surveys were conducted during the wet season from April to May 2021 and in mid-June 2021, and dry season during October 2021

Through the surveys, a total of 376 plant species were recorded. The survey identified two species occurring outside the SML that are listed on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species under various categories of conservation status. The 16 species of mammals recorded are categorised as Least Concern on the IUCN Red List of Threatened Species (2025). A total of 16 amphibian and 14 reptile species were recorded, all categorised as Least Concern.

A total of 26 species of fish were recorded within the project area of influence, although outside of the SML, with four species identified as having conservation significance. These include: *Labeo victorianus* and *Oreochromis variabilis* which are listed as Critically Endangered (IUCN-CR); and *Haplochromis argens* and *Haplochromis nubilus* are listed as Vulnerable (IUCN-VU). The presence of these species in these habitats may potentially to be impacted by the operation. Management of any potential impacts will be considered through the ESMP.

#### 20.2.2.1 TERRESTRIAL FLORA

During the 2021 flora surveys (Mfilinge & Selemani, 2022), a total of 376 plant species from 74 families were recorded during the wet season survey and 245 during the dry season. Of the species identified, 115 were trees, 68 shrubs, 121 herbs, 51 grass, 15 wood climbers, and six sedges.

The survey identified two species occurring within the project area of influence, but outside the SML, that are listed on the IUCN Red List of Threatened Species (2025) under various categories of conservation status. These include *Aeollanthus stuhlmannii* (Endangered – EN) and *Dalbergia melanoxylon* (Near Threatened – NT). The ESMP addresses the management of flora to minimise impact of the operations.

#### 20.2.2.2 TERRESTRIAL FAUNA

With regards to terrestrial fauna, a total of 16 species of mammals were recorded within and outside the SML during field surveys carried out in 2021 (Hassan, Kilwanila, & Haule, 2021). Two species were recorded in the wet season, six were recorded in the dry season and eight species were recorded in both seasons. All species recorded are categorised as Least Concern on the IUCN Red List of Threatened Species (2025). There were no restricted-range mammal species recorded.

A total of 290 bird species were recorded in the survey area during the 2021 field surveys (Hassan, Kilwanila, & Haule, 2021). Bird species recorded include five IUCN listed species: Bateleur (*Terathopius ecaudatus*) (IUCN-EN), Steppe Eagle (*Aquila nipalensis*) (IUCN-EN), Tawny Eagle (*Aquila rapaxes*) (IUCN-VU), Southern Ground-hornbill (*Bucorvus leadbeateri*) (IUCN-NT) and Fischer's Lovebird (*Agapornis fischeri*) (IUCN-NT). Management of potential impacts to the species identified will be addressed in the ESMP.

A total of 16 amphibian species were recorded during the 2021 surveys. One amphibian species was recorded that is endemic to countries harbouring the Rift Valley lakes of eastern Africa, the Victoria clawed frog (*Xenopus victorianus*). This species was recorded in very low numbers (less than three) at three sites – Kaningu A and Busisi freshwater swamps, and the Lubungo Dam (all located outside of the SML). All species are classified as IUCN Least Concern.

A total of 14 reptile species were recorded during the 2021 surveys. The pancake tortoise *(Malacochersus tornieri)* is classified as IUCN-CR and was recorded at two rocky outcrop locations near Busisi, outside of the SML.

#### 20.2.2.3 AQUATIC ECOLOGY (FISH, MACROINVERTEBRATES)

Aquatic ecology field surveys were carried out in mid-June 2021 (Ndibalema, Swalehe, & Masinde, 2022). Previous aquatic ecology surveys took place in 2017 as part of the Project ESIA (MTL Consulting, 2017). A total of 26 species and eight families of fish were recorded with four species identified being of conservation significance. These include: *Labeo victorianus* and *Oreochromis variabilis* which are listed as IUCN-CR; and *Haplochromis argensi* and *Haplochromis nubilusi* are listed as IUCN-VU. Management of potential impacts to the species identified will be addressed in the ESMP. Traces were found of the presence of the Nile crocodile (*Crocodylus niloticus*) at Nyamtukuza's wetland site (located south of the SML), however individuals were not observed. This site is said to be a breeding site for the Nile crocodile.

## 20.3 ENVIRONMENTAL MONITORING

### 20.3.1 CLIMATE AND METEOROLOGY

The climate and meteorology for the Nyanzaga Gold Project is described in Section 5.3.

### 20.3.2 AIR QUALITY

As part of the ESIA (MTL Consulting, 2017), six baseline air quality monitoring sampling sites were selected to measure particulate matter($PM_{10}$ and $PM_{2.5}$), nitrogen oxides, nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), hydrogen sulfide ($H_2S$) and carbon dioxide ($CO_2$) during both the wet and dry season. In addition, nine dust deposition monitoring stations were erected to record depositional dust.

Outcomes from the monitoring completed to date from these sites include:

- Data shows very low levels of dust fallout. Results are compared to the South African National Dust Control Regulation (2013) Standards, as there are no established standards in Tanzania for depositional dust.
- The highest concentrations of particulate matter were measured at Kaningu and Nyabila villages, which appears to be associated with vehicular movements, while the lowest concentration was measured at Nyashimba village. The average $PM_{10}$ and $PM_{2.5}$ concentrations across all the locations were found to be below the respective guidelines stipulated by IFC, WHO and Tanzanian Ambient Air Quality standards.
- All the measured parameters (nitrogen oxides, $NO_2$, $SO_2$, $H_2S$ and $CO_2$) from the six sampling stations were found to be within Tanzanian and international guidelines.

Perseus has considered dust management strategies to manage dust emissions from future operating activities within the SML, including the use of water tracks to spray internal unsealed roads and dust suppression and collection systems within the process plant.

### 20.3.3 NOISE LEVEL MONITORING

Background noise levels were measured at six locations during both the wet and dry seasons as part of the ESIA (MTL Consulting, 2017). Noise levels varied between 40 dBA and 53 dBA during the day and between 34 dBA and 44 dBA at night, with no large variance between seasons. The biggest contributing factor to the measured noise at all sites was vehicular movement from both private and exploration vehicles.

An increase in ambient noise levels is expected from mining and processing activities such as drilling and blasting, hauling of material, crushers, the grinding circuit and generators. Measures will be taken to minimise noise level exceedances at sensitive receptors within Nyang'hona, Nyashimba, Kaningu A and B, and Kadashi hamlets outside the Project area. These include maximising distances from onsite noise emanating activities and the communities, implementing noise control on machinery, and minimising activities at night that could impact communities. Other controls will be developed as part of the site Noise Management Plan.

### 20.3.4 GROUND VIBRATION

Baseline monitoring recorded ground vibrations as not more than 0.39 mm/s during regular working hours (with no blasting being undertaken).

At Perseus operating mines, ground vibration levels do not exceed 1 mm/s more than 0.5% of the time and are always below 2 mm/s when blasting occurs. Dependent on recording proximity to main vibration sources, it is therefore expected that vibration measurements at offsite stations will be below the prescribed limit of 5 mm/s as per the Tanzanian Environmental Management (Standards for the Control of Noise and Vibration Pollution) Regulations. The execution and operation of the Project will involve blasting that will generate ground vibration.

The project will observe the provisions under these regulations. The noise and vibration management and monitoring plan for the project will be implemented and where deemed necessary, will be amended accordingly.

## 20.4 WATER MANAGEMENT

### 20.4.1 SURFACE WATER

The Wingi River and Lake Victoria are the most dependable water sources for communities, both for domestic and agricultural purposes.

As described in Section 17.8, water for the Project will be sourced from recycle streams within the process plant, from the TSF decant, pit dewatering, and abstracted from Lake Victoria. Water requirements will vary over the life of the mine. Further, as described in Section 18.10, surface water and sediment management infrastructure has been designed to manage and/or contain surface water from the SML footprint, reduce flow velocities to promote sediment settling, mitigate adverse effects on water quality, and mitigate impacts to flora, fauna and habitat.

A network of surface water monitoring sites has been established across the SML area. Quarterly water quality monitoring has commenced and will continue throughout the life of the Project. A site water management plan was developed based on the framework ESMP provided within the Project ESIA document (MTL Consulting, 2017). This will be revised based on additional studies being undertaken and will thereafter be revised and implemented accordingly.

### 20.4.2 GROUNDWATER

AQ2 Pty Ltd has conducted site investigations, studies, and hydrogeological modelling to understand groundwater in the vicinity of the Nyanzaga Gold Project (AQ2, 2025). AQ2 has determined that the Project area is characterised by three aquifers, namely:

- A shallow perched aquifer formed in ferricrete with groundwater measurement ranging from 0 to 6 metres below ground level (mbgl), and commonly less than 2 mbgl.
- A saprock transition zone aquifer with groundwater measurement ranging from 10 to 70 mbgl, varying with topographic location both in relation to Nyanzaga Hill and position in the catchment.
- A variable aquifer formed in the fractured basement, which is discontinuous and of limited areal extent, controlled by the presence of fracture zones. Groundwater samples were collected from newly constructed monitoring boreholes, hand dug wells, community water supply boreholes and springs.

Groundwater in the Nyanzaga region is generally fresh to brackish with total dissolved solids (TDS) ranging from less than 400 mg/L (in the SML) to 1,200 to 1,800 mg/L in the regional monitoring bores. Groundwater samples with relatively high TDS come from the saprock aquifer and are characterised by very high concentrations of sulfate and bicarbonate.

A numerical groundwater model, based on AQ's 2022 conceptual hydrogeological model, has been used to assess dewatering requirements and potential groundwater impacts associated with the current mine plan.

Over the open pit mining duration, groundwater inflow rates are predicted to peak at approximately 1,300 kL/d in year four and then decline to between 900 kL/d and 1,000 kL/d in the final years of mining.

At the end of mining, dewatering will cease and the mined-out void will refill with inflowing groundwater and rainfall recharge. Groundwater levels will recover until a balance is reached between groundwater inflows and evaporative losses (from the pit lake surface) and outflows from the pit.

Following the cessation of mining, a permanent pit lake is predicted to form in the deeper part of the Nyanzaga Pit, whilst in the vicinity of the Kilimani deposit, long term groundwater levels are predicted to remain below the pit base with no groundwater inflow and only temporary surface waterflooding. The model predictions indicate that the final Nyanzaga pit void lake will be a throughflow type system with groundwater inflow to the pit void lake from upstream (northeast) and groundwater outflow to downstream (southwest).

It is recognised that further work is required during 2025, primarily to:

- Incorporate the structural setting after an update to the geological interpretation into the ground water modelling.
- Undertake pit void water balance modelling to further assess the rates of potential groundwater outflow from pit lake after the cessation of mining.
- Predict the pit lake water quality after cessation of mining.

## 20.5 TRAFFIC AND TRANSPORTATION

There will be significant increases in vehicular traffic on the roads leading to and from the project area. In addition to the increase in traffic directly related to Project operations, it is predicted that there will be further increases due to the influx of people to the nearby communities with the increasing prosperity and potential opportunities.

Since the relocation of most of the households from the project area, Perseus has been upgrading and maintaining all the roads that lead to the Project site for the safety of employees, contractors, visitors and community members. As noted in Section 18.1.2.1, Perseus is significantly contributing to the construction of a new road to bypass Ngoma township and reach the Nyanzaga site. The remaining roads from the project area to other villages will be monitored and support from the site will be provided to repair in line with the site's community support initiatives. Regular campaigns of sensitising and education are conducted into the community by the Perseus HSEC department in respect of the road code and road safety rules to prevent accidents with mobile equipment and to minimise dust pollution.

## 20.6 SOIL AND LAND CAPABILITY

Mining activities can have a significant impact on the land capability and soil structures because of compaction, erosion and land disturbance. During the construction and operation of the mine, actions will be taken to control and maintain the land capability and soil structures including:

- Topsoil will be removed and stored on denuded areas and utilised when areas are being rehabilitated after mining activities are completed.
- The current nursery will be upgraded, and seedlings will be planted as part of progressive rehabilitation.
- Soil and water conservation measures consisting of progressive rehabilitation of grasses on disturbed areas will be adopted to prevent wind erosion and ensure drainage and channelling of surface water in a controlled manner.

A Land Management Plan has been developed based on the framework ESMP provided within the Project ESIA document (MTL Consulting, 2017). This is being revised based on the changes being made to the proposed mining methods and site layout compared to the previous plan.

## 20.7 WASTE MANAGEMENT

### 20.7.1 PIT WASTE ROCK

Test work and analysis of waste rock has been conducted by Knight Piésold (Knight Piésold, 2018); (Knight Piésold, 2019); (Knight Piésold, 2022) and Perseus to understand the geochemical characteristics of waste rock and the potential for acid rock drainage (ARD). This body of work has identified that some waste rock within the open pit will contain potentially acid forming (PAF) material. Design details and material placement schedules for waste rock dumps will provide a plan to mitigate the risk associated with ARD from PAF waste. Surface water management designs (described in Section 18.10) consider collection of any contaminated runoff from the waste stockpiles to a specific contact water control pond.

Further test work is being undertaken to quantify PAF material within the pit, along with development of practical methodologies for management of PAF materials.

Waste dumps have been designed and have sufficient capacity to accommodate all waste rock from mining activities across the Project's LOM and within the SML.

### 20.7.2 TAILINGS STORAGE FACILITY

The tailings storage facility (TSF) will be used to store process waste (tailings) during the life of the Project. The design and operation of the TSF is detailed in Section 18.9.

### 20.7.3 GENERAL WASTE

A waste segregation management plan is currently employed to encourage the active sorting of waste types. This ensures that waste is documented, tracked for reporting purposes, and provides insights into the various types of waste generated.

A Materials and Waste Management Plan has been developed based on the framework ESMP provided within the Project ESIA document (MTL Consulting, 2017). This will be revised based on additional studies being undertaken and will be updated accordingly.

## 20.8 EMISSIONS AND ENERGY

A Greenhouse Gas (GHG) assessment for the Project was undertaken, with key Project activities included in the determination of Scopes 1 and 2 emissions as part of the study. These include:

- Scope 1
  - Land clearance.
  - Fuel consumption in mining equipment and transport vehicles (mobile and stationary combustion).
  - Use of explosives for blasting.
- Scope 2
  - Electricity supply (for process plant operations, MSA, offices, and the accommodation camp), supplied from the Tanzania Electric Supply Company Limited (TANESCO) grid.

The assessment excluded the estimation of GHG emissions for Scope 1 and Scope 2 activities associated with construction of the Project. The GHGs evaluated in the study included carbon dioxide ($CO_2$), nitrous oxide ($N_2O$) and methane ($CH_4$), which were estimated using the GHG protocol, ISO 14064, and the Intergovernmental Panel on Climate Change (IPCC) emission estimation methodology, which is consistent

with the 2006 IPCC Guidelines. The Scope 1 and 2 emissions for the Nyanzaga Gold Project are summarised in Table 20-1.

***Table 20-1: Energy emissions predictions for the Nyanzaga Gold Project***

| SCOPE ACTIVITIES | OPERATIONAL ANNUAL PRODUCTION |
|---|---|
| Total Scope 1 Emissions (t $CO_2$ e/a) | 1,554 |
| Total Scope 2 Emissions (t $CO_2$ e/a) | 112,441 |
| Total Scope 1 and 2 Emissions (t $CO_2$ e/a) | 113,995 |
| Emissions Intensity (t $CO_2$ e/oz gold produced) | 0.62 |

Electricity (Scope 2) will be sourced from TANESCO, which is produced using a mix of hydro, natural gas and fossil fuel power. Additional hydroelectric generation projects are currently being developed in Tanzania, which will increase the contribution of hydropower to approximately 70% when completed in coming years.

Several grid emission factors[2] (GEF) are available for Tanzania, which can be used to determine the Scope 2 emissions. The GHG assessment utilised the most recent GEF (0.495 $kgCO_2$/kWh) published by the Institute for Global Environmental Strategies in 2022 (IGES, 2022). It is noted that the Scope 2 emissions are calculated based on the current grid emission factors and therefore expected to reduce significantly following commissioning of the additional hydroelectric generation projects currently under development.

The most significant contributors to GHG emissions and energy consumption relate to electric power consumption in the process plant and operating the mobile equipment fleet using diesel fuel. The option to power the process plant via the TANSECO grid offered the benefit of reduced GHG emissions over diesel powered generators. Perseus is also studying renewable energy options as part of a backup power strategy.

The ability to reduce GHG emissions from the mobile equipment fleet will be dependent on advances in technology and changes to market forces to make it feasible in the future.

## 20.9 MINE REHABILITATION AND CLOSURE

Progressive rehabilitation programs and mine closure activities will take place over the life of mine. In accordance with Tanzanian and international requirements, the Project is obliged to undertake continuous site rehabilitation during the life of the Project and prior to closure. Based on these requirements, a framework for rehabilitation and closure has been developed for the Project. This rehabilitation and closure plan is preliminary since the final Project design will only be completed prior to construction and is likely to require changes to this conceptual mine closure plan (MCP). In addition, mine operations may be subject to various changes which will also need to be included in the MCP over the LOM.

A detailed rehabilitation and closure plan will be prepared and submitted to the Ministry of Minerals as required by Tanzanian law under Regulation 205 of the Mining (Safety, Occupational and Environmental Protection) Regulations, 2010, which requires every holder of a special mining licence or mining licence to prepare and submit to the Chief Inspector mines closure plan for approval. The MCP should include as a minimum:

- A program to reclaim and rehabilitate land and watercourses to an acceptable condition that takes account of its previous use.
- A program to support socio-economic activities to provide an alternative livelihood for local communities beyond the life of the mine.
- Comments made by the district authorities, the surrounding communities and the district mine closure committee.
- The cost of providing statutory and other benefits to employees beyond the life of the mine.

[2] Grid emission factor (GEF) refers to a $CO_2$ emission factor ($tCO_2$/MWh or $kgCO_2$/kWh) which is associated with each unit of electricity provided by an electricity system in a specific country or region (IGES, 2022). The power mix of the applicable grid therefore determines the GEF score.

- The cost of reclaiming and rehabilitating the mining area at mine closure.

The Project will make financial provisions for mine closure as part of the detailed closure plan that will be prepared and submitted to the Ministry of Minerals for approval. The detailed closure costs will be dependent on the final layout and extent of the mine facilities that will be determined after construction and commissioning of the Project. As such, the detailed closure plan that will be prepared and submitted to the Chief Inspector of Mines, as per the requirements of the Mining (Safety, Occupational Health and Environmental Protection) Regulations, 2010, will incorporate the financial provisions for closure.

The basis of the rehabilitation and closure costs that Perseus has provisioned as part of this Study is discussed in Section 21.1.4.

## 20.10 RESETTLEMENT

### 20.10.1 RESETTLEMENT ACTION PLAN (RAP)

The Nyanzaga Gold Project will cause both physical and economic displacement in the villages of Sotta and Nyabila. A Resettlement Action Plan (RAP) is being implemented to support those affected.

The RAP aims to ensure affected people are compensated fairly and supported to restore or improve their livelihoods and living standards. Key elements of the RAP are as follows:

- The RAP follows Tanzanian law (Land Act 1999, Mining Act 2017) and international standards (IFC Performance Standard 5) to ensure fair and transparent resettlement and compensation.
- Compensation will be at full replacement cost, ensuring replacement land and housing is of equal value and quality to what is lost.
- A valuation report, compliant with Tanzanian law and international standards, will be approved by the Chief Valuer.
- Compensation options include:
    - In-kind compensation (replacement of homes, land, and other lost assets).
    - Cash compensation.

All affected households, whether physically or economically displaced, can participate in a livelihood restoration program tailored to their level of impact. A Resettlement Working Group (RWG) was established in February 2022 and includes company, government, and community representatives which leads stakeholder engagement and decision-making. A grievance mechanism is in place, allowing affected persons to submit complaints or claims free of charge, with guaranteed timely responses.

### 20.10.2 RESETTLEMENT PROGRAM

Surveys and studies to support the RAP were completed in February 2023. The Project has since advanced the RAP with compensation payments completed for over 93% of the project affected persons. A housing relocation construction program is underway, and the scheduling of house builds will be sequenced to ensure that areas of the SML are available to achieve Project development scope and schedule.

## 20.11 ENVIRONMENTAL AND SOCIAL MANAGEMENT

An Environmental and Social Management System (ESMS) has been developed for the Project to be consistent with the requirements of IFC PS 1 and ISO 14001:2015, in order to manage Project environmental and social risks and opportunities. The ESMS establishes the foundation of a flexible management approach, capable of addressing the regulatory requirements of the Project whilst meeting international standards for environmental, social and corporate governance (ESG), providing guidance on the implementation and

operation of the ESMS to all Project personnel. This section provides a summary of the Project ESMS manual (OreCorp, 2024).

The purpose of the ESMS is to establish a set of processes and practices to consistently implement the Company's policies regarding the management of environmental and social risks. The ESMS is intended to assist in the identification and control of risks and impacts, while improving environmental, social and sustainability performance. The ESMS will incorporate the following elements:

- policy.
- identification of risks and impacts.
- management programs.
- organisational capacity and competency.
- emergency preparedness and response
- stakeholder engagement.
- monitoring and review.

In keeping with these requirements, a Project ESMS has been developed that is relevant and appropriate to the nature and the context in which the Project is being developed.

### 20.11.1 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

An Environmental and Social Management Plan (ESMP) is currently being developed for the Project, based on the framework that the ESMS provided within the Project ESIA document (MTL Consulting, 2017), as well as additional studies being undertaken to develop a revised ESIA. The primary aim of the ESMP is to assist in delivering the intended environmental and social outcomes over the entire Project life cycle. The current ESMP is being compiled in line with the legal and compliance framework for the Project and is aligned with the management controls identified in the Project impact and risk register.

The Project ESIA documentation contains a range of mitigation and management measures to minimise the potential impacts, as far as reasonably practicable. These mitigation and management measures will be developed in more detail in the ESMP and sub plans.

## 20.12 SOCIAL DEVELOPMENT

The Project represents a large source of employment and economic opportunities for the region in which it operates. The Project currently employs 96 direct employees of which 93% are Tanzanian nationals, 33% coming from the local communities near the project. As the Project grows, there will be employment of more people both as Perseus direct employees and through the contractors.

The company is committed to maximising its contributions to host communities. Perseus's social performance policy is based on three pillars: local employment, providing skills-based training, and establishing local procurement programs, focusing on local supply chain development.

### 20.12.1 SOCIAL DEVELOPMENT ASPECTS

A Social Impact Assessment (SIA) conducted during the Feasibility Study identified a series of measures to avoid or minimise social impacts and risks associated with project operations and maximise social benefits. This section describes how the Project operationalises some of these key measures and manages its overall social performance.

The Project recognises that social performance is an ongoing dynamic process that:

- Is part of its overall mine management system.
- Involves regular employee participation and community engagement.

- Includes systematic planning and implementation activities.
- Enables continuous improvement.

### 20.12.2 STAKEHOLDER ENGAGEMENT PROGRAM

Perseus considers stakeholder engagement as a broad, inclusive and continuous process of building trust and relationships between the project and its stakeholders.

With this in mind, the Nyanzaga Gold Project has implemented the following measures:

- Engagement with national, regional, and district authorities and ward and village local communities to encourage cooperation in the governance system. This will in turn maximise benefits for affected communities through induced economic growth and payment of royalties and taxes.
- Support for working groups within the stakeholder management governance structure (i.e., the Resettlement Implementation Working Group,) to facilitate a participatory approach to planning and decision making.

The above measures and ongoing collaboration with the various stakeholders have resulted in reaching a consensus on the definition of “local” and “regional” for employment and procurement planning purposes, as well as several other initiatives related to skills enhancement, apprenticeship programs, facilitation of local employment, and support for local businesses, including through regional financial and training service providers.

### 20.12.3 LIVELIHOOD RESTORATION PROGRAM

The acquisition of the project footprint resulted in the economic displacement of numerous individuals, households and communities who relied on the assets contained within the footprint for their livelihoods, namely agricultural land and communal resource land.

SMCL developed a Livelihood Restoration Framework Program (LRFP), which has helped to define the mechanism for acquiring land and managing the impacts of the resulting economic displacement, in line with IFC Performance Standard 5 and relevant Tanzanian legislation and regulations.

The program includes:

- Analysing relevant international standards (IFC Performance Standard 5) and the Tanzanian legal and institutional framework, identifying gaps between the two, and defining measures to fill the gaps.
- Preliminary assessment of displacement impacts associated with the acquisition of project land.
- A description of the approach to managing these impacts through a thoughtfully planned and executed livelihood restoration process.
- Definition of a stakeholder engagement program specific to livelihood restoration that complements and dovetails with the project-wide stakeholder engagement program.
- Explanation of support programs potentially needed to supplement compensation entitlements, including a livelihood restoration and improvement program and a vulnerable person’s assistance program.
- Description of a grievance management system.
- The definition of a monitoring and evaluation program.
- Identification of the various stages, including the obligation to draw up a resettlement action plan for land acquisition activities undertaken.

### 20.12.4 SOCIAL DEVELOPMENT PROGRAM

#### 20.12.4.1 CLEARING MANAGEMENT

As part of the Social Development Program, a compensation process has been defined with the various stakeholders. The people affected and community representatives are involved at every stage of the process to ensure transparency and prevent any potential grievances.

The land and crop compensation methodology is implemented by SMCL according to the current laws and practices in Tanzania. The compensation process is regulated by the Valuation and Valuers Registration Act, 2016 and its Regulations of 2018, and the Land Act, 1999; the Grave Removal Act, 1969; and Land Acquisition Act, 1967, which provides guidance on the compensation scale.

The objective of our approach is:

- Compensate the communities for the loss of their land and crops.
- Identify losses, costs, and payment methods for compensation.
- Conduct the process transparently and complete it before operations commence in the area.

The compensation process is managed with the support of an external Project Valuer. The process is implemented as follows:

- Awareness campaign with leaders and the owners (landowners and farmers).
- Identification of the land and crop owners.
- Delimitation/delineation of the project area and the boundaries of the plot.
- Crops inventory.
- Validation and signature of the inventory form/valuation form.
- Valuation and preparation of compensation schedule.
- Compensation schedule disclosure.
- Compensation agreement signing by the project affected persons and Company.
- Payment.

#### 20.12.4.2 CULTURAL HERITAGE AND SACRED SITES

A Cultural Heritage and Archaeological Assessment was conducted as part of the Project ESIA (MTL Consulting, 2017), (Sotta Mining Corporation Limited, 2023), and several sacred sites and graves were recorded within the immediate Project area. The assessments were conducted within the framework of Tanzanian legislation on cultural heritage preservation and protection and the International Financial Corporation Performance Standard 8 on Cultural Heritage.

In addition, SMCL undertook a consultative process to list all sacred sites and graves with the assistance of communities, and determine appropriate the approach to valuation prescribed in various Acts, including the Land Act, 1999; the Land (Assessment of Land Compensation) Regulations, 2001; the Village Land Regulations, 2001; the Valuation and Valuers Registration Act, 2016; and the Valuation and Valuers (General) Regulations, 2018. The Graves Removal Act, 1969 guides the financial compensation linked to the removal of graves from the Project area. There is no legislation that guides the financial compensation for the moving of cultural sites, the current practice is through direct negotiation with communities and the relevant leaders.

SMCL also undertook a cultural heritage impact assessment as part of the ESIA, which identified cultural resources within the SML area and surrounds. These resources will be managed in compliance with the Antiquities Act, 1964 and the Antiquities Amendment Act, 1979.

#### 20.12.4.3 LIVELIHOOD RESTORATION ACTIVITIES

As part of its livelihood restoration programs, SMCL signed a partnership agreement with Vuna Agribusiness. The aim of this partnership was to support project affected persons in a number of agreed areas/programs, including:

- Livelihood re-establishment.
- Crop-based programs.
- Livestock-based programs.
- Enterprise development.
- Budgeting and money management.

VUNA conducted a training session on crop storage and marketing, and also on post-harvest monitoring in April 2024.

#### 20.12.4.4 COMMUNITY TRAINING AND EDUCATIONAL SUPPORT

SMCL has implemented a range of initiatives through the Corporate Social Responsibility programs to assist local schools near the project area and even further afield, but within Sengerema and Nyanghwale districts. These initiatives included renovating school buildings or building new classrooms, building toilets, and donation of equipment and desks. SMCL has also been providing practical training placements to university and college students. SMCL has further allowed access to the surrounding community to fetch water from a well within the Project area.

### 20.12.5 LOCAL RECRUITMENT PLAN

In line with the Local Content Regulation in Tanzania, Perseus works with local and regional authorities and businesses to design and implement a local procurement plan that maximises the local and regional content of the project and focuses on locally produced or locally added value products and services.

The objectives are to:

- Develop partnerships with local and regional businesses, as well as chambers of commerce, to maximise the supply of locally produced or locally added-value products and services.
- Create a transparent and reliable supply system based on the principle of 'local preference' while maintaining quality, safety and cost efficiency.
- Strengthen the resilience of the project supply chain.
- Support the sustainable growth of local/regional businesses and local/regional economic development.
- Discourage inward migration caused by commercial speculation through the development of local/regional businesses able to better meet the supply requirements of the project.

### 20.12.6 ARTISANAL AND ILLEGAL MINING

There is no legal obligation to the small scale mining sector, however the existence of small-scale mining and processing operations in the surrounding area of the project area (Ifugandi and Bululu) may have some negative environmental impacts, especially pollution of the Wingi River which is in between the Project area and the small-scale operations. Training on responsible mining may be helpful to mitigate pollution of Wingi River.

Artisanal mining can have a negative social impact on the community structure. It has contributed to some of the demographic growth in the two villages surrounding the operations. SMCL has obtained support from local government authorities to reduce incursions into its prospecting licence areas by illegal miners. Despite

all these efforts and support, illegal mining activities remain one of the challenges for the Project on the prospecting licences. Several actions have been carried out with the objective to:

- Involve the community, district and Tanzania Mining Commission leaders in the sensitisation on the illegal miner intrusions.
- Maintain a good relationship with the community.

# 21. CAPITAL AND OPERATING COSTS

Capital and operating cost estimates have been developed for the Nyanzaga Gold Project to a Feasibility Study standard. The cost estimates are presented in USD ($), with costs effective Q4 CY2024.Capital costs for the Project are presented in Section 21.1, and operating costs for the Project are presented in Section 21.2.

## 21.1 CAPITAL COSTS

Capital cost estimates have been compiled by Perseus and Lycopodium, with inputs from Lycopodium (process plant, infrastructure, construction distributables, EPCM management costs, and spares), ECG Engineering (electrical), Majesso Consulting (mine contractor mobilisation and establishment, mine services area, and mine contractor demobilisation), Knight Piésold (site access road, surface water management, Lake Victoria raw water abstraction, TSF, and TSF closure), Mine Earth (closure), and Perseus (earthworks, mine services area, owner's costs, pre-production, sustaining capital, and retrenchment).

The capital cost estimate, summarised in Table 21-1, includes development and pre-production capital, sustaining capital, and rehabilitation and mine closure costs for the Nyanzaga Gold Project. The capital cost estimates are presented in USD ($), with costs effective Q4 CY2024. Overall, the capital cost estimates are considered to have an accuracy of -10% +15%. The foreign exchange rates, as presented in Section 21.1.1, were used to develop the capital cost estimate. There is no allowance for project escalation, project sunk costs, or exchange rate variations in the capital cost estimate other than that which would normally be covered by the project contingency.

***Table 21-1: Capital cost estimate summary (Q4 CY2024, -10% 15%)***

| ITEM | $M |
|---|---|
| Development and pre-production capital | 523.1 |
| Sustaining capital | 97.1 |
| Rehabilitation and mine closure | 58.8 |
| **TOTAL** | **679.1** |

The development and pre-production capital cost includes costs incurred post-FID (final investment decision) up to first gold pour. The development capital cost includes mine contractor mobilisation and establishment, construction of the processing plant (as described in Section 17), construction of project infrastructure (as described in Section 18), construction distributables, EPCM management costs, owner's costs, commissioning spares, the initial stage of the TSF, taxes (withholding and duties) and contingency. The pre-production capital cost includes operational readiness labour and programs, and capitalised pre-production costs for mining, processing and general and administrative (G&A).

The sustaining capital cost includes expenditure required during the life of the Project to maintain production at the specified design capacity.

Rehabilitation and mine closure costs capture expenditure for all activities related to progressive and final rehabilitation of affected land and watercourses to an approved end of Project land use condition and mine site closure. This includes costs related to environmental monitoring in the period between operations ceasing and formal closure, mining contractor demobilisation, and provision of statutory benefits to Perseus staff at the end of the Project.

The build-up of the capital cost estimate is detailed in the following sections.

### 21.1.1 ESTIMATE CURRENCY AND BASE RATE

Cost estimates for the Nyanzaga Gold Project are expressed in USD ($) and are based on prices and market conditions current as of the fourth quarter of calendar year 2024 (Q4 CY2024).

Foreign currency exchange rates used for cost estimates are presented in Table 21-2.

*Table 21-2: Foreign currency exchange rates used for Nyanzaga Gold Project cost estimates*

| EXCHANGE RATE | VALUE |
|---|---|
| AUD:USD | 0.66819 |
| EUR:USD | 1.09086 |
| CAD:USD | 0.73127 |
| GBP:USD | 1.30080 |
| ZAR:USD | 0.05545 |
| TZS:USD | 0.00037 |
| XOF:USD | 0.00166 |

### 21.1.2 DEVELOPMENT AND PRE-PRODUCTION CAPITAL

The development capital cost estimate has been compiled by Lycopodium (2025e), with estimate inputs from Lycopodium (process plant, infrastructure, construction distributables, EPCM management costs, and spares), ECG (electrical), Majesso Consulting (mine contractor mobilisation and establishment, and mine services area), Knight Piésold (site access road, surface water management, Lake Victoria raw water abstraction, and TSF) and Perseus (earthworks, mine services area, owner's costs).

The pre-production capital cost estimate has been compiled by Perseus and includes operational readiness salaries and programs, and capitalised pre-production costs for mining, processing and G&A that are ratioed to the annual operating cost for each department for the relevant pre-production periods.

The development and pre-production capital cost of $523.1M is broken into further detail in Table 21-3, with the development capital cost being $472.2M and the pre-production capital cost being $50.9M.

*Table 21-3: Development and pre-production capital cost summary (Q4 CY2024, -10% 15%)*

| ITEM | $M |
|---|---|
| Process plant | 117.8 |
| Reagents and services | 38.3 |
| Infrastructure | 93.7 |
| Mining services and mining contractor establishment | 11.0 |
| Construction distributables | 27.5 |
| EPCM management costs | 51.2 |
| Owner's project costs | 80.9 |
| *Sub-total* | *420.4* |
| Taxes (WHT) | 2.5 |
| Development capital contingency | 49.3 |
| Sub-total: Development Capital | 472.2 |
| | |
| Operational readiness | 11.0 |
| Capitalised pre-production – mining | 33.1 |
| Capitalised pre-production – processing | 4.5 |
| Capitalised pre-production – G&A | 2.3 |
| Sub-total: Pre-Production Capital | 50.9 |
| | |
| **TOTAL** | **523.1** |

#### 21.1.2.1 DEVELOPMENT CAPITAL BASIS OF ESTIMATE AND METHODOLOGY

The development capital cost estimate was prepared according to Lycopodium's Basis of Estimate (2025f). The development capital cost estimate basis is detailed in Table 21-4 and the development capital cost estimate methodology is detailed in Table 21-5.

General arrangement drawings and a 3D model have been produced with sufficient detail to permit the assessment of the engineering quantities for earthworks, concrete, steelwork, mechanical, and electrical for the processing plant and infrastructure.

The design status varies on a facility-by-facility basis, from recently completed designs, modified construction and as-built drawings of current and past project facilities, to initial concept drawings.

The key process and engineering design criteria used for equipment selection in the development of the capital cost estimate had been pre-established for the purpose of this Feasibility Study.

Unit rates that reflect the current market conditions have been established for bulk materials, capital equipment and labour from region specific budget quotation requests (BQRs) and benchmarked against projects that are either currently under construction or recently completed.

Budget pricing for equipment and infrastructure facilities was obtained from suitable suppliers and contractors.

***Table 21-4: Development capital cost estimate basis***

| DESCRIPTION | BASIS |
|---|---|
| **Site** | |
| Geographical location | Perseus advice from site plan |
| Maps and surveys | Provided by Perseus |
| Geotechnical data | Assumed competent based on previous study. To be confirmed through current geotechnical study |
| **Process Definition** | |
| Process selection | Based on Perseus's flowsheet |
| Design criteria | FS standard (Based on Perseus's flowsheet) |
| Plant capacity | 5 Mt/a nameplate |
| Flowsheets | FS standard |
| Piping and instrumentation diagrams (P&IDs) | N/A |
| Mass balances | FS standard |
| Equipment list | FS standard |
| **Process Facilities Design** | |
| Equipment selection | FS standard |
| General arrangement drawings | FS standard |
| 3D model | Detailed |
| Piping drawings | Not Required |
| Electrical drawings | Single line diagrams, electrical layouts |
| Specifications/data sheets | Used for equipment pricing |
| **Infrastructure Definition** | |
| Existing services | None |
| Power | Estimate provided by ECG |
| Water | Lake intake structure, pumping and overland piping |
| Accommodation | 400-person camp |
| Access and site roads | Knight Piésold– design, quantities |
| TSF | Knight Piésold – design, quantities |
| Mine services | As advised by Perseus and Majesso Consulting |
| Security/fencing | Plant security fencing, stock fence to lease boundary |
| Design basis | FS standard |
| Layout | FS standard |

*Table 21-5: Development capital cost estimate methodology*

| DESCRIPTION | BASIS |
|---|---|
| Bulk earthworks | Volume for bulk earthworks provided by the project model |
| Detailed excavation | Allowances for under pad excavation and backfill to prepare site for concrete works |
| Concrete installation | Quantities based on study engineering, reference projects and estimated structures |
| Structural steel | Quantities based on study engineering, reference projects and estimated structures |
| Platework and small tanks | Platework items as per the mechanical equipment list |
| Tankage – field erected | Tanks as per the mechanical equipment list |
| Mechanical equipment | Items as per the mechanical equipment list. Formal budget enquiries with datasheets and/or specifications for the major mechanical items. Costs for minor items taken from the Lycopodium (recent) database |
| Plant piping general | Factored from mechanical costs |
| Overland piping | Size and specification based on engineering selection. Quantity based on site layout. Rates taken from the Lycopodium database |
| Electrical general | Quantities derived from engineering design and site layout. Electrical equipment priced for the project. Bulks and installation costs drawn from a combination of recent database and budget pricing |
| Electrical HV | Quantities derived from engineering design and site layout. Electrical equipment priced for the project. Bulks and installation costs drawn from a combination of recent database and budget pricing |
| Commodity rates – general | Based on specific contractor enquiries with indicative drawings |
| Installation rates – general | Based on specific contractor enquiries with indicative drawings |
| Large cranage | 300 t crane – Provided by Perseus |
| Freight general | Combination of freight tonnes and percentages |
| Contractor mobilisation / demobilisation | Based on BQRs |
| EPCM | Resource based estimate for the EPCM controlled scope |
| **Owner's Costs** | |
| Owner's project costs | Perseus estimate |
| Construction accommodation | Owner's team, EPCM personnel and contractors' expats at $25/day |
| Project insurances and permits | Part of Owner's project costs |
| Spares | % allowance |
| Duties and taxes | EPCM withholding tax only |
| Escalation | Excluded |

#### 21.1.2.2 QUANTITY DEVELOPMENT

The Project works were quantified to represent the defined scope of work and to enable the application of rates to determine costs. Allowances for compaction, waste, rolling margin, and the like are included in the build-up of unit costs.

Quantity information was derived from a combination of sources and categorised to reflect the maturity of design information as follows:

- Study engineering that includes quantities derived from project specific engineering for the purpose of the Study. Includes equipment lists and 3D modelled facilities.
- Reference projects that include quantities drawn from previously constructed projects or detailed designs, and by exception have been adjusted to suit the equipment sizing and layout specific to this project.
- Estimated quantities derived from sketches or redline mark-ups of previous project drawings and data, compiled by estimating.

- Factored quantities derived from percentages applied as a factor from previous estimates or projects.

The derivation of quantities within these categories by percentage is provided in Table 21-6, weighted by bulk quantity.

***Table 21-6: Derivation of quantities***

| CLASSIFICATION | QUANTITY | UNIT | STUDY ENGINEERING LIST/MODEL % | REFERENCE PROJECTS (ADJUSTED) % | ESTIMATED % | FACTORED % |
|---|---|---|---|---|---|---|
| Earthworks – plant | 798,467 | $m^3$ | 95 | 5 | - | - |
| Earthworks – water and roads | 1,643,616 | $m^3$ | 100 | - | - | - |
| Plant concrete | 15,195 | $m^3$ | 20 | 60 | 20 | - |
| Structural steel | 2,131 | t | - | 90 | 10 | - |
| Platework | 465 | t | 10 | 85 | 5 | - |
| Field erected tanks | 710 | t | 80 | 20 | - | - |
| Mechanical equipment | 711 | ea. | 100 | - | - | - |
| Conveyors | 997 | m | 100 | - | - | - |
| Piping – plant | 1 | lot | - | - | - | 100 |
| Piping – overland | 41 | km | 100 | - | - | - |
| E&I plant and infrastructure | 1 | lot | 90 | - | 10 | - |
| Steel buildings | 9,785 | $m^2$ | 95 | 5 | - | - |

#### 21.1.2.3 PRICING BASIS

The development capital cost estimate pricing was derived from a combination of:

- Budget Pricing – Market pricing solicited specifically for the project estimate.
- Database – Actual costs from similar projects that have recently been constructed, or were under construction at the time of the estimate, and are less than six months old.
- Estimated – Historical database pricing older than six months, escalated to the current estimate base date.
- Factored – Factors derived from percentages applied as a factor from previous estimates or projects.

Table 21-7 and Figure 21-1 summarises the source of pricing by major commodity, weighted by value of the direct permanent works (excluding temporary works, construction services, commissioning assistance, EPCM costs and contingency), including supply and installation. The total of $420.36M corresponds to the development capital sub-total in Table 21-7 before taxes (WHT) and contingency.

*Table 21-7: Sources of pricing*

| CLASSIFICATION | SUBTOTALS $M | BUDGET PRICING % | DATABASE % | ESTIMATED % | FACTORED % |
|---|---|---|---|---|---|
| A: Architectural | 24.22 | 55 | 45 | - | - |
| B: Earthworks – plant | 7.61 | - | 100 | - | - |
| B: Earthworks – water and roads | 28.72 | - | 100 | - | - |
| C: Concrete | 16.61 | 95 | 5 | - | - |
| E: Electrical | 96.46 | 95 | 5 | - | - |
| L: Platework | 11.63 | 95 | 5 | - | - |
| M: Mechanical | 70.54 | 85 | 10 | 5 | - |
| P: Piping | 24.80 | - | 35 | - | 65 |
| S: Steelwork | 15.55 | 95 | 5 | - | - |
| S1: SMP indirects | 15.12 | 95 | 5 | - | - |
| U: Owner's costs (other) | 72.53 | 95 | 5 | - | - |
| V: EPCM | 30.44 | 100 | - | - | - |
| W: Consultants | 2.13 | - | 100 | - | - |
| Z: General | 4.00 | 5 | 95 | - | - |
| **Pricing Derivation** | **420.36** | **76** | **19** | **1** | **4** |

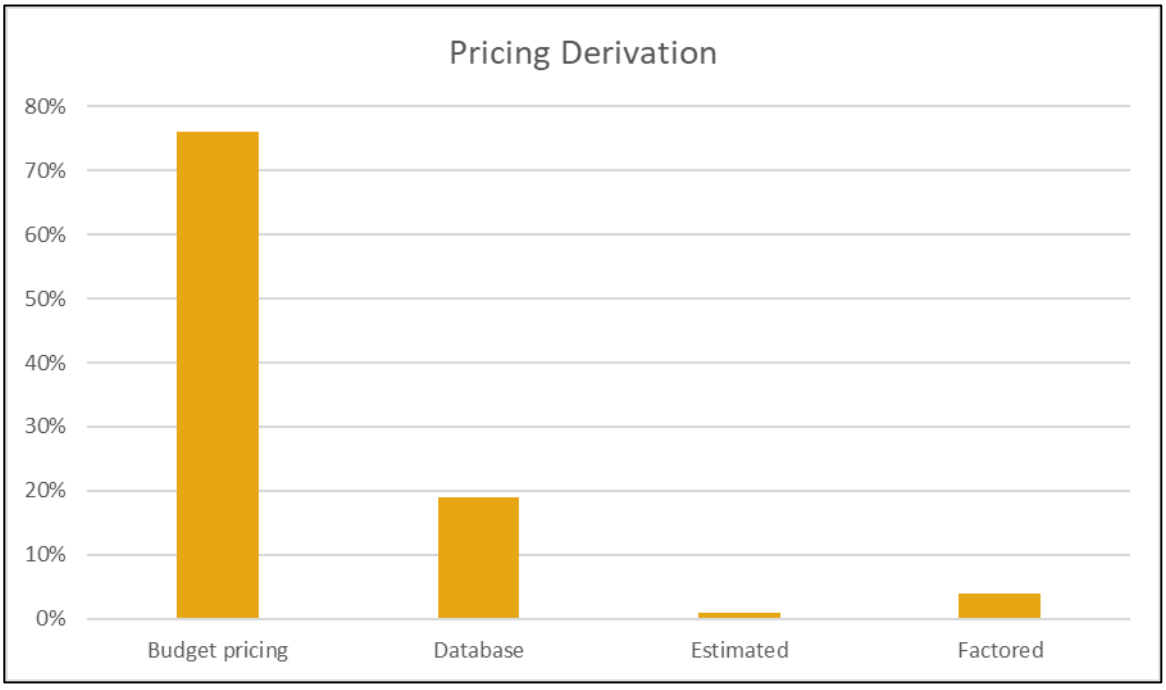



*Figure 21-1: Sources of development capital cost pricing*

Pricing is categorised by the following cost elements, as applicable, for the development of each estimate item.

#### *21.1.2.3.1 BULK MATERIALS*

This component covers all materials normally purchased in bulk form for installation on the project. Costs include the purchase price ex-works, off-site fabrication (if applicable), and over-supply for anticipated wastage.

#### *21.1.2.3.2 PLANT EQUIPMENT*

This component represents pre-fabricated, pre-assembled, off-the-shelf types of mechanical or electrical equipment items. Pricing is inclusive of all costs necessary to purchase the goods ex-works, generally excluding delivery to site (unless otherwise stated), although does include operating and maintenance manuals. Vendor representation and commissioning spares have been allowed for separately in the estimate.

#### *21.1.2.3.3 INSTALLATION*

This component represents the cost to install the plant equipment and bulk materials on site or to perform site activities. Installation costs are further divided between trade labour, equipment and contractors' distributables.

The labour component reflects the cost of the trade labour workforce (excluding management, supervision and other onsite support staff) required to construct the Project scope. The labour cost is the product of the estimated work hours spent on site multiplied by the cost of labour to the contractor inclusive of overtime premiums, statutory overheads, and payroll burden and contractor margin.

The equipment component reflects the cost of the construction equipment and running costs required to construct the Project. The equipment cost includes small tools, consumables, PPE, and the applicable contractor's margin.

Contractors' distributable costs encompass the remaining cost of installation and include items such as off-site management, onsite staff and supervision above trade level, site facilities, cranes (up to 100 t) and crane drivers, mobile equipment, scaffold, mobilisation and demobilisation, R&R breaks, meals and accommodation costs, general duration costs, and the applicable contractors' margin.

### 21.1.2.4 PROCESS PLANT

Process plant capital costs include the following components:

- General site earthworks, drainage, in-plant roads and site security fencing.
- Primary crushing and coarse ore stockpile.
- Reclaim, grinding and gravity concentration (also includes quicklime addition system, classification and pebble recycle).
- Trash screening and pre-leach thickening.
- Leach and adsorption (includes pre-oxidation).
- Elution, gold room and mercury handling (also includes acid wash and regeneration).
- Tailings thickening, treatment (cyanide detoxification) and pumping.

The process plant capital costs are summarised in Table 21-8.

***Table 21-8: Process plant capital cost breakdown***

| ITEM | $M |
|---|---|
| Process plant – general | 5.45 |
| Primary crushing and stockpile | 12.07 |
| Reclaim, grinding and gravity concentration | 64.52 |
| Trash screening and pre-leach thickening | 4.88 |
| Leach and adsorption | 13.64 |
| Elution, gold room and mercury handling | 10.51 |
| Tailings thickening, treatment and pumping | 6.77 |
| **TOTAL** | **117.78** |

#### 21.1.2.5 REAGENTS AND SERVICES

Reagents and services capital costs include the following components:

- Reagent mixing, storage and dosing systems (flocculant, cyanide, hydrochloric acid, caustic soda, SMBS, copper sulfate).
- Plant site water storage and distribution systems (raw water, process water, filtered water, gland seal water, fire water, potable water, and cooling water).
- Plant services (piperacks, sewage collection and treatment, process plant event pond, and plant control and actuated valves).
- Air services (plant and instrument air systems and the PSA oxygen plants).
- Fuels (plant diesel day tank and piping).
- Electrical services (switchrooms, site distribution, and process plant security system).

The reagents and services capital costs are summarised in Table 21-9.

***Table 21-9: Reagents and services capital cost breakdown***

| ITEM | $M |
|---|---|
| Reagents | 4.41 |
| Water services | 4.21 |
| Plant services | 4.39 |
| Air services | 5.08 |
| Fuels | 0.20 |
| Electrical services | 19.97 |
| **TOTAL** | **38.26** |

#### 21.1.2.6 INFRASTRUCTURE

Infrastructure capital costs include the following components:

- Infrastructure – general (access roads, site fencing, and helipad).
- Environmental (surface water management, nursery, and incinerator).
- Water and sewerage (raw water abstraction from Lake Victoria, and potable water and sewerage systems outside of the process plant).
- Power supply (substations and grid transmission line from Bulyanhulu to Nyanzaga, and site-based diesel emergency standby power generators).
- Tailings storage facility (stage 1 TSF facility, tailings pipeline, decant system and decant pipeline).
- Administration and security buildings (includes main administration office, clinic and ERT facility, gatehouse and security facilities, ablutions, change rooms, low security mess, and renovations to the existing exploration camp).
- Process plant buildings (includes main process plant office, maintenance offices and workshop, warehouse, ablutions, change rooms, control room, laboratory, and reagent storage sheds).
- Permanent accommodation camp.

The infrastructure capital costs are summarised in Table 21-10.

*Table 21-10: Infrastructure capital cost breakdown*

| ITEM | $M |
|---|---|
| Infrastructure – general | 3.54 |
| Environmental | 4.08 |
| Water and sewerage | 7.86 |
| Power supply | 33.04 |
| Tailings storage facility | 20.47 |
| Buildings – administration and security | 3.03 |
| Buildings – plant | 7.02 |
| Permanent accommodation | 14.69 |
| **TOTAL** | **93.74** |

#### 21.1.2.7 MINING SERVICES AND MINING CONTRACTOR ESTABLISHMENT

Mining services and mining contractor establishment capital costs include the following components:

- Mining – general (general earthworks for mining services, and explosives magazine).
- Mine establishment (haul roads).
- Mine infrastructure – other (IT for mining services, radio system, turkey nest and water cart fill system).
- Mining contractor facilities (mining office, mine workshop, washdown facility, and bulk fuel and lubricants).

The mining services and mining contractor establishment capital costs are summarised in Table 21-11.

*Table 21-11: Mining services and mining contractor establishment capital cost breakdown*

| ITEM | $M |
|---|---|
| Mining – general | 1.12 |
| Mine establishment | 3.22 |
| Mine infrastructure – other | 0.65 |
| Mining contractor facilities | 6.03 |
| **TOTAL** | **11.02** |

#### 21.1.2.8 CONSTRUCTION DISTRIBUTABLES

Construction distributables have been estimated by Lycopodium and are summarised in Table 21-12.

*Table 21-12: Construction distributables cost breakdown*

| ITEM | $M |
|---|---|
| Construction distributables - contractors | 24.44 |
| Site construction distributables – general | 0.35 |
| Site construction facilities | 0.63 |
| Construction operations | 0.58 |
| Construction accommodation | 1.50 |
| **TOTAL** | **27.48** |

#### 21.1.2.9 EPCM MANAGEMENT COSTS

The Project will be implemented using an EPCM approach, whereby the EPCM Engineer will provide engineering, procurement and construction management (EPCM) services on behalf of Perseus based on the Project schedule.

The EPCM services cost estimate includes head office support and site staffing, sub-consultants, office consumables, equipment and associated project travel. The cost of a fully equipped home design office (from

which the EPCM provider will provide offshore services, based in Perth) and all project computing requirements are included under Management costs.

The estimate for EPCM services costs has been based on a preliminary personnel schedule for the anticipated project deliverables and project schedule. The resulting EPCM cost estimate is consistent with other projects of this nature in terms of the percentage of the plant capital cost.

The engineering design component of the EPCM estimate is based on a calculation of required personnel levels to complete the Project and benchmarked against Lycopodium experience on recent projects.

The EPCM management costs are summarised in Table 21-13.

***Table 21-13: EPCM management cost breakdown***

| ITEM | $M |
|---|---|
| EPCM – home office | 35.39 |
| EPCM – site | 8.27 |
| Specialist consultants – design | 2.36 |
| Specialist consultants – construction | 4.51 |
| Vendor representatives | 0.64 |
| **TOTAL** | **51.17** |

### 21.1.2.10 OWNER'S PROJECT COSTS

Owner's project costs include the following components:

- Owner's cost – general (owner's project management team, and project insurance).
- Construction fuels and lubricants.
- Site IT establishment.
- Commissioning spares.
- Import duties.
- Community (land compensation, RAP program, and community infrastructure).
- Owner's mobile equipment (including light vehicles, cranes, forklifts, FELs, skid steer loaders, trucks, and boom lifts).
- Early works establishment (containerised accommodation, buried services, construction workshops and offices, establishment of construction fuel facility, security fencing installation, and tooling).

The owner's project costs are summarised in Table 21-14.

***Table 21-14: Owner's project costs***

| ITEM | $M |
|---|---|
| Owner's costs – general | 26.10 |
| Construction fuels and lubricants | 5.83 |
| Site IT establishment | 1.17 |
| Commissioning spares | 0.50 |
| Import duties | 10.00 |
| Community | 16.75 |
| Owner's mobile equipment | 15.05 |
| Early works establishment | 5.51 |
| **TOTAL** | **80.91** |

The owner's project costs exclude opening stocks, first fills and critical spares. These costs are included in the pre-production capital estimate.

### 21.1.2.11 TAXES

Outside of the provision for import duties noted in Section 21.1.2.10, the development capital cost estimate also includes $2.46M for withholding tax (WHT) payable on EPCM home office services.

### 21.1.2.12 CONTINGENCY

An amount of contingency has been provided in the estimate to cover anticipated variances between the specific items allowed in the estimate and the final total installed project cost. The contingency does not cover scope changes, design growth, etc., or the listed qualifications and exclusions.

Contingency has been applied to the estimate as a deterministic assessment by assessing the level of confidence in each of the defining inputs to the item cost being engineering, estimate basis, and vendor or contractor information. It should be noted that contingency is not a function of the specified estimate accuracy and should be measured against the Project total that includes contingency.

The resultant overall contingency for the development capital cost estimate is $49.35M (11.6%).

No contingency has been applied to pre-production capital, sustaining capital, or rehabilitation and mine closure capital.

### 21.1.2.13 PRE-PRODUCTION CAPITAL

The pre-production capital cost estimate has been compiled by Perseus and includes operational readiness salaries and programs, and capitalised pre-production costs for mining, processing and G&A that are ratioed to the annual operating cost for each department for the relevant pre-production periods. Pre-production capital cost includes costs incurred post-FID up to first gold pour. Pre-production capital costs are summarised in Table 21 15.

***Table 21-15: Processing pre-production capital cost breakdown***

| AREA / ITEM | $M |
|---|---|
| Operational readiness | 10.99 |
| Capitalised pre-production – mining | 33.07 |
| Capitalised pre-production – processing | 4.54 |
| Capitalised pre-production – G&A | 2.32 |
| **TOTAL** | **50.92** |

### 21.1.2.14 QUALIFICATION AND ASSUMPTIONS

The development and pre-production capital estimate is qualified by the following assumptions:

- Where contingency has been allowed, it is based on the quality of the estimate input information, however no allowance for escalation has been included.
- Prices of materials and equipment with an imported content have been converted to US$ at the rates of exchange stated in Section 21.1.1. All pricing received has been entered into the estimate using native currency.
- Contractor rates and distributables include mobilisation/demobilisation, recurring costs, direct and indirect labour, construction equipment, materials, materials handling and offloading, temporary storage, construction facilities, off site costs, insurances, flights, construction fuel, tools, consumables, meals, and personal protective equipment (PPE).
- During construction, potable water and raw water supply will be provided by Perseus and made available at site for the use by contractors.

- Site construction offices will be containerised units only, with the intention that the permanent administration building construction schedule will be accelerated.
- The bulk commodities for earthworks, that include imported material, assume that suitable construction/fill materials will generally be available from borrow pits within 2 km of the work fronts, other than roads that will likely have longer haulage distances.
- Engineering quantities for the tailings storage facility (TSF) have been provided by Knight Piésold and appropriate rates applied to complete the capital cost of these items. Knight Piésold sub-consultant costs for design and construction supervision are included.
- The estimate allows for aggregate and sand for concrete batching to be provided by the concrete contractor and are assumed available locally to the Project site.
- The estimate allows for all reinforced bar and mesh for construction to be provided by the concrete contractor. Free issue of materials would be a project capital opportunity.
- There is no allowance for blasting in the bulk earthworks.
- The estimate allows for supply of structural steel and platework from South Africa.
- Meals and accommodation for the owner and EPCM teams and senior contractor management have been allowed in the estimate.
- Domestic flights for the EPCM team are to be provided by Perseus.
- Commissioning spares are a percentage allowance of the mechanical supply cost based on similar sized projects and are included under owner's project costs.
- First fills and operating spares are included in the pre-production capital estimate.
- A commissioning assistance crew is included in the estimate.
- PLC programming for the process plant has been allowed for in the EPCM allowance.
- Communications network and data for construction facilities to be free issued by Perseus.
- No allowance for landscaping in the permanent village has been included in the capital estimate, however, full internal fit out of the facilities and buildings is included.
- Perseus's mobile equipment is to be purchased early and made available for construction and operations. A heavy lift crane of 300 t capacity, already owned by Perseus, is to be provided for construction.
- The capital estimate includes an allowance for mill installation supervision by the vendor.

The following items are specifically excluded from the development and pre-production capital cost estimate:

- Working capital.
- Permits and licences.
- Project sunk costs.
- Taxes and duties, unless otherwise stated.
- Exchange rate variations.
- Escalation.

### 21.1.3 SUSTAINING CAPITAL

The sustaining capital cost estimate is the expenditure required during the life of the Project to maintain and replace existing equipment and infrastructure to ensure ongoing operations and production at the specified design capacity. The life of mine sustaining capital cost estimate is summarised in Table 21-16. Perseus

benchmarked the sustaining capital cost estimate against the sustaining capital cost requirements for two of its existing African gold operations, Yaouré (in Côte d'Ivoire, with FY2024 ore treatment rate of 3.9 Mt/a) and Edikan (in Ghana, with FY2024 ore treatment rate of 6.2 Mt/a).

***Table 21-16: LOM sustaining capital cost estimate***

| ITEM | $M |
|---|---|
| Mining | 23.9 |
| Resource definition | 2.5 |
| Processing and infrastructure | 13.5 |
| Water treatment | 3.0 |
| TSF | 54.2 |
| **TOTAL** | **97.1** |

For mining sustaining capital, Perseus has made a cost allowance equivalent to 2% of mining operating cost incurred in each financial year period.

For resource definition, Perseus has allowed a provisional sum of $2.5M for continued resource definition drilling of the Nyanzaga and Kilimani deposits.

For processing and infrastructure sustaining capital, Perseus has made a cost allowance equivalent to 2% of processing operating cost incurred in each financial year period.

As noted in Section 17.8, Perseus has allowed for $3.0M in sustaining capital for a water treatment plant to treat any excess water to discharge quality, should this requirement be confirmed during ongoing technical studies. This cost allowance is based on budgetary quotations for a water treatment plant with the capacity to treat approximately 50 $m^3$/h of mine effluent water.

For the TSF, a Feasibility Study level cost estimate was developed by Knight Piésold (2024) for nine additional TSF stage lifts, with the ultimate TSF lift being Stage 10. The LOM design and cost estimate by Knight Piésold accommodates all tailings associated with the processing production schedule presented in Figure 17-3. TSF lifts will occur annually, with construction activities prioritised during dry season periods.

### 21.1.4 REHABILITATION AND MINE CLOSURE

Rehabilitation and mine closure costs capture expenditure for all activities related to progressive and final rehabilitation of affected land and watercourses to an approved end of Project land use condition (as discussed in Section 20.9) and mine site closure. This includes costs related to environmental monitoring in the period between operations ceasing and formal closure, mining contractor demobilisation, and provision of statutory benefits to Perseus staff at the end of the Project. These costs are summarised in Table 21-17.

***Table 21-17: Rehabilitation and closure capital cost estimate***

| ITEM | $M |
|---|---|
| Closure and reclamation cost | 42.4 |
| Mining contractor demobilisation | 11.0 |
| Retrenchment | 5.5 |
| **TOTAL** | **58.8** |

A Class 4 closure cost estimate developed by Mine Earth (2022) was used as the basis of developing the closure and reclamation cost. The closure cost estimate was developed from a desktop assessment using GIS data, aerial photography, Mine Earth's database of closure activity rates and the closure plan for each operational area based on OreCorp's 2022 Project concept and layout (4 Mt/a combined open pit and underground operation). This estimate was developed by applying a schedule of rates to relevant groups of closure tasks, in accordance with the scope of closure works. The closure estimate included direct costs (for closure and reclamation of mine workings, landforms, TSF, process plant, non-process infrastructure, roads

and hardstands), indirect costs (closure and post-closure management, post-closure monitoring and reporting and fixed costs) and 30% contingency. The estimate assumed that there will be no rehabilitation requirements for local public roads.

For non-TSF areas, the Mine Earth estimate was factored by Perseus to account for changes to surface area disturbance based on the larger 5.0+ Mt/a open pit only operating concept presented in this Report. For the TSF, a Feasibility Study level closure cost estimate was developed by Knight Piésold (2024). The provision of $42.2M for closure and reclamation cost is a sum of the factored Mine Earth closure estimate for non-TSF infrastructure and the Knight Piésold estimate for the TSF.

The mining contractor demobilisation cost was developed by Majesso Consulting (2024a), based on benchmarking of mining contractor rates operating at a similar scale in Africa.

Retrenchment costs of $5.5M is a provisional sum made by Perseus to cover statutory benefits to Perseus employed staff at the end of the Project.

## 21.2 OPERATING COSTS

Operating cost estimates have been compiled by Perseus, with input from Majesso Consulting (mining costs), Lycopodium (processing costs), and Perseus (mining schedule, processing schedule, general and administration costs, revenue costs, organisational charts, project labour rates, and on-costs).

The operating cost estimate includes:

- Mining – costs related to drilling, blasting, loading and haulage of ore (to the crusher dump pocket, and ROM pad and other ore stockpiles) and waste (to waste dumps). Costs were developed for a contractor-based mining strategy, with management by Perseus's technical and supervision team.
- Processing – costs related to crushing, grinding, gravity gold recovery, pre-oxidation/CIL, elution, electrowinning, smelting, cyanide detoxification, tailings deposition, water abstraction and other infrastructure services. These include both fixed and variable costs.
- G&A – all other costs related to SMCL that are not mining or processing costs.
- Revenue Costs – doré transportation and refining, royalties, inspection fees and service levy.

The Nyanzaga Gold Project operating cost estimates are presented in USD ($), with costs effective Q4 CY2024. The operating cost estimates are considered to have an overall accuracy of ±15%. The foreign exchange rates, as presented in Section 21.1.1, were used to develop the operating cost estimate.

The overall Nyanzaga Gold Project LOM operating cost estimate is summarised in Table 21-18.

***Table 21-18: Project LOM operating cost estimate (Q4 CY2024, ±15%)***

| COST CENTRE | LOM COST ($M) | UNIT COST ($/t ORE) | UNIT COST ($/oz) |
|---|---|---|---|
| Mining | 1,179.0 | 22.66 | 586 |
| Processing | 667.1 | 12.82 | 332 |
| G&A | 235.9 | 4.53 | 117 |
| Revenue costs | 319.7 | 6.08 | 157 |
| **TOTAL** | **2,401.8** | **46.10** | **1,192** |

The mining cost of $22.66/t of ore is equivalent to $3.41/t of material (ore + waste) mined.

The build-up of the LOM operating cost estimates by area is detailed in the following sections.

### 21.2.1 MINING

The mining operating cost estimate considers all costs related to drilling, blasting, loading and haulage of ore (to the crusher dump pocket, and ROM pad and other ore stockpiles) and waste (to waste rock dumps). The

mining operating cost estimate has been compiled by Perseus based on production schedules developed by Perseus (Figure 16-5) and first principles cost element calculations developed by Majesso Consulting (2024a), (2024b) for a contractor-based mining strategy. Perseus costs for mining management, technical services and grade control were benchmarked against existing open pit mining operations and applied for Perseus's technical and supervision team. The LOM mining operating cost estimate is summarised in Table 21-19, with costs by year presented in Table 21-22. The proportion of each cost element to the LOM mining operating cost is shown in Figure 21-2.

***Table 21-19: LOM mining operating cost estimate (Q4 CY2024, ±15%)***

| COST ELEMENT | LOM COST ($M) | UNIT COST ($/t ORE) | UNIT COST ($/t MATERIAL) | UNIT COST ($/oz) |
|---|---|---|---|---|
| Ore | 271.3 | 5.21 | 0.78 | 135 |
| Waste | 833.6 | 16.02 | 2.41 | 414 |
| Rehandle | 34.4 | 0.66 | 0.10 | 17 |
| Grade control | 31.4 | 0.60 | 0.09 | 16 |
| Geotechnical and dewatering | 8.3 | 0.16 | 0.02 | 4 |
| **TOTAL** | **1,179.0** | **22.66** | **3.41** | **586** |

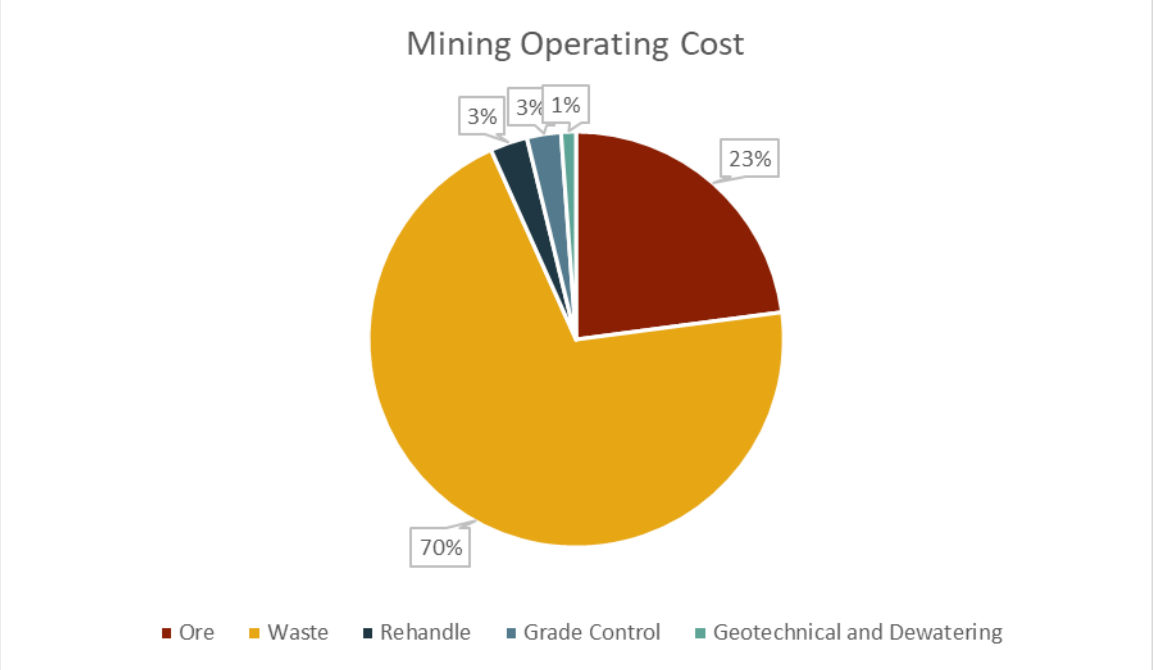



***Figure 21-2: LOM mining operating cost breakdown by cost element (Source: Perseus, 2025)***

The scope of mining operations is described in Section 16. The mining operating cost estimate includes operations and maintenance of the mining fleet, as well as provision for minor equipment (such as light vehicles, buses, service/fuel truck, integrated tool carrier (IT) and gensets) and day works.

Key financial assumptions that have been used as part of the mining operating cost estimate are listed in Table 21-20. A summary of ore and waste mining unit costs by pit stage is provided in Table 16-3, and drill and blast unit costs by ore type are provided in Table 16-4.

***Table 21-20: Mining operating cost key assumptions***

| COST ITEM | UNIT | VALUE |
|---|---|---|
| Fuel price | $/L | 1.121 |
| Assumed contractor markup | % | 12.5 |

Labour is included in the cost elements listed in Table 21-19. It is assumed that national mine employees working for both Perseus and the mining contractor will be sourced from the surrounding regions, and supplemented by personnel sourced from further afield within Tanzania if required. As noted in Section 5.6, roster design planning for Perseus employees is maturing and is expected to be finalised in the coming months.

Labour costs have been benchmarked by position across African mining companies and contractors, and include on-costs such as flights, leave entitlements, social security contributions and other statutory costs. Where relevant for the position, site-based accommodation costs have been captured under G&A costs in Section 21.2.3.

The peak workforce requirement on site for any day of mining operation totals around 350 people, with a peak mining workforce employed of approximately 660 people. The number of direct employees in Perseus's mining technical and supervision team is summarised in Table 21-21.

***Table 21-21: Perseus mining personnel***

| AREA | NUMBER OF EXPATRIATES | NUMBER OF TANZANIANS | TOTAL NUMBER |
|---|---|---|---|
| Mining technical and supervision | 5 | 18 | 23 |

Mining costs incurred prior to first gold production, including contractor mobilisation, are excluded from costs reported in this section and are reported as pre-production capital in Section 21.1.2. Mining contractor demobilisation costs at the end of Project are discussed in Section 21.1.4.

*Table 21-22: Mining LOM operating cost estimate by financial year ($M, Q4 CY2024, ±15%)*

| COST CENTRE | FY2027 | FY2028 | FY2029 | FY2030 | FY2031 | FY2032 | FY2033 | FY2034 | FY2035 | FY2036 | FY2037 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ore | 3.6 | 23.3 | 27.9 | 30.9 | 32.3 | 32.6 | 31.9 | 33.5 | 35.4 | 18.7 | 1.3 |
| Waste | 25.3 | 102.4 | 111.5 | 127.7 | 130.8 | 137.7 | 119.3 | 57.2 | 15.7 | 5.9 | 0.2 |
| Rehandle | 0.7 | 4.2 | 4.2 | 4.2 | 4.1 | 3.9 | 3.7 | 3.7 | 3.7 | 1.9 | 0.1 |
| Grade control | 0.7 | 3.8 | 3.8 | 3.8 | 3.7 | 3.6 | 3.4 | 3.4 | 3.3 | 1.7 | 0.1 |
| Geotechnical and dewatering | 0.2 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 | 0.5 | 0.1 |
| **TOTAL** | **30.6** | **134.7** | **148.3** | **167.5** | **171.8** | **178.7** | **159.2** | **98.7** | **59.0** | **28.7** | **1.8** |

### 21.2.2 PROCESSING

The processing operating cost estimate has been compiled by Perseus based on production schedules developed by Perseus (Figure 17-3 and Figure 22-1) and cost element calculations developed by Lycopodium (2024b), and considers all fixed and variable costs related to crushing, grinding, gravity gold recovery, pre-oxidation/CIL, elution, electrowinning, smelting, cyanide detoxification, tailings deposition, water abstraction and other infrastructure services. The process plant operating cost estimate considers a gold processing plant with an ore treatment rate of 5.0+ Mt/a at a grind size of $P_{80}$ 75 µm, and based on a 24 hour per day, 365 days per year operation and 91.3% (8,000 h/a) runtime, as described in Section 17.

Processing operating costs have been developed for Nyanzaga oxide and fresh (chert, sandstone and mudstone) ore types and Kilimani oxide ore. The plant will process a range of blends of these ore types. The blend processing costs have been calculated as the weighted average of the five ore type processing costs based on the makeup of the blend.

The processing operating costs have been compiled from a variety of sources, including the following:

- Labour rates and organisation chart as advised by Perseus. Labour rates are based on benchmarking studies for expatriate and local personnel.
- Grid power cost unit rates (T3 HV tariff) as published by TANESCO (2025).
- Power consumption by Lycopodium and ECG, based on applying typical drive efficiency and utilisation factors to installed power of electrical drives and loads.
- Maintenance consumable costs, factored as a percentage of installed capital cost.
- Reagent and consumable prices are from supplier budget quotations or the Lycopodium database.
- Modelling by Orway Mineral Consultants (2024) for crushing and grinding energy and consumables, based on average ore type characteristics determined for the Nyanzaga Gold Project ores.
- Usage rates for other reagents and consumables are based on test work (Section 13.5.3), typical gold CIL plant operating data, or standard industry practice.
- Miscellaneous costs from Perseus or Lycopodium, based on typical operating data or standard industry practice.

The LOM processing operating cost estimate is summarised in Table 21-23, with costs by year presented in Table 21-24. The proportion of each cost element to the LOM processing operating cost is shown in Figure 21-3.

***Table 21-23: LOM processing cost summary (Q4 CY2024, ±15%)***

| COST ELEMENT | LOM COST ($M) | UNIT COST ($/t ORE) | UNIT COST ($/oz) |
|---|---|---|---|
| Labour | 63.6 | 1.22 | 31.70 |
| Power | 171.6 | 3.30 | 85.58 |
| Maintenance | 87.8 | 1.69 | 43.77 |
| Reagents and consumables | 330.4 | 6.35 | 164.80 |
| Miscellaneous | 13.8 | 0.26 | 6.87 |
| **TOTAL** | **667.1** | **12.82** | **332.71** |

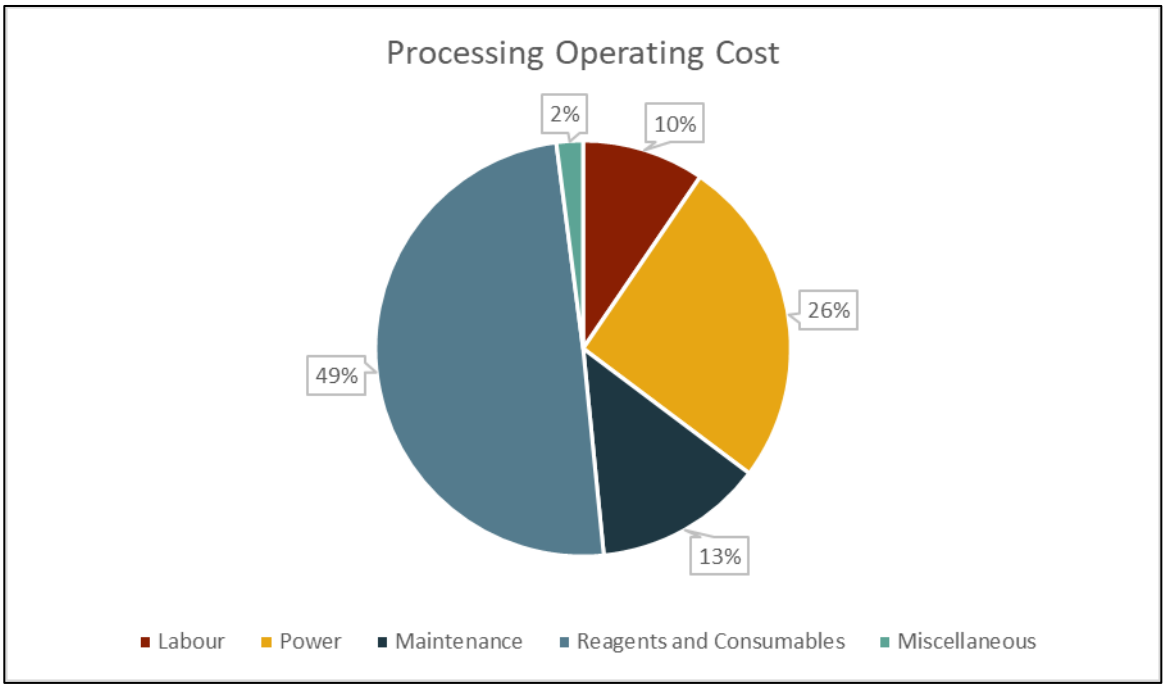



*Figure 21-3: LOM processing operating cost breakdown by cost element (Source: Perseus, 2025)*

The battery limits for the processing operating costs are as follows:

- Ore loaded into the ROM bin or emergency feed hopper. (Costs for the FEL to load ore to the process plant have been captured under the mining operating cost estimate in Section 21.2.1).
- Gold doré in the gold room safe.
- Recovered elemental mercury deposited into flasks.
- Mercury loaded carbon packed in drums.
- Discharge from the tailings pipeline to the TSF.
- TSF decant return pump intake.
- Raw water supply from the intake of the Lake Victoria water supply pumps.
- The plant fence line for other services and utilities.

*Table 21-24: Processing LOM operating cost estimate by financial year ($M, Q4 CY2024, ±15%)*

| COST CENTRE | FY2027 | FY2028 | FY2029 | FY2030 | FY2031 | FY2032 | FY2033 | FY2034 | FY2035 | FY2036 | FY2037 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Labour | 2.0 | 7.1 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 6.8 | 5.4 | 1.4 |
| Power | 3.8 | 18.6 | 19.4 | 19.3 | 19.4 | 19.4 | 19.3 | 19.3 | 19.3 | 12.4 | 1.7 |
| Maintenance | 2.6 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 9.7 | 6.7 | 0.9 |
| Reagents and consumables | 6.9 | 36.1 | 36.5 | 36.6 | 37.0 | 37.5 | 37.7 | 37.6 | 37.8 | 23.7 | 3.4 |
| Miscellaneous | 0.4 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.0 | 0.1 |
| **TOTAL** | **15.7** | **73.0** | **73.8** | **73.9** | **74.3** | **74.8** | **75.0** | **74.9** | **75.1** | **49.2** | **7.4** |

#### 21.2.2.1 LABOUR

The plant labour operating cost estimate was based on labour classifications, labour rates and on-costs, organisational charts and rosters provided by Perseus. The plant labour cost includes all process plant operations and maintenance personnel. Labour costs and personnel numbers for the process plant are summarised in Table 21-25.

***Table 21-25: Process plant personnel and labour cost***

| AREA | COST ($M/a) | NUMBER OF EXPATRIATES | NUMBER OF TANZANIANS | TOTAL NUMBER |
|---|---|---|---|---|
| Plant operations | 3.17 | 5 | 59 | 64 |
| Plant maintenance | 3.60 | 3 | 112 | 115 |
| **TOTAL** | **6.78** | **8** | **171** | **179** |

The plant labour cost excludes all mining, site-based administration, and regional office personnel. These costs are included in the mining operating cost estimate (Section 21.2.1) and G&A operating cost estimate (Section 21.2.3). Note that the site laboratory will be operated on a contract basis, and these labour costs are accounted for in the contract laboratory cost (as discussed in Section 21.2.2.5.1).

The estimate of the labour contingent has been based on a three shift panel operation (one 12 hour day shift, one 12 hour night shift and one shift on break), to provide continuous coverage for the plant operations and maintenance with allowance for leave and absenteeism coverage. Provision has been made in the number of personnel to cover annual and sick leave requirements.

The operating cost estimate considers roster patterns with a 2:1 labour ratio (a minimum of two days worked for each day of rest earned). The operating cost estimate has considered national employee rosters of four weeks on site and two weeks off site, and expatriate employee rosters of six weeks on site and three weeks off. As noted in Section 5.6, roster design planning is maturing and is expected to be finalised in the coming months.

Unit rates for labour include the base salary and on-costs such as flights, leave entitlements, social security contributions and other statutory costs. Camp and bus transportation costs for the workforce are excluded from the labour cost, as they are included in the G&A operating cost estimate.

#### 21.2.2.2 POWER

Power consumption for the Nyanzaga Gold Project is based on applying typical drive efficiency and utilisation factors to the installed power of electrical drives in the mechanical equipment list. Specific to the SAG and ball mills, Orway Mineral Consultants (2024) has modelled grinding energy requirements by ore type. The T3 HV power tariffs, published by TANESCO (2025) and summarised in Table 21-26, have been applied to the power consumption by period to generate power costs.

***Table 21-26: TANESCO T3 HV Power Tariffs***

| COST ELEMENT | UNIT | VALUE |
|---|---|---|
| Power unit cost | TZS/kWh | 152 |
| Maximum demand charge | TZS/kVA/month | 16,550 |

Based on the foreign exchange rates presented in Section 21.1.1 and the relative contribution of the tariff cost elements, the effective power unit price for the Nyanzaga Gold Project is $0.07/kWh.

The site-wide annual electrical energy consumption and associated cost is summarised in Table 21-27. Approximately 59% of energy consumption and power cost is fixed, with the remaining 41% being variable and dependent on ore type and process plant operations.

*Table 21-27: Project annual electrical energy consumption and cost*

| AREA | ANNUAL CONSUMPTION GWh/a | COST $M/a |
|---|---|---|
| Crushing | 9.0 | 0.70 |
| Stockpile and reclaim | 5.4 | 0.42 |
| SAG and ball mill | 158.6 | 12.24 |
| Grinding and classification | 14.0 | 1.08 |
| Gravity and intensive cyanidation | 2.7 | 0.21 |
| Pebble recycling | 0.4 | 0.03 |
| Trash screening/pre-leach thickening | 2.2 | 0.17 |
| CIL | 10.1 | 0.78 |
| Elution, gold room, mercury handling | 5.1 | 0.39 |
| Tailings thickening and treatment | 3.8 | 0.30 |
| Tails pumping | 3.8 | 0.29 |
| Reagents | 0.4 | 0.03 |
| Service – water | 5.0 | 0.39 |
| Services – air, oxygen | 8.7 | 0.67 |
| TSF, decant return | 1.8 | 0.14 |
| Lake water extraction | 2.9 | 0.22 |
| Plant, mining and admin buildings | 11.6 | 0.89 |
| Village | 5.3 | 0.41 |
| **TOTAL** | **250.8** | **19.35** |

The power cost estimate excludes any tariff discount that may be realised as part of a power purchase agreement with TANESCO.

#### 21.2.2.3 MAINTENANCE

The maintenance cost allowance has been factored from the installed capital cost by WBS using factors from the Lycopodium database, and benchmarked to costs from two of Perseus's existing African gold operations, Yaouré (in Côte d'Ivoire, with FY2024 ore treatment rate of 3.9 Mt/a) and Edikan (in Ghana, with FY2024 ore treatment rate of 6.2 Mt/a). Maintenance costs are summarised in Table 21-28. Approximately 80% of the maintenance cost allowance is fixed, with the remaining 20% being variable and dependent on ore type and process plant operations.

The maintenance cost allowance covers mechanical spares, lubricants and wear parts, but excludes crushing and grinding wear components, grinding media and general consumables which are separately accounted in Section 21.2.2.4. Allowances for building maintenance, plant mobile equipment and general maintenance expenses have been made. General maintenance expenses include specialist maintenance software, maintenance manuals and control system licence and maintenance fees.

The maintenance cost allowance excludes maintenance labour, which is included in the process labour cost in Section 21.2.2.1. Costs for contract labour have been included under the maintenance cost allowance for SAG mill and ball mill liner changes and plant maintenance shutdowns. It has been assumed that primary crusher liner changes will be completed by site personnel.

*Table 21-28: Maintenance cost summary*

| AREA | FIXED COST $M/a | VARIABLE COST $M/a |
|---|---|---|
| Crushing | 0.48 | 0.12 |
| Milling | 2.58 | 0.65 |
| Trash screening/pre-leach thickening | 0.20 | 0.05 |
| CIL | 0.55 | 0.14 |
| Elution, gold room, mercury handling | 0.42 | 0.11 |
| Tailings thickening and treatment | 0.27 | 0.07 |
| Reagents | 0.11 | 0.03 |
| Water services | 0.10 | 0.03 |
| Plant services | 0.11 | 0.03 |
| Air services | 0.12 | 0.03 |
| Environmental infrastructure | 0.10 | 0.02 |
| Water and sewage infrastructure | 0.19 | 0.05 |
| Tailings storage facility | 0.49 | 0.12 |
| Buildings | 0.24 | 0.06 |
| Permanent accommodation | 0.35 | 0.09 |
| Plant mobile equipment | 0.88 | 0.22 |
| General maintenance costs | 0.28 | 0.00 |
| Back up generators | 0.05 | 0.00 |
| Contract reline and maintenance labour | 0.19 | 0.19 |
| **TOTAL** | **7.69** | **1.98** |

#### 21.2.2.4 REAGENTS AND CONSUMABLES

The consumption rate of reagents and other consumables has been calculated from laboratory test work, comminution circuit modelling at average ore properties, calculated from first principles, or assumed based on typical gold CIL plant operating data or standard industry practice. Reagent and consumable unit costs are from supplier budget quotations or the Lycopodium database. Transport and freight to site and import duties and taxes were typically included in budget quotations or database prices. If these cost elements were not included in the base unit cost, an allowance was made to cover them.

The unit costs have been applied to the consumption rates by period and by ore type to generate reagents and consumables costs. Typical annual costs and usage for reagents and processing operating consumables are summarised Table 21-29.

*Table 21-29: Reagents and consumables cost summary*

| REAGENT/CONSUMABLE | TYPICAL COST $M/a | USAGE |
|---|---|---|
| Primary crusher liners – mantle | 0.03 | 0.2-1.2 sets/a |
| Primary crusher liners – concaves | 0.03 | 0.1-0.8 sets/a |
| SAG mill – lifters/liners | 3.10 | 1.5-1.9 sets/a |
| SAG mill – grinding media | 4.32 | 3,200-3,350 t/a |
| Ball mill – lifters/liners | 1.92 | 1.5-1.9 sets/a |
| Ball mill – grinding media | 6.37 | 5,000-5,200 t/a |
| Flocculant | 0.16 | 50-145 t/a |
| Sodium cyanide | 6.80 | 2,250-2,500 t/a |
| Quicklime | 2.80 | 4,800-5,200 t/a |
| Caustic soda | 2.08 | 1,900 t/a |
| Hydrochloric acid | 0.40 | 670 t/a |
| Carbon – CIL | 0.55 | 165-185 t/a |
| Carbon – sulfur impregnated (Hg abatement) | 0.01 | 4.7 t/a |
| Sodium metabisulfite | 2.46 | 3,200-3,500 t/a |
| Copper sulfate | 1.21 | 310-340 t/a |
| Smelting fluxes | 0.01 | 4.1 t/a |
| Steel wool – CIL electrowinning cells | 0.12 | 88 sets/a |
| Steel wool – gravity electrowinning cells | 0.06 | 44 sets/a |
| Diesel | 3.47 | 3.1 ML/a |
| Water abstraction – Lake Victoria | 0.01 | 2.2 GL/a |
| Water treatment – filtered | 0.04 | 550 ML/a |
| Water treatment – potable | 0.01 | 53 ML/a |
| Antiscalant, sulfamic acid, biocide | 0.05 | 6.5 t/a |
| Operator consumables | 0.09 | 179 sets/a |
| Other | 1.00 | |
| **TOTAL** | **37.10** | |

### 21.2.2.5 MISCELLANEOUS

#### *21.2.2.5.1 LABORATORY COSTS*

A contract laboratory will provide sample preparation and assay services for plant samples and mine grade control samples. Mine grade control sample preparation and assay costs have been included in the mining operating cost estimate in Section 21.2.1. The laboratory costs and the estimated sample numbers are summarised in Table 21-30.

*Table 21-30: Plant laboratory cost summary*

| ITEM | COST $k/a |
|---|---|
| Fixed fee | 418 |
| Plant solid samples (preparation and assay) | 49 |
| Plant solution samples (preparation and assay) | 17 |
| Plant carbon samples (preparation and assay) | 9 |
| Doré samples (preparation and assay) | 24 |
| **TOTAL** | **517** |

Costs are based on a budgetary quote for the provision of contract plant laboratory services. The laboratory cost allows for the supply of the laboratory equipment, mobilisation, and all ongoing costs (laboratory labour,

equipment, and consumables). The capital cost for specialist laboratory equipment has been amortised into the fixed component of the quote.

#### *21.2.2.5.2 OTHER COST ALLOWANCE*

A provisional sum of $1.0M/a was included in the processing operating cost estimate to allow for other miscellaneous costs not otherwise captured in the cost categories described in Section 21.2.2.

### 21.2.3 GENERAL AND ADMININSTRATION

G&A operating costs have been estimated by Perseus. G&A costs were benchmarked against two of Perseus's existing African gold operations, Yaouré (in Côte d'Ivoire, with FY2024 ore treatment rate of 3.9 Mt/a) and Edikan (in Ghana, with FY2024 ore treatment rate of 6.2 Mt/a), and adjusted for country and Project specific requirements. The breakdown of G&A costs is presented in Table 21-31.

***Table 21-31: LOM G&A cost summary (Q4 CY2024, ±15%)***

| COST CENTRE | LOM COST ($M) | UNIT COST ($/t ORE) | UNIT COST ($/oz) |
|---|---|---|---|
| Environment, health and safety (EHS) | 34.3 | 0.66 | 17.04 |
| Community relations | 12.7 | 0.24 | 6.31 |
| Security | 27.7 | 0.53 | 13.77 |
| Administration | 26.1 | 0.50 | 13.00 |
| Finance and supply | 128.1 | 2.46 | 63.67 |
| Regional office | 7.0 | 0.13 | 3.48 |
| **TOTAL** | **235.9** | **4.53** | **117.25** |

G&A costs include the following ongoing operating expenses:

- EHS costs include the onsite clinic and health management programs, onsite emergency response capability, and environmental programs (including monitoring), as well as Perseus and contract labour (and on-costs) and consumables required to manage and execute these work programs.
- Community relations costs include community development programs and the Perseus and contract labour (and on-costs), and consumables required to manage and execute these programs.
- Security costs include Perseus and contractor costs to provide required security services for Nyanzaga at a site level, as well as for provision of security services in high security areas within the process plant.
- Administration costs include human relations (HR), training and information technology (IT) programs, as well as Perseus and contract labour (and on-costs) and consumables required to manage and execute these work programs.
- Finance and supply costs include the camp and site catering contract; local transportation contracts and services; government charges and licence fees; accounting, compliance, and insurance costs and expenses; corporate supervision costs; and mine access road maintenance activities. Perseus and contract labour (and on-costs) and consumables required to manage and execute these work programs are also included.
- Costs associated with operating a regional office in Tanzania to support the Nyanzaga Gold Project operations.

The number of direct employees considered in Perseus's G&A operating cost estimate is summarised in Table 21-32. The number of personnel presented in Table 21-32 excludes any third-party contractors.

*Table 21-32: Perseus G&A personnel*

| AREA | NUMBER OF EXPATRIATES | NUMBER OF TANZANIANS | TOTAL NUMBER |
|---|---|---|---|
| General & Administration | 7 | 122 | 129 |

### 21.2.4 REVENUE COSTS

Costs associated with revenue realisation (doré transportation and refining, royalties, inspection fees and service levy) have been estimated by Perseus. The basis of these costs and the LOM breakdown of these costs is presented in Table 21-33.

*Table 21-33: Revenue realisation cost basis and LOM cost summary (Q4 CY2024, ±15%)*

| ITEM | RATE | BASIS | LOM COST ($M) |
|---|---|---|---|
| Doré transportation and refining | $3.42/oz Au | Benchmarking of existing Perseus operations | 6.9 |
| Royalties* | 6% for metallic minerals | Refer to Table 4-1 | 257.1 |
| Inspection fees** | 1% of gross value | | 42.8 |
| Service levy | 0.3% of turnover | | 12.9 |
| **TOTAL** | | | **319.7** |

** Recent amendment to the Finance Act 2022 provides for a reduced royalty rate to 4% specifically applicable to gold sold to local refinery centres which provides potential future upside to the project economics.*

*** Exempted if sold to the Bank of Tanzania or refined at a local refinery.*

### 21.2.5 QUALIFICATIONS

The operating cost estimates presented are exclusive of the following:

- Costs associated with areas outside of the scope and battery limits stated.
- All sunk costs.
- Any impact of foreign exchange rate fluctuations.
- Any escalation from the date of the estimate.
- Any contingency allowance.
- Withholding taxes and other taxes, unless otherwise stated.
- First fill and opening stocks costs are excluded from the operating cost estimate. These costs are captured in the pre-production capital estimate.
- Pre-production mining, processing and G&A costs (included in the capital cost estimate).
- Sustaining capital, rehabilitation and closure costs (included in the capital cost estimate).

# 22. ECONOMIC ANALYSIS

An economic analysis has been completed on a 100% project basis for the Nyanzaga Gold Project. Note that the Government of Tanzania has a 20% free carry interest in this Project (as referenced in Table 4-1).

Key inputs used for the financial analysis include production schedules (Figure 16-5, Figure 17-3 and Figure 22-1), capital and operating cost estimates (Section 21) and the key economic assumptions presented in Table 22-1. Production schedules are based on Mineral Reserves only, as presented in Section 15.

***Table 22-1: Key economic assumptions for evaluation of the Nyanzaga Gold Project***

| ITEM | VALUE | BASIS |
|---|---|---|
| Gold price | $2,100/oz | Long-term gold price assumption |
| Discount rate | 10% | Perseus corporate standard for economic evaluation |
| Royalties | 6% for metallic minerals | Refer to Table 4-1 |
| Inspection fees | 1% of gross value | |
| Service levy | 0.3% of turnover | |
| Corporate tax rate | 30% | (The United Republic of Tanzania, 2004) |
| VAT rate | 18% | (Tanzania Revenue Authority, 2025) |

Key outcomes of the economic analysis for the Project are presented in Table 22-2, with the associated gold production profile shown in Figure 22-1 and the cumulative pre-tax net cashflow by period shown in Figure 22-2.

***Table 22-2: Outcomes of economic analysis for the Nyanzaga Gold Project (100% basis)***

| CATEGORY | ITEM | UNIT | VALUE |
|---|---|---|---|
| Revenue | | $M | 4,285 |
| Capital | Development and pre-production | $M | 523 |
| | Sustaining | $M | 97 |
| | Rehabilitation and closure | $M | 59 |
| Net Project Cash Flow | Pre-tax | $M | 1,133 |
| | Post-tax | $M | 706 |
| $NPV_{10\%}$ | Pre-tax | $M | 404 |
| | Post-tax | $M | 202 |
| IRR | Pre-tax | % | 25.6 |
| | Post-tax | % | 19.0 |
| Payback period (from first production) | Post-tax, discounted[10] | years | 5.8 |

The financial metrics presented confirm positive Project economics and positive cashflow that supports the Mineral Reserve estimate in Section 15. Note that the Nyanzaga Gold Project development will be solely financed via interest free, intercompany loans provided by Perseus from its existing cash and bullion balance of $801M as of March 31, 2025. Under the economic assumptions of this analysis, Project payback period is 5.8 years from first production, on a discounted post-tax basis (10%).

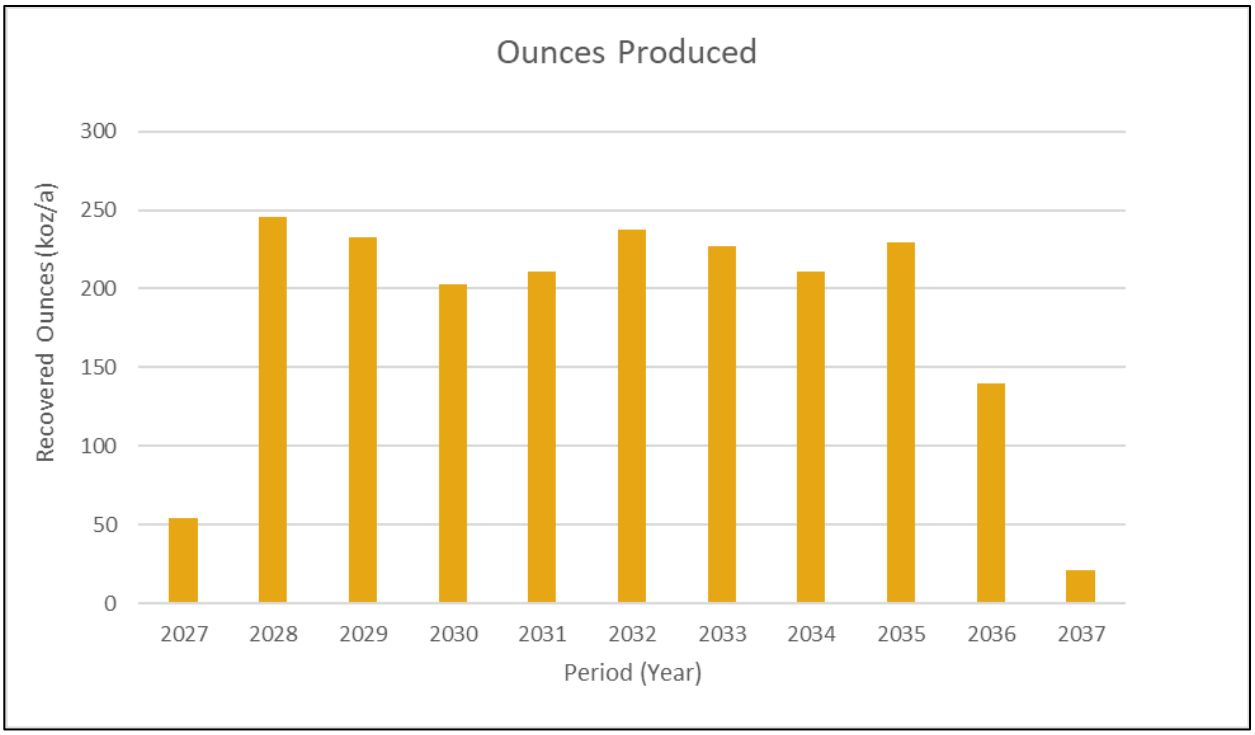



*Figure 22-1: Project gold production profile (Source: Perseus, 2025)*

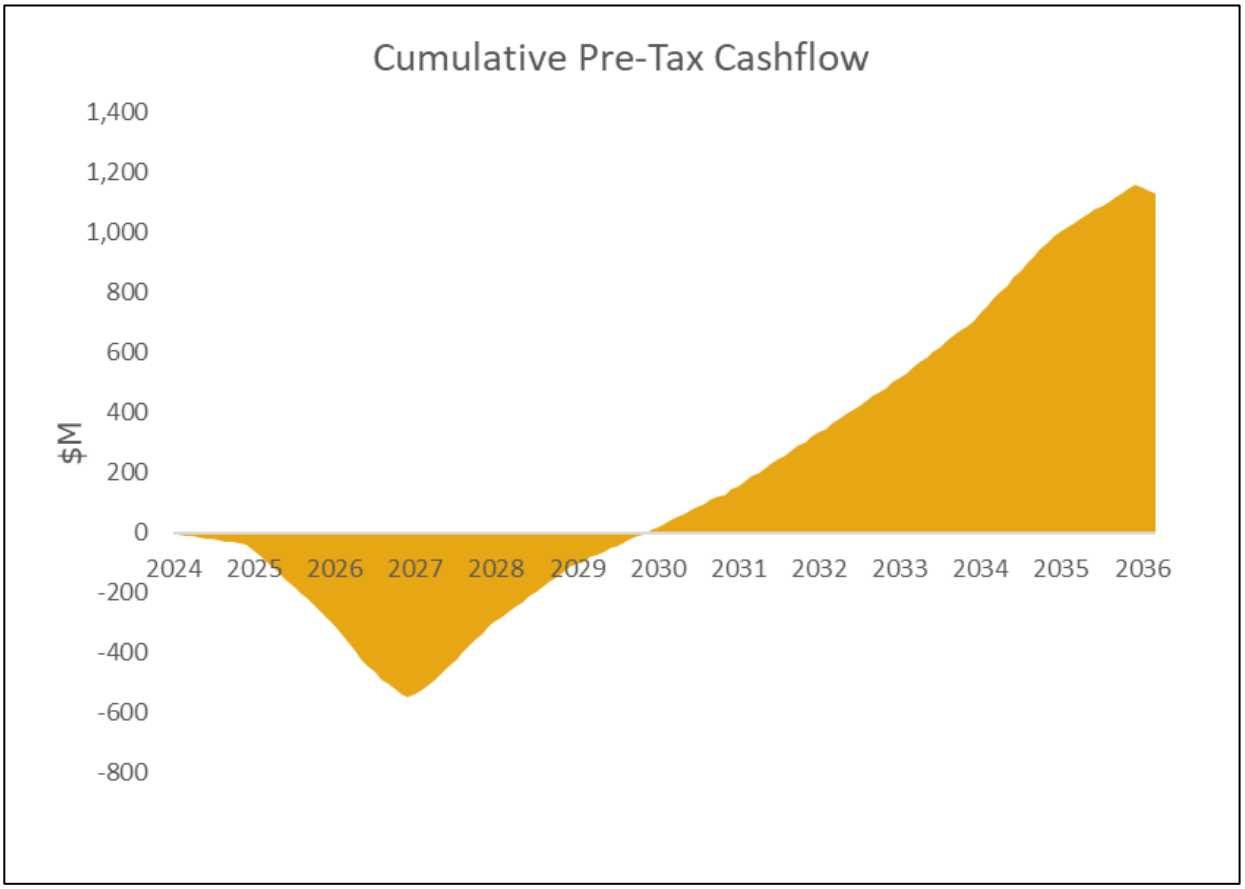



*Figure 22-2: Project pre-tax net cumulative cashflow (Source: Perseus, 2025)*

The sensitivity of the pre-tax $NPV_{10\%}$ of $404M, presented in Table 22-2, to variations in gold price (±20%), operating costs (±20%), head grade (±10%), and capital costs (±20%) is presented in Figure 22-3. The Project pre-tax NPV is most sensitive to variations in gold price.

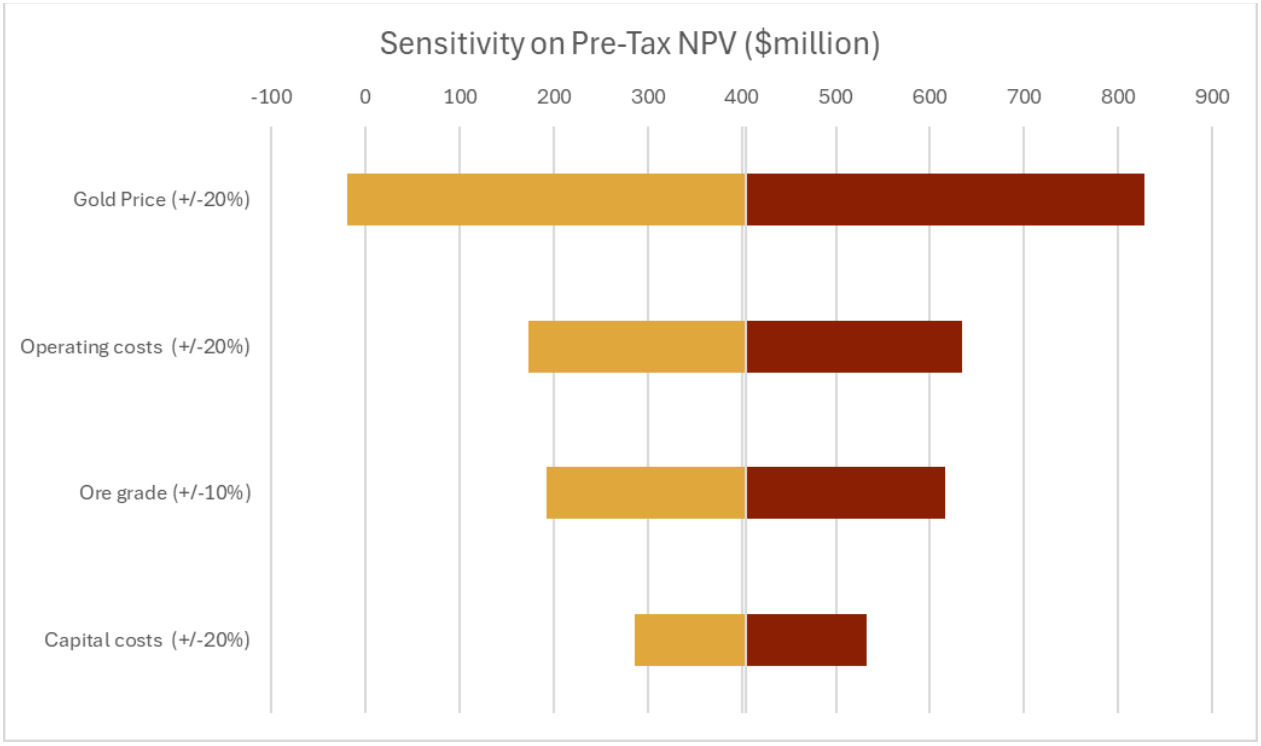



***Figure 22-3: Key sensitivities to Project pre-tax NPV (Source: Perseus, 2025)***

# 23. ADJACENT PROPERTIES

There are no known significant occurrences of gold mineralisation on tenements adjacent to those controlled by Perseus. The boundaries of Perseus's tenements do not constrain the Mineral Resources, Mineral Reserves or planned mining operations disclosed in this report.

# 24. OTHER RELEVANT DATA AND INFORMATION

There is no other material data or information pertaining to the Nyanzaga Gold Project that has not been summarised and presented in the Report.

# 25. INTERPRETATION AND CONCLUSIONS

This Report summarises the results of an updated Feasibility Study for the Nyanzaga Gold Project, which demonstrates the technical and economic viability of a large open pit mining operation and gravity/CIL process flowsheet on the Nyanzaga and Kilimani orebodies. Risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the exploration information, Mineral Resource or Mineral Reserve estimates, or projected economic outcomes are discussed below.

## 25.1 MINERAL RESOURCES

Data that inform the Mineral Resource estimate are considered to be representative and free of any biases or other factors that may materially impact the reliability of the sampling or significantly affect confidence in estimated resources. Checks to confirm the validity of the drilling database indicate that it forms a sufficiently reliable basis for resource estimation.

Drilling activities are ongoing at the Nyanzaga Gold Project with a focus on infill and depth extensions at the Nyanzaga and Kilimani deposits, as well as early-stage exploration on granted tenure.

The Nyanzaga Gold Project Mineral Resource estimates could be affected by:

- Future, yet unknown environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant issues.
- Metal price assumptions.
- Changes to the technical inputs used to estimate gold content (e.g., bulk densities, grade estimation strategies, and interpolation methodologies).
- Changes to the geological interpretation (e.g., intrusive dykes and structural offsets such as faults and shear zones) and mineralisation (domain) geometry and continuity of mineralised zones and grade.
- Depletion due to previous mining activities.
- Changes to geotechnical and mining assumptions, including the minimum mining thickness; or the application of alternative mining methods.
- Changes to process plant recovery estimates.
- Changes to the assumptions used to calculate the gold cut-off grades.

## 25.2 MINERAL RESERVES

Perseus has performed an economic analysis related to the Nyanzaga Gold Project to a Feasibility Study level of accuracy at the forecasted metal prices, production rates, metal recoveries, and capital and operating costs estimated in this Report. Perseus confirms that the positive economic outcome supports the Mineral Reserve estimate.

The QP is of the opinion that Mineral Reserves were estimated using industry-accepted practices and conform to the CIM Definition Standards and the JORC Code. Mineral Reserves stated in this report are based on open pit mining methods. The Mineral Reserves are acceptable to support mine planning.

As noted in Section 15.5, the reported Mineral Reserve may be affected by future study assessments of mining, processing, environmental, permitting, taxation, socio-economic and other factors.

Additional technical factors which may affect the Mineral Reserve estimate include:

- Metal price assumptions.
- Changes to the technical inputs used to estimate gold content (e.g., bulk densities, grade estimation strategies, and interpolation methodologies).

- Changes to the geological interpretation (e.g., intrusive dykes and structural offsets such as faults and shear zones) and mineralisation (domain) geometry and continuity of mineralised zones and grade assumptions.
- Changes to geotechnical and mining assumptions, including the minimum mining thickness; or the application of alternative mining methods.
- Changes to process plant recovery estimates.
- Changes to the assumptions used to calculate the gold cut-off grades.

## 25.3 MINING METHODS

Open pit mining of the Nyanzaga Gold Project is considered reasonable and technically viable based on the parameters and assumptions contained within this report, and based on Perseus' extensive open pit mining experience in other African jurisdictions. Estimates of open pit Mineral Reserves, mining parameters, costs and revenues are well understood and can be considered reliable predictors of the future mining performance at Nyanzaga.

## 25.4 MINERAL PROCESSING AND METALLURGICAL TESTING

The results of comminution and metallurgical test work conducted across the Nyanzaga and Kilimani deposits are considered by the QP to be of sufficient scope and quality to support the proposed process plant design and production planning.

Comminution testing determined that oxide ores are between very low competency to competent, are between very soft and hard, and are between non-abrasive and abrasive; and fresh ores are between low competency to very competent, are medium hard to very hard, and are between slightly abrasive and abrasive. The single stage crushing and SAB comminution circuit selected can accommodate the spectrum of material hardness and competency observed from test work, and can achieve the target plant throughput and grind size ($P_{80}$ of 75 µm).

It has been demonstrated that the Nyanzaga and Kilimani deposits are 'free-milling' and amenable to gold recovery by a standard gravity and CIL flowsheet. Gravity/cyanidation variability test work at optimised flowsheet conditions determined that average gold extractions by ore type ranged between 82.3% and 96.1%. Low to moderate sodium cyanide and lime consumptions have been observed through test work.

It was noted that the Nyanzaga and Kilimani deposit ores contain elevated concentrations of mercury, arsenic and antimony. The process design includes a mercury handling circuit to mitigate the health hazards associated with mercury exposure. Test work and modelling indicates that soluble arsenic and soluble antimony will not have a significant effect on potential economic recovery of gold in CIL and that soluble arsenic and soluble antimony will be contained within the tailings and process water systems. Provision has been made in sustaining capital for a water treatment plant should arsenic or antimony present operational challenges in the future. pH control is included in the process control design to mitigate gold passivation that can occur at high pH due to elevated antimony levels.

## 25.5 RECOVERY METHODS

The process plant has been designed and costed to Feasibility Study level, and is based on a robust metallurgical flowsheet designed for optimum recovery with minimal operating costs. The flowsheet is based on unit operations that are well proven in industry. Processing parameters, costs, and revenues are well understood and can be considered reliable predictors of the mineral processing performance at Nyanzaga.

Perseus intends to proceed with detailed design of the mineral processing plant.

## 25.6 PROJECT INFRASTRUCTURE

Infrastructure for the process plant, and the Project more widely, has been considered and defined to Feasibility Study level. Key enabling infrastructure for the Project includes the Ngoma bypass road, 220 kV connection to the TANESCO grid, external communications, water abstraction system from Lake Victoria, TSF, MSA, permanent accommodation camp, and other operational buildings.

Perseus intends to proceed with detailed design of Project enabling infrastructure.

## 25.7 ENVIRONMENT, SOCIAL IMPACT AND PERMITTING

The Environmental and Social Management Plan is being updated for resubmission to the NEMC. This will allow for construction of the Project in line with the design concept variations made since the previous plan submission. A mine closure plan with associated costs will need to be developed within one year of commencing operations.

A permitting pathway has been generated that encompasses all other necessary permits and approvals and Perseus has commenced engagement with various Ministries and authorities to progress the permitting process.

A RAP housing construction program is underway, and the scheduling of house builds will be sequenced to ensure that areas of the SML are available to achieve Project development scope and schedule.

Although a number of environmental and social impacts have been identified, it is expected that these will be successfully abated through implementation of a range of mitigations and management measures. At the same time there will be many positive impacts expected, including improved housing, community infrastructure, community contributions to improve services, livelihood developments and employment opportunities for local community members.

## 25.8 ECONOMIC ANALYSIS

Economic Analysis of the Nyanzaga Gold Project has shown that at an assumed gold price of $2,100/oz, the project is economically viable and the Mineral Reserves, stated in Section 15, are therefore supported. The Project pre-tax $NPV_{10\%}$ (pre-tax) is most sensitive to variations in gold price.

# 26. RECOMMENDATIONS

Note that as of April 28, 2025, Perseus has announced FID and confirmed its intention to proceed with development of the Nyanzaga Gold Project (Perseus Mining, 2025).

## 26.1 MINERAL RESOURCES

Perseus is currently conducting planned drilling programs within the Nyanzaga area, which aim to add to reported Mineral Resources. The work program will involve additional drilling as both infill and at depth for each of Nyanzaga and Kilimani. The works are estimated to be approximately $11.8M. Approximately $5.1M of this cost is contingent on results of the initial works.

## 26.2 MINERAL RESERVES

Once the additional drilling referred to in Section 26.1, the additional geotechnical drilling and test work referred to in Section 26.3, and the additional metallurgical test work referred to in Section 26.4 has been completed, Mineral Reserves should be updated based on any additions to Mineral Resources and any changes to geotechnical and ore processing parameters, and the results of such work should be publicly released. This work will be completed in-house by Perseus and will not incur additional cost.

## 26.3 MINING METHODS

The contractor mining tender process for the Nyanzaga Gold Project should continue in order to test the market for real-world mining costs and enable mobilisation of a suitable open pit mining contractor in time for the pre-strip of the Nyanzaga Gold Project. Costs for this work is estimated to be $120,000.

Perseus intends to complete additional geotechnical drilling, test work and analysis to improve confidence and precision of pit and waste dump geotechnical parameters. Costs are estimated at $3.5M for drilling and $370,000 for test work and analysis.

Perseus has also commenced a program to increase knowledge relating to the potential for acid rock drainage (ARD) generation from waste rock material. This will consider distribution of potentially acid forming (PAF) materials and develop detailed plans for waste dump design that includes encapsulation. Estimated cost for this work is $175,000.

## 26.4 MINERAL PROCESSING AND METALLURGICAL TESTING

Perseus intends to complete the following metallurgical test work and analysis to further improve understanding of ore variability and improve confidence and precision of operating and cost parameters used for ongoing business planning processes:

- Additional comminution and gravity/leach variability test work from recent and current drilling programs conducted on the Nyanzaga and Kilimani deposits.
- Additional optimisation test work for pre-oxidation and CIL oxygenation.
- Additional test work to optimise operational parameters for the cyanide detoxification process.
- Test work to support the design of a water treatment plant to treat any excess water to discharge quality, should this requirement be confirmed during ongoing technical studies.
- Review sample characterisation by ore type in line with evolving geological interpretation of the Nyanzaga and Kilimani deposits, as additional drilling information becomes available.
- Update ore specific operating and cost parameters, based on the review of sample characterisation and the body of proposed additional metallurgical test work noted above.

- Ongoing testing of the proposed raw water source, to understand the impact that a wider range of analytes and their seasonal variation will have on the design and operational performance of water services systems.

Completion of this additional test work is estimated to cost $600,000.

Perseus also recommends that metallurgical test work programs are conducted on future ore sources identified as part of ongoing exploration programs. Suitable test work should be performed to confirm the amenability and operating parameters of future ore sources to be treated in the proposed Nyanzaga Gold Project process plant. The cost of future ore test work programs is dependent on the occurrence, size and nature of future ore deposits, but costs for these programs typically fall in the range of $100,000 to $300,000 and funding is requested as part of the annual budget cycles.

## 26.5 RECOVERY METHODS

It is recommended to proceed with detailed design of the mineral processing plant. Detailed design forms part of the proposed EPCM scope, and the EPCM scope has been fully costed in the Project capital cost estimate presented in Section 21.1.

$35.4M has been included in the capital cost estimate for Perth-office based EPCM (engineering, procurement and construction management) services for the process plant, as well as infrastructure items (Section 26.6) within the EPCM contractor's scope. Note that detailed design is only one component of the EPCM services.

## 26.6 PROJECT INFRASTRUCTURE

It is recommended to proceed with detailed design of Project enabling infrastructure. Detailed design forms part of the proposed EPCM scope, and the EPCM scope has been fully costed in the Project capital cost estimate presented in Section 21.1.

The following costs have been included in the capital cost estimate for the full range of EPCM (engineering, procurement and construction management) services:

- $35.4M for the process plant and infrastructure items within the EPCM contractor's Perth-office based scope.
- $2.3M for the TSF, water abstraction and surface water management scopes.
- $1.4M for the grid power supply scope.
- $0.1M for specialist building architecture assistance.

Note that detailed design is only one component of the EPCM services listed above.

Perseus will also proceed with a study considering a full-capacity power station located adjacent to the Project 220 kV switchyard. This study will evaluate meeting the process plant's peak demand through the deployment of high-speed generators connected to the 11 kV switchboard on-site. The concept will consider operation in parallel with the grid supply, accommodating both reduced load conditions and total outages. Renewable generation options will also be considered. A cost provision of $150,000 is included within the approved corporate Projects budget to progress this study.

## 26.7 ENVIRONMENT, SOCIAL IMPACT AND PERMITTING

Applications for Permits required for the Project, as outlined in Table 4-4, should be made in a timely manner in order to support the development and execution of the Nyanzaga Gold Project. This work will be completed in-house by existing Perseus personnel and will not incur additional cost.

Due to changes between the previous OreCorp DFS and the layouts proposed in this Study by Perseus, an updated Environmental and Social Management Plan will be required for resubmission to the NEMC. A cost provision of $388,000 is allowed to complete necessary updates and studies required to update the ESMP.

Perseus will update the closure cost estimate progressively to reflect the most recent level of Project understanding as the development cycle continues. The detailed closure costs will be dependent on the final layout and extent of the mine facilities that will be determined after construction and commissioning of the Project. A cost provision of $50,000 is allowed to progress updates to the closure cost estimate.

Perseus plans to further study the Project hydrogeology, including updating models with the latest structural interpretation of the open pit, conducting pit void water balance modelling, and modelling of the pit lake water quality at mine closure. A cost provision of $150,000 is allowed to progress the hydrogeological scope.

# 27. REFERENCES


ALS Metallurgy. (2017a). *Metallurgical Testwork Conducted upon Fr Eng Bulk Composite Pastefill Feed for Lycopodium Minerals Pty Ltd/OreCorp Tanzania Limited (A17783).*

ALS Metallurgy. (2017b). *Metallurgical Testwork conducted upon Nyanzaga Paste Fill Composite for Lycopodium Minerals Pty Ltd/OreCorp Tanzania Limited (A18045).*

ALS Metallurgy. (2022). *Metallurgical Testwork conducted upon Kilimani Gold Ore Composites for OreCorp Limited (A23304).*

AMMTEC Ltd. (2005). *Metallurgical Testwork Conducted Upon Samples of Ore from Tusker-Nyanzaga Gold Project for Barrick Africa Corporation Limited (A9928).*

AMMTEC Ltd. (2006). *Metallurgical Testwork Conducted Upon Samples of Ore from Tusker-Nyanzaga Gold Project for Barrick Exploration Africa Limited (A10543).*

AMMTEC Ltd. (2007a). *Metallurgical Testwork Conducted Upon Samples of Ore From Nyanzaga-Tusker Gold Project for Barrick Exploration Africa Limited (A10632).*

AMMTEC Ltd. (2007b). *Comminution Testwork Conducted Upon Samples of Ore from Tusker Gold Project for Barrick Gold of Australia Limited (A10865).*

AMMTEC Ltd. (2008). *Flotation Testwork on a Tuskar Sample for Barrick Gold (A10928).*

ANCOLD. (2012). *ANCOLD Guidelines on the Consequence Categories for Dams.*

ANCOLD. (2019a). *Guidelines on Tailings Dams - Planning, Design, Construction, Operation and Closure.*

ANCOLD. (2019b). *ANCOLD Guidelines for Design of Dams and Appurtenant Structures for Earthquake.*

AQ2. (2025). *Nyanzaga Gold Project Hydrogeological Assessment.*

Borg, G., & Krogh, T. (1977). The Tanzania and Northeast Zaire cratons. *Greenstone Belts*, 608-609.

CIM. (2014). *CIM Standing Committee on Reserves Defintions - Defintion Standards for Mineral Resources and Mineral Reserves.* Westmount, QC: The Canadian Insitute of Mining, Metallurgy and Petroleum.

CSA Global. (2017). *Nyanzaga Gold Project - Mineral Resource Estimate.*

CSA Global. (2020). *Kilimani Mineral Resource Estimate - Summary Report.*

CSA Global. (2021). *Update of the Estimation of Acid Forming Potential (AFP) into Nyangaza Mining Model.*

Digby Wells Environmental. (2021). *Nyangaza Gold Mine Tanzania Resettlement Policy Framework (Report prepared for Orecorp Ltd, Perth, Australia).*

ECG Engineering. (2022). *Power Supply Grid Connection - Definitive Feasibility Study - Nyanzaga Gold Project (NNZ-0007-G-FS-001 Rev F).*

ECG Engineering. (2024). *Electrical Load List (NNZ-E-LI-0002 Rev A).*

Fawthorp, A. (2019). *Gauntlet laid down for gold miners to meet climate targets, but green switch could cost as much as $70bn.* Retrieved from www.nsenergybusiness.com/news/gold-climate-change-net-zero-mining/

Global Tailings Review. (2020). *Global Industry Standard on Tailings Management.*

Golder Associates. (2012). *Interim Pit Slope Report for the Nyanzaga Gold Project: Tusker Pit.* Technical Memorandum.

Groves, D., Goldfarb, R. J., Gebre-Mariam, M., Hagemann, S., & Robert, F. (1998). Orogenic gold deposits: A proposed classification in the context of their crustal distribution and relationship to other gold deposit types. *Ore Geology Reviews Vol 13*, 7-27.

Hassan, S., Kilwanila, S., & Haule, O. (2021). *Nyangaza Gold Project, Sengerema, Mwanza Region. Fauna Baseline Study. (Report for OreCorp Tanzania Ltd).*

Henkel, J. (2012). *Assessment of whole rock geochemistry data of chemical sediments, clastic sediments and volcanic rocks from Nyanzaga.* African Barrick Gold - Internal report.

IGES. (2022). *Institute for Global Environmental Strategies. List of grid emission factors Version 10.12 (Source: https://pub.iges.or.jp/pub/iges-list-grid-emisisons-factors)ww.iges.or.jp).*

International Cyanide Management Institute. (2021). *Mining Operations Verification Protocol.* Washington, DC: International Cyanide Management Institute.
International Finance Corporation. (2012). *IFC's Performance Standards on Environmental and Social Sustainability*. Retrieved from International Finance Corporation: https://www.ifc.org/content/dam/ifc/doc/2010/2012-ifc-performance-standards-en.pdf
International Society for Rock Mechanics and Rock Engineering. (2007). *The Complete ISRM Suggested Methods for Rock Characterization, Testing and Monitoring: 1974-2006.* (R. Ulusay, & J. Hudson, Eds.) Ankara: ISRM Turkish National Group and the ISRM.
International Union for Conservation of Nature. (2025). *IUCN Red List*. Retrieved from IUCN: https://www.iucnredlist.org
JKTech Pty Ltd. (2012). *Comminution Testing - African Barrick Gold PLC (JKTech Job No. 12275).*
Knight Piésold. (2017a). *Nyanzga Gold Project - Tailings Physical Testing.*
Knight Piésold. (2017b). *Nyanzaga Gold Project - Tailings Geochemical Characterisation (PE17-00601).*
Knight Piésold. (2018). *Geochemical Characterisation of Waste Rock (PE301-00656/05 Rev 0).*
Knight Piésold. (2019). *Waste Rock Geochemical Report - Humidity Cell Testing (PE301-00656/06 Rev 0).*
Knight Piésold. (2021a). *Nyanzaga Gold Project - Design Climatology Rev 1.*
Knight Piésold. (2021b). *Nyanzaga Gold Project - Seismic Hazard Assessment (PE21-01467).*
Knight Piésold. (2022). *Geochemical Characterisation of Kilimani Waste Rock (PE301-00656/10 Rev 0).*
Knight Piésold. (2024). *Nyanzaga Gold Project - Preliminary Life of Mine Cost Estimate (PE24-01562).*
Knight Piésold. (2025a). *Nyanzaga Gold Project - Definitive Feasibility Study Site Water Balance (PE25-00039).*
Knight Piésold. (2025b). *Nyanzaga Gold Project - Dam Breach Assessment (DFS) (PE25-00159).*
Knight Piésold. (2025c). *Nyanzaga Gold Project - Sediment Control and Surface Water Management Design (DFS) (PE25-00108).*
Knight Piésold. (2025d). *Nyanzaga Gold Project - TSF - Final Stage General Arrangement Plan (301-656-B0001-125 Rev A).*
Knight Piésold. (2025e). *Nyanzaga Gold Project - Definitive Feasibility Study Geotechnical Interpretative Report (PE301-00656/12 Rev A).*
Lycopodium. (2024a). *Site Data Sheet for the Nyanzaga Gold Project (2290-GDAS-001 Rev 0).*
Lycopodium. (2024b). *Processing Operating Cost Estimate (2290-FEST-001 Rev B).*
Lycopodium. (2025a). *Nyanzaga Gold Project Process Design Criteria (2290-FPDC-001 Rev C).*
Lycopodium. (2025b). *Nyanzaga Gold Project - Treatment Plant - General - Site Layout - Plan (110-GD-003 Rev B).*
Lycopodium. (2025c). *Nyanzaga Gold Project - Mechanical Equipment List (2290-MLST-001 Rev C).*
Lycopodium. (2025d). *Nyanzaga Gold Project - Treatment Plant - General - Overall Site Layout - Plan.*
Lycopodium. (2025e). *Capital Cost Estimate - Nyanzaga Gold Project FEED - Rev G1 - Owners Other Included.*
Lycopodium. (2025f). *Nyanzaga Gold Project - Basis of Estimate (2290-GREP-001 Rev B).*
Lycopodium. (2025g). *Nyanzaga Gold Project - Sketch - Accommodation Camp - Layout (380-WS-001 Rev B).*
Lynch, A., Mainza, A., & Morrell, S. (2015). Ore Comminution Measurement Techniques. In *Comminution Handbook, Spectrum 21, Chapter 4* (pp. 43-60). Melbourne: Australasian Institute of Mining and Metallurgy.
Mainline Carriers Ltd and Freight Forwarders Tanzania Ltd. (2022). *Route Inspection Report for the Planned Nyanzaga Gold Mine Project.*
Majesso Consulting. (2024a). *2405 NYANZAGA - Mining Cost by Bench - v0.*
Majesso Consulting. (2024b). *Perseus Mining - Nyanzaga Gold Project - Notes on Indicative Costs for Mining.*

Mason, D. (2011). *Petrographic descriptions for fifty-one rock polished thin sections from Nyanzaga, Kahama and Masabi projects, Lake Victoria Gold Field, Tanzania - Internal Report.* Mason Geosciences Pty Ltd.

Metso Outotec. (2022). *Nyanzaga Gold Project Thickening Report (3327172).*

Metso Outotec. (2023). *Crushing and Screening Handbook* (seventh ed.). (I. Nieminen, Ed.) Tampere: Metso Outotec.

Mfilinge, P., & Selemani, O. (2022). *Nyangaza Gold Project, Sengerema, Mwanza Region: Flora Baseline Study. (Report prepared for OreCorp Tanzania Ltd).*

Mine Earth. (2022). *Nyanzaga Gold Project - Closure Cost Estimate (CCE).*

MineGeoTech. (2025). *Nyanzaga Open Pit Geotechnical Assessment.*

Mining Plus. (2016). *Nyanzaga Geotechnical PFS.* Perth: Lycopodium App. 5.7.

Mining Plus. (2016). *Nyanzaga Project Geotechnical Drilling Program Proposal.* Memorandum.

MTL Consulting. (2017). *Environmental and Social Impact Asessment for Nyangaza Gold Project, Mwanza Region, Sengerema District, Igalula Ward, Sotta Village. (Report prepared for Orecorp Tanzania Limitied).*

Ndibalema, V., Swalehe, M., & Masinde, R. (2022). *Nyangaza Gold Project, Sengerema, Mwanza Region. Aquatic Fauna Baseline Study. (Report for OreCorp Tanzania Ltd).*

Norgaard, S. (2019). Laboratory Test Work Equipment. In R. Dunne (Ed.), *SME Mineral Processing & Extractive Metallurgy Handbook* (pp. 115-140). Englewood, CO: Society for Mining, Metallurgy, and Exploration.

OreCorp. (2024). *Environmental and Social Management System Manual.*

OreCorp Limited. (2022). *Nyanzaga DFS Delivers Robust Results - ASX Release.* OreCorp Limited.

Orway Mineral Consultants. (2024). *Nyanzaga Gold Project 5.0 Mtpa Comminution Circuit Design, Report No. 7792, Rev. 2.*

Outotec. (2017). *Thickening Test Report S2954TA Nyanzaga.*

Perseus Mining. (2025, April 28). *Perseus Mining Proceeds with Development of the Nyanzaga Gold Project.* Retrieved from Perseus Mining - ASX Announcements: https://wcsecure.weblink.com.au/pdf/PRU/02939460.pdf

Perseus Mining Limited. (2023). *Annual Report.* Perth: Perseus Mining Limited.

Perseus Mining Limited. (2024). *Annual Report.* Perth: Perseus Mining Limited.

Peter O'Bryan & Associates. (2022). *Geotechnical Assessment Open Pit & Underground Mining, Nyanzaga Deposit.*

SGS. (2017). *Metallurgical Testwork on Gold Ores from the Nyanzaga Project - Final Report (0633BH).*

Sotta Mining Corporation Limited. (2023). *Nyanzaga Gold Project - Environmental and Social Impact Statement.*

SRK. (2022). *Nyanzaga Gold Project. Decarbonisation Options Report (Report prepared for OreCorp).*

Stockley. (1943). The Pre-Karoo Stratigraphy of Tanganyika. *Geological Magazine V80*, 161-170.

TANESCO. (2025, April 29). *Tariffs - Bei za Umeme Zilizoidhinishwa.* Retrieved from Tanzania Electric Supply Company Limited: https://www.tanesco.co.tz/attachments/customer_services/_unewEou3Ea2ea5kfxYK7GX9H0qhcjnO_2022_11_30_07_10_00.pdf

Tanzania Revenue Authority. (2025, May 13). *Tanzania Revenue Authority*. Retrieved from Value Added Tax (VAT): https://www.tra.go.tz/page/value-added-tax-vat

The East African Community. (2016). *The East African Community Vehcile Load Control Act.*

The Joint Ore reserves Committee of the Australasain Institute of Mining and Metallurgy, Australian Institute of Geoscientists. (2012). *JORC, 2012. Asutralasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code)*. Retrieved from www.jorc.rg

The United Republic of Tanzania. (2001). *Road Traffic (Maximum Weight of Vehciles) Regulations.*

The United Republic of Tanzania. (2004). *The Income Tax Act.*

The United Republic of Tanzania, Ministry of Water. (2020). *Dam Safety Guidelines.*

Unwelt Solutions (Pty) Ltd. (2022). *Nyanzaga Gold Project. Greenhouse Gas Assessment (Draft report prepared for OreCorp).*

Western Australian School of Mines. (2018). *Report on Rock Properties Testing for Nayanzaga Gold Project.* Geomechanics Laboratory. Curtin University of Technology.

World Gold Council. (2020). *Gold and Climate Change: The Energy Transition (Source: www.gold.org/download/file .*