NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana

Report prepared for:

Galiano Gold Inc.

Report prepared by:

srk consulting

SRK Consulting (Canada) Inc.
CAPR001985
March 2023

NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana

Prepared for:

Galiano Gold Inc.
1640 - 1066 W Hastings Street
Vancouver, BC V6E 3X1
Canada

Prepared by:

SRK Consulting (Canada) Inc.
2600–320 Granville Street
Vancouver, BC V6C 1S9
Canada

Effective Date: 31 December 2022
Report Date: 28 March 2023

Authored by:

SRK Consulting (Canada) Inc.
SRK Consulting (South Africa) (Pty) Ltd.
SRK Consulting (UK) Limited
ABS Africa (Pty) Ltd.
CSA Global (UK) Ltd.
Resource Engineering Consultants Pty Ltd.

Project No: CAPR001985

Important Notice

This report was prepared as a Technical Report for Galiano Gold Inc. (Galiano) by SRK Consulting (Canada) Inc. as part of a team of consultants ("the Team") contracted by Galiano. The quality of information, conclusions and estimates contained herein is consistent with the level of effort involved in the Team's services, based on: i) information available at the time of preparation, ii) data supplied by outside sources, and iii) the assumptions, conditions, and qualifications set forth in this report. This report is intended for use by Galiano subject to the terms and conditions of its contracts with SRK and the Team and to the relevant securities legislation. The contracts permit Galiano to file this report as a technical report with relevant securities regulatory authorities. Except for the purposes legislated under provincial securities law or for litigation or dispute resolution, any other uses of this report by any third party are at that party's sole risk. The responsibility for this disclosure remains with Galiano. The user of this document should ensure that this is the most recent Technical Report for the property as it is not valid if a new technical report has been issued.

Currency is expressed in US dollars and metric units are used, unless otherwise stated. The report uses Canadian English.

Date and Signature Page

This technical report was written by the following contributing authors. The effective date of this technical report is 31 December 2022. The date of signature is 28 March 2023.

"original signed"

Bob McCarthy, P.Eng.
Principal Consultant (Mining)
SRK (Canada) Inc.

"original signed"

Dr. Anoush Ebrahimi, P.Eng.
Principal Consultant (Mining)
SRK (Canada) Inc.

"original signed"

Glen Cole, P.Geo.
Principal Consultant (Geology)
SRK (Canada) Inc.

"original signed"

Dr. Oy Leuangthong, P.Eng.
Principal Consultant (Mineral Resources)
SRK (Canada) Inc.

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Dr. John Willis, MAusIMM(CP)
Principal Consultant (Metallurgy)
SRK Consulting (UK) Ltd.

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Ismail Mahomed, BSc (Hons), Pr.Sci.Nat.
Principal Consultant (Hydrogeology)
SRK Consulting (South Africa)(Pty) Ltd.

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Desmond Mossop, Pr.Sci.Nat.
Principal Consultant (Geology, Mining Geotechnics)
SRK Consulting (South Africa)(Pty) Ltd.

"original signed"

Malcolm Titley, BSc, MAIG, MAusIMM
Principal Associate Consultant
CSA Global (UK) Ltd.

"original signed"

Mitch Hanger, BEng, MAIG, MAusIMM
Principal Geotechnical Engineer
Resource Engineering Consultants Pty Ltd.

"original signed"

Faan Coetzee, BSc (Hons), Pr.Sci.Nat.
Director / Environmental Scientist
ABS Africa (Pty) Ltd.

Qualified Persons Statements

CERTIFICATE OF QUALIFIED PERSON

To accompany the technical report entitled: "NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana" prepared for Galiano Gold Inc. (the "Issuer") dated 28 March 2023, with an effective date of 31 December 2022 (the "Technical Report").

I, Robert McCarthy, do hereby certify that:

1. I am a Principal Consultant with SRK Consulting (Canada) Inc. ("SRK") with an office at Suite 2600-320 Granville Street, Vancouver, BC, Canada.
2. I am a graduate of the University of British Columbia where I obtained a Bachelor of Applied Science (Mining Engineering) in 1984, plus I obtained a Masters of Business Administration from Athabasca University in 2005. I have practiced my profession continuously since 1984. I have held positions in engineering, operations, and maintenance at operating mines, and as a consultant since 2007, I have conducted mine planning and costing for numerous mining projects from PEA to feasibility levels.
3. I am a Professional Engineer registered with the Engineers and Geoscientists of British Columbia, with membership number, 136877.
4. I visited the Asanko Gold Mine on June 27-29, 2022.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. As a qualified person, I am independent of the Issuer as defined in Section 1.5 of NI 43-101.
7. I am a co-author of the Technical Report, responsible for Sections 1.1, 1.2, 1.10, 1.12, 1.13, 2 (all), 3 (all), 4 (all), 5 (all), 6 (all), 18 (except 18.5, 18.6), 19 (all), 21 (except 21.1.3, 21.1.4, 21.1.6, 21.2.2, 21.2.3), 22 (all), 23 (all), 24 (all), 25.1, 25.2.5, 25.2.7, 25.2.8, and 27 (all) of the Technical Report, and I accept professional responsibility for those sections of the Technical Report.
8. I have not had prior involvement with the subject property.
9. As of the date of this certificate, to the best of my knowledge, information and belief, the portion of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the portion of the Technical Report for which I am responsible not misleading.
10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

Dated this 28th day of March 2023 in Vancouver, BC, Canada.

"original signed"

Robert McCarthy, PEng
SRK Consulting (Canada) Inc.

CERTIFICATE OF QUALIFIED PERSON

To accompany the technical report entitled: "NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana" prepared for Galiano Gold Inc. (the "Issuer") dated 28 March 2023, with an effective date of 31 December 2022 (the "Technical Report").

I, Anoush Ebrahimi, do hereby certify that:

1. I am a Principal consultant with SRK Consulting (Canada) Inc. with an office at 2600–320 Granville St., Vancouver, BC V6C 1S9, Canada.
2. I am a graduated of the Kerman University, Iran with a bachelor's degree in mining engineering, in 1990, Poly Technique Tehran, Iran with a Master of Mining Engineering degree in 1993 and University of British Columbia (UBC) with a Ph.D. in Mining Engineering. Aside from the time spent studying at schools above, I have practiced my profession continuously since 1990. My relevant experience includes working in a gold mine (Moteh, Iran), mine design of multiple gold projects in various stages and in various countries including Qualcamayo gold mine, Don Nicholas gold mine and Lindero gold mine in Argentina, Olimpiada gold mine in Russia, As Suq Gold Project in Saudi Arabia, Sabodala Gold mine in Senegal, Bermejal open pit and Monterde Gold Project in Mexico, Bisha mine operation in Eritrea, Magino Gold Project in Canada, and more
3. I am a Professional Engineer registered with the Engineers and Geoscientists of British Columbia (EGBC); my registration number is 144638.
4. I visited the Asanko Gold Mine from August 6th to August 11th of 2022.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. As a qualified person, I am independent of the Issuer as defined in Section 1.5 of NI 43-101.
7. I am a co-author of the Technical Report, responsible for Sections 1.7, 1.8, 15 (except 15.2.8), 16 (except 16.2.1 to 16.2.4), 25.2.2, 25.2.3, and 26.3 of the Technical Report and I accept professional responsibility for those sections of the Technical Report.
8. I have not had prior involvement with the subject property.
9. As of the date of this certificate, to the best of my knowledge, information and belief, the portion of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the portion of the Technical Report for which I am responsible not misleading.
10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

Dated this 28th day of March 2023 in Vancouver, BC, Canada

"original signed"

Anoush Ebrahimi, P.Eng
SRK Consulting (Canada) Inc.

CERTIFICATE OF QUALIFIED PERSON

To accompany the technical report entitled: "NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana" prepared for Galiano Gold Inc. (the "Issuer") dated 28 March 2023, with an effective date of 31 December 2022 (the "Technical Report").

I, John Anthony Willis, do hereby certify that:

1. I am a Principal Consultant (Mineral Processing) with SRK Consulting (UK) Ltd with an office at Fifth Floor, Churchill House, 17 Churchill Way, Cardiff, CF10 2HH, UK.

2. I am a graduate of the University of Queensland, Australia where I obtained a BE in Metallurgical Engineering and a PhD in Minerals Process Engineering. Aside from the time spent studying at University of Queensland, I have practiced my profession continuously since 1986. My relevant experience includes preparing, managing and undertaking metallurgical testwork programs and interpreting the results thereof, flowsheet design and development, and commissioning and auditing of gold recovery plants in locations including Ghana.

3. I am a Chartered Professional registered with the Australasian Institute of Mining and Metallurgy (Member number 103635).

4. I visited the Asanko Gold Mine from 27th to 29th June 2022.

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

6. As a qualified person, I am independent of the Issuer as defined in Section 1.5 of NI 43-101.

7. I am a co-author of the Technical Report, responsible for Sections 1.9, 13 (all), 17 (all), 21.1.4, 21.2.2, and 25.2.4 of the Technical Report, as well as relevant parts in the References and Date and Signature of the Technical Report, and I accept professional responsibility for those sections of the Technical Report.

8. I have not had prior involvement with the subject property.

9. As of the date of this certificate, to the best of my knowledge, information and belief, the portion of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the portion of the Technical Report for which I am responsible not misleading.

10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

Dated this 28th day of March 2023 in Cardiff, UK.

"original signed"

John A. Willis, BE(Met), PhD, MAusIMM(CP)
SRK Consulting (UK) Ltd

CERTIFICATE OF QUALIFIED PERSON

To accompany the technical report entitled: “NI 43-101 Technical Report, Feasibility Study for the Asanko Gold Mine, Ghana” prepared for Galiano Gold Inc. (the “Issuer”) dated March 28, 2023, with an effective date of 31 December 2022 (the “Technical Report”).

I, Oy Leuangthong, do hereby certify that:

1. I am a Corporate Consultant (Geostatistics) with SRK Consulting (Canada) Inc. with an office at 155 University Avenue, Suite 1500, Toronto, Ontario, Canada M5H 3B7.
2. I am a graduate of the University of Toronto in 1998 where I obtained a B.A.Sc. (Honours) in Civil Engineering. I am a graduate of the University of Alberta in 2003 with a PhD in Mining Engineering (Geostatistics). My relevant experience includes research in resource modelling and geostatistics, teaching activities in mine planning, resource estimation and advanced geostatistics, and since 2010, geostatistical support and modelling for exploration projects and operations in the Americas, Australia, and West Africa
3. I am a Professional Engineer registered with the Professional Engineers Ontario (PEO#90563867).
4. I visited the Asanko project site from August 6 to August 11, 2022.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* (“NI 43-101”) and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. As a qualified person, I am independent of the Issuer as defined in Section 1.5 of NI 43-101.
7. I am a co-author of the Technical Report, responsible for Sections 1.6 (excluding Nkran), 14 (excluding 14.1, 14.2.2, 14.3.2) and 25.2.1 (excluding Nkran) of the Technical Report, and I accept professional responsibility for those sections of the Technical Report.
8. I have not had prior involvement with the subject property.
9. As of the date of this certificate, to the best of my knowledge, information and belief, the portion of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the portion of the Technical Report for which I am responsible not misleading.
10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

Dated this 28 day of March 2023 in Toronto, Ontario, Canada.

"original signed"

Oy Leuangthong, PEng (PEO#90563867)

Corporate Consultant (Geostatistics)

SRK Consulting (Canada) Inc.

CERTIFICATE OF QUALIFIED PERSON

To accompany the technical report entitled: “NI 43-101 Technical Report, Feasibility Study for the Asanko Gold Mine, Ghana” prepared for Galiano Gold Inc. (the “Issuer”) dated 28 March 2023, with an effective date of 31 December 2022 (the “Technical Report”).

I, Glen Cole, do hereby certify that:

1. I am a Principal Consultant (Resource Geology) with SRK Consulting (Canada) Inc. (SRK) with an office at Suite 1500 – 155 University Avenue, Toronto, Ontario, Canada.
2. I am a graduate of the University of Cape Town in South Africa with a BSc (Hons) in 1983; I obtained an MSc (Geology) from the University of Johannesburg in South Africa in 1995 and an MSc(Eng) from the University of the Witwatersrand in South Africa in 1999. Aside from the time spent studying at these universities, I have practiced my profession continuously since 1986. My relevant experience includes I have estimated and audited mineral resources for a variety of early and advanced international base and precious metals projects. I have worked in the mining industry on several underground and open pit mining operations and held various positions senior operational and corporate positions.
3. I am a Professional Geoscientist registered with the Association of Professional Geoscientists of the province of Ontario (APGO#1416) and am also registered as a Professional Natural Scientist with the South African Council for Scientific Professions (Reg#400070/02).
4. I visited the project site during August 6-11, 2022.
5. I have read the definition of “qualified person” set out in National Instrument 43-101 *Standards of Disclosure for Mineral Projects* (“NI 43-101”) and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a “qualified person” for the purposes of NI 43-101.
6. As a qualified person, I am independent of the Issuer as defined in Section 1.5 of NI 43-101.
7. I am a co-author of the Technical Report, responsible for Sections 1.3, 1.4, 1.5, 7 (all), 8 (all), 9 (all), 10 (all), 11 (all), 12 (all), 14.2.2, 14.3.2, 14.4, 25.2.1, 26.1, 26.2 and 26.4 of the Technical Report, and I accept professional responsibility for those sections of the Technical Report.
8. I have not had prior involvement with the subject property.
9. As of the date of this certificate, to the best of my knowledge, information and belief, the portion of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the portion of the Technical Report for which I am responsible not misleading.
10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

Dated this 28th day of March, 2023 in Toronto, Ontario, Canada.

“original signed”

Glen Cole, PGeo (APGO#1416)

Principal Consultant (Resource Geology)

SRK Consulting (Canada) Inc.

Desmond H Mossop, Pr.Sci.Nat., COMREC

CERTIFICATE of QUALIFIED PERSON

This Certificate of Qualified Person has been prepared to meet the requirements of National Instrument 43-101 Standards of Disclosure for Minerals Projects Part 8.

a. Name, Address, Occupation

Desmond H Mossop, Pr.Sci.Nat., COMREC
SRK (South Africa) (Pty) Ltd., 265 Oxford Road, Illovo, Johannesburg, 2196, South Africa
Partner and Principal Engineering Geologist, Mining Geotechnics

b. Title and Effective Date of Technical Report

NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana.
Effective Date: December 31, 2022

c. Qualifications

N.Dip. Geology, Tshwane University of Technology, South Africa, 1995
B.Tech. Engineering Geology, Tshwane University of Technology, South Africa, 1998
Rock Engineering Certificate (Cert. # 596), Chamber of Mines of South Africa
Pr.Sci.Nat (Reg. # 400172/07), South African Council for Natural Scientific Professions (SACNASP), field of practice Rock Mechanical Sciences.

I have practiced my profession continuously since January 1996 and have worked internationally, servicing mining operations across multiple geographies, including: South Africa, Botswana, Namibia, Lesotho, Democratic Republic of the Congo, Cameroon, Ghana, Zambia, Burkina Faso, Senegal, Côte d'Ivoire, Australia, Canada, Chile and Brazil. This experience covers multiple commodities, including Iron Ore, Copper, Platinum and associated Base Metals, Niobium, Nickel, Phosphates, Coal, Uranium, Manganese, Zinc, Diamonds and Gold. This experience has been built in the progressive capacities of Geotechnologist, Engineering Geologist, Geotechnical Superintendent, Rock Engineering Manager, Global Corporate Principal Rock Engineer, and Consulting Principal Engineering Geologist and Partner. I have held a corporate position as the Global Principal Rock Engineer at Anglo American and am currently a Partner and Principal Engineering Geologist, and Head of the Mining Geotechnics department at SRK (South Africa) (Pty) Ltd. I have participated in multiple project phase and due diligence studies, and international Geotechnical Review Boards.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 for the sections of the technical report that I take responsibility.

d. Site Inspection

Regular site visits since October 2016 (on average 2 to 3 visits per year, minimum of 6 days per visit), with further site visits by delegates since January 2019. Dates for most recent visit to site: 14th to 21st October 2022.

e. Responsibilities

I am a co-author of the Technical Report, responsible for Sections 15.2.8, 16.2.1, 16.2.2, and 16.2.3 of the Technical Report, and I accept professional responsibility for those sections of the Technical Report.

f. Independence

The SRK Group's independence is ensured by the fact that it is strictly a consultancy organisation, not holding equity in any project and with ownership primarily by staff. This permits its consultants to provide clients with conflict-free and objective support on crucial issues. As a Partner and Principal Consultant with SRK, I am fully independent of any client organisations and in my personal capacity do not hold any equity related to Galiano Gold or Asanko Gold Ghana. I am independent of Galiano Gold Inc. in accordance with the application of Section 1.5 of National Instrument 43-101.

g. Prior Involvement

I am a consultant to Asanko Gold Ghana through my independent company SRK (South Africa) (Pty) Ltd, providing specialist geotechnical consulting services since October 2016.

I have also been QP for geotechnical reporting since the December 2019 NI 43-101 reporting cycle.

h. Compliance with NI 43-101

I have read National Instrument 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance with the same.

i. Disclosure

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

"Signed by Desmond H Mossop"

"original signed"

	March 28, 2023
Desmond H Mossop, Pr.Sci.Nat., COMREC Partner & Principal Engineering Geologist Mining Geotechnics	Date

Ismail Mahomed, Pr.Sci.Nat.

CERTIFICATE of QUALIFIED PERSON

This Certificate of Qualified Person has been prepared to meet the requirements of National Instrument 43-101 Standards of Disclosure for Minerals Projects Part 8.

a. Name, Address, Occupation

Ismail Mahomed, Pr.Sci.Nat.
SRK (South Africa) (Pty) Ltd., 265 Oxford Road, Illovo, Johannesburg, 2196, South Africa
Partner and Principal Hydrogeologist

b. Title and Effective Date of Technical Report

NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana.
Effective Date: December 31, 2022

c. Qualifications

BSc (Hons), University of the Witwatersrand South Africa, 1995
Pr.Sci.Nat (Reg. # 400070/01), South African Council for Natural Scientific Professions (SACNASP), field of practice Geological Sciences.

I have practiced my profession continuously since January 1998 and have worked internationally, servicing mining operations across multiple geographies, including: South Africa, Botswana, Namibia, Lesotho, Democratic Republic of the Congo, Cameroon, Ghana, Zambia, Zimbabwe, Burkina Faso, Iran, Nigeria and Sudan. This experience covers multiple commodities, including Iron Ore, Copper, Platinum, Nickel, Phosphates, Coal, Uranium, Manganese, Zinc, Diamonds and Gold. This experience has been built in the progressive capacities of junior, senior and principal hydrogeologist and partner. I am currently a Partner and Principal Hydrogeologist, and Head of the groundwater group at SRK (South Africa) (Pty) Ltd. I have participated in multiple project phase and due diligence studies.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 for the sections of the technical report that I take responsibility.

d. Site Inspection

I have not personally visited the Asanko Gold Mine but have supervised the work of a Principal Consultant that visited the site from August 6 to 11, 2022.

e. Responsibilities

I am a co-author of the Technical Report, responsible for Section 16.2.4 of the Technical Report, and I accept professional responsibility for those sections of the Technical Report.

f. Independence

The SRK Group's independence is ensured by the fact that it is strictly a consultancy organisation, not holding equity in any project and with ownership primarily by staff. This permits its consultants to provide clients with conflict-free and objective support on crucial issues. As a Partner and Principal Consultant with SRK, I am fully independent of any client organisations and in my personal capacity do not hold any equity related to Galiano Gold or Asanko Gold Ghana. I am independent of Galiano Gold Inc. in accordance with the application of Section 1.5 of National Instrument 43-101.

g. Prior Involvement

I am a consultant to Asanko Gold Ghana through my independent company SRK (South Africa) (Pty) Ltd, providing specialist geotechnical consulting services since 2020.

h. Compliance with NI 43-101

I have read National Instrument 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance with the same.

i. Disclosure

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

"Signed by Ismail Mahomed"

"original signed"

	March 28, 2023
Ismail Mahomed, Pr.Sci.Nat. Partner & Principal Hydrogeologist	Date

CERTIFICATE OF QUALIFIED PERSON

Malcolm Addison Titley, MAIG

This Certificate of Qualified Person has been prepared to meet the requirements of National Instrument 43-101 Standards of Disclosure for Minerals Projects Part 8.

a) Name, Address, Occupation

Malcolm Addison Titley
33B Moffat Avenue, Hillside, Bulawayo, Zimbabwe.
Principal Associate Consultant, CSA Global (UK) Ltd.

b) Title And Effective Date of Technical Report

NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana.
Effective Date: December 31, 2022

c) Qualifications

Bachelor of Science Degree in Geology and Chemistry from University of Cape Town (UCT - 1979)
Member of the Australian Institute of Geologists (AIG – No 2546)
Member of the Australasian Institute of Mining & Metallurgy (AusIMM – No 106018)

I have over 40 years experience in the mining industry with over 20 years experience in gold resource estimation, mine geology and mining operations; including senior and executive management; project planning and execution; technical due diligence. I have read the definition of "Qualified Person" set out by National Instrument 43-101 and certify that, by reason of my education, affiliation with a professional association (as defined in NI 43- 101) and relevant work experience I am a "Qualified Person" for the purpose of NI 43-101.

d) Site Inspection

My most recent visit to the Asanko Ghana Gold Mine was during the period 12th to 15th July 2022.

e) Responsibilities

I am a co-author of the Technical Report, responsible for Sections 1.6 (only Nkran), 14.1, 14.4 (only Nkran), and 25.2.1 (only Nkran) of the Technical Report, and I accept professional responsibility for those sections of the Technical Report.

f) Independence

I am currently Director of Maja Mining Limited, Director of Executive Mining Limited and a Principal Associate Consultant with CSA Global (UK) Limited. I have no financial investment in Asanko Gold Ghana or its owners. I am independent of Galiano Gold Inc. in accordance with the application of Section 1.5 of National Instrument 43-101.

g) Prior Involvement

I have been involved with Asanko Gold Ghana previously in Mineral Resource Estimation and mine production business improvement support since 2016.

h) Compliance with NI 43-101

I have read National Instrument 43-101 and Form 43-101F1 and the Technical Report has been prepared in compliance with same.

i) Disclosure

As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to comply with CIM standards for a Technical Report.

"Signed by Malcolm Addison Titley"

"original signed"

	March 28, 2023
Malcolm Addison Titley **BSc Geology, AIG, AusIMM**	**Date**

2E, 2 Gemstone Blvd
Carine WA 6020 Australia
T: +61 8 6444 7988
W: www.rec.com.au
E: info@rec.com.au
Resource Engineering Consultants Pty Ltd
ABN: 66 626 931 753

CERTIFICATE OF QUALIFIED PERSON

Mitch Hanger

To accompany the technical report entitled: "NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana" prepared for Galiano Gold Inc. (the "Issuer") dated 28 March 2023, with an effective date of 31 December 2022 (the "Technical Report").

I, Mitch Hanger, do hereby certify that:

1. I am a Director and Principal Geotechnical Engineer with Resource Engineering Consultants Pty Ltd, with an office at Unit 2E, 2 Gemstone Blvd, Carine, WA, 6020.
2. I am a graduate of the Griffith University in Queensland where I obtained a bachelor's degree in civil engineering in 2008. Aside from the time spent studying at Griffith University, I have practiced my profession continuously since 2008. My relevant experience includes 15 years of being directly involved in the design of numerous tailings storage and water storage facilities in support of various base and precious metal projects in Australia, Africa, and Canada. As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101) for those sections of the Technical Report that I am responsible for preparing.
3. I am a Geotechnical Engineer registered in Australia MAIG (member #7308). I am a Registered Member of the Australasian Institute of Mining and Metallurgy (member #331826, Chartered status pending), with registered disciplines in Geotechnical Analysis and Design, and Tailings Storage Facility Design.
4. I attended a visit site on the August 8 to 11th, 2022 for a site tour and various meetings.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. As a qualified person, I am independent of the Issuer as defined in Section 1.5 of NI 43-101.
7. I am a co-author of the Technical Report, responsible for Sections 18.5, 18.6, 21.1.3, and 21.2.3 of the Technical Report, and I accept professional responsibility for those sections of the Technical Report.
8. I have not had prior involvement with the subject property.
9. As of the date of this certificate, to the best of my knowledge, information and belief, the portion of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the portion of the Technical Report for which I am responsible not misleading.
10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

Dated this 28th day of March 2023 in Carine, WA.

Mitch Hanger

"original signed"

Director and Principal, BEng Civil (Hons), MAIG (7308), MIEAust (5433358), MAusIMM (331826)

<u>Director and Principal Geotechnical Engineer</u>

ABS Africa (Pty) Ltd
Suit C2, Carlswald Close Office,
128 Seventh Road, Carlswald,
1685
South Africa
+27 11 805 0061

CERTIFICATE OF QUALIFIED PERSON

To accompany the Technical Report titled: "NI 43-101 Technical Report and Feasibility Study for Asanko Gold Mine, Ghana" prepared for Galiano Gold Inc. (the "Issuer") dated 28 March 2023, with an effective date of 31 December 2022 (the "Technical Report").

I, Faan Coetzee (Pr Sci Nat.), do hereby certify that:

1. I am a Director with ABS Africa (Pty) Ltd with an office at Suite 2 Block C, Carlswald Close Office Park, 128 Seventh Road, Carlswald, Midrand, 1685, South Africa,
2. I am a graduate of the North West University (previously the Potchefstroom University for Christian Higher Education) where I obtained a B.Sc. Hons in Environmental Management. Aside from the time spent studying at North West University, I have practiced my profession continuously since 1997. My relevant experience relates to the fields of sustainability and environmental management with exposure to various projects and operations in the mining, infrastructure and energy sectors. Fields of competence includes Resettlement Planning and Economic Displacement, Environmental & Socio-economic Impact Assessments, Environmental & Social Feasibility Studies, Environmental Management Programme Reports, Environmental Auditing, Environmental Due Diligence, Mining Closure Planning, Technical Reviews, Independent Competent Person's Reporting and Geographic Information Systems. Jurisdictions include South Africa, Zambia, Tanzania, Mali, Guinea, Ghana, Sudan, Botswana, Mozambique, Namibia, Armenia and Burkina Faso.
3. I am an Environmental Scientist registered with the South African Council for Natural Scientific Professions (Pr.Sci.Nat.) with registration number 40044/04.
4. I did visit the site between 31/10/2022 and 03/11/2022.
5. I have read the definition of "Qualified Person" set out in National Instrument 43-101 Standards of Disclosure for Mineral Projects ("NI 43-101") and certify that by virtue of my education, affiliation to a professional association and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
6. As a Qualified Person, I am independent of the Issuer as defined in Section 1.5 of NI 43-101.
7. I am a co-author of the Technical Report, responsible for relevant Sections 1.11, 20 (all), 21.1.6, and 25.2.6 of the Technical Report, and I accept professional responsibility for those sections of the Technical Report.
8. Prior involvement relating to the subject property include the following:
    a. Environmental Feasibility Study for the Esaase Project between 2012 and 2014.
    b. Calculation of the Asset Retirement Obligation during 2016 and again in 2019.
    c. Compilation of the 2019 PFS Report for the Expanded Obotan Project
9. As of the date of this certificate, to the best of my knowledge, information and belief, the portion of the Technical Report for which I am responsible contains all scientific and technical information that is required to be disclosed to make the portion of the Technical Report for which I am responsible not misleading.
10. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with NI 43-101 and Form 43-101F1.

Dated this 28th day of March 2023 in Johannesburg, Gauteng, South Africa.

"original signed"

Faan Coetzee (Pr.Sci.Nat.)
ABS Africa (Pty) Ltd

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1 Summary

1.1 Introduction

This report has been prepared by SRK Consulting (Canada) Inc. on behalf of Galiano Gold Inc. (Galiano). The purpose of this report is to provide a technical report that documents all supporting work, methods used and results relevant to a feasibility study (FS) that fulfills the reporting requirements in accordance with National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

1.2 Property Description and Ownership

Ghana is located in West Africa, sharing boundaries with Togo to the east, Cote d'Ivoire to the west, Burkina Faso to the north and the Gulf of Guinea to the south. The Asanko Gold Mine (AGM) tenements are in the Amansie West and South Districts of the Ashanti Region of Ghana, approximately 250 km northwest of the capital Accra and some 75 km southwest of the regional capital Kumasi.

The AGM areas are accessed from the town of Obuasi, northward towards Kumasi on the Kumasi-Dunkwa highway to the Anwiankwanta Junction. The AGM is accessed by travelling 35 km south to Anwiankwanta Junction, and then west into the AGM property on surfaced and un-surfaced all weather roads. The concessions cover an area of approximately 476 km^2 between latitudes 6º 19'40" N and 6º 28' 40" N; and longitudes 2º 00' 55" W and 1º 55' 00" W.

The AGM is located in hilly terrain dissected by broad, flat drainages that typically form swamps in the wet season between May and late October. Hill tops are generally at very similar elevations, reflecting the elevation of a previous erosional peneplane that is now extensively eroded. Maximum elevations are approximately 80 m above sea level (masl). Despite the subdued topography, hill slopes are typically steep. The concession areas are covered by a series of low, gently undulating hills, which rarely exceed 680 masl in elevation.

In general, the concession areas have been largely transformed, having experienced extensive degradation in recent years. The main land uses include secondary forest, subsistence and cash crop farming, and artisanal gold mining. The soils of the area fall within the Bekwai and Nzema Oda classification. The soils of the Bekwai series are found on the summits and some upper slope sites of the hills of the area.

The AGM concessions are owned 100% by Asanko Gold Ghana Limited (AGGL). The legal status of the mineral properties in Ghana in which AGGL has an interest have been verified by AGGL and by an independent legal entity, Kimathi Partners Corporate Attorneys based in Accra. As at 31 December 2022, all mineral tenements were in good standing with the Government of Ghana. Furthermore, it has been confirmed that the properties are lawfully accessible for evaluation and mineral production.

AGGL holds seven mining leases, nine prospecting licences and one reconnaissance licence, which collectively make up the AGM property and span over 40 km in length of the Asankrangwa Belt. The AGM is made up of a series of contiguous concessions in the Obotan and Esaase area. These concessions cover a total area of 476 km^2.

1.3 History, Exploration and Drilling

Gold rushes in the area occurred in 1898 to 1901 and again in the 1930s. Most of the AGM concessions, however, have no record of the work undertaken on the properties for this period. Interest in the area was renewed in the early 1990s mainly because of the successful exploration work carried out on the adjacent concession where the Nkran deposit is located. Artisanal mining has occurred at a number of the AGM target areas, focusing mainly on placer gold production. Prior to the AGM consolidation of the Keegan and PMI mineral assets in 2014, a number of satellite pit mining and evaluation projects were in operation.

The main producing mine in the area was the Obotan Mine (now Nkran Mine). Open pit mining commenced in February 1997. A total of 16.11 Mm^3 of material was excavated from the open pit at a production rate of 1.4 Mtpa. Following several re-designs, the pit was mined in two stages. A total of 7.82 Mt of material was milled at an average recovery of 89% at a reported reserve grade of 2.35 g/t (Brinckley 2001). The mine was closed in July 2001 after having produced 590,743 oz Au. Operations ceased due to low gold prices coupled with the requirement to push back the Nkran pit to access deeper reserves. The AGM dewatered the Nkran pit and re-commenced mining operations in February 2015, with the first gold produced in February 2016. Nkran Cut 2 mining completed in Q2 2020. The AGM has processed 790,824 oz of gold from Nkran to date.

The AGM commenced operations at Akwasiso in 2017 and recently completed mining Cut 3 in July 2022. A total of 165,938 ounces of gold was processed from the Akwasiso deposit. The Dynamite Hill deposit was discovered in 2013 and put into production in Q4 2017. Production ceased in late 2019 with a total of 93,411 oz of gold being processed. The AGM commenced operations at Esaase in 2018 processing 480,591 oz of gold from non-alluvial sources to date.

At Abore, Resolute Mining Limited (Resolute) conducted mining in the late 1990s to early 2000s. Mining targeted mainly oxides and transition material by open cast blast, load and haul to be processed at the old Nkran plant. A total of 1.88 Mt at 1.95 g/t Au was delivered to the ROM pad, containing a total of 117,453 oz of gold. Total production of 113,301 oz (recovered) was achieved, representing 96.3% recovery. At Adubiaso, Resolute mined mostly oxides and transition material from the deposit by open cast free dig, load and haul to the Nkran plant. Mining was from October 1999 to December 2000. As reported by Brinckley (2001), a total of 3.79 Mm^3 of material was excavated from Adubiaso open pit. A total of 0.70 Mt at 2.43 g/t Au was delivered to the ROM pad, containing a total of 54,654 oz of gold. Total production of 52,677 oz (recovered) was achieved. At Miradani North, some open pit mining was conducted to a vertical depth of 30 to 40 m by GPS Ghana Ltd.

Systematic exploration at the AGM concessions includes regional generative and near mine programs, targeting new gold deposits as well as further delineation of known Mineral Resources. Regional prospecting work was initiated in 2014 in collaboration with Corporate Geoscience Group (CGSG), and advanced drilling programs undertaken thereafter from early 2015. Follow-up to this work since 2017 includes:

- Reconnaissance mapping and sampling in of areas of exposure
- 3,000-line kilometre heli-borne versatile time-domain electromagnetic surveying (VTEM)
- Updated regional geological interpretation based on the interpretation of the VTEM survey
- Gradient array electrical geophysics survey over Esaase
- Discovery and drilling of the Miradani North deposit
- Drilling to Indicated Mineral Resource classification on the Miradani North and Abore targets
- Resource expansion of the Dynamite Hill and Abore deposits through exploration drilling.

The AGM has integrated historical databases with more recent and ongoing drilling programs. Surface drilling at the AGM included RC, DDH and RCD drilling. Drilling for Mineral Resource delineation focused on Nkran, Esaase, Miradani North, Dynamite Hill and Abore, although extensive drilling has also been undertaken at Akwasiso and Adubiaso. To date, a combined total of 4,773 evaluation air core (AC), DD, RC and RCD drillholes totaling 652,425 m have been drilled at the AGM deposits that are the subject of this Report, as well as additional grade control and other drillholes. Mineral Resource definition drilling at AGM mainly includes RC and DDH drilling.

1.4 Sample Preparation, Analysis and Security

Resolute, PMI and AGM have used various laboratories to prepare and assay samples collected on the various deposits within the AGM. These included SGS in Accra, Bibiani and Tarkwa, Min Analytical in Perth, ALS in Kumasi, Intertek in Tarkwa, Trans World (TWL) in Tarkwa, Performance Labs in Bibiani and AGM internal laboratory at the Nkran site (Table 1-1).

Since 2014, exploration samples are sent to either ALS laboratory in Kumasi, Intertek laboratory in Tarkwa, or the AGM mine laboratory at Obotan. ALS and Intertek are independent from Galiano. The AGM laboratory is not independent from Galiano.

Table 1-1 Laboratories and accreditation used by AGM (1996-2021)

Laboratory	Locality	Company	Period	Accreditation*
SGS	Accra	Historical	1995	Unknown
Inchcape	Obuasi	Resolute	1995-1997	Unknown
Analabs	Nkran Site	Resolute	1997-1998	Unknown
SGS	Bibiani	PMI	2009-2012	Unknown
SGS	Tarkwa	PMI	2010-2011	Unknown
Min Analytical	Perth	PMI	2011-2014	Unknown
ALS	Kumasi	PMI & AGM	2006-2021	2014-2018 – none 2018 – ISO/IEC 17025:2005 2020 – ISO/IEC 17025:2017
Trans World (TWL)	Tarkwa	PMI	2009-2010	Unknown
Intertek	Tarkwa	PMI & AGM	2010-2021	2014-2017 – none 2017-2019 – ISO/IEC 17025:2005 2019-2021 – ISO/IEC 17025:2017
Performance Labs	Bibiani	PMI	2010-2014	Unknown
AGM Laboratory	Nkran Site	PMI & AGM	2017-2022	None

** Scope of accreditation includes analysis for gold by fire assay followed by acid digestion and atomic absorption finish*

From 2014 onward, all sampling was performed by AGM staff. No metal jewelry is permitted to be worn by the AGM samplers to avoid contamination. Core samples were typically between 30 to 150 centimeters in length and weighed between 2 to 3 kilograms. Sample intervals were determined by the logging geologist respecting lithological boundaries, alteration zones and structural features. The sample preparation and analyses methodology used by the primary laboratories is summarized in Table 1-2.

Table 1-2 Laboratory sample preparation and gold assay techniques (2014-2022)

Laboratory	Locality	Period	Preparation	Au Assay Method	Lower Detection Limit
ALS	Kumasi	2014-2022	PREP-31 - 3 kg, or less of sample is dried, disaggregated, and jaw crushed with 70% passing 2 mm. Sample is pulverized to 85% passing 75 µm using an LM2 pulveriser. Two pulp samples are taken for analysis and pulp storage.	30 g FA AAS 30 g screen FA	0.01 g/t 0.5 g/t
Intertek	Tarkwa	2014-2022	Samples are crushed to 2 mm and pulverized to 75 µm.	FA, Leachwell bottle roll*	0.01 g/t 0.001 g/t
Asanko	Nkran Site	2017-2022	Samples are crushed to 2 mm and pulverized to 90% passing 75 µm in LM2 pulverisers. 250 g pulp sample taken for analysis.	FA, Leachwell bottle roll*	0.01 g/t 0.001 g/t

With the exception of Esaase and Akwasiso, all exploration samples collected by AGM were processed and stored at the AGM exploration facilities at Obotan. Esaase and Akwasiso samples are collected in staple-closed bags once taken from the rig or core-cutting facility. The samples are then transported to the project camp to be picked up by the laboratory truck and taken directly to the laboratory.

Quality control measures are set in place to ensure the reliability and trustworthiness of exploration data. These measures include written field procedures and independent verifications of aspects such as drilling, surveying, sampling and assaying, data management and databases integrity. Appropriate documentation of quality control measures and regular analysis of quality control data are important as a safeguard for project data and form the basis for the quality assurance program implemented during exploration.

Analytical control measures involve internal and external laboratory control measures implemented to monitor the precision and accuracy of sampling, preparation and assaying. They are also important to prevent sample mix-up and to monitor the voluntary or inadvertent contamination of samples.

Assaying protocols involve regularly duplicating and replicating assays and inserting quality control samples to monitor the reliability of assaying results delivered by the assaying laboratories. Check assaying is normally performed as an additional test of reliability of assaying results. This generally involves re-assaying a set number of sample rejects and pulps at a secondary umpire laboratory.

The exploration work carried out on the AGM during 2014 to 2022 was conducted by AGM personnel. AGM implemented a series of routine verifications to ensure the collection of reliable exploration data. All work was conducted by appropriately qualified personnel under the supervision of qualified geologists. To ensure procedural consistency for data collection, AGM followed written Standard Operating Procedures (SOPs) for all data collection, including procedural documents for collar surveys, down-hole surveys, drill core logging, sampling of drill core, RC chips, and core density, and analytical quality control.

Previous extensive data verification was undertaken by several independent consultants over the periods when Keegan and PMI owned the Esaase and Nkran properties respectively, prior to the AGM takeover of PMI and the merger of the two entities as Asanko Gold and the commencement of mining from the Nkran pit in 2015. These independent consultants included SRK (2011, 2012), Muller and Umpire (2014, 2016), and CSA Global (2016, 2019). In November 2020, AGM commissioned independent consultant Richard Minnitt to review the AGM laboratory procedures and data. Based on his review, no significant issues were identified. Mr. Minnitt visited the AGM mine laboratory multiple times in 2021, reviewed the process and interviewed the laboratory personnel, and is of the opinion that AGM laboratory was operating at industry standard.

As part of AGM's regular procedures, project staff visit the laboratories processing their samples on a regular basis. This was done to review the sample handling, preparation, and analytical procedures. A compilation of weekly, monthly, quarterly, bi-quarterly, and annual analytical quality control reporting, including data charting and results, is completed on the control sample assays.

In accordance with National Instrument 43-101 guidelines, several members of the SRK team visited the AGM to inspect the properties, conduct field investigations and discuss with AGM personnel. Qualified persons Dr. Oy Leuangthong, PEng (Mineral Resources), and Mr. Glen Cole, PGeo (Geology) visited the Project from 6-11 August 2022 accompanied by various technical AGM staff. The purpose of the site visit was to review all aspects that could materially impact the integrity of the exploration database, including core logging and sampling, as well as review the controls on gold mineralization. SRK was given full access to all relevant project data. During the site visit, all the project areas were visited to review local geology as well as historical mining activities and to verify information used for mineral resource modeling. The lithological contacts checked by SRK matched the information reported in the core logs.

1.5 Geology and Mineralization

The geology of Ghana is largely underlain by the West African craton. The craton consists of the Man-Leo (or Kénéma-Man) shield in the south (extending from Ghana to Senegal) and the Archaean Reguibat Shield in Mauritania to the north. They are separated by overlying younger sedimentary rocks of the Taoudeni Basin.

The AGM deposits are located within the Kumasi Basin, one of the intervening basins between the greenstone belts. Within this basin lies the Asankrangwa Gold Belt, which was recognized after decades of artisanal mining in gold-bearing, shear zone hosted quartz reefs. The basin is bound to the southeast by the Ashanti Fault/Shear and the Bibiani Shear to the northwest. The Asankrangwa Belt expresses itself as a complex of northeast-trending shear zones situated along the central axis of the Kumasi Basin. Several major northeast-trending shears/structures bisect the Kumasi Basin/Asankrangwa Belt. The Nkran deposit is located on a jog along the regional 35-40° trending Nkran Shear, which is a zone about 15 km in width and may be traced on a northeast to southwest trend for 150 km. The Nkran Shear Corridor also hosts the Asuadai, Dynamite Hill, and Akwasiso deposits. The parallel Esaase Shear Corridor hosts the Esaase, Adubiaso, and Abore deposits. The Miradani Shear Corridor hosts the Tontokrom, Miradani, and Fromenda deposits.

The AGM deposits are hosted along the NE-SW Asankrangwa structural shear corridor, which is defined by NE-SW trending lineaments and magnetic lows and is about 7 km wide and over 50 km long (Table 1-3).

Table 1-3 Summary of mineralization control and host rock by deposit

Deposit	Mineralization Control	Main Host Rock
Nkran	D2 shear + granitoid + linking QVs	Quartz (Qtz) sandstone + granitoid + quartz veins (QVs)
Nkran Extension	D2 shear + Late conjugate QVs	Qtz sandstone
Esaase	D2 shear + tensional QVs	Highly deformed sandstone-siltstone-shale + QVs
Akwasiso	D2 shear + granite + Late conjugate QVs	Qtz sandstone + granite + QVs
Abore	D2 shear + granite dyke + Late conjugate QVs	Granite + QVs
Asuadai	D2 + Granite + late conjugate QVs	Granite + QVs
Adubiaso	D2 shear + granite dyke + Late conjugate QVs	Qtz sandstone + granite
Adubiaso Ext	D2 shear + late conjugate QVs	Qtz sandstone
Miradani North	D2 shear + sub-horizontal linking QVs	Qtz sandstone + tonalite + QVs
Midras South	D2 shear + linking QVs	Qtz sandstone

1.6 Mineral Resource Estimate

The AGM is comprised of nine deposits: Nkran, Esaase, Abore, Miradani North, Midras South, Adubiaso, Akwasiso, Asuadai and Dynamite Hill. The mineral resource model for Nkran was prepared by CSA Global Ltd (UK). The mineral resource models for Esaase, Abore, Miradani North, Midras South, and Adubiaso were prepared by SRK.

Mineral Resources and Mineral Reserves have been prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated May 19, 2014 (CIM (2014) definitions) and CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines dated November 29, 2019. The effective date of the Mineral Resource Statement is 31 December 2022.

The QPs are 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. Other relevant factors that may materially affect the Mineral Resources, including mining, metallurgical recovery, and infrastructure are reasonably well understood according to the assumptions presented in this report.

The Mineral Resource statement for the AGM is provided in Table 1-4. Mineral Resources are reported at various cut-off grades using a gold price of US$1800/oz.

Table 1-4 Mineral Resource statement, AGM, Ghana, as at 31 December 2022

Category	Deposit	Tonnage (Mt)	Grade (g/t Au)	Contained Metal (koz Au)
Measured	Nkran			
	Esaase			
	Abore			
	Miradani North			
	Adubiaso			
	Midras South			
	Akwasiso			
	Asuadai			
	Dynamite Hill			
	Stockpiles	7.4	0.67	158
	Total Measured	**7.4**	**0.67**	**158**
Indicated	Nkran	15.3	1.89	931
	Esaase	30.6	1.25	1,227
	Abore	12.8	1.16	477
	Miradani North	7.9	1.39	352
	Adubiaso	3.1	1.47	148
	Midras South			
	Akwasiso	1.4	1.16	52
	Asuadai	1.6	1.23	64
	Dynamite Hill	2.2	1.34	95
	Stockpiles			
	Total Indicated	**75.0**	**1.39**	**3,346**
Measured + Indicated	Nkran	15.3	1.89	931
	Esaase	30.6	1.25	1,227
	Abore	12.8	1.16	477
	Miradani North	7.9	1.39	352
	Adubiaso	3.1	1.47	148
	Midras South			
	Akwasiso	1.4	1.16	52
	Asuadai	1.6	1.23	64
	Dynamite Hill	2.2	1.34	95
	Stockpiles	7.4	0.67	158
	Total Mea + Ind	**82.3**	**1.32**	**3,504**
Inferred	Nkran	3.6	1.83	209
	Esaase	8.2	1.26	334
	Abore	3.6	1.14	131
	Miradani North	2.9	1.30	122
	Adubiaso	0.1	1.05	3
	Midras South	5.4	1.32	232
	Akwasiso	0.2	1.28	9
	Asuadai	0.1	1.29	4
	Dynamite Hill	1.0	1.24	40
	Stockpiles			
	Total Inferred	**25.1**	**1.34**	**1,084**

** Mr. Malcolm Titley, MAIG of CSA Global UK is the Qualified Person responsible for the Nkran Mineral Resource statement. Dr. Oy Leuangthong, PEng and Mr. Glen Cole, PGeo of SRK Consulting (Canada) Inc. are Qualified Persons responsible Mineral Resource statements for Esaase, Abore, Miradani North, Adubiaso, Midras South, Akwasiso, Asuadai and Dynamite Hill.*

Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates. Due to rounding, some columns or rows may not compute exactly as shown.

Reported within an optimized pit shell assuming a price of USD1,800 / oz gold and using various cut-off grades: 0.40 g/t gold for Nkran; 0.50 g/t in Oxides and 0.60 g/t gold in Transition and Fresh for Esaase; and 0.45 g/t gold for all other deposits.

Metallurgical recovery of 94% for all deposits, except in Esaase, where gold recoveries vary based on lithology.

All tonnages are reported as in situ dry tonnes.

Mineral Resources are inclusive of Mineral Reserves.

Galiano's share of the project on an equity basis is 45%. All quantities are reported on a 100% basis.

1.7 Mineral Reserve Estimate

The Mineral Reserve estimate for the AGM has been prepared as part of the 2022 Feasibility Study. This Mineral Reserve estimate has been prepared in accordance with the CIM Definition Standards adopted May 2014.

The Mineral Reserves were derived from the mineral resource block models and stockpiled mineral resources that are presented in Section 14. The Mineral Reserves respective of the six open pits are based on Indicated mineral resources that have been identified as being economically extractable and which incorporate mining losses and mining waste dilution. The Mineral Reserves include 41.7 Mt of mineable ore from six open pits and 7.2 Mt of existing stockpile material at an average grade of 1.43 g/t and 0.67 g/t, respectively. The Mineral Reserve includes variable mining dilution for each pit and it is calculated after 2% ore loss. The reference point for the Mineral Reserve estimate is the point where the ore is delivered to the processing plant. A summary of the surface mineable Mineral Reserves by pit is shown in Table 1-5.

Table 1-5 Summary of the Mineral Reserves for AGM, Ghana, as at 31 December 2022

Deposit	Proven			Probable			Total		
	Tonnes (Mt)	Au Grade (g/t)	Au Content (koz)	Tonnes (Mt)	Au Grade (g/t)	Au Content (koz)	Tonnes (Mt)	Au Grade (g/t)	Au Content (koz)
Nkran				9.9	1.82	582	**9.9**	**1.82**	**582**
Esaase				13.6	1.22	532	**13.6**	**1.22**	**533**
Miradani North				6.8	1.41	310	**6.8**	**1.41**	**310**
Abore				8.2	1.27	334	**8.2**	**1.27**	**334**
Dynamite Hill				1.1	1.31	45	**1.1**	**1.31**	**45**
Adubiaso				2.2	1.58	110	**2.2**	**1.58**	**110**
Stockpiles	7.2	0.67	155				**7.2**	**0.67**	**155**
Total Reserve	**7.2**	**0.67**	**155**	**41.7**	**1.43**	**1,913**	**48.9**	**1.31**	**2,068**

Notes:

- *The effective date of the Mineral Reserve is 31 December 2022.*
- *Mineral Reserves are reported assuming a gold price of US$1,500/oz Au.*
- *Mineral Reserves are defined within six different pit designs guided by pit shells derived from the optimization software, GEOVIA Whittle™ and Datamine Studio NPVS™.*
- *Cut-off grades vary based on the deposit. Nkran is close to the mill and contains only fresh ore. The Mineral Reserves are reported at 0.40 g/t Au cut-off for the fresh ore in Nkran. For Esaase, Mineral Reserves are reported at cut-offs of 0.55 g/t Au for the oxide ore and 0.70 g/t Au for the remaining ore types. For all other open pits, the Mineral Reserves are reported at 0.5 g/t Au cut-off for all ore types.*
- *Mining costs vary based on the pit, the rock type, and the depth of the pit. The average mining costs for Nkran, Esaase, Miradani North, Abore, Dynamite Hill and Adubiaso are $2.44/t, $1.98/t, $1.94/t, $2.00/t, $2.29/t and 2.06/t, respectively. There are additional expenditures for fixed contractor monthly fees, grade control, community fees, Owner's Mining G&A, and other small costs that vary with each deposit and are in addition to the $/t stated.*
- *Ore transportation cost varies for each pit based on the haul distance. It ranges between $0.61/t for Nkran and $6.15/t for Esaase.*
- *Processing cost is $8.81/t for oxide ore, $10.39/t for transition ore and $10.66/t for fresh ore.*
- *General and administration costs are $6.69/t for Esaase and $6.19/t for all other pits.*
- *Processing recovery is 94.0% for all ore types in all pits except for Esaase. Processing recovery varies based on the ore type and head grade in Esaase, where the average recovery for oxide, Upper Sandstone, Cobra and Central Sandstone ore types are 90.1%, 73.8%, 71.3% and 76.4%, respectively.*
- *Mining dilution varies between pits. The average mining dilution is calculated to be 11.9%, 14.4%, 6.0%, 10.8%, 11.6% and 15.3%, for Nkran, Esaase, Miradani North, Abore, Dynamite Hill and Adubiaso, respectively.*
- *A 2% ore loss has been applied to the total reserve in each pit and for the stockpiles.*
- *Figures are rounded to the appropriate level of precision for the reporting of Mineral Reserves. Due to rounding, some columns or rows may not compute as shown.*
- *The overall strip ratio (the amount of waste mined for each tonne of ore) for AGM is 7.21 (W:O). The strip ratio for Nkran, Esaase, Miradani North, Abore, Dynamite Hill and Adubiaso is 13.5, 4.5, 5.6, 4.8, 9.8, and 8.2 respectively.*
- *The Mineral Reserve is stated as diluted dry metric tonnes.*
- *The mine plan underpinning the Mineral Reserves has been prepared by SRK Consulting (Canada) Inc.*

The QP, Dr. Anoush Ebrahimi, does not know of any legal, political, environmental, or other risks that could materially affect the potential development of the Mineral Reserves. Dr. Ebrahimi believes the risks regarding permitting and socio-economic factors are low.

1.8 Mining

There are several mineral deposits at the AGM that are in different stages of exploration and advancement. Six deposits are viable to be mined by conventional truck and shovel open pit mining techniques; they are: Nkran, Esaase, Miradani North, Abore, Dynamite Hill and Adubiaso.

All pits will utilize truck-loader mining methods operated by contractors as has traditionally been the case at the AGM. Ore and waste material will be drill and blasted as required in 6 m benches, loaded using front-end loaders or backhoe excavators and then hauled using a mix of articulated and rigid body trucks. Mining will be operated by experienced contractors using either 40-t CAT 740 and/or 91-t CAT 777 trucks, depending on pit size and equipment availability.

All six pits in this report were previously subject to mining activities. The last mining activity at the AGM was in the Esaase pit, terminated in May 2022, followed by the Akwasiso pit, terminated in July 2022; however, the mill continues operations using stockpiled ore.

There are ROM stockpiles near each pit and ROM stockpiles near the primary crusher adjacent to the processing plant. Ore from Esaase, Abore, Miradani North and Dynamite Hill will be stockpiled adjacent to the pits and then hauled by contractors to the processing plant near the Nkran pit. The Nkran and Adubiaso pits are close to the mill, so some ore will be directly fed to the crusher.

Bench geometries were determined by SRK geotechnical guidance and AGM operational experience and are specific to each pit.

Haulage roads are for two-way traffic for the upper parts of the pits and one-way for the last two or three benches in the pits. In some cases, the last one or two benches were assumed to be mined by smaller equipment, utilizing temporary ramping.

Pits were designed to best follow optimized pit shells and minimize strip ratios, while honouring geotechnical guidance, safety standards, and other spatial constraints, such as previously mined pit walls and regulatory boundaries relating to nearby villages and other infrastructure.

Waste materials will be hauled to the waste storage facilities (WSFs) located near each pit.

Two SRK mining engineers visited the mine site in June and August 2022. They concluded that the mining operations were sound and the use of Ghanaian mining contractors has been safe and cost effective.

1.9 Mineral Processing and Metallurgy

Metallurgical testwork programs were conducted during 2022 in support of the Feasibility Study for Esaase, Nkran, Abore and Midras. Summary of all recovery relationships is summarized in Table 1-6.

The focus of the metallurgical testwork conducted in support of this FS for Esaase was on Fresh ore material. While a sample of Oxide material was included in the testwork program, this was largely for confirmation purposes. The recovery model that has been used by AGM in recent times for Oxide material from Esaase has been based on the use of a fixed tailings grade of 0.10 g/t Au. SRK considers this approach to be valid going forward, noting that the tailings grade reported for the Oxide sample in the recent Esaase testwork was also 0.10 g/t Au. The recoveries developed for Esaase Fresh and Transition ore considered all of the relevant metallurgical testwork data and for which data was available that identified the drillhole intervals that made up each particular composite or sample. The interval information was then cross-checked against the new lithostructural model developed as part of this FS to assign an oxidation stage and a lithology to each sample based on the most recent interpretation of the orebody. Due to the preg-robbing behaviour exhibited at Esaase, the predicted recoveries from the testwork derived recovery-head grade equations have been discounted by 11.14%, as per a comparison of recoveries between predicted and actual when Esaase low grade material was fed through the plant.

The available testwork data for Nkran, both historical and current, supports the ongoing use of a recovery figure of 94%.

Similarly, recovery figures of 94% have been quoted for the Obotan satellite deposits (Abore, Miradani North, Akwasiso, Dynamite Hill, Adubiaso, Midras South), mainly based on those periods over the past few years when these ores were fed to the AGM plant, albeit as a minor blend component, with Nkran ore representing the major blend component. However, the available historic testwork, together with some older sole plant feed data, support the ongoing use of this figure for these deposits.

Table 1-6 Summary of recovery relationships

Orebody	Oxidation Level	Lithology	Recovery Relationship
Esaase	Oxide	All	Fixed tails grade: 0.1 g/t Au
	Transition & Fresh	Hawk & USS	Recovery = 8.26 * ln(Au head grade) + 73.86
		Cobra	Recovery = 2.70 * ln(Au head grade) + 71.14
		CSS & FWS	Recovery = 6.98 * ln(Au head grade) + 74.38
Nkran	All	All	Fixed recovery: 94%
Abore	All	All	Fixed recovery: 94%
Miradani North	All	All	Fixed recovery: 94%
Akwasiso	All	All	Fixed recovery: 94%
Dynamite Hill	All	All	Fixed recovery: 94%
Adubiaso	All	All	Fixed recovery: 94%
Midras South	All	All	Fixed recovery: 94%
Stockpiles	All	All	Fixed recovery: 85%; minimum 0.1 g/t Au tails grade

The existing process plant located at Obotan is capable of processing approximately 5.8 Mtpa of total mill feed. Before the period of stockpile processing, the plant was fed primarily with ore from Esaase supplemented by feed from Akwasiso. The milling circuit is configured as a SAG milling, ball milling, crushing circuit (SABC circuit) comprising a primary SAG mill, a secondary ball mill and a pebble crushing circuit.

Gravity concentrate originating from the three milling gravity recovery concentrators is treated in two ILRs. These reactors contain elevated levels of cyanide, caustic soda, catalyst and oxygen to enable maximum leaching of the precious metals in the concentrate.

The CIL circuit comprises 8 agitated tanks, numbered 0 to 7. This follows the conversion, in October 2021, of the pre-oxidation tank to CIL operation.

As per International Cyanide Management Code (ICMC) guidelines, the CIL tailings need to be discharged with a final cyanide concentration of less than 50 g CNWAD/m3 at the TSF spigot. The current plant operating parameters utilize hydrogen peroxide as needed for cyanide detoxification of the CIL tailings. Provision has been made to use the INCO air/SO2 process for cyanide detoxification.

The current detoxification circuit comprises a cyanide destruction feed box, gravity feeding into a single agitated tank, with a blower air sparging facility.

Electrowon gold is recovered from the cathodes and the electrowinning cells using high pressure water jet sprays. The precious metal slurry is then filtered and dried in a drying oven at approximately 110°C to remove associated moisture. Once dried, the precious metal powder is smelted in the melting furnace at approximately 1,700°C with fluxes, such as borax, sodium carbonate and silica to remove base metallic impurities such as copper, iron etc. The molten bullion mixture is then poured in moulds, allowed to solidify, cleaned, sampled and stamped with the mine name and sequential bar number. Gold content varies from 85% to 90%, with approximately 10% silver and approximately 2% to 5% base metal content. The bars are dispatched periodically to a refiner for production of 99.99% gold bars.

1.10 Infrastructure

The Obotan plant commenced production in early 2016. The plant was erected close to the Nkran deposit and several satellite orebodies. The plant is currently processing 5.8 Mtpa of material.

Current site infrastructure includes:

- An established mining operation with various structures, including offices, stores, workshops and fuel storage facilities (Obotan and Esaase); exploration camp/office and core shed (Esaase)
- A CIL process plant with various structures, including offices, stores, workshops and reagent storage / mixing facilities (Obotan)
- An administration block, training facilities, exploration offices, core storage area, clinic and analytical laboratory (Obotan)
- Senior and junior accommodation facilities located to the west of the Nkran pit (Obotan)
- Tailings storage facility (Obotan)
- Waste rock dumps at Nkran, Akwasiso, Dynamite Hill and Esaase
- Multiple boreholes for water supply
- Water treatment plant (in place at Esaase; under construction at Obotan)
- A 161 kV incoming power line from the Asawinso substation (Obotan); 33 kV overhead power line supplied by the Electricity Company of Ghana (Esaase)
- Mobile communications facilities (a Vodafone tower is located at the Obotan camp and MTN connectivity is also available)
- Community services including hospital and community boreholes

The Esaase to Obotan haul road is approximately 28 km long. The haul road route goes through thick vegetation, farmlands and artisanal mining areas. It also crosses various local gravel roads, one paved district road and a few overhead power lines. The Miradani North to Obotan haul road is not yet constructed but will be approximately 11 km. The envisaged haul road route will also service the Midras deposit.

The Esaase site is accessed by existing public roads from two directions via three routes:

- Kumasi/Sunyani road to the north-east (sealed road)
- Kumasi/Obuasi road to the south (sealed road)
- Kumasi/Manso Nkwanta road (sealed road), with the last 15 km being AGM's private haul road

Roads from both directions are gravel topped for the last 20 km to the Esaase site, with conditions that can be described as fair to poor. The process plant is accessed by the Kumasi/Manso Nkwanta road.

The surface water management system consists of two separate systems:

- A clean water diversion system to control run-off from higher lying natural environment
- A storm water system to capture contaminated storm water from operational areas

Water accumulated within the clean water system is diverted around areas of disturbance and directed towards natural watercourses.

1.11 Environment and Permitting

Two key regulatory permits required for the AGM were:

- The Mine Operating Permits (MOP) issued by the Minerals Commission in respect of mining leases
- The Environmental Certificate issued by the EPA in respect of mining operations

Following the required engagements, regulatory site visits, and submission of the relevant documentation, the AGM has successfully obtained and renewed its Mine Operating Permits since commencement of operation in 2016 and is currently operating under the 2021 MOPs issued on 12 January 2021 in respect of the following leases, all of which form part of the operational complex of the AGM. The latest Environmental Certificate for the AGM (gold mining and mineral processing) was issued on 30 July 2021 and is valid for three years, following which it will be due for renewal.

AGM is currently implementing the preventative approach to environmental management with the primary objective of limiting negative environmental impacts from the operational activities, whilst maximizing positive benefits. Where possible, AGM seeks to minimize such negative impacts through appropriate mitigation measures. This approach fulfils the aspirations of the corporate policy on the environment, environmental performance management systems, and various impact-specific environmental action plans.

AGM maintains an extensive programme for the regular monitoring of surface and groundwater quality. As per International Cyanide Management Code (ICMC) requirements, weekly sampling is conducted at cyanide facility areas for free cyanide, WAD-cyanide, and total cyanide levels. Pit water quality is also monitored monthly with additional monitoring conducted prior to any necessary discharges. Multiple locations within the TSF surrounds are monitored daily to enable detection of any potential discharges.

Although post-mining land uses are likely to be agriculturally oriented, a terrestrial fauna survey will be undertaken during the closure phase to assess habitat regeneration as well as compliance with AGM's Reclamation and Closure Plans.

AGM's reclamation objective is to ensure that the site is left in a condition that is safe and stable where long-term environmental impacts are minimized and any future liability to the community and future land use restrictions are minimized.

The final post-mining land use will be determined in consultation with the EPA, other Ghanaian government institutions, stakeholders, and local communities. Natural soil covers and vegetation will as far as possible be re-established over the disturbed areas.

Financial provision for reclamation and closure are made in accordance with the requirements of the Reclamation Security Agreement (RSA) that has been entered into between the mine and the EPA.

1.12 Cost Estimation

Most of the infrastructure to support the life of mine (LoM) is already in place and continues to be in operation as at the effective date of this report.

In 2018, the AGM commenced development of the Esaase orebody. All existing infrastructure between Obotan and Esaase, including a 28-km haul road, is established and is presently utilized for haulage of the stockpile material. The AGM also constructed infrastructure to support the mining of satellite deposits at Akwasiso and Dynamite Hill. The Akwasiso deposit was in production until 2022, and the Dynamite Hill deposit was in production between 2017 to 2019.

New infrastructure required to support the current LoM includes:

- New 11-km haul road to Miradani North deposit
- Utilities for newly established sites (Abore, Adubiaso, and Miradani North)
- Crop compensation and partial resettlement of affected structures/land within 500 m buffer of pits
- Diversion of affected public roads
- Contractor site establishment (admin building, change house, workshop, laydown, mess, etc.)
- TSF Stages 7 and 8; note Stage 7 is under construction at the time of this report

Capital costs are summarized below in Table 1-7. The base date for the capital cost estimate is Q4 2022 and it is expressed in US dollars.

Table 1-7 Capital expenditure summary

Description	Total ($000 USD)
Growth Capital	
Capitalized Waste Stripping (Nkran)	258,532
Site Establishment	58,361
Total Growth Capital	**316,893**
Sustaining Capital	
Capitalized Waste Stripping	169,846
Site Establishment	23,024
Tailings Storage Facility and Water Treatment	44,748
Plant and Infrastructure	27,477
Total Sustaining Capital	**265,095**
Closure and Reclamation	**80,857**
Total Capital Cost	**662,845**

The AGM LoM operating costs are summarized in Table 1-8.

Table 1-8 Operating expenditure summary

Description	LoM Total ($000 USD)	Cost per oz (US$/oz)
Mining, Ore Transport and Rehandling	824,499	447
Processing Cost	528,273	286
Site and Corporate G&A	293,534	159
Royalties	161,960	88
Transport and Refining	8,251	4
Total Operating Cost	**1,816,517**	**984**

Note: Mining costs above are exclusive of deferred stripping

Mining costs are primarily based on competitive tenders obtained by the AGM in Q4 2021. Major mining contractors prevalent in Ghana submitted tenders for the Nkran, Esaase and Abore deposits. The scope of work within the tender included contractor site establishment, mobilization and demobilization, monthly management fees, dewatering, drill & blast, load & haul, and unit rates for other miscellaneous activities.

Processing costs are based on first principle calculations for power, reagents, process consumables, labour, maintenance and other fixed costs. Supply costs are based on actual site unit supply cost data.

The current G&A cost structure at the AGM and its corporate G&A costs in Accra were analyzed to support the G&A component of the operating cost estimate.

1.13 Economic Analysis

Life-of-mine physical and financial metrics are provided in Table 1-9.

Table 1-9 LoM economic analysis summary

General[1]	Units	Value
Gold price assumption (base case)	$/oz	1,700
Average gold production	*oz/year*	217,000
Peak average gold production (2025 to 2030, inclusive)	*oz/year*	254,000
Total gold production	*Moz*	1.8
Mine life	*years*	8.5
Total ore mined	million tonnes	41.7
Average mill head grade	*g/t Au*	1.31
Average mill recovery rate	*%*	89%
Proven and Probable Mineral Reserves	*Moz Au*	2.1
Economics		
Net present value (NPV 5%) *(pre-tax)*	*$ M*	477.8
LoM cumulative cash flow *(pre-tax)*	*$ M*	673.7
Net present value (NPV 5%) *(after-tax)*	*$ M*	343.3
LoM cumulative cash flow (*after-tax)*	*$ M*	490.8
Operating Costs		
Mining cost[2]	*$/t mined*	3.66
Processing cost	*$/t milled*	10.80
G&A cost[3]	*$/t milled*	6.00
Total cash costs[4]	*$/oz sold*	905
AISC[4]	*$/oz sold*	1,143
Capital Costs		
Development capital (excluding deferred stripping)	$ *M*	58.4
Sustaining capital (excluding deferred stripping)	$ *M*	95.2
Closure costs	*$ M*	80.9

1 Unaudited as at December 31, 2022
2 Mining costs include deferred stripping of $428.4M (LoM) and ore transportation of $101.3M (LoM)
3 G&A costs include management fees payable to Galiano of approximately $7.0M per year
4 Non-IFRS performance measures; total cash costs are exclusive of capitalized stripping, corporate G&A, rehabilitation accretion, sustaining capital, and capitalized lease payments

The sensitivity of project value, as measured by post-tax NPV(5%), to changes in various key input assumptions is presented in Table 1-10.

Table 1-10 Sensitivity analysis

Change	Mining OPEX	Other OPEX	Capital Costs	Gold Price
-15%	450.5	414.3	358.5	99.7
-10%	414.7	390.6	353.4	183.4
-5%	379.0	367.0	348.4	261.9
0% (Base Case)	**343.3**	**343.3**	**343.3**	**343.3**
5%	307.5	319.6	338.3	424.8
10%	272.7	295.8	333.2	506.3
15%	239.0	272.8	328.1	587.8

Project value is most sensitive to changes in gold price. Project NPV changes by approximately US$16M for every 1% change in gold price. This sensitivity is very similar for other parameters that directly affect revenue, such as grade and recovery. Project value is least sensitive to changes in capital expenditures, with NPV changing by approximately US$1M for every 1% change in capital cost.

2 Introduction

2.1 Terms of Reference

SRK was commissioned by Galiano to conduct a feasibility study and lead an NI 43-101 technical report on its AGM located in Ghana, West Africa. Additional contributors to the study and report are from CSA Global Ltd. (UK), Resource Engineering Consultants (Pty) Ltd. and ABS Africa (Pty) Ltd.

Galiano is a gold mining company listed on the TSX and NYSE, with headquarters at 1640-1066 West Hastings Street, Vancouver, British Columbia (https://www.galianogold.com). Galiano's flagship project is the jointly owned AGM. Galiano and Gold Fields Limited (JSE & NYSE: GFI) jointly each own a 45% interest in Asanko Gold Ghana Limited (AGGL), with the Government of Ghana retaining a 10% free-carried interest. The AGM concessions are owned 100% by AGGL.

The AGM is a large scale, multi-deposit gold asset, which is managed and operated by Galiano. The mine was built in 2015, with first gold poured in January 2016, and commercial production commencing in April 2016. The AGM has produced an average of approximately 230,000 ounces of gold per year from 2017 to 2021 and had a peak gold production of approximately 251,000 ounces in 2019. AGGL holds the largest land package on the prospective Asankrangwa Gold Belt.

The AGM is a multi-deposit complex with six deposits in the LoM plan – Nkran, Esaase, Abore, Miradani North, Adubiaso, and Dynamite Hill; and an operating carbon-in-leach processing plant with a current capacity of approximately 5.8 Mtpa.

This NI 43-101 technical report summarizes the AGM operations, LoM plan, and updated Mineral Reserves and Mineral Resources, effective December 31, 2022. The report updates all material information on the AGM, supports the disclosure of updated Mineral Reserve and Mineral Resource estimates, and supports the scientific and technical content in Galiano's Annual Information Form filing.

2.2 Qualified Person Responsibilities

The qualified persons (QPs) preparing this report are specialists in the fields of geology, metallurgy and mineral processing, exploration, mineral resource and reserve estimation, mine engineering, water and waste management, and economic analysis.

The following individuals, by virtue of their education, experience and professional association are considered QPs as defined in NI 43-101 and are members in good standing of appropriate professional institutions / associations. The QPs are responsible for the specific report sections as provided in Table 2-1.

Table 2-1 QP responsibilities and site visits

Qualified Person	Company	QP Responsibility / Role	Report Section(s)
Bob McCarthy	SRK	Mine Costing, Infrastructure	1.1, 1.2, 1.10, 1.12, 1.13, 2 (all), 3 (all), 4 (all), 5 (all), 6 (all), 18 (except 18.5, 18.6), 19 (all), 21 (except 21.1.3, 21.1.4, 21.1.6, 21.2.2, 21.2.3), 22 (all), 23 (all), 24 (all), 25.1, 25.2.5, 25.2.7, 25.2.8, 27 (all)
Glen Cole	SRK	Geology	1.3, 1.4, 1.5, 7 (all), 8 (all), 9 (all), 10 (all), 11 (all), 12 (all), 14.2.2, 14.3.2, 14.4, 25.2.1, 26.1, 26.2, 26.4
John Willis	SRK	Metallurgy & Mineral Processing	1.9, 13 (all), 17 (all), 21.1.4, 21.2.2, 25.2.4
Oy Leuangthong	SRK	Resource Estimation	1.6 (not Nkran), 14 (except 14.1, 14.2.2, 14.3.2), 25.2.1 (not Nkran)
Malcolm Titley	CSA Global	Resource Estimation	1.6 (only Nkran), 14.1, 14.4 (only Nkran), 25.2.1 (only Nkran)
Anoush Ebrahimi	SRK	Mining and Mineral Reserves	1.7, 1.8, 15 (except 15.2.8), 16 (except 16.2.1 to 16.2.4), 25.2.2, 25.2.3, 26.3
Desmond Mossop	SRK	Mine Geotechnical	15.2.8, 16.2.1, 16.2.2, 16.2.3
Ismail Mahomed	SRK	Hydrogeology	16.2.4
Mitch Hanger	REC	Tailings Management	18.5, 18.6, 21.1.3, 21.2.3
Faan Coetzee	ABS Africa	Environment and Permitting	1.11, 20 (all), 21.1.6, 25.2.6

2.3 Sources of Information

This report is based on information collected by the QPs during site visits and on additional information provided by Galiano throughout the course of the study and report preparation. Other information was obtained from the public domain. The QPs have no reason to doubt the reliability of the information provided by Galiano or obtained from the public domain. This technical report is based on the following sources of information:

- Discussions with Galiano and AGM on-site personnel and management
- Inspection of the site, including surface facilities and drill core
- Review of exploration and historical mining data collected by Galiano
- Previous studies completed on the AGM
- New testwork completed during the course of this study by Galiano or by the QPs or their designates
- Additional information from public domain sources

2.4 Site Inspections

The list of QPs and dates of their most recent personal site inspections are summarized in Table 2-2.

Table 2-2 List of QPs and site inspection dates

Qualified Person	Company	Date(s) of Site Visit
Bob McCarthy	SRK	27 – 29 June 2022
Glen Cole	SRK	6 – 11 August 2022
John Willis	SRK	27 – 29 June 2022
Oy Leuangthong	SRK	6 – 11 August 2022
Malcolm Titley	CSA Global	12 – 15 July 2022
Anoush Ebrahimi	SRK	6 – 11 August 2022
Desmond Mossop	SRK	14 – 21 October 2022
Ismail Mahomed	SRK	n/a
Mitch Hanger	REC	8 to 11 August 2022
Faan Coetzee	ABS Africa	31 October – 3 November 2022

2.5 Effective Date

The effective date of this report is 31 December 2022, after which date, no additional material information has been collected or analyzed whose exclusion would invalidate the results of the technical study.

2.6 Declaration

The opinions of the QPs contained herein are based on information collected throughout the course of their investigations, which in turn reflect various technical and economic conditions at the time of writing. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. Consequently, actual results may be more or less favourable.

This report may include technical information that requires subsequent calculations to derive sub-totals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, the QPs do not consider them to be material.

None of the QPs or any associates employed in the preparation of this report has any beneficial interest in Galiano and neither are insiders, associates nor affiliates. They are independent of Galiano. The results of this report are not dependent upon any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings between Galiano and the QPs. The QPs are being paid a fee for their work in accordance with normal professional consulting practice.

2.7 Units and Currency

The units of measure used in this report are as per the International System of Units (SI) or “metric”, except for Imperial units that are commonly used in industry (i.e., troy ounces (oz.) for the mass of precious metals, US gallons per minute (gpm) for water flow rates).

All dollar figures quoted in this report refer to United States dollars (US$, USD or $) unless otherwise noted.

3 Reliance on Other Experts

For the purpose of this report, the QPs have relied on other experts for information regarding mineral rights, surface rights, agreements, political and permits as noted below.

The QPs have not reviewed the mineral tenure, nor verified the legal status or ownership of the property or underlying property agreements, including permits. As such, the QPs have fully relied upon, and disclaim responsibility for information derived from the following document:

- Kimathi & Partners, “Title Opinion: Relating to the Mineral Rights Owned by Asanko Gold Ghana Limited and Adansi Gold Ltd”, prepared 31 December 2022

This information was prepared by Mr. Kimathi Kuenyehia Sr., Managing Partner of Kimathi & Partners, Corporate Attorneys, who act as legal counsel to AGGL and Adansi Gold Limited.

This document includes information concerning property licenses and mineral tenure, legal status, permits and royalties. This information is used in Section 4 of the report.

4 Property Description and Location

4.1 Ghana

The AGM is located in Ghana. Ghana is in West Africa, sharing boundaries with Togo to the east, Cote d'Ivoire to the west, Burkina Faso to the north and the Gulf of Guinea to the south.

The country is known to hold a significant portion of West Africa's gold deposits and has long attracted investors looking to trade and invest in its mineral riches. According to recent global statistics on gold production, Ghana is the world's sixth and Africa's largest gold producer. In addition to gold, the country has other mineral resources such as manganese, bauxite, and diamonds. Gold is Ghana's most important export commodity. Other top exports include crude cocoa and timber products.

Ghana has an estimated population of 33 million (2022 estimate) and covers an area of approximately 238,530 km². Ghana's population is ethnically diverse. The Akans account for majority of the population. Other significant ethnic groups include the Mole-Dagdani, Ewe, Ga-Adamgbe Gruma, and Grussi. Despite the prominence of these cultures, English, a legacy of British colonial rule, has become the official language.

In 1957, Ghana, (formerly known as the Gold Coast), became the first country in sub-Saharan Africa to gain independence. Ghana has been a stable democracy since 1992, which marked the drafting of a new constitution. Ghana is governed under a multi-party democratic system, with elected presidents allowed to hold power for a maximum of two terms of four years each.

Ghana predominantly has a tropical climate and consists mostly of low savannah regions with a central, hilled forest belt. Ghana's one dominant geographic feature is the Volta River, upon which the Akosombo HydroElectric Dam was built in 1964. The damming of the Volta created the enormous Lake Volta, which occupies a sizeable portion of Ghana's south-eastern territory.

Ghana has a market-based economy with relatively few policy barriers to trade and investment in comparison with other countries in the region. Ghana has substantial natural resources and a much higher per capita output than many other countries in West Africa.

Major international airlines fly into and out of the international airport in Ghana's capital city, Accra.

4.2 Location and Area

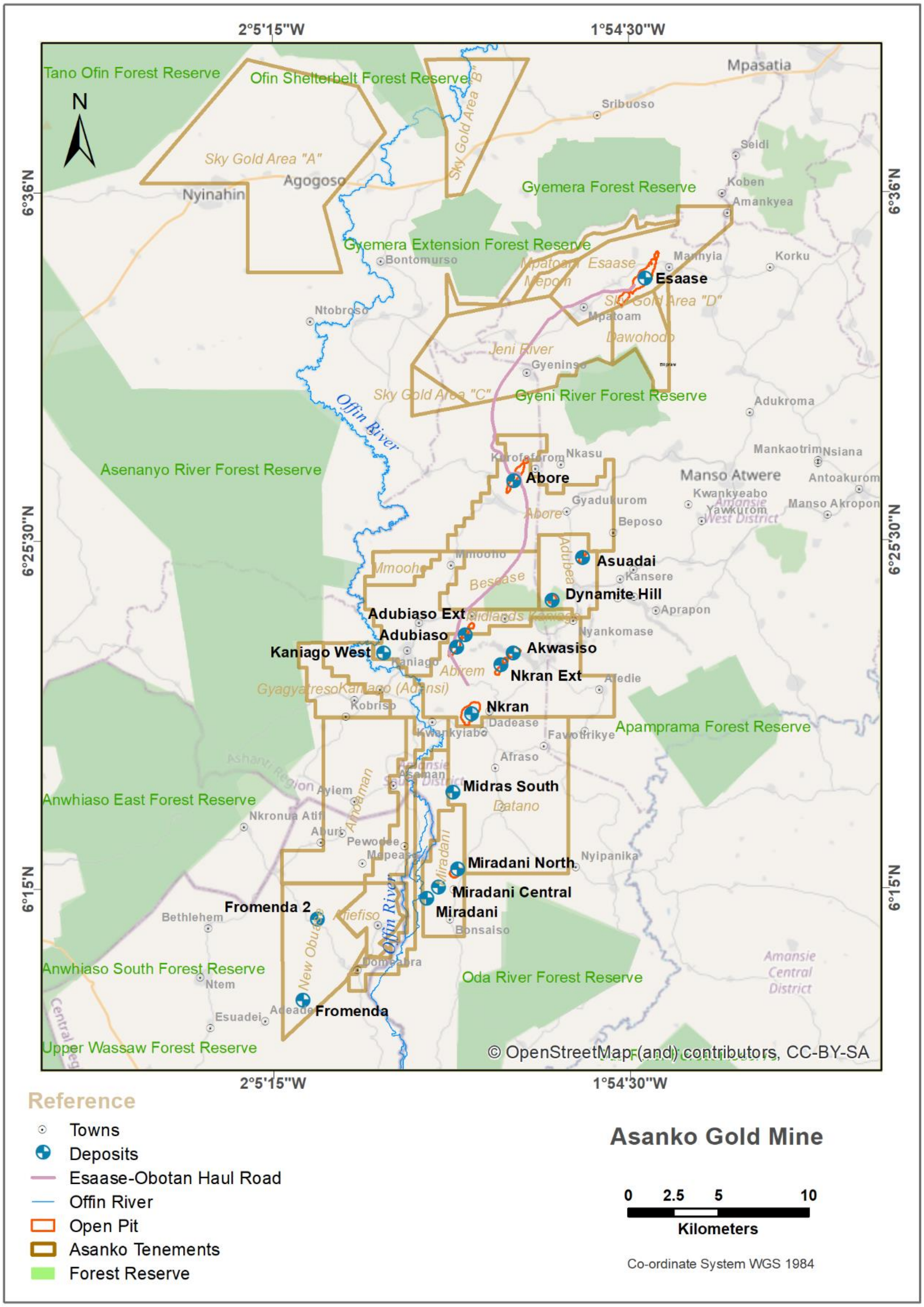
The AGM tenements are in the Amansie West and South Districts, of the Ashanti Region of Ghana, approximately 250 km northwest of the capital Accra and some 75 km southwest of the regional capital Kumasi (Figure 4-1 and Figure 4-2).

The AGM areas are accessed from the town of Obuasi, northward towards Kumasi on the Kumasi-Dunkwa highway to the Anwiankwanta Junction. The AGM is accessed by travelling 35 km south to Anwiankwanta Junction, and then west into the AGM property on surfaced and un-surfaced all weather roads.

The concessions cover an area of approximately 476 km² between latitudes 6º 19'40" N and 6º 28' 40" N; and longitudes 2º 00' 55" W and 1º 55' 00" W.

(Source: Muller and Umpire, 2014)

Figure 4-1 AGM location map (Ashanti region, Ghana)



(Source: AGM, 2021)

Figure 4-2 Location of AGM tenements

4.3 Licences and Mineral Tenure

The following legal information was prepared by subject matter experts within AGGL under the supervision of the Galiano legal counsel (see Section 3).

4.3.1 Mining Legislation Overview

The Minerals and Mining Act, 2006 (Act 703) (as amended by the Minerals and Mining (Amendment) Act, 2015 (Act 900) and the Minerals Commission Act, 1993 (Act 450) are the principal enactments setting out the framework of Ghanaian mining law. These acts express the basic position that minerals in their natural state are owned by the state. They also outline the licensing scheme for mineral operations, the incidents of the various mineral rights and the powers of the principal regulatory institutions. The following pieces of subordinate legislation add detail in specific areas to the regime set out in the principal legislation:

- Minerals and Mining (General) Regulations, 2012
- Minerals and Mining (Support Services) Regulations, 2012
- Minerals and Mining (Compensation and Settlement) Regulations, 2012
- Minerals and Mining (Licensing) Regulations, 2012
- Minerals and Mining (Explosives) Regulations, 2012
- Minerals and Mining (Health, Safety and Technical) Regulations, 2012
- Minerals and Mining (Local Content and Local Participation) Regulations 2020 (LI 2431)

The mining law divides the various licences that can be granted for a mineral right into three sequential categories: Reconnaissance Licence, Prospecting Licence and Mining Lease, defined under the Minerals and Mining Act, 2006 (Act 703). These licences are discussed below.

4.3.1.1 Reconnaissance Licence (Sections 31-33)

A reconnaissance licence entitles the holder to search for specified minerals by geochemical, geophysical and geological means. It does not generally permit drilling, excavation, or other physical activities on the land, except where such activity is specifically permitted by the licence. It is normally granted for 12 months and may be renewed for a period not exceeding 12 months if it is in the public interest. The area extent is negotiable, related to the proposed reconnaissance program.

4.3.1.2 Prospecting Licence (Sections 34-38)

A prospecting licence entitles the holder to search for the stipulated minerals and to determine their extent and economic value. This licence is granted initially for a period of up to three years covering a maximum area of 150 km^2. This may be renewed for an additional period of two years, but with a 50% reduction in the size of the licence area if requested. A prospecting licence will only be granted if the applicant shows adequate financial resources, technical competence and experience and shows an adequate prospecting program. It enables the holder to carry out drilling, excavation and other physical activities on the ground.

4.3.1.3 Mining Lease (Sections 39-46)

When the holder of a prospecting licence establishes that the mineral to which the licence relates is present in commercial quantities, notice of this must be given to the Minister of Lands, Forestry and

Mines and if the holder wishes to proceed towards mining, an application for a mining lease must be made to the Minister within three months of the date of the notice.

4.3.2 Issuer's Title to the AGM Concessions

The AGM concessions are owned 100% by AGGL. The legal status of the mineral properties in Ghana in which AGGL has an interest have been verified by AGGL and by an independent legal entity, Kimathi Partners Corporate Attorneys based in Accra. As at 31 December 2022, all mineral tenements were in good standing with the Government of Ghana. Furthermore, it has been confirmed that the properties are lawfully accessible for evaluation and also mineral production.

AGGL holds seven mining leases, nine prospecting licences and one reconnaissance licence, which collectively make up the AGM property and span over 40 km in length of the Asankrangwa Belt. The AGM is made up of a series of contiguous concessions in the Obotan and Esaase area (Figure 4-2). These concessions cover a total area of 476 km^2.

The areas of the respective mining leases and prospecting licences with respective company owners are tabulated in (Table 4-1).

In the case where an application is awaiting ministerial approval, the renewed application has been submitted and recognized by the Ghana Minerals Commission (Mincom) and is awaiting final Ministerial signature. Mining Leases are renewed for an extended period based on available reported resources whereas Prospecting Licenses are renewed for an additional three years from date of Ministerial Grant. The final step which may reverse this accepted status is the lease ratification by Parliament thereby preventing the Ministerial approval. This is, however, typically a formality.

A prospecting renewal application (three years) and a renewal for a Mining Lease is submitted to Mincom and is always accompanied by an updated technical report, relevant processing fees, consideration fees, annual mineral right fees and Stool Land fees. The renewal application is subsequently submitted by Mincom to the Ministry of Lands and Natural Resources for secondary approvals and is completed by Ministerial Approval thereafter.

The lease/concession boundaries have been surveyed by global positioning system (GPS) and are correlated with the latitude and longitude via degree coordinates as per the Ghanaian Mining Cadastre (July 2016).

AGGL is the merged entity of Keegan Resources Ghana Limited (KRGL) and Adansi Gold. When AGGL acquired the Esaase concessions, there was a mining lease in place from the historical alluvial mining operations. The Minister of Lands and Natural Resources granted the other Mining Leases for the Obotan Project to PMI Gold Inc (PMI) in November 2012, prior to the acquisition of PMI by AGGL in early 2014.

In November 2012, AGGL formally received mining leases on the Abore-Abirem and Adubea prospecting licences. The formal grant of these three Mining Leases, renewable under the terms of the Minerals and Mining Act, 2006 (Act 703), followed the favourable recommendation by the Minerals Commission of Ghana in September 2012. The Mining Leases cover a total area of 167 km^2, encompassing the two main deposits, Nkran and Esaase and the smaller satellite deposits, Abore, Adubiaso, Dynamite Hill, Akwasiso, Asuadai, Adubiaso Extension and Nkran Extension.

In 2017, AGGL acquired the Miradani Mining Lease area situated in the southern camp adjacent to the Datano concession area.

Table 4-1 AGM mining lease and prospecting concession areas

Name	Mincom Ref#	Licence area (km^2)	Type	Status/ Expiry date	Ownership
Abore	PL 6/352	28.47	Mining Lease	Valid-ML 4/2030	AGGL 100 %
Abirem	PL 6/303	47.13	Mining Lease	Valid-ML 3/2026	
Adubea	PL 6/310	13.38	Mining Lease	Valid-ML 4/2030	
Miradani	PL 6/122	14.98	Mining Lease	Valid-ML 5/2025	AGGL 100 %
Esaase	PL 6/8 Vol 8	27.03	Mining Lease	Application, All relevant documents and payment made for renewal of ML. Awaiting Ministerial Approval.	
Jeni River	RL 6/21	27.37	Mining Lease	Application, All relevant documents and payment made for renewal of ML. Awaiting Ministerial Approval.	
Kaniago	PL 6/307	25.5	Prospecting	Application, All relevant documents and payment made for renewal of PL. Awaiting Ministerial Approval	AGGL 100 %
New Obuase	PL 3/84	33.67	Prospecting	Application, All relevant documents and payment made for renewal of PL. Awaiting Ministerial Approval	
Datano	PL 6/32	53.78	Mining Lease	Valid-ML 5/2030	
Mepom	Pl 6/245	2.37	Prospecting	*Note 1*	AGGL 100 %
Dawohodo	PL 6/43	10.00	Prospecting	Valid-PL 12/2023	
Sky Gold	RL 6/86	91.50	Reconnaissance	Application, All relevant documents and payment made for renewal of RL. Awaiting Ministerial Approval. *Note 2*	AGGL 100 %
Kaniago	PL 6/289	25.27	Prospecting	Application, All relevant documents and payment made for renewal of PL. Awaiting Ministerial Approval	AGGL 100 %
Besease	PL.6/120	15.55	Prospecting	Valid-PL 12/2023	
Mmooho	PL 6/352	5.70	Prospecting	Valid-PL 12/2023	
Gyagyatreso	PL6/32	10.83	Prospecting	Application, All relevant documents and payment made for renewal of PL. Awaiting Ministerial Approval	
Amoaman	PL6/380	43.47	Prospecting	Valid-PL 11/2022	

Note 1: Mepom License renewal pending since 2012. In process of being merged with Esaase ML
Note 2: License conversion from RL to PL pending since 2012.

4.4 Agreements, Royalties and Encumbrances

All concessions carry a 10% free carried interest in favour of the Ghanaian government and as a result, the Ghanaian government holds a 10% interest in AGGL. The mining leases are also subject to a 5% net smelter return (NSR) royalty payable to the Government of Ghana. In addition, the Adubea mining concession is subject to an additional 0.5% NSR royalty to the original concession owner. The Esaase mining lease is also subject to an additional 0.5% NSR royalty to the Bonte Liquidation Committee. The Akwasiso pit on the Abirem mining lease is also subject to an additional 2% NSR royalty payable to the original concession owner.

4.5 Environmental Liabilities and Obligations

Environmental liabilities and obligations are discussed in Section 20.

4.6 Permitting

All operational permits are in place for the mine and processing facility in production. The key operational permits are listed in Section 20.

4.7 Political Risk

The QP has used the Policy Perception Index from the 2021 Fraser Institute Annual Survey of Mining Companies report (Fraser Institute, 2022) as a credible source for the international mining industry consensus on the overall political risk facing an exploration or mining project in Ghana. The QP has relied on the Fraser Institute survey because it is globally regarded as an independent report-card style assessment to governments on how attractive their policies are from the point of view of an exploration manager of a mining company. The survey forms a proxy for the assessment by senior management in the mining industry of political risk in Ghana. Overall, Ghana ranked as Africa's second most attractive country to the mining industry in 2021 and was 47th globally (out of the 84 jurisdictions in the 2021 Policy Perception survey).

The AGM is a developed mine in an established mining camp with the Ghanaian government as a free carried joint venture partner.

4.8 Other Factors and Risks

The QP is not aware of any other significant factors and risks that may affect access, title or the right or ability to perform work on the property, other than what is described in this report.

5 Accessibility, Climate, Infrastructure, Local Resources and Physiography

5.1 Topography, Elevation and Vegetation

The AGM lies in the Amansie West District of the western region of Ghana. The AGM is located in hilly terrain dissected by broad, flat drainages that typically form swamps in the wet season between May and late October (Figure 5-1). Hill tops are generally at very similar elevations, reflecting the elevation of a previous erosional peneplane that is now extensively eroded. Maximum elevations are approximately 80 masl, but the areas impacted by the project generally lie at less than 50 masl. Despite the subdued topography, hill slopes are typically steep. The concession areas are covered by a series of low, gently undulating hills, which rarely exceed 680 masl. Ecologically, the AGM is situated in the wet evergreen forest zone.

In general, the concession areas have been largely transformed, having experienced extensive degradation in recent years. The main land uses include secondary forest, subsistence and cash crop farming, and artisanal gold mining.

The soils of the area fall within the Bekwai and Nzema Oda classification. The soils of the Bekwai series are found on the summits and some upper slope sites of the hills of the area. They are generally deep to very deep (over 20 cm), humus, well drained, red in colour, loam to clay loam, gravelly and concretionary, with well-developed sub angular blocky structure and clay cutans within sub-soils. The soils are acidic throughout the profile.

Figure 5-1 Example of topography and vegetation near Esaase pit

The soils of the Nzema Oda series are heavy textured soils developed on alluvial deposits along streams of the area. The soils are poorly drained and are subjected to flooding during the wet seasons and are greyish in colour with prominent yellowish orange mottles. The soils are deep, acidic with clay loam to clay textures, but are structureless in the sub-soils.

5.2 Access

The AGM is accessed by road from the city of Kumasi, south towards Obuasi on the Kumasi–Dunkwa highway to the Anwiankwanta Junction then approximately 20 km west from this junction through Poano and Antoakurom on a tarred road onto a laterite road for approximately 30 km through Manso Akropon, Manso Atwere, Manso Nkwanta, Suntreso, Gyadukurom to Abore. At Abore, the road branches northwest to Akuntam, then northeast to Nkasu. At Gyadukurum, the road branches off south to Asuadai, Dynamite Hill, and Adubea. At Adubea, the road continues south to Kumpese and westward to Abirem, to Besease, then north to Mmooho. At Kumpese, the road branches south to Akwasiso, southwest to Koninase and to Nkran and Adubiaso. Areas of interest within the concession are reached via a combination of secondary roads, four-wheel drive tracks, logging roads, and farming/ hunting footpaths.

The Esaase property is accessed by road from the city of Kumasi by taking the tarred Sunyani–Kumasi road west for 10 km to the Bibiani Junction at Abuakwa and then southwest for 10 km along the tarred Bibiani–Kumasi highway to the village of Wiaso. A secondary tarred road is taken 8 km south from Wiaso to the village of Amankyea. Secondary gravel roads can be taken for a further 11 km via the villages of Ahewerwa and Tetrem. The Esaase deposit itself is accessed by a 28 km haul road constructed by AGGL.

5.3 Proximity to Population Centres and Transport

There are several local villages near the AGM site. The closest to the plant site is the Manso Nkran village, while the villages of Tetrem and Esaase are in close proximity to the Esaase deposit. Current site infrastructure and transport means are discussed in Section 5.5.

5.4 Climate and Length of Operating Season

The following is noted:

- **Rainfall** - The annual rainfall is in the range of 1,500 to 2,000 mm. The major rainy season takes place from April to July followed by a minor rainy season from September to October. The mine has operated without cessation or delay throughout both rainy seasons.
- **Temperature** - Maximum temperatures occur between January and April ranging 26 to 28°C and minimum temperatures between May and December when values range 24 to 25°C
- **Wind speed and direction** - The mean monthly wind speed is 0.59 knots with a mean monthly range from 0.4 to 1.3 knots. Mean monthly wind speeds rarely exceed 1.3 knots (0.67 m/s). August is generally the windiest month and wind direction is predominantly southeast during the year.

5.5 Infrastructure

Current site infrastructure with respect to the Obotan concessions consists of an office complex, metallurgical facility, tailings storage facility, senior and junior accommodation and mess facilities, workshops, power distribution facility, a core storage facility, potable and operational water supplies, a WSF, an upgraded dry weather air strip and a haul road from Esaase pit to Nkran pit. In addition, the following is noted for the Obotan concessions:

- Local facilities of importance to exploration and mining include towns, villages, roads, trails, power lines, rivers and rail roads.
- The principal towns within the Obotan concession area are Abore, Adubea, and Keniago.
- Nkran and Akwasiso which are communities also within the concession, and Abore a principal town, are where actual mining activities takes place.
- Surrounding villages are connected to the national electrical grid.
- There is grid power to the Nkran area, the processing plant and town site.
- Most areas are adequately serviced by several cellular telephone suppliers.
- The principal towns have potable water and health posts which cover local needs.

The following resources are available for the Esaase concession area:

- The Esaase camp and surrounding villages are connected to the national electrical grid.
- Esaase is in an area well serviced by the Ghana national power grid with at least two alternate points of supply within a 50 km radius of the open pit mining site.
- Mobile phone communication is accessible in most parts of the concession.
- Hospitals and most government offices are available in Kumasi.
- Food and general supplies are also purchased in Kumasi.

Ghana has a mature mining industry that has resulted in the local availability of both skilled and unskilled personnel.

5.6 Surface Rights

The laws regarding surface rights are captured in the Mineral and Mining Act 206, Act 703 sub-section 72. This section gives rights to the owners of the land (i.e., Chiefs, family, individuals, etc.) to be compensated by Mineral Rights holders (i.e., mining companies).

Sub-section: 72

(1) The holder of a mineral right shall exercise the rights under this Act subject to limitations that relate to surface rights that apply under an enactment and further limitations reasonably determined by the Minister.

(2) In the case of a dispute between a holder of a mining lease and the Minister concerning the limitations determined by the Minister under this subsection, the dispute shall be referred for resolution under section 27.

(3) The lawful occupier of land within an area subject to a mineral right shall retain the right to graze livestock upon or to cultivate the surface of the land if the grazing or cultivation does not interfere with the mineral operations in the area.

(4) In the case of a mining area, the owner or lawful occupier of the land within the mining area shall not erect a building or a structure without the consent of the holder of the mining lease, or if the consent is unreasonably withheld, without the consent of the Minister.

(5) The owner of a mining lease shall, in the presence of the owner or lawful occupier or accredited representative of the owner or lawful occupier of land, the subject of a mining lease and in the presence

of an officer of the Government agency responsible for land valuation carry out a survey of the crops and produce a crop identification map for the compensation in the event that mining activities are extended to the areas.

(6) An owner or lawful occupier of land shall not upgrade to a higher value crop without the written consent of the holder of the mining lease, or if the consent is unreasonably withheld, without the consent of the Minister.

In the case of the AGM, all concessions belong to the Ashanti Kingdom who has in turn given same right to the relevant Divisional Chiefs and in some cases specific individuals to exercise that right in terms of compensation. Compensation with regards to surface rights comes in the form of:

- Crop compensation
- Deprivation for land use compensation
- Compensation of immovable properties (shrines, ponds, etc.)
- Royalty payment through the Stool lands

There are sufficient surface rights available now, or that can be obtained, if necessary, for any future mining operations. There are adequate sources of power, water, mining personnel, tailings storage areas, waste rock storage areas, and sites for processing facilities.

6 History

6.1 Prior Ownership and Ownership Changes

The deposits within the current AGM property have largely undergone a number of ownership changes since their discovery.

In 2007, Keegan Resources Inc acquired 100% of the Esaase Mining Lease from Sametro Company Limited, a private Ghana company. This lease includes the Esaase mineral deposit. In 2013, Keegan Resources Inc. changed the name of the company to Asanko Gold Inc. In 2014, Asanko Gold Inc. acquired the Abirem, Adubea, and Abore Mining Leases from PMI Gold Inc. These leases include the Nkran, Akwasiso, Asuadai, Adubiaso, Abore and Dynamite Hill mineral deposits. In 2017, Asanko Gold Inc. acquired the Miradani Mining Lease, which includes the Miradani North mineral deposit. In March 2020, Asanko Gold Inc. changed the name of the company to Galiano Gold Inc. All these properties, collectively known as the AGM, form the basis of a joint venture established between Galiano and Gold Fields Limited in 2018. Galiano is the JV operator.

A summary of the ownership history is provided in Table 6-1.

Table 6-1 Historical summary of ownership

Year	Ownership
Nkran (Historically Nkran Hill, or Obotan Mine)	
Late 1980s	Obotan Minerals awarded prospecting concession over 106 km² (current Abirem Mining Lease, Adubea Mining Lease and Abore Mining Lease)
1990	Kiwi Resources Limited (KIR) took over Obotan Minerals interest. Concession explored by Australian juniors Associated Gold Fields NL (AGF) and KIR
1996	Resolute Mining Limited bought combined interests of AGF and KIR (Nkran, Akwasiso, Asuadai, Adubiaso and Abore)
1999	Resolute changed name to Resolute Amansie Limited
2001	Obotan Mine closed.
2006	Resolute relinquished ground to Government of Ghana who granted several small-scale mining leases on the deposits. PMI Gold Inc (PMI) acquired the Abirem, Abore and Adubea prospecting licenses.
2014	Asanko Gold acquired mining leases Abirem, Adubea and Abore from PMI through purchase agreement; Obotan Mine renamed to Nkran Mine
Esaase	
1900-1939	Artisanal mining
1990	Adjacent Jeni River mining lease granted to Jeni River Development Company Limited
1990	Esaase (previously Bonte) mining lease granted to Akrokerri-Ashanti Gold Mines (AAGM) and later transferred to local subsidiary Bonte Gold Mines Limited (BGM)
2002	Ghanaian incorporated private company Dawohodo Manufacturing and Marketing Limited granted adjacent prospecting license to the south (Dawohodo-Esaase prospecting license)
2003	Jeni River Development Company Limited and BGM declared bankrupt. Esaase mining lease acquired from the Bonte Liquidation Committee by private Ghanaian company Sametro Company Limited
2006	Keegan Resources Inc entered into an option agreement with Sametro to earn 100% of the Esaase mining lease
2007	Esaase mining lease transferred to Keegan
2013	Keegan changed name to Asanko Gold
Akwasiso *see Nkran lease area*	

Abore	
Pre-1990	Small scale mining license held by Oda River Gold
1990	Mutual Resources acquired Oda River Gold and formed JV with Leo Shield Exploration
1990	Leo Shield Exploration (which became Shield Resources) bought out Mutual Resources
2001	Agreement entered with Resolute; Resolute took ownership of project
2006	Resolute relinquished lease to Government of Ghana; PMI acquired Abore license
2014	Asanko Gold acquired ground from PMI
Asuadai – *Adubea lease area*	
1996	Resolute purchased combined interests of AGF and KIR; released to six small scale operators at the time of mine closure
2006	Resolute relinquished ground to Government of Ghana; Adubea license granted to Chief Joseph Biney family, and later acquired by PMI
2014	Asanko Gold acquired ground from PMI
Adubiaso *see Nkran lease area*	
Miradani North – *Miradani lease area*	
1994	Miradani Mining Lease granted to Ashanti Goldfields, now Anglogold Ashanti (AGA)
2017	Asanko acquired the Miradani Lease from AGA
Dynamite Hill – *Adubea lease area*	
2013	Discovered by PMI beneath laterite cap
2014	Asanko Gold acquired ground from PMI
Midras	
1994-1996	Ashanti Gold Corporation (AGC) now AngloGold Ashanti (AGA) Exploration delineated four coincident soil geochemical and helicopter borne electromagnetic (HEM) linear anomalies within the Midras ground
1996	Resolute acquired the Datano tenement and outlined an infill drilling program by way of validating AGC's 1994 – 1996 results
2012	Mining Lease assigned to Adansi Gold
2014	Asanko Gold acquired ground from Adansi/PMI and completed a first phase confirmatory drilling

6.2 Historical Exploration and Development

Gold rushes in the area occurred in 1898 to 1901 and again in the 1930s. Most of the Asanko Gold concessions, however, have no record of the work undertaken on the properties for this period. Interest in the area was renewed in the early 1990s mainly because of the successful exploration work carried out on the adjacent concession where the Nkran deposit is located.

Table 6-2 below summarizes the extent of the exploration activities and developments per area relevant to the current Mineral Resource.

Table 6-2 Summary of historical exploration and development - by deposit

Period	Workings	Operator
Nkran		
Historical	Alluvial and eluvial gold artisanal gold mining which extend for ±610 m in a northeast-southwest direction. European settlers worked the deposits – adits and drives extend 80 m into the hill on site of old native workings.	
1980s	Limited exploration work undertaken with minor attention paid to the alluvial gold potential	Previous Owner
1990-1995	Exploration focused on known prospects at Nkran deposit (formerly known as Jabokassie).	Previous Owner

Period	Workings	Operator
	Regional soil geochemical survey carried out that identified numerous anomalies around Nkran. Early reverse circulation drilling phase (details not available) yielded encouraging results over wide zone of bedrock mineralization, extending along strike for 600 m. The broad, low-lying Nkran had relief of only about 40 m with oxidation extending to depths of 40 m.	
1995	Additional DDH, RC, RC and RCD drilling was completed. Mineral Resources (Measured, Indicated and Inferred classes) were estimated and reported. A feasibility study was completed, and mining lease was granted.	Previous Owner
1996	Combined interests of KIR and AGF bought out by Resolute who immediately reviewed and expanded project scope. Further RC and DDH drilling conducted to increase Mineral Resources to a depth of 150 m at Nkran and to further assess the known mineralization at nearby Adubiaso.	Previous Owner
July 1996	Revised mine development plan completed with decision to proceed into production at a rate of 1.4 Mtpa	Previous Owner
Early 1997	Initial mining commenced, and further exploration drilling continued	Previous Owner
May 1997	First gold poured	Previous Owner
1998-2000	Additional DDH, RC, RCD holes drilled	Previous Owner
2001	Nkran Mine closed due to low gold price having produced 590,743 oz Au at an average grade of 2.35 g/t Au.	Previous Owner
2002	Intensive exploration undertaken	Previous Owner
2011	PMI carried out a 5 km² Induced Potential (IP) ground geophysical survey. PMI also completed a VTEM electromagnetic (EM) and magnetic survey centred over the Nkran pit.	Previous Owner
2020	Additional drilling (DDH, RC and RCD) completed to infill and expand on resource at depth. Refer to Table 10-1 for total quantities.	Galiano
2015-2016	Nkran Mine dewatered and re-opened by Asanko Gold as a deeper opencast operation	Galiano Gold
2016-2020	Open pit production. Plant refurbishment and expansion to circa 5 Mtpa	Galiano Gold
2020	Additional drilling (DDH, RC and RCD) completed to infill and expand on resource at depth. Refer to Table 10-1 for total quantities.	Galiano Gold
2022	Infill diamond drilling completed to convert and expand resource. Exploration drilling at depth to confirm mineralization potential underground.	Galiano Gold
Nkran Extension Project Area		
Historical	No known historical exploration or mining activity.	
1997-2016	Exploration on north-eastern extension of Nkran structure delineated a number of mineralized zones – Akwasiso and Nkran Extension that have all been drilled (2016) to Indicated Mineral Resource classification.	Previous Owner/ Galiano Gold
Esaase		
Historical	Artisanal mining in Bonte Area associated with the Ashanti Kingdom.	
1900-1939	Workings by European settlers evidenced by old adits - no documented records remain.	Previous Owner
1966-1967	Drilling conducted on the Bonte River valley alluvial sediments to determine alluvial gold potential – no information available.	Previous Owner
1990	Bonte mining lease granted to Akrokerri-Ashanti Gold Mines (AAGM) and later transferred to BGM.	Previous Owner
1990-2002	Recovered approximately 200,000 oz of alluvial gold on Esaase concession +300,000 oz downstream on Jeni River concession.	Previous Owner
2006-2013	Keegan consolidates further concessions. Intensive exploration – geophysics (airborne VTEM - 2,266 line-km), soil geochemistry (>4,000 samples) and exploration drilling. Drilling included DDH, DTH, RC, and RCD.	Galiano Gold
2013-2018	Asanko Gold continued extensive exploration drilling in order to update the Mineral Resources.	Galiano Gold

Period	Workings	Operator
Dec 2018-May 2022	Open pit production.	Galiano Gold
2020-2021	Infill drilling conducted.	Galiano Gold
2022	Infill diamond drilling completed to convert and expand resource. Metallurgical drilling to obtain samples for geometallurgical testwork	Galiano Gold
Akwasiso		
1996-2000	Exploration programs including RC and DDH holes.	Previous Owner
2001	Artisanal miners mined oxides. DDH holes drilled.	Previous Owner
2014-2018	Exploration continues with purpose of refining the Mineral Resource. Drilling undertaken including RC, DDH, and RCD holes.	Galiano Gold
2017	Open pit operations commence.	Galiano Gold
Dec 2018	Open pit operations suspended in Q1 2019.	Galiano Gold
2019	Exploration drilling including RC, DD and RCD holes.	Galiano Gold
Jan 2020 – July 2022	Open pit production.	Galiano Gold
Abore		
Historical	Alluvial and eluvial artisanal gold mining.	
1990-1998	Mutual Resources and Leo Shield Exploration initiated regional exploration program (73 km²) including soil geochemistry and trenching. Extensive drilling in the area (mainly RC, some DDH) outlined sizeable resources (now known as the Abore, Adubiaso, Asuadai and Akwasiso prospects).	Previous Owner
2001-2002	Conventional open pit mining undertaken by Resolute Amansie Ltd., producing 1.9Mt ore at 1.95 g/t Au, and recovered 113 koz (96% recovery)	Previous Owner
2007-2012	Exploration programs which included RC and DDH drilling completed. Resulted in a Mineral Resource estimate. Open pit mining, and an agreement was reached whereby ore was trucked from Abore north to Nkran plant for treatment.	Previous Owner
2019-2021	RC and RCD drilling, to extend the known resource at depth and along strike to the north.	Galiano Gold
2022	Infill drilling (RC and DDH) completed to convert and expand resource.	Galiano Gold
Asuadai		
Historical	No known formal historical mining or exploration on this area. Minor pitting in the region by artisanal miners down to 5 m to 10 m through the oxide material to expose stock work vein sets.	
1996	Mining undertaken by artisanal workers (to present day).	Previous Owner
2000-2012	Exploration programs which included RC and DDH drilling completed.	Previous Owner
Adubiaso		
Historical	No known formal historical mining or exploration on this area.	
1996-2000	DD, RCD, and RC drilling completed.	Previous Owner
1999-2000	Open pit mining. Oxide ore processed at Nkran plant.	Previous Owner
2007-2013	Exploration programs including RC and DDH drilling completed.	Previous Owner
2016	Exploration continues with RC drilling to refine orebody definition.	Galiano Gold
2017 - current	No further exploration undertaken. Mineral Resource estimate restated.	Galiano Gold
2020	RC and RCD drilling complete.	Galiano Gold
Miradani North		
1900-1914	Ashanti Rivers and Concession Ltd conducted ‘extensive exploration’ including adits	Previous Owner
1995	Miradani Mining License acquired by Ashanti Goldfields, now Anglogold Ashanti (AGA)	Previous Owner
1995-1996	Airborne geophysics, soil sampling and trenching completed by AGA	Previous Owner
2017	License acquired from AGA	Galiano Gold

Period	Workings	Operator
2017-2021	RC, DD, and RCD drilling complete.	Galiano Gold
2022	Infill diamond drilling completed to convert shallow inferred resources to Indicated.	Galiano Gold
Dynamite Hill		
2013	Discovered through trenching and drilling in 2013	Galiano Gold
2013-2016	DD, RC, and RCD drilling complete.	Galiano Gold
2017	Commencement of mining delayed until Q4 2017 due to regulatory approvals	Galiano Gold
2019	Production ceased in Q4 2019	Galiano Gold
2021	Additional drilling to extend resource at depth, including RC and RCD drilling.	Galiano Gold
Midras		
2016-2017	Exploration conducted two drill campaigns to define resource	Galiano Gold
2020-2022	Exploration conducted infill and extension drilling to update resource	Galiano Gold

6.3 Previous Mineral Resource Estimates

Since 1995, a number of Mineral Resource and Mineral Reserve estimations and declarations have been conducted over the various project areas that are the subject of this report.

6.4 Historical Production

Artisanal mining has occurred at a number of the AGM target areas, focusing mainly on placer gold production. Prior to the Asanko Gold consolidation of the Keegan and PMI mineral assets in 2014, a number of satellite pit mining and evaluation projects were in operation.

The main producing mine in the area was the Obotan Mine (now Nkran Mine). Open pit mining commenced in February 1997. A total of 16.11 Mm^3 of material was excavated from the open pit at a production rate of 1.4 Mtpa. Following several re-designs, the pit was mined in two stages. A total of 7.82 Mt of material was milled at an average recovery of 89% at a reported reserve grade of 2.35 g/t (Brinckley 2001). The mine was closed in July 2001 after having produced 590,743 oz Au. Operations ceased due to a low gold price environment coupled with the requirement to push back the Nkran pit to access deeper reserves. Asanko Gold dewatered the Nkran pit and re-commenced mining operations in February 2015, with the first gold produced in February 2016. Nkran Cut 2 mining completed in Q2 2020. The AGM has processed 790,824 oz of gold from Nkran to date.

Asanko Gold commenced operations at Akwasiso in 2017 and recently completed mining Cut 2 in July 2022. A total of 165,938 ounces of gold was processed from the Akwasiso deposit.

The Dynamite Hill deposit was discovered in 2013 and put into production in Q4 2017. Production ceased in late 2019 and processed 93,411 oz of gold.

At Esaase, under the Bonte mining lease BGM recovered approximately 200,000 oz of alluvial gold during the period 1990-2002. No mining or production details are available. Asanko Gold commenced operations at Esaase in 2018 extracting from non-alluvial sources. The AGM has processed 480,591 oz of gold from Esaase to date.

At Abore, Resolute Mining Limited conducted mining in the late 1990s to early 2000s. Mining targeted mainly oxides and transition material by open cast blast, load and haul to be processed at the old Nkran plant. A total of 1.88 Mt at 1.95 g/t Au was delivered to the ROM pad, containing a total of

117,453 oz of gold. Total production of 113,301 oz (recovered) was achieved, representing 96.3% recovery.

At Adubiaso, Resolute mined mostly oxides and transition material from the deposit by open cast free dig, load and haul to the Nkran plant. Mining was from October 1999 to December 2000. As reported by Brinckley (2001), a total of 3.79 Mm^3 of material was excavated from Adubiaso open pit. A total of 0.70 Mt at 2.43 g/t Au was delivered to the ROM pad, containing a total of 54,654 oz of gold. Total production of 52,677 oz (recovered) was achieved.

At Miradani North, some open pit mining was conducted to a vertical depth of 30 to 40 m by GPS Ghana Ltd. Production details from this operation are unknown at this time.

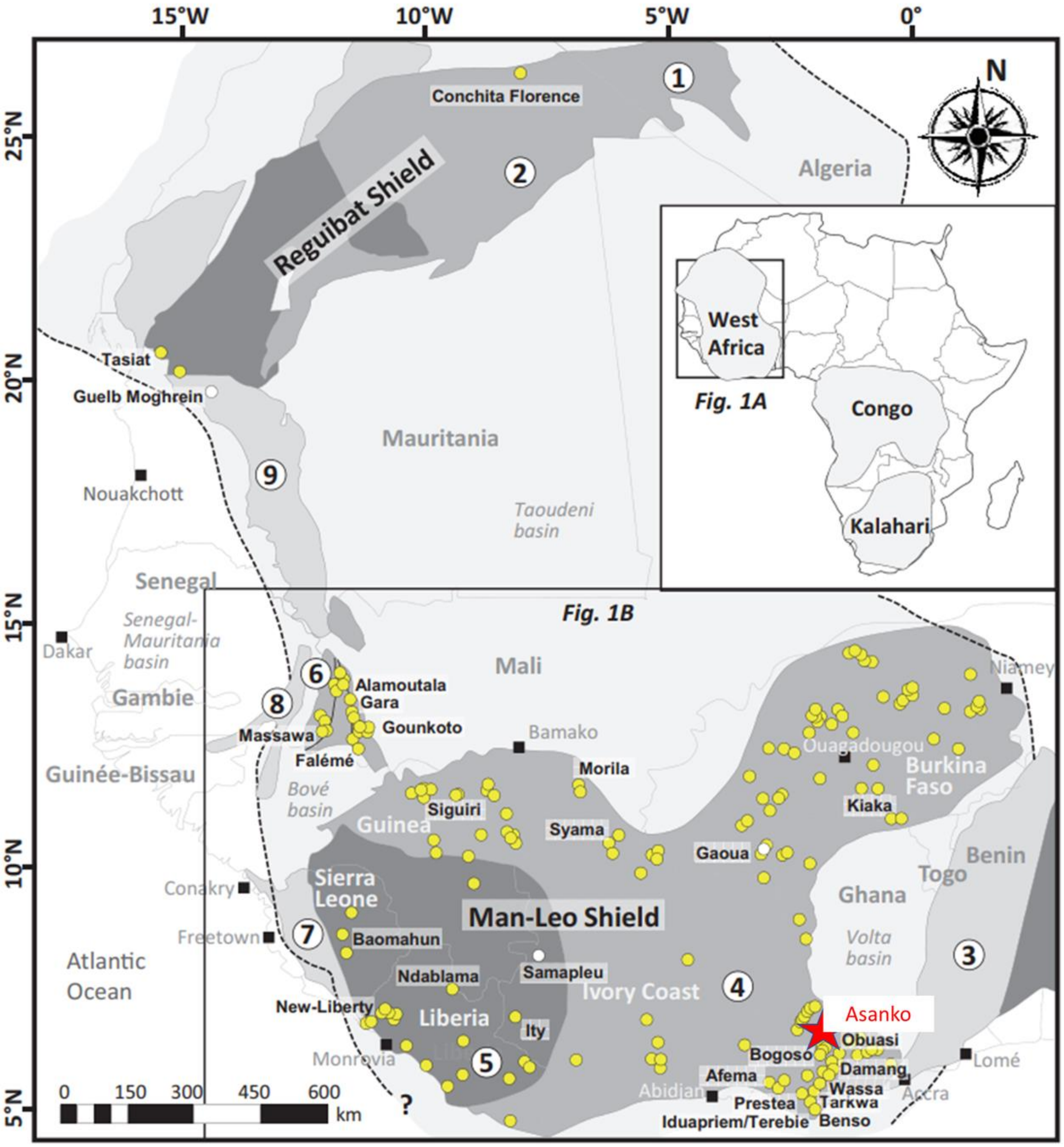
There is no record of formal commercial historical mining activity for the other target areas.

7 Geological Setting and Mineralization

Unless specified otherwise, all diagrams in this section are sourced from AGM (2019).

7.1 Regional Geology

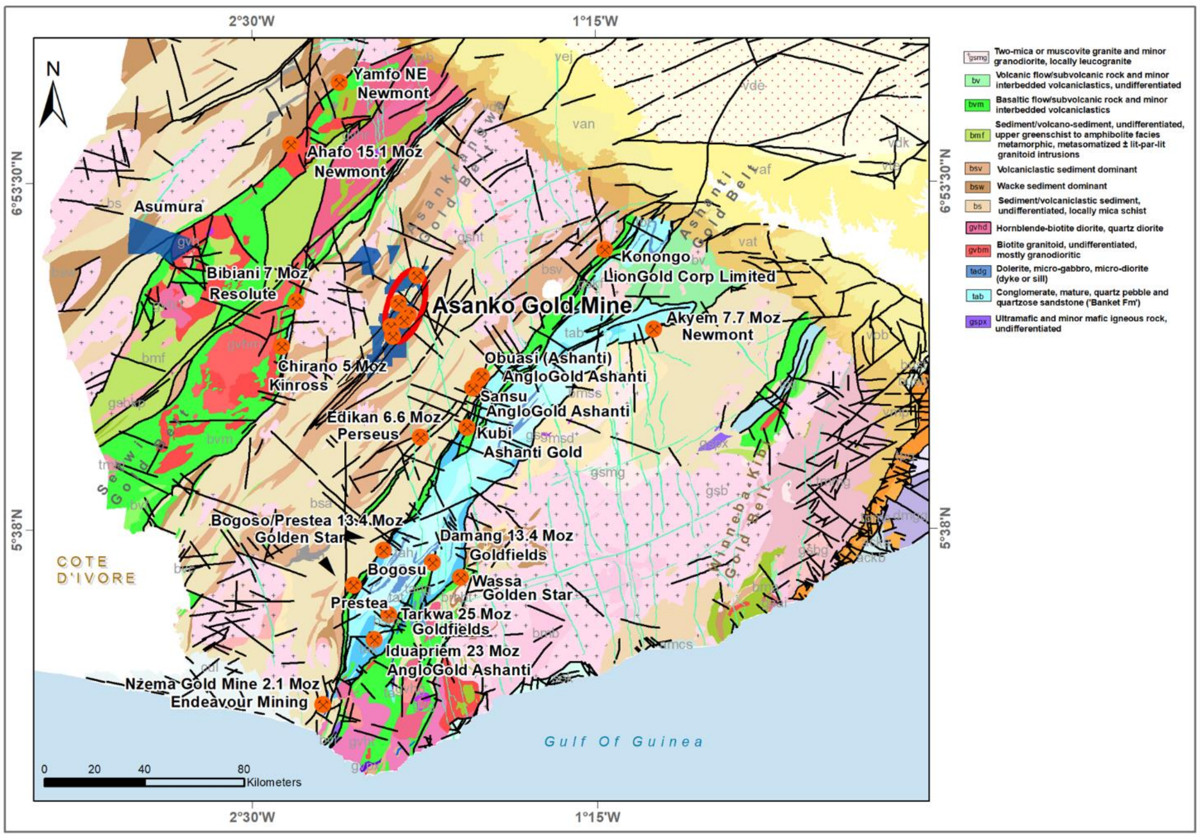
The geology of Ghana is largely underlain by the West African craton. The craton consists of the Man-Leo (or Kénéma-Man) shield in the south (extending from Ghana to Senegal) and the Archaean Reguibat Shield in Mauritania to the north. They are separated by overlying younger sedimentary rocks of the Taoudeni Basin (see Figure 7-1).



(Note: Numbers 1 to 9 outline the different Archean, Proterozoic, and Hercynian domains: 1 = Eglab, 2 = Yetti, 3 = Daomeyan, 4 = Baoulé-Mossi, 5 = Kenema-Man, 6 = Kédougou-Kénébia Inlier, 7 =Rokelides, 8 = Bassarides, 9 = Mauritanides)

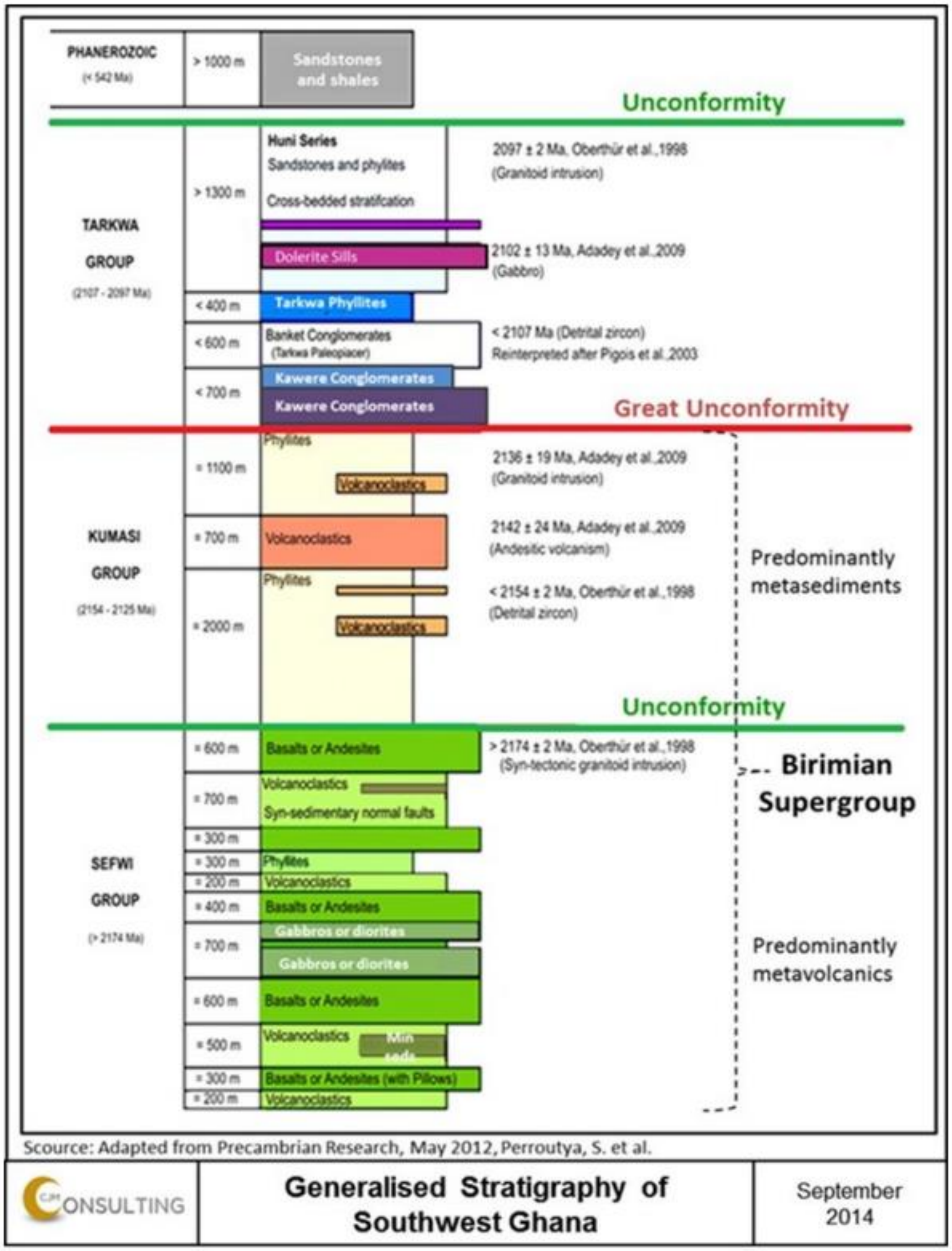
Figure 7-1 Simplified map of West African Craton and associated gold deposits (modified from Goldfarb et al, 2017)

The Man-Leo Shield covers the southernmost third of the craton. It is divided into two portions, with the Archaean age Kenema-Man Domain in the west and a Paleoproterozoic dominated Birimian aged terrain in the east, sometimes referred to as the Baoulé-Mossi domain. The Birimian rocks consist of five evenly spaced commonly NNE-trending, narrow, linear greenstone belts composed of calc-alkaline or tholeiitic volcanic rocks (Figure 7-2, Figure 7-3). These belts are separated by wide intervening basins (such as the Kumasi Basin) filled with thick turbiditic sequences of argillites, phyllites, graywackes, and chemical sediments. The Birimian rocks are believed to have formed during two major orogenic phases, namely the Eoeburnian (ca. 2.25 to 2.15 Ga) and the Eburnian (ca. 2.12 to 2.06 Ga).



(Source: Ghana Geological Survey, Muller and Umpire, 2014)

Figure 7-2 Regional geology of southwest Ghana around AGM concessions



(Source: Muller and Umpire, 2014)

Figure 7-3 Generalized stratigraphy of southwest Ghana

Birimian sedimentation was followed by deposition of clastic sediments of the Tarkwa Group from ca. 2135 to 2120 Ma, in places interbedded with the Birimian units and containing clasts derived from the Birimian rocks. Generally, though, the contact is considered unconformable. Tarkwaian conglomerates, sandstones, and phyllites appear to have accumulated in restricted basins within the volcanic belts of the Birimian towards the end of the volcanic cycle.

Clastic shallow water sediments of the Neoproterozoic Volta Basin cover the northeast of the country. Minor Paleozoic and Cretaceous to Tertiary sediments occur along the coast and in the extreme southeast of the country.

Three magmatic episodes intrude the Birimian rocks, divided based on petrography, geochemistry, and isotopic ages (Baratoux et al., 2011), as well as magnetic and radiometric signatures (Metelka et al., 2011):

- The oldest magmatic episode was characterized by emplacement of calc-alkaline biotite and amphibole-bearing Tonalite-Trondhjemite-Granodiorite (TTG) suites dated from ca. 2.17 to 2.12 Ga (Yao et al., 2001). These equate to the often-used 'Cape Coast' or 'Basin-type granitoids' due to their spatial association with the sedimentary basins.
- The second episode is represented by calc-alkaline K-feldspar- and biotite-bearing granodiorite and granite intrusions dated between ca. 2.12 and 2.09 Ga. These are often referred to as 'Belt-type' or 'Dixcove' granitoids, due to their spatial association with the volcanic belts.
- The third episode, exemplified by the Bongo, Tongo, and Banso potassic granitoids granites were emplaced during late orogenic stages between ca. 2.11 and 2.07 Ga. (post-Tarkwaian)

Later deformation resulted in widespread lower to upper greenschist facies metamorphism of most of the volcanic and sedimentary rocks in the greenstone belts (Feybesse et al., 2006), although amphibolite facies peak conditions were locally only reached during regional metamorphism.

Much of this deformation is what is termed the Eburnean orogeny, which Allibone et al. (2004) defined as represented by two major deformational cycles. Feybesse et al. (2006) synthesized these West African events as 2130 to 2105 Ma (D1) thrusting followed by 2095 to 1980 Ma (D2-D3) transcurrent tectonics.

The margins of the belts commonly exhibit faulting on local and regional scales. These structures are fundamentally important in the development of gold deposits for which the region is well known.

Multiple tectonic events have affected virtually all Birimian rocks with the most substantive being the Eburnean Orogeny fold-thrust compressional event, that affected both volcanic and sedimentary belts throughout the region and to a lesser extent Tarkwaian rocks. For this reason, relative age relations suggest that the final deposition of Tarkwaian rocks took place as the underlying and adjacent volcanic and sedimentary rocks were undergoing the initial stages of compressional deformation.

Mesothermal gold mineralization in the Birimian Supergroup occurs as two main types, namely quartz vein hosted and disseminated sulphide type (Leube et al., 1990; Béziat et al., 2008), and most developed between 2.2 and 1.8 Ga. Of these, orogenic gold deposits formed between 2.2 and 2.0 Ga, intrusion-related (and skarn) between 2.2 and 2.1 Ga, and paleoplacer types between 2.1 and 1.8 Ga.

There are also examples of atypical major supergene gold deposits such as Yatela, which has been correlated with the glacial formation on the West African craton during the Miocene–Eocene epochs (Matsheka and Hein., 2011). Furthermore, gold mineralization is also known from the Archean of Sierra Leone and Liberia dating to 2.9 Ga (Foster and Piper, 1993). The youngest in situ recognized gold phase occurs in the Pan-African Dahomeyan belt of Togo (Markwitz et al., 2015).

Orogenic gold in West Africa is hosted in a range of rock types including mafic-hosted (both intrusive and extrusive units), granitoid-hosted, sediment-hosted, carbonate-hosted, and Banded Iron Formation (BIF) hosted. Orogenic gold in shear zones, commonly in quartz veins, is the dominant style of mineralization in West Africa (Markwitz et al 2015).

Intrusion-related deposits and skarn deposits are rare. Generally, gold mineralization is associated with greenschist metamorphosed terrains, and less commonly in lower amphibolite facies rocks. Most deposits are found in the Baoulé Mossi domain and the Kédougou-Kéniéba Inlier and are spatial associated with shear zones. The shear zones commonly occur at the contact between Birimian metasedimentary and metavolcanic rocks (Kesse, 1985), with gold deposits expressing a significant degree of structural control (Béziat et al., 2008). Some gold mineralization is related to the pre-Eburnean metallogenesis (Tangaean event) at approximately 2.19–2.15 Ga (Allibone et al., 2002; Tshibubudze et al., 2009; Hein, 2010; de Kock et al., 2012) which is observed in Ghana (e.g., Wassa), Burkina Faso (e.g., Kiaka, Essakane) and Mali (e.g., Morila).

In the West African Craton, the peak of mineralization was during the Eburnean Orogeny at approximately 2.15–2.10 Ga and produced very large (>10 Moz) gold deposits associated with regional northeast–southwest trending shear zones. Gold occurs as free grains associated with quartz and/or is hosted in sulphides (mainly pyrite and arsenopyrite) (Milési et al.,1989).

Extensive hydrothermal alteration is observed throughout gold-rich areas, with carbonate–pyrite–chlorite–sericite alteration in meta-sedimentary rocks, actinolite–chlorite–quartz ± chalcopyrite ± albite ± leucoxene in mafic volcanic rocks, and quartz–chlorite–sericite–epidote in felsic intrusive rocks (Markwitz et al., 2015).

7.2 Local Geology

The AGM deposits are located within the Kumasi Basin, one of the intervening basins between the greenstone belts. Within this basin lies the Asankrangwa Gold Belt which was recognized after decades of artisanal mining in gold-bearing, shear zone hosted quartz reefs. The basin is bound to the southeast by the Ashanti Fault/Shear and the Bibiani Shear to the northwest. The Asankrangwa Belt expresses itself as a complex of northeast-trending shear zones situated along the central axis of the Kumasi Basin. Several major northeast-trending shears/structures bisect the Kumasi Basin/Asankrangwa Belt. The Nkran deposit is located on a jog along the regional 35-40° trending Nkran Shear, which is a zone about 15 km in width and may be traced on a northeast to southwest trend for 150 km. The Nkran Shear Corridor also hosts the Asuadai, Dynamite Hill, and Akwasiso deposits. The parallel Esaase Shear Corridor hosts the Esaase, Adubiaso, and Abore deposits. The Miradani Shear Corridor hosts the Tontokrom, Miradani and Fromenda deposits.

The Kumasi Basin is heavily faulted and consists of an isoclinally folded sequence of metasediments, dominated by turbiditic sequences of greywackes and shales, intercalated with rare andesitic and volcaniclastic rocks, previously described as greywackes, phyllites, argillites, and shales.

The Asankrangwa Belt straddles two broad domains of distinct magnetic character. The western portion is characterized by the low magnetic relief that is typical of the Kumasi Basin as a whole. In the east, moderately magnetic mafic volcanic rocks result in a high magnetic zone corresponding to the Lower Birimian Supergroup, and the infolded, strongly magnetic rocks of the Ashanti Belt volcano-sedimentary and Tarkwaian sedimentary packages. This domain is in sharp contact with the weakly, to non-magnetic rocks of the upper Birimian metasediments, which dominate the Kumasi Basin in the west. This zone of contrast coincides with the prominent, shear zone which bounds the northwest margin of the Ashanti volcanic belt that plays host to most of the large gold deposits in the area.

A sharp NE trending break separates these two distinct magnetic domains and also truncates the dominant ENE to WSW trends typical of the eastern domain. Evident, dramatic changes in the structural grain in the area indicate the presence of a major shear zone separating the two domains.

This interpretation results in the Upper Birimian metasediments of the western domain occurring in the hanging wall of the shear zone, and above Lower Birimian metavolcanics of the eastern domain which occur in the shear zone footwall. This arrangement of ‘younger-over-older’ supports a long and intense thrusting history on the shear zone.

One of the structural setting interpretations of the Asankrangwa Belt that explains these relationships is an inverted half-graben, in which growth faulting controlled the accumulation of the upper Birimian metasediments, above the Lower Birimian metavolcanics in the footwall.

7.3 Regolith and Weathering Profile

The regolith system of the Asankrangwa belt is a typical tropical weathering environment. The topography comprises rolling hills and valleys with a dendritic drainage pattern that features a network of rivers and streams that generally drain southwards.

In this vast area, different regolith regimes are observed namely relic, erosional and depositional. The relict regime contains mainly lateritic residuum, the erosional regime comprises ferruginous saprolite, saprolite, lag and soil on saprolite bedrock saprolite and soils on bedrock saprolite. The depositional regimes are mainly colluvium, alluvium, paleochannel, lacustrine sediments and ferricrete.

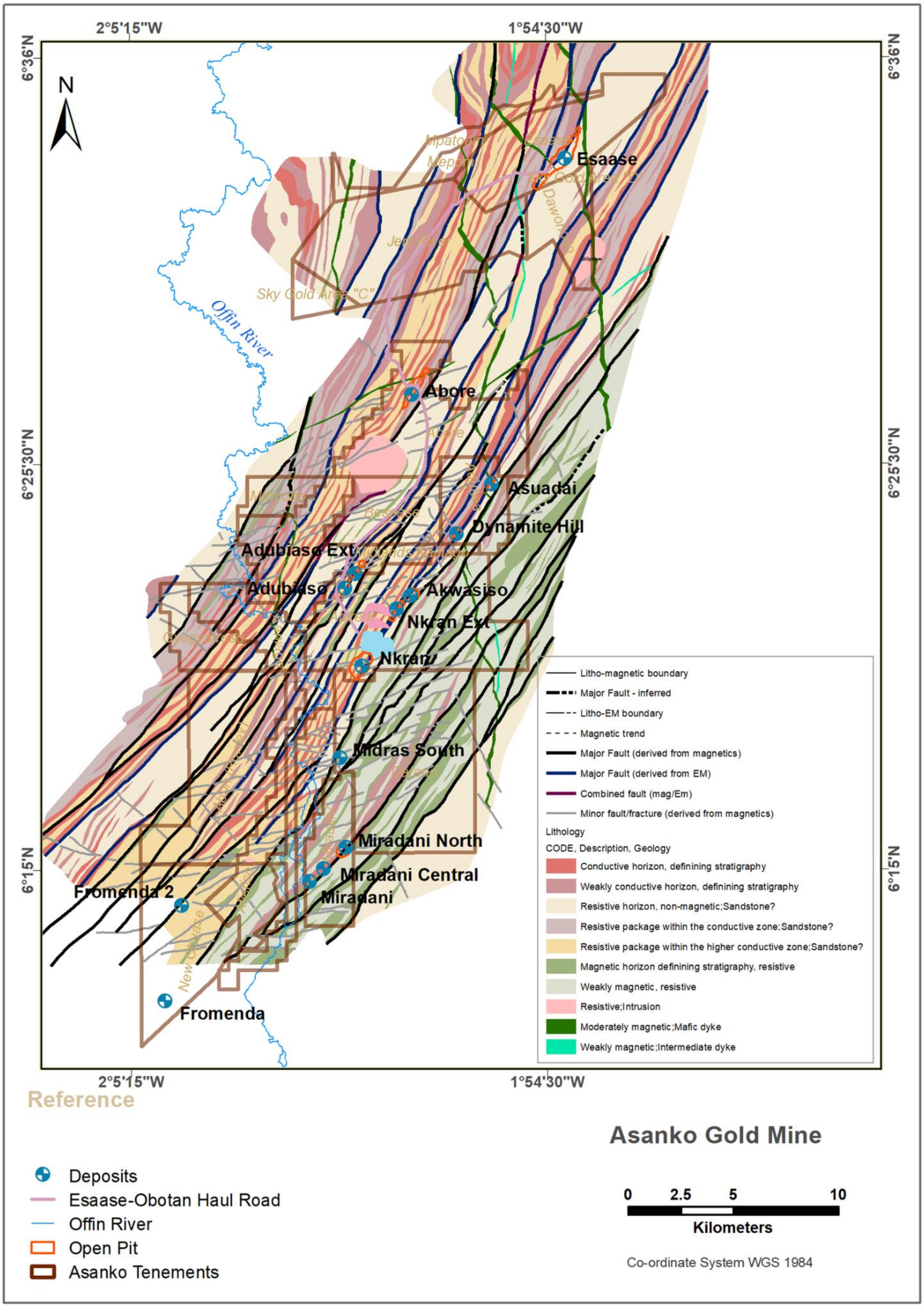
On hilltops, ridges and slopes, there is vegetation cover sitting on topsoil rich in organic matter which is between 0-30 cm thick. Underneath this is the lateritic residuum comprising lateritic gravel and duricrust beneath which is the mottled zone followed by plasmic zones. Beneath the plasmic zone lies the saprolite and the saprock sitting on the bedrock.

In valleys and plains, the vegetation cover is underlain by mud, thick sandy soils and pebbly gravels, 0.5 m to 5 m thick, which overlie the saprolite and the caprock. Both are underlain by bedrock.

Generally, the base of oxidation is about 50 m but varies between 20 m to 80 m deep depending on local conditions such as rock type, topography, degree of silicification and other factors. The transition from completely weathered to fresh rock is 3 m to 10 m thick but more gradual in the metasedimentary rocks compared to the intrusive rocks.

Figure 7-4 is a photo showing a typical regolith profile exposed in a road cut. Figure 7-5 shows the Asankrangwa belt regional geology.

Figure 7-4 Road-cut exposure showing typical regolith in the Asankrangwa Belt



(Source: AGM, 2021)

Figure 7-5 Location of AGM deposits along the Asankrangwa Gold Belt

7.4 Property Geology and Mineralization

The AGM deposits are hosted along the NE-SW Asankrangwa structural shear corridor, which is defined by NE-SW trending lineaments and magnetic lows and is about 7 km wide and over 50 km long. A summary of the structural controls on mineralization and dominant host rocks at each deposit is presented in Table 7-1.

Table 7-1 Summary of structural controls on mineralization by deposit

Deposit	Mineralization Control	Main Host Rock
Nkran	D2 shear + granitoid + linking QVs	Quartz (Qtz) sandstone + granitoid + quartz veins (QVs)
Nkran Extension	D2 shear + Late conjugate QVs	Qtz sandstone
Esaase	D2 shear + tensional QVs	Highly deformed sandstone-siltstone-shale + QVs
Akwasiso	D2 shear + granite + Late conjugate QVs	Qtz sandstone + granite + QVs
Abore	D2 shear + granite dyke + Late conjugate QVs	Granite + QVs
Asuadai	D2 + Granite + late conjugate QVs	Granite + QVs
Adubiaso	D2 shear + granite dyke + Late conjugate QVs	Qtz sandstone + granite
Adubiaso Ext	D2 shear + late conjugate QVs	Qtz sandstone
Miradani North	D2 shear + sub-horizontal linking QVs	Qtz sandstone + tonalite + QVs
Midras South	D2 shear + linking QVs	Qtz sandstone

7.4.1 Nkran

Nkran occurs on a 20° trending jog on the Nkran Shear Corridor. The Nkran Shear is characterized by sheared siltstones (phyllites) dominant on the western side of the shear and sandstone dominant on the east. The central part of the Nkran deposit consists of a series of wacke and sandstone-dominated stratigraphy that has been intruded by felsic porphyry (see Davis, 2016). Consistent mappable lithologies are the western sandstone, the central sandstone, the eastern sandstone, the felsic granitic porphyry intrusive unit and the skinny breccia unit, which is located within the eastern sandstones and runs along the strike of the deposit.

In plan, the Nkran pit extends for approximately 850 m in a NE-SW direction along the strike length of the orebody and at its widest point measures 450 m across strike. The main rock types at Nkran pit consist of thinly bedded greywacke and thickly bedded to massive sandstone, phyllite and carbonaceous shale. The metasediments have been isoclinally folded and sheared, and generally dip steeply to the north-west at between 70º to 80º, with a steep 70º north-easterly plunge.

Intruding the metasediments are two lensoid tonalitic intrusions. The intrusion is largely restricted to the NE portion of the pit, with isolated pods of granitoid in the southern portion. Granitoid (as tonalite; Nude, 2011) is present at depth in the south end of the pit. The re-opening of the Nkran deposit has provided extensive in-pit exposure. The granitoids intrude structures marked by a stratigraphic discordance and are variably sericite altered. Of note is that the granitoids post-date the D1-D2 deformational events and host a brittle vein style of gold mineralization.

The regional stratigraphy trends in a NE direction, while in the middle of the Nkran pit the stratigraphy trends north. The stratigraphic discordance in the centre of the pit correlates with both the southern extent of the granite intrusion (GR01) at upper levels and the presence of sandstone-dominant stratigraphy. Phyllites locally are observed to splay and merge along strike and mark zones of higher strain (shear zones) within a more competent sandstone dominant package and tonalite. Duplex structures present through the centre of the pit, cut the GR01 granite and repeat the sandstone-dominant stratigraphy along sheared phyllites and tonalite contacts.

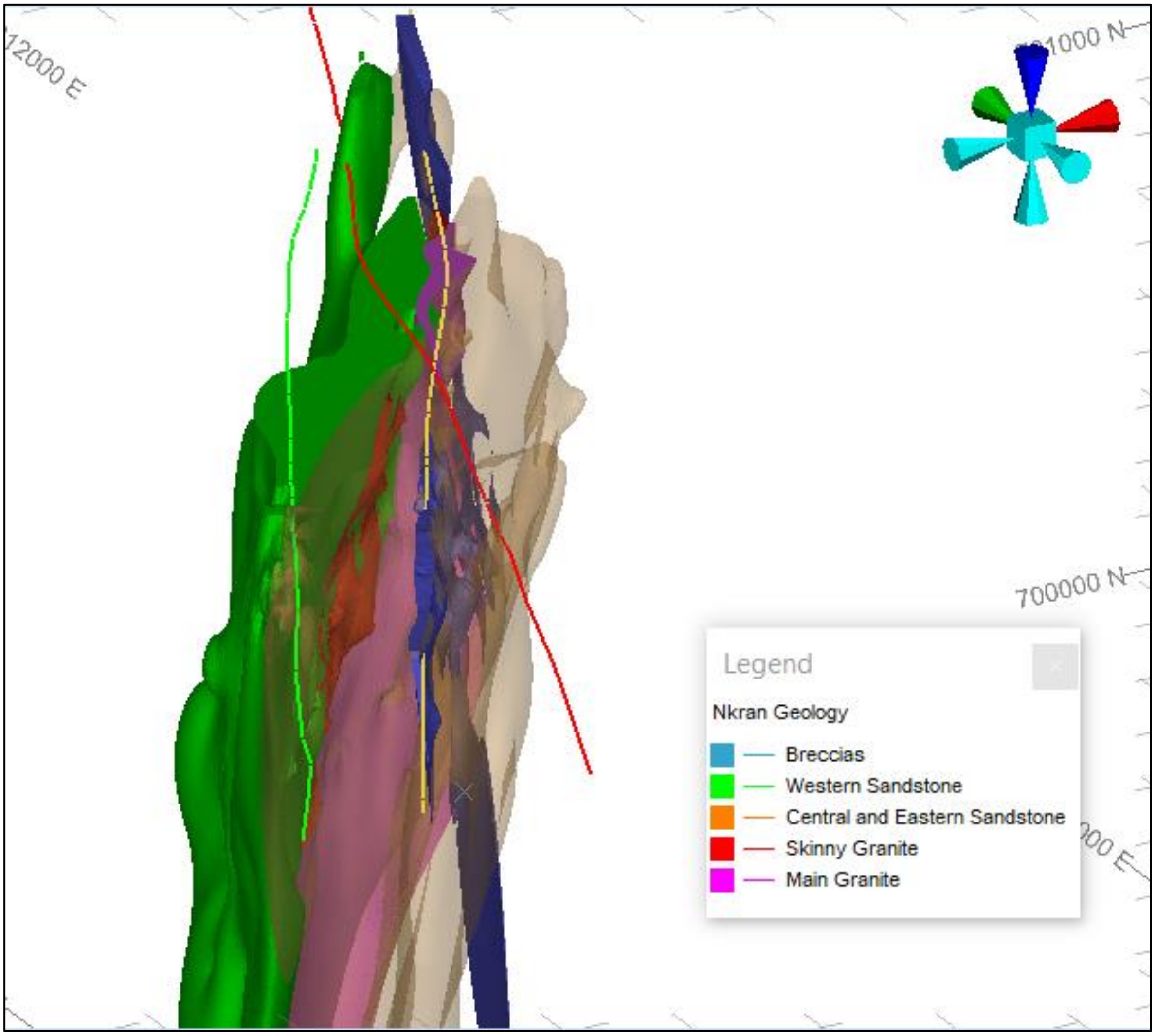
Three predominant deformation/geotectonic phases are identified at the Nkran area:

- Closure of the Kumasi Basin through NW-SE compression
  - D1 NW-SE shortening, creating NE-trending, steep NW-dipping isoclinal folded stratigraphic package of greywacke, phyllite and carbonaceous shale
  - D2 WNW-ESE shortening, dextral movement along the Nkran shear, duplication of stratigraphy along phyllite/shale rich horizons. Formation of four main controlling structures – Freelander, Defender, Discovery and County. The early phase of Au-mineralization is associated with ductile fabric associated with D2 deformation.
- Change/rotation in stress field resulting in SW-NE compression
  - D3 SW-NE shortening, resulting in crenulation cleavage.
- Change/rotation in stress field resulting in NE-SW compression
  - D4a NE–SW shortening, resulting in shallow stacked veins that cross-cut D2 fabric. Vein arrays predominantly hosted within the thick sandstone package, the synformal keel of prior D1/D2 deformation and the granitoid stocks. High-grade gold is associated with these vein arrays
  - D4b NW-SE extension, resulting in steep, narrow extension veins striking NW. Often contain high-grade gold.
  - D5 NW-SE shortening, sinistral reactivation of major structures, resulting in barren quartz breccia and laminated veins, contain xenoliths of early D2 and D4 related mineralization.

Figure 7-6 shows an oblique view looking down and to the north of the Nkran lithology model.

Mineralization at Nkran is controlled by an isoclinally sheared fold verging to the north. There is a very strong control on the gold mineralization distribution by structures associated with the Western Sandstone and the Eastern Breccia. The mineralization is concentrated around the limbs of this fold and occurred in two phases:

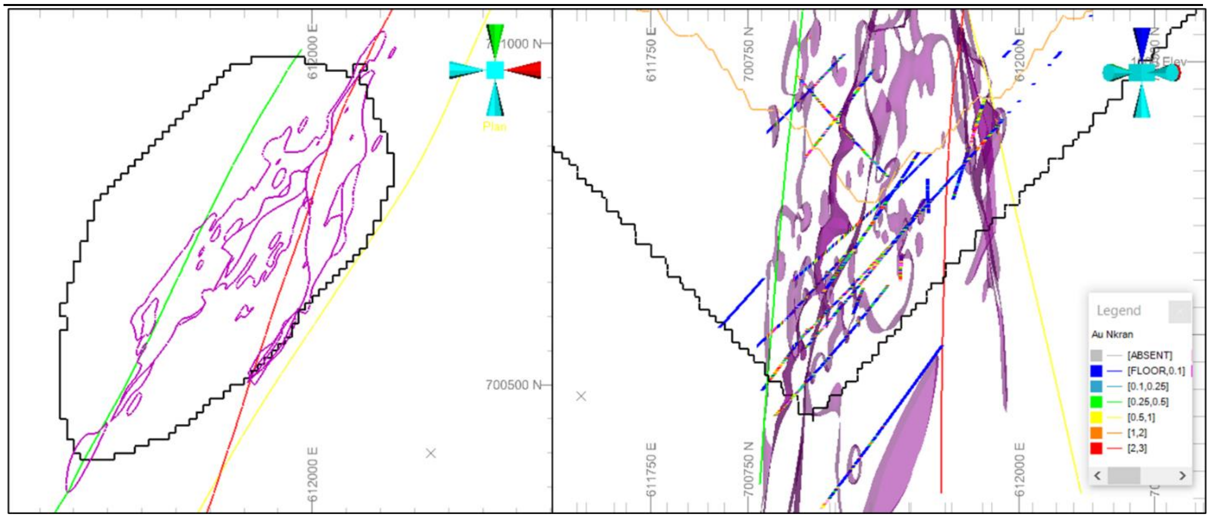
- Ductile, shear-hosted mineralization, within the NNE-striking, steeply W-dipping GV, CV and EV systems. These zones typically measure approximately 2 m in wide in the central area, with higher grades associated with the intersection of the lodes and the controlling structures (Freelander, Defender, etc.) resulting in high-grade steeply plunging shoots. These lodes are overprinted by a barren quartz event that significantly disrupts the continuous nature of the mineralization in the central zone of the pit.



(Source: CSA Global, 2022)

Figure 7-6 Oblique view looking NE of Nkran lithology model; main structures are shown as line traces at surface *(County = red; Discovery = yellow; Freelander = green)*

- Cross-cutting, NW to NNW-striking, shallow to moderately NE-dipping brittle quartz-carbonate vein hosted mineralization and associated sericite-albite-arsenopyrite-magnetite alteration. Steep, narrow (2 cm to 5 cm thick) high-grade veins overprint the shallow dipping mineralization. The first set of shallow dipping veins (Figure 7-7) are linked to NE-SW shortening. The second phase of veins were linked to the NNE-SSW extension. This mineralization is predominantly hosted in the folded thickened broad sandstone and granitoid stocks.



(Source: CSA Global, 2022)

Figure 7-7 Nkran plan view (850RL) and cross-section through pit showing mineralized domains based on grade, vein density and orientation data
(Note: June 2020 mining surface = orange, County = red, Discovery = yellow, Freelander = green)

7.4.2 Esaase

Broadly speaking, the Esaase deposit area can be referred to as a 'system of gold-bearing quartz veins hosted by tightly folded Birimian-age sedimentary rocks arranged along an NNE-SSW trending strike'. Since the maiden resource release in October 2007, various simplified geological models have been used to constrain the resource estimation.

The 2007 maiden Mineral Resource for Esaase used a simple 'two mineral domain' model to geologically constrain the resource, consisting of Hanging Wall and Footwall zones. The Hanging Wall zone consisted of shale and siltstone and the Footwall zone, predominantly greywacke (Coffey, 2007).

The 2019 model used four 'litho-stratigraphic' units (Upper Siltstone, Cobra Unit, Central Sandstone, Python Shear (or Footwall) Sandstone) to constrain modelling (see Table 7-2), all of which were believed to be bounded by NE-SW trending sheared contacts.

Table 7-2 Stratigraphic Unit with a General Description

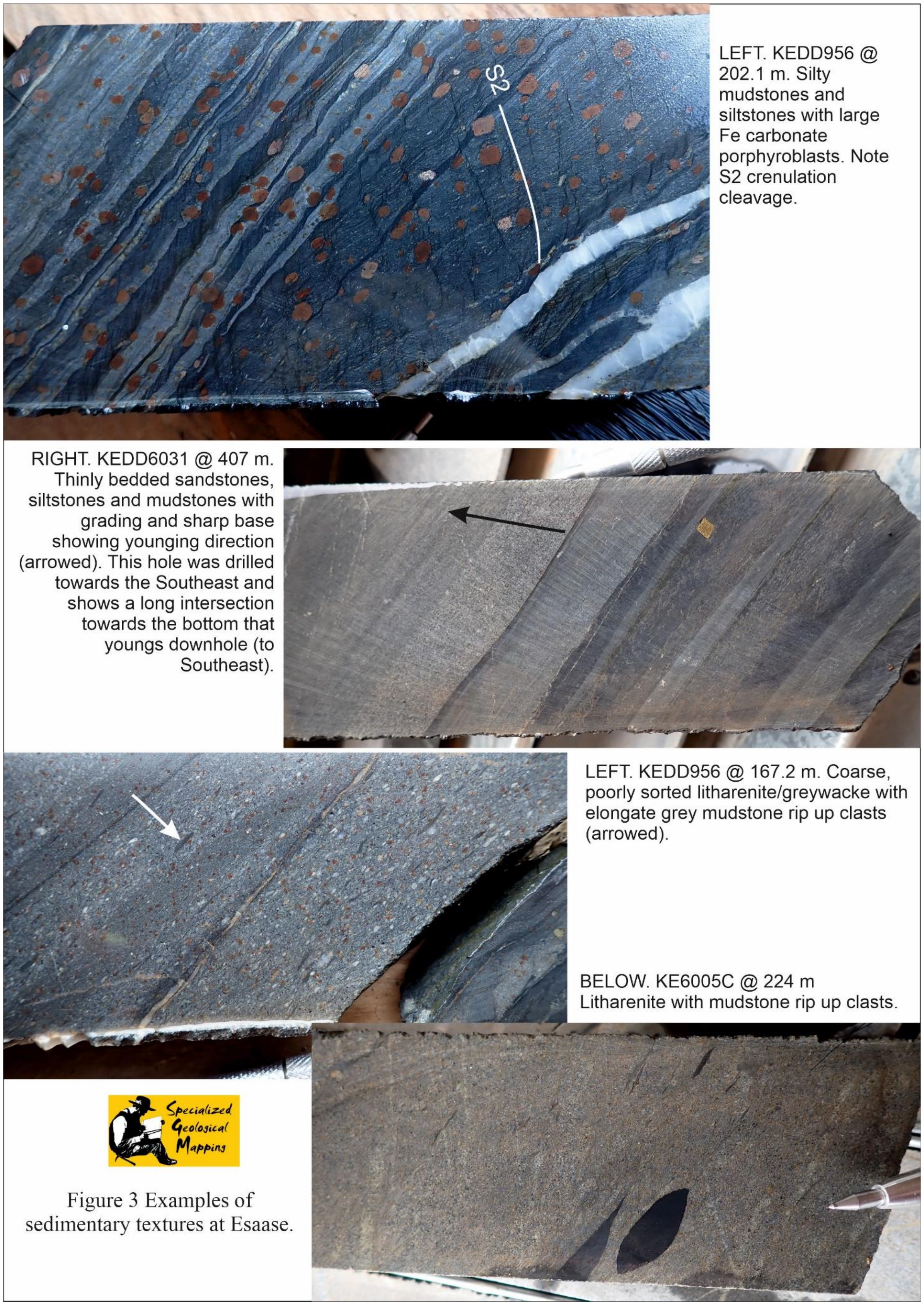
Stratigraphic Unit	General Description
Upper Siltstone	Interbedded succession of sandstone (Upper Sandstone unit) and siltstone layers. The Mamba shear zone marks the top contact of the unit.
Cobra Siltstone	Distinctive, sheared and folded pelitic and carbonaceous succession which caps the Central Sandstone. The Cobra unit contains shear–bounded discontinuous shale bands.
Central Sandstone	The Dominant gold-bearing unit is exposed in the Esaase starter pit and represents the principal economic unit.
Python Shear Sandstone	High-strain bounding Python shear with relatively undeformed Sandstone in the footwall which extends to the Viper Shear Zone.

These units are considered valid litho-stratigraphic units for Esaase, although recent work by Pratt (2021) highlights a tectono-stratigraphic unit between the Central Sandstone and the Cobra Unit that he refers to as ‘The Mobile Zone’ (Figure 7-8).

The mineralized domain model used currently as a basis for resource modelling is based on recognising the distribution of vein arrays using quartz vein percentages, assisted by orientation data and pit mapping. In addition, the wealth of grade control data to date highlights the distribution of these vein arrays along fold hinges. These grade control patterns are best seen in level plans rather than cross sections due to the steeply northeast plunge to both mineralization and lithology.

The lithostratigraphy and structure is best described in the modified excerpts and figures from Pratt (2021) italicised below:

The rocks are entirely metasedimentary, varying from black, organic-rich mudstones to coarse grained, almost pebbly sandstones (though probable thin, late dikes were also seen in core photos). The style of deposition was turbiditic, shown by some normally graded sandstone beds with finer, planar laminated to ripple cross bedded tops. There are some examples of reverse grading in poorly sorted greywackes. The pyritous black mudstones are hemipelagites, deposited under oxygen-poor (anoxic) conditions. The pyrite is almost certainly diagenetic. The pyrite was probably remobilized during metamorphism and hydrothermal alteration. The grade of metamorphism is probably low greenschist (indicated by lack of true mica schists/phyllites and the presence of cordierite (or andalusite). The main minerals are very fine-grained white mica, quartz and feldspar. Feldspar seems to be preserved in the least altered, footwall sandstones suggesting that the white mica (sericite) in other rocks, particularly the Cobra Unit, is ultimately of hydrothermal origin.

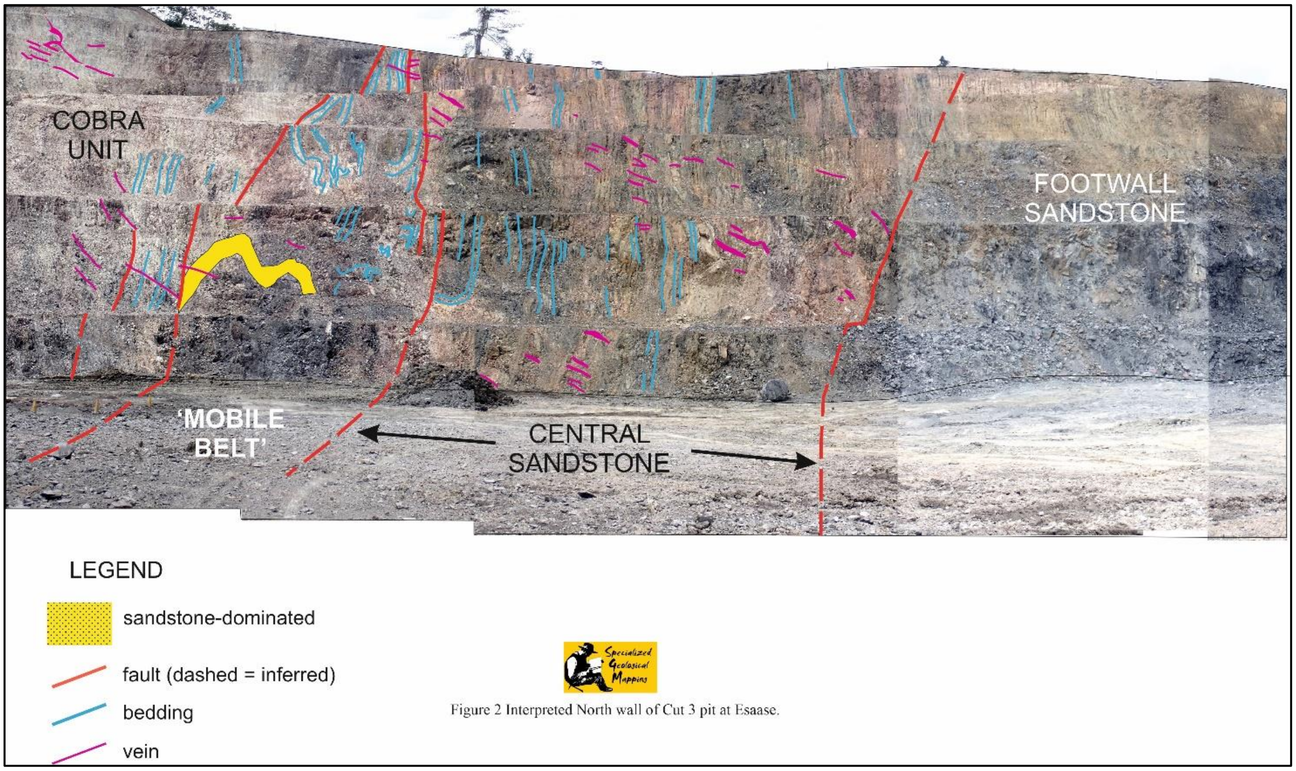


(Source: Pratt, 2021)

Figure 7-8 Examples of sedimentary textures at Esaase

7.4.2.1 Lithostratigraphic Scheme

In the north of Cut 3, the lithostratigraphy comprises five main components, one of which is best described as 'tectonostratigraphic' (see Figure 7-9).



(Source: Pratt, 2021)

Figure 7-9 Interpreted north wall of Cut 3 at Esaase

Figure 7-9 shows some of these components, along with en echelon quartz vein swarms (in magenta). Figure 7-9 s shows a cross section across the North Wall area of Cut 3, approximating to the photo above. Broadly, the beds in Cut 3 seem too young from East to West (oldest to youngest). They comprise:

1. The footwall grey sandstones and siltstones (the 'Grey Sandstones' or 'Footwall Sandstone' of previous Esaase reports). These thickly bedded sandstones are generally fine grained and well sorted. The main characteristic is the colour: they are grey and there are no intervening black mudstones. There are also common interbeds of sandstone with planar lamination and ripple cross stratification (useful for younging directions – not common in the Central Sandstone). The rocks are tough and relatively fresh, even close to the original ground surface. Some individual sandstone beds are very thick. They can contain large euhedral grains of pyrite. The contact with the overlying Central Sandstone is a fault in the North Wall of Cut 3 (Figure 7-9). It is also important to emphasize that the footwall sandstone contains significant folds.
2. The 'Central Sandstone'. This comprises medium- to coarse grained, moderate- to poorly sorted litharenites (quartz, feldspar, rock fragments). Mudstone rip-up clasts are common (Figure 7-8). Some individual sandstone beds are probably more than 3 m thick (true thickness). Towards the top of the unit, the litharenites are better described as greywackes. There are common thin interbeds of black pyritous mudstones, identical to the 'Cobra Unit'. The sandstones generally have a weak cleavage and are commonly strongly sericitic or clay (smectite) altered.

3. The 'Mobile Belt' (or 'Dead Zone', because of mostly low gold grades) (Figure 7-9). This belt is of strongly deformed, folded and sheared black mudstones and sandstones. It is obvious in the North Wall of Cut 3 (Figure 7-9). This zone partly coincides with the previously modelled 'Cobra Shear', but that modelled shear is much narrower and cuts across the Mobile Belt.
4. The 'Cobra Unit'. Pratt (2021) defines this as all the rocks between the Mobile Belt and the Hawk Fault. This complex unit comprises alternating sequences of black, pyritous mudstone- and sandstone-dominated rocks. There are a few packets of thickly bedded sandstone, commonly greywacke (sericitic, with a strong cleavage). One of these is probably the 'Upper Sandstone' mentioned in the past. Overall, the high pyrite content causes a distinct purplish hematite staining. The mudstones commonly have a strong S2 crenulation cleavage and common spherical porphyroblasts of cordierite or andalusite (now altered to fine grained mica). These porphyroblasts are locally overprinted by a halo of Fe carbonate. Fe carbonate also occurs as discrete porphyroblasts (Figure 7-8). There are almost certainly significant tight or isoclinal folds within the Cobra Unit, which repeat the sandstone units, however locating the hinges can be difficult.
5. The Hawk Unit (approximately equivalent of the previously modelled 'Upper Siltstone'). This lies above (west of) the Hawk Fault. It comprises medium- to thickly bedded litharenites, locally coarse grained, with interbedded dark grey mudstones. It weathers in yellow, red and purple colours, quite different from the Cobra Unit. Oxidation penetrates more deeply in this unit. Younging data indicate that this unit is the right way up (younging Northwest). It shows complex folds, with some gently dipping beds (Figure 7-10).

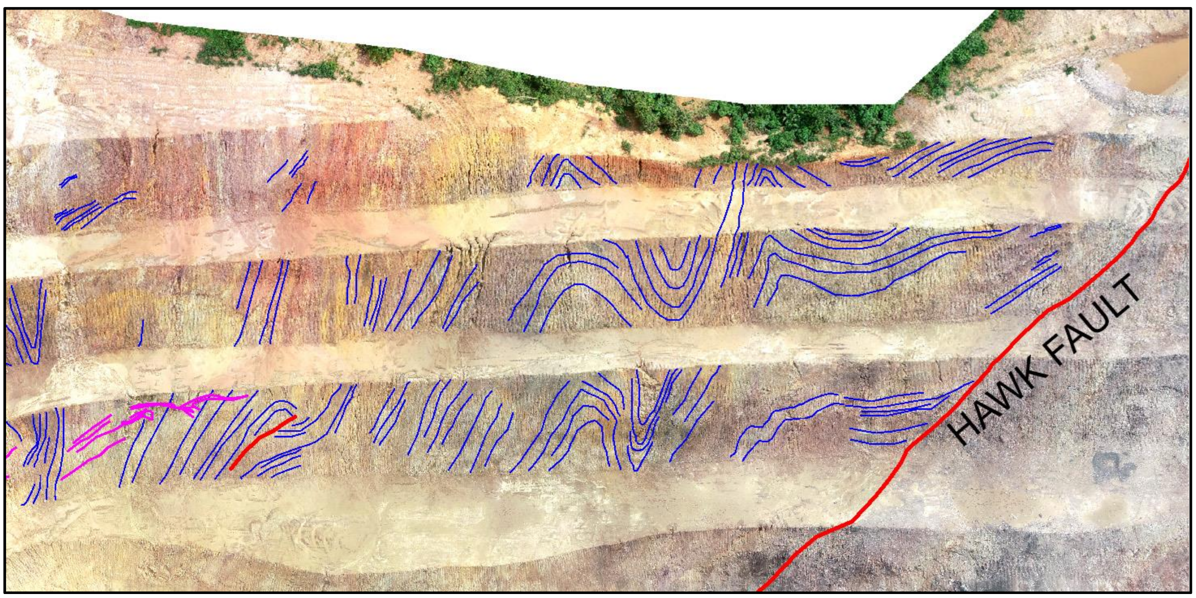


Figure 7-10 Complex folding in the 'Hawk Unit' adjacent to the Hawk Fault

Structure

D1 Deformation

The structural 'grain', mostly defined by bedding and schistosity, is the product of a single major deformation (D1). The bedding at Esaase is mostly sub vertical and Northeast-striking. The blue rectangles in Figure 7-11 are downhole bedding measurements. The Dead Zone (Mobile Belt) is clearly visible as a gap in gold grade.

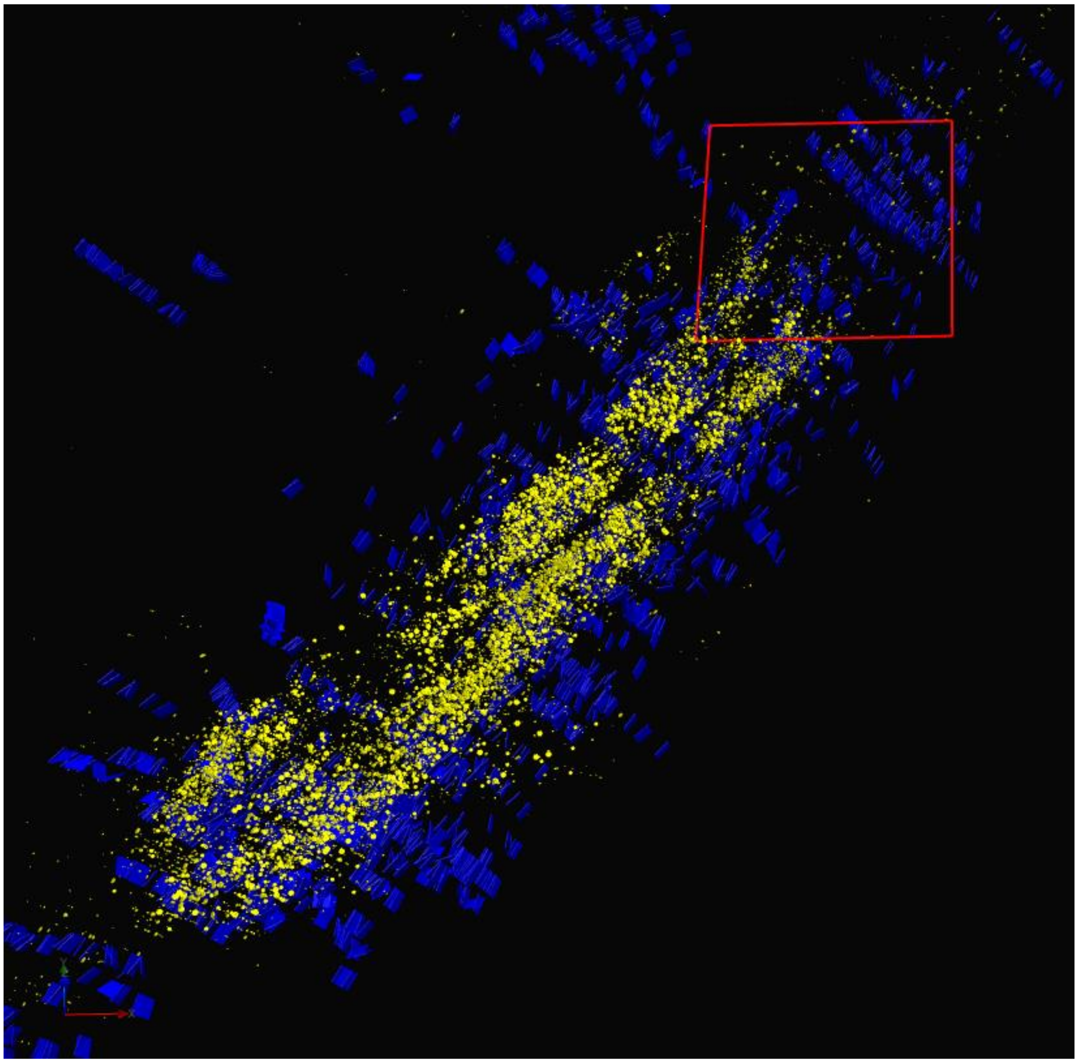


Figure 7-11 Illustrates the gold-poor Dead Zone associated with the 'Mobile Belt'

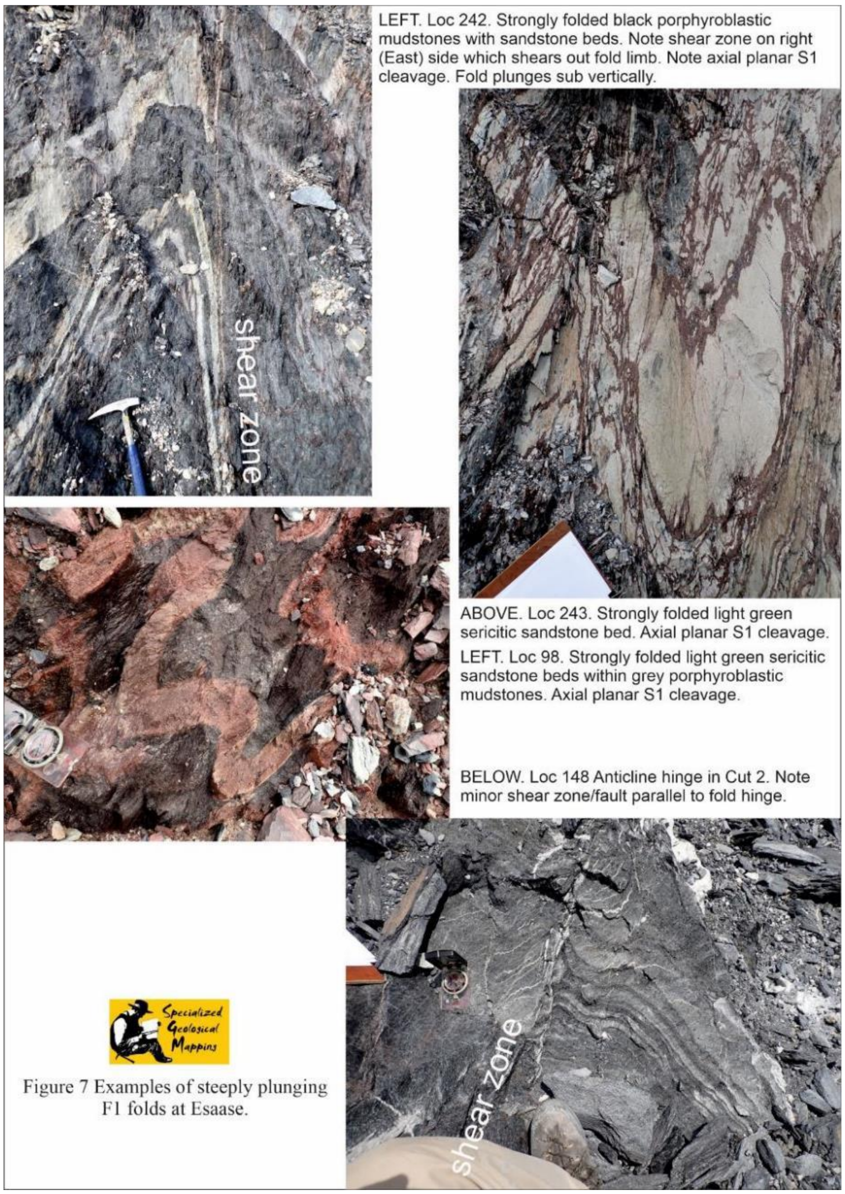
It is tempting to say that the entire sequence youngs towards the northwest, like above the Hawk Fault. However, probable tight- to isoclinal folding is present. The hinges are under-represented in the mapping because they are trickier to spot in benches. They are also poorly represented in the downhole oriented bedding measurements. But there is clear evidence of folding; there are reversals in younging direction in drillholes. For example, a large part of KEDD6031, from 340-450 m depth, shows younging downhole (towards the southeast).

The North Wall transect in Cut 3 (Figure 7-9) shows five main structural domains:

1. Open to tight folds occur in the hanging wall of the Hawk Fault, a major structure with a probable large post-mineral offset. These folds are very visible in the pit wall, emphasized by variegated colours. The rocks are mainly sandstones. The younging appears to be upward/northwest.
2. Between the Hawk Fault and the Mobile Belt, the Cobra Unit comprises interbedded black mudstones and sandstones, with at least one packet of thickly bedded sandstones (probably the 'Upper Sandstone'). Minor folds plunge sub vertically or steeply towards the northeast.
3. The Mobile Belt has been described already; a belt of strongly folded rocks sandwiched between major faults (it is crosscut by Galiano's Leapfrog-modelled 'Cobra Shear'). It has low gold grade. Fold hinges plunge sub-vertically or steeply northeast.

4. The Central Sandstone to the Southeast of the 'Mobile Belt' seems to comprise uniformly bedded rocks in the North Wall of Cut 3 (Figure 7-9). Major folds are likely to be present within it. This is supported by younging direction reversals in KEDD956.
5. The footwall grey sandstones also have fold hinges that plunge subvertically or steeply northeast. The main difference is the intensity of deformation and alteration. Sericite is present in the Central Sandstone but absent in the grey sandstones. Veins also tend to be carbonate-dominated. Bedding is less disturbed and sheared. This is confirmed by mapping in Cuts 2 and 3, where fold hinges (Figure 7-12) can be directly measured. Many plunge almost vertically.

The main cleavage (S1) is approximately axial planar to small scale F1 folds. Examples are shown in Figure 7-12.



(Source: Pratt, 2021)

Figure 7-12 Examples of steeply plunging F1 folds at Esaase

D2 Deformation

There is localized D2 deformation. This is manifested as kink bands and F2 folds (Figure 7-13 and Figure 7-14). Major folds are not recognized. An S2 crenulation cleavage is widespread within the muddier rocks (see Figure 7-8). Some significant quartz veins occur along F2 fold hinges, suggesting that the D2 event is related to gold mineralization. Of note, the S2 crenulation cleavage orientation is quite variable, suggesting it may reflect local forces, due to movement on nearby faults/shear zones.

Faults and Shear Zones

Mapping and logging at the north end of Cut 3 show numerous significant northeast-striking, subvertical faults (Figure 7-9). They comprise narrow zones (mostly < 1 m) of gouge and sheared/ broken rock and are commonly hosted by ductile black mudstones. Apparent 'drag' folds are common in the foot- and hanging walls. The 'Mobile Belt' comprises two subparallel faults (including the 'Cobra Fault') with a zone of intense folding, transposed bedding, shearing and S2 crenulation between. Figure 7-15 shows some textures from the 'Mobile Belt'.

To best understand the structure of Esaase, drill data should be viewed perpendicular to the average fold axis. Doing this, for example with the exploration and grade control assay data, seems to show evidence of folds. The key to understanding the distribution of the lithostratigraphic units, arrays of en echelon quartz veins and, ultimately, gold grade, lies with these folds.

There are also multiple shear zones/faults within the Cobra Unit and within the Central Sandstone. It is strongly suspect that these multiple shear zones/faults have been mis-correlated between holes. The simplest parameter to model is the first appearance of thick sandstones (top of Central Sandstone). This contact is faulted and sheared in Cut 3, but, in some places, it seems like a normal lithostratigraphic contact. The contact is also commonly marked by the appearance of major, en echelon quartz tension gash veins (because the sandstone is more competent).

Veins

There is a clear correlation between the major quartz veins and gold grade. In drill core, the veins commonly present as en echelon tension gash veins at low angle to the core axis (Figure 7-16 and Figure 7-17). This is borne out by mapping, which shows swarms of veins that consistently strike anticlockwise of the structural grain, approximately north-south and sub vertical to northeast dipping. This implies a component of sinistral movement on the controlling structures (faults).

Some pertinent observations regarding veins at Esaase:

- Veins within the competent sandstones can appear relatively planar and undeformed (though some are gently folded and boudinaged) (Figure 7-16 and Figure 7-17). However, these same veins can be traced laterally into more ductile units where they become sheared, parallel to the S1 cleavage and folded.
- The larger, tension gash veins have stylolites of organic material (Figure 7-17)

Some quartz veins are folded in a ductile fashion and show an axial planar cleavage which seems to be S1 (Figure 7-16)

- Even lithologies that may be considered as ductile, locally contain en echelon to sigmoidal tension gash veins that carry gold grades. See KEDD956 @ 218.8 m. In other words, the veins are not restricted to certain rock types.
- Veins seem to be thicker within more competent rocks (thickly bedded sandstones). This is obvious in the North Wall of Cut 3.

- The quartz veins are dominated by quartz, but can contain orange weathered Fe carbonate, light grey carbonate, minor pyrite, rare arsenopyrite and light green mica (probably sericite) (Figure 7-16 and Figure 7-17).
- Veins within the grey footwall sandstones seem to be more carbonate-dominated.

(Source: Pratt, 2021)

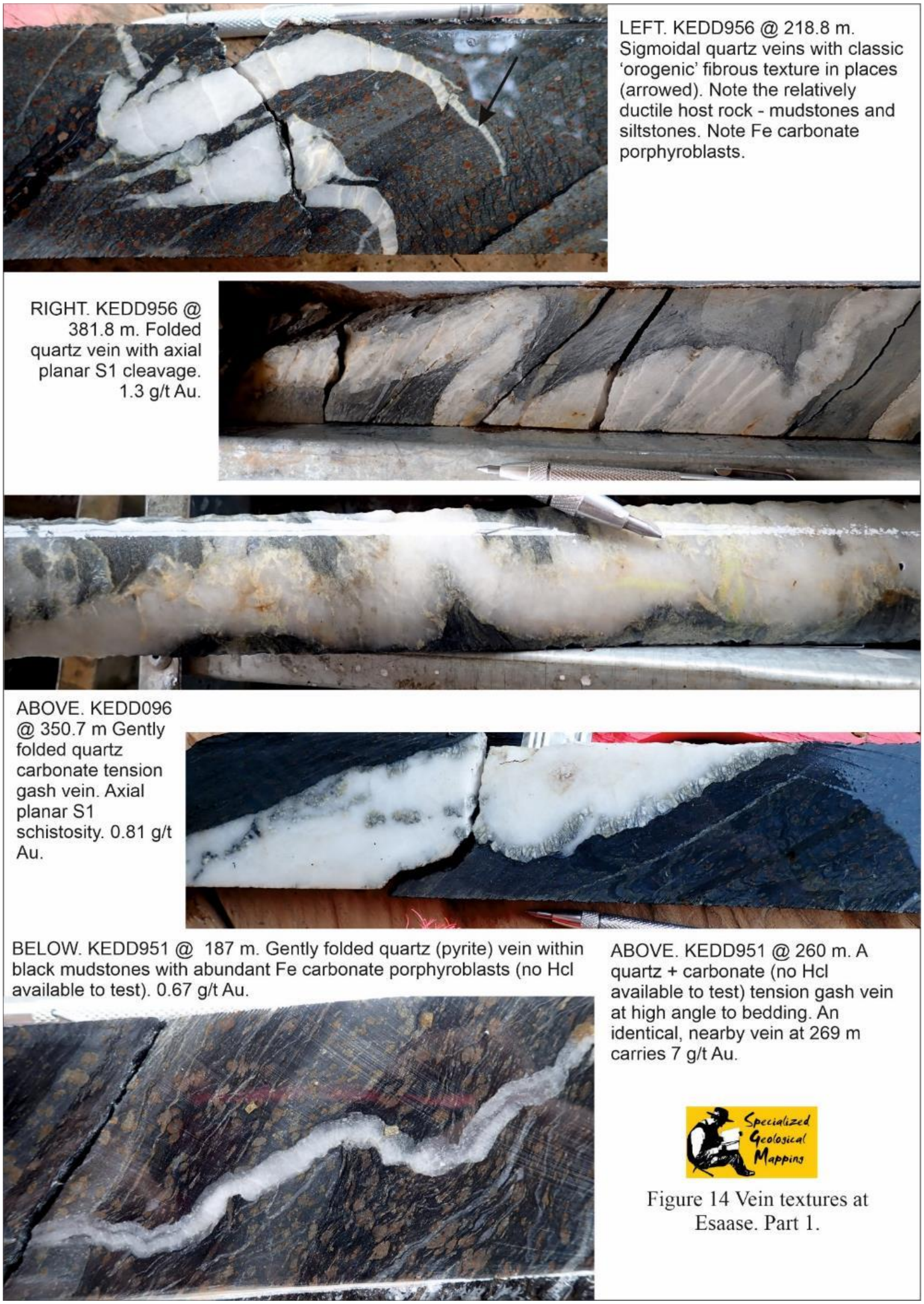
Figure 7-13 Examples of deformation fabrics at Esaase

(Source: Pratt, 2021)

Figure 7-14 Examples of F2 folds and S2 crenulation cleavage at Esaase

(Source: Pratt, 2021)

Figure 7-15 Textures from the 'Mobile Belt' at Esaase



(Source: Pratt, 2021)

Figure 7-16 Vein textures at Esaase (Part 1)

(Source: Pratt, 2021)

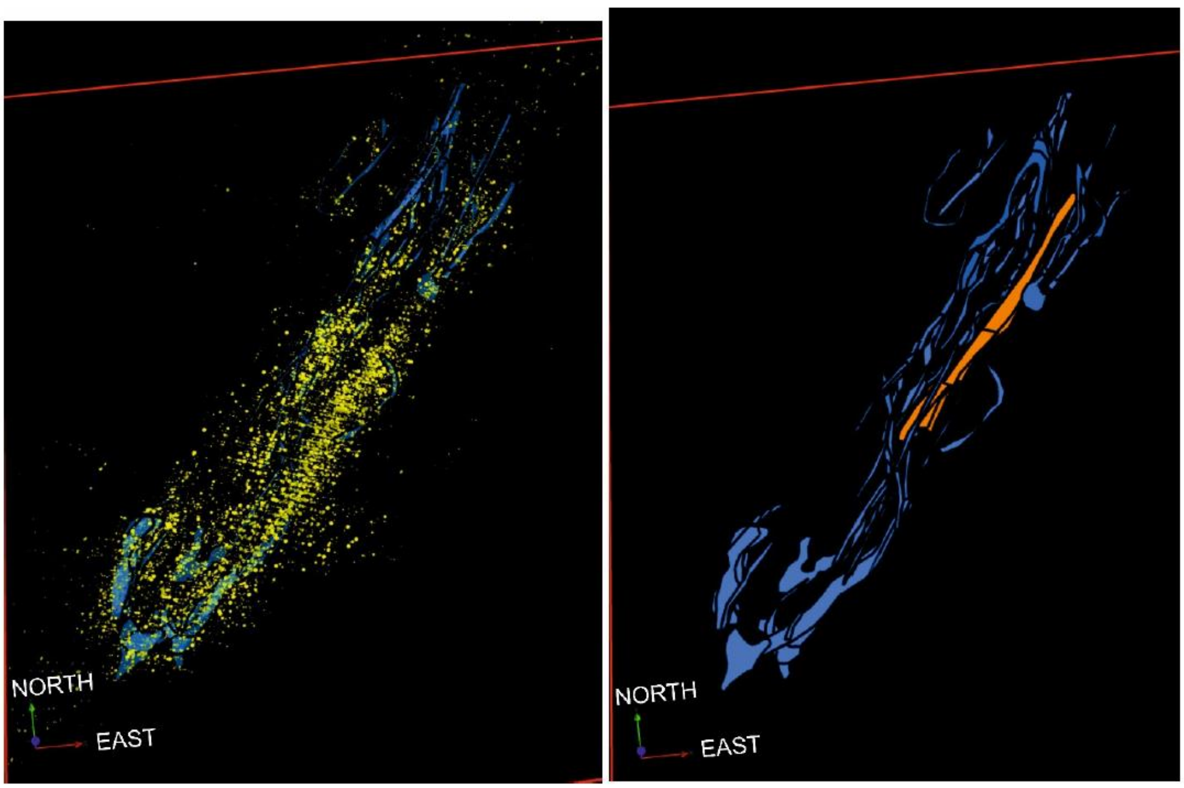
Figure 7-17 Vein textures at Esaase (Part 2)

Controls on Gold Mineralization

Gold at Esaase occurs in northeast-striking, sub vertical corridors, parallel to the structural grain. But it is not clear whether these corridors are controlled principally by through-going faults/shear zones or by rock type, or a combination of both. The best understanding on the controls on gold comes from the exposures north of Cut 3. Here gold grade can be compared directly with mapped structures.

The strong ductility contrast between the Central Sandstone and the ductile 'Mobile Belt' (mostly black mudstones of the Cobra Unit), is a clear example of 'contact-related' orogenic gold mineralization. The Central Sandstone is clearly a good competent host for quartz veining and has quite a wide area of mineralization (visible in the tension gash veins of Figure 7-16 and Figure 7-19). The tension gash veins strike anticlockwise of bedding, suggesting a component of contemporaneous sinistral shear along the principal faults. The abrupt decline in gold grade to the southeast seems to coincide well with the fault shown in Figure 7-20, which also marks a change in alteration (less sericite and pyrite). This strongly suggests a post-mineral offset on this fault. (The closest modelled fault in the Galiano Leapfrog model is the 'Python Shear').

Figure 7-18 shows the grade shapes (in blue) with and without, the gold grades.



(Source: Pratt, 2021)

Figure 7-18 Grade control drilling patterns highlighting the distribution around folds

The most striking feature is the lack of gold in the 'Mobile Belt' (or 'Dead Zone' – shown in orange above). This is perhaps because the (dominantly) black mudstones were not a good host for veining. However, the major faults on either side of the 'Mobile Belt' were clearly a major control on gold. Their immediate foot- and/or hanging walls are zones of grade, likely explained by swarms of en echelon quartz veins.

There are also bends in the mineralization shapes, suggesting that folds are present and that favourable lithologies (massive sandstones) are mineralized. The most pronounced ‘bends’ occur in the south, in Cut 2. Mapping along the west wall of the pit indicate that the Central Sandstone is folded in a steeply plunging anticline/syncline pair. In fact, there may be multiple folds; the fold pair may be a simplification.

The fold hinges and limbs are mineralized with gold, suggesting this was a favourable area. The resolution in the grade control drilling is not quite sharp enough to decide if the sandstones within the Cut 2 folds host ‘disseminated’ gold (veins everywhere) or are cut by numerous corridors (mineralized faults or kink bands) of vein swarms. An example on the west side of Cut 2 is shown in Figure 7-19. It clearly shows a northeast corridor of veins, apparently without a major controlling fault. This belt of veins cuts across the lithostratigraphy but the veins are thicker in the sandstones. It may be comparable to the ‘kink band’ at the north end of Cut 3, or it may be developed along an incipient fault that never developed fully. Figure 7-20 shows an example of how, within this belt of veins, the veins swell in the more competent sandstone.

(Source: Pratt, 2021)

Figure 7-19 NE Corridor, illustrating the Echelon Tension Gash vein arrays

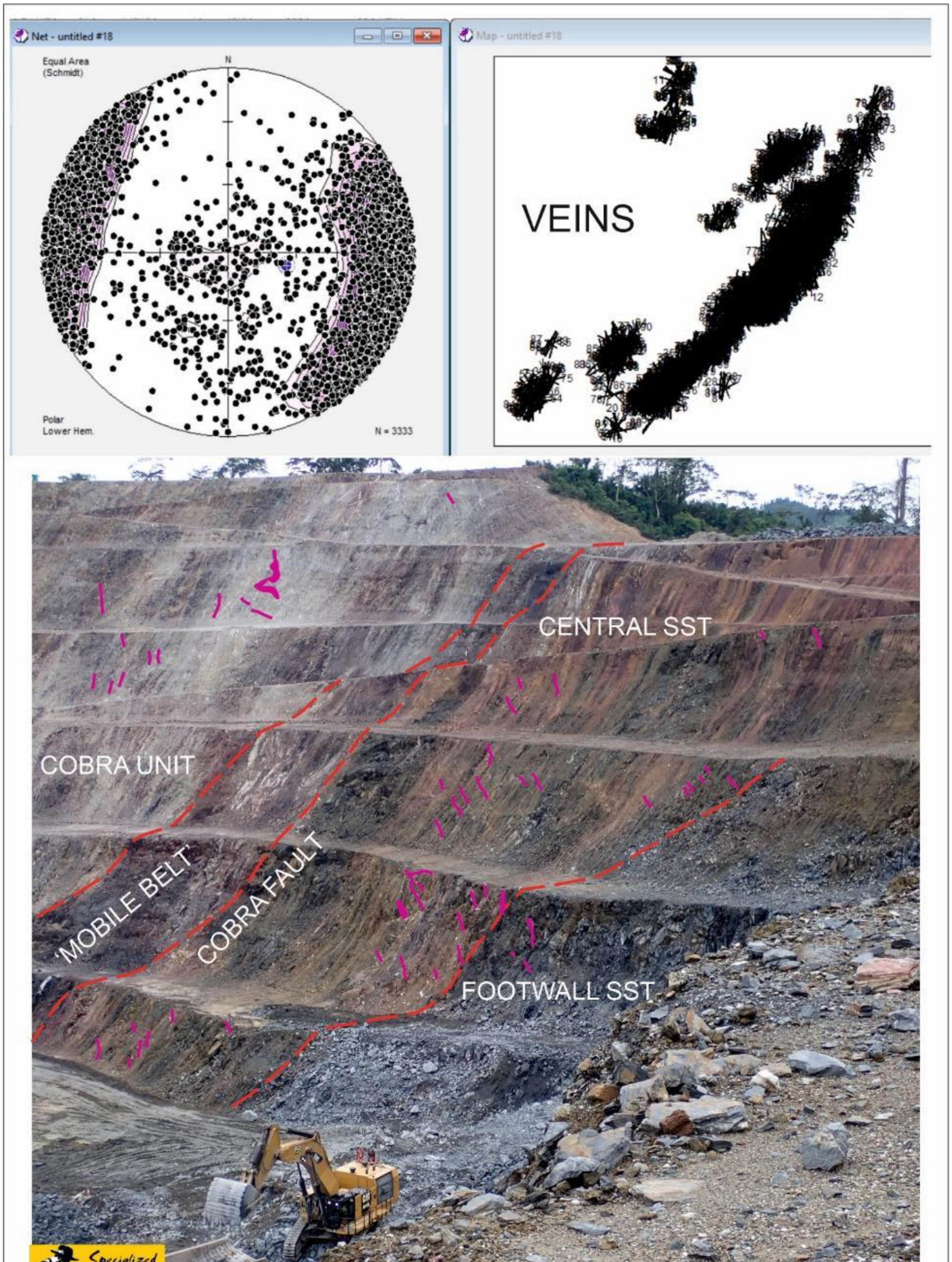


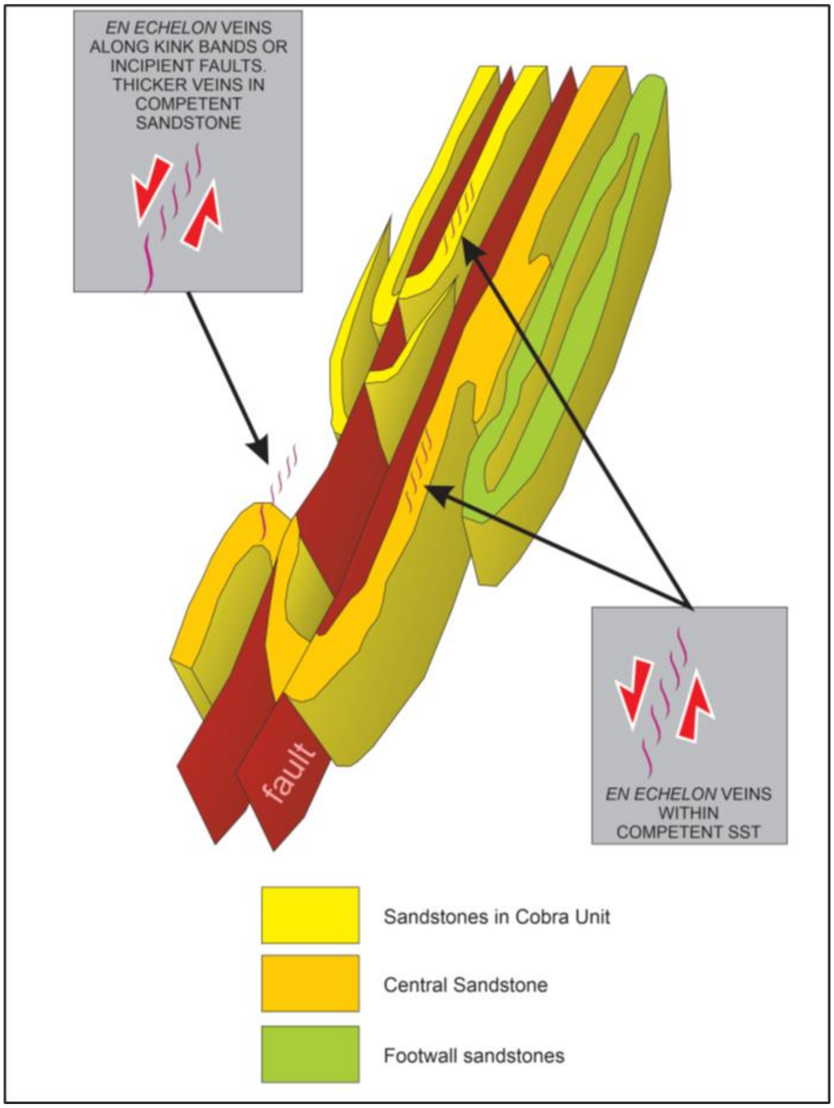
Figure 13. ABOVE. stereographic plots for veins (downhole data from Galiano/Keegan). BELOW. North wall of Cut 3.

(Source: Pratt, 2021)

Figure 7-20 Stereographic plots for veins and north wall of Cut 3 showing vein distribution in various units

Figure 7-21 shows a simple model to explain the two styles of mineralization at Esaase:

- The dominant control is sub vertical northeast-striking faults and shear zones. The faults are mostly not mineralized themselves, though there is some evidence of informal miners chasing some very narrow, late brittle faults. They probably also have a strong post-mineral component of movement. But the faults are flanked by belts of en echelon veins with gold, particularly where the adjacent host rock is competent sandstone ('contact orogenic'). This explains why the best grades are in the Central Sandstone. It is much more competent than the adjacent Cobra black mudstones. The veins lie anticlockwise of the fold hinges, suggesting a component of sinistral movement. There is also evidence that sandstones within the Cobra Unit were more favourable for vein development.
- The second style comprises swarms of en echelon veins, kink bands and zones of incipient faulting that traverse various rock types. Within these belts, the veins are thicker and grades higher, where they traverse competent sandstone.



(Source: Pratt, 2021)

Figure 7-21 Schematic geological model for fold mineralization at Esaase

7.4.3 Akwasiso

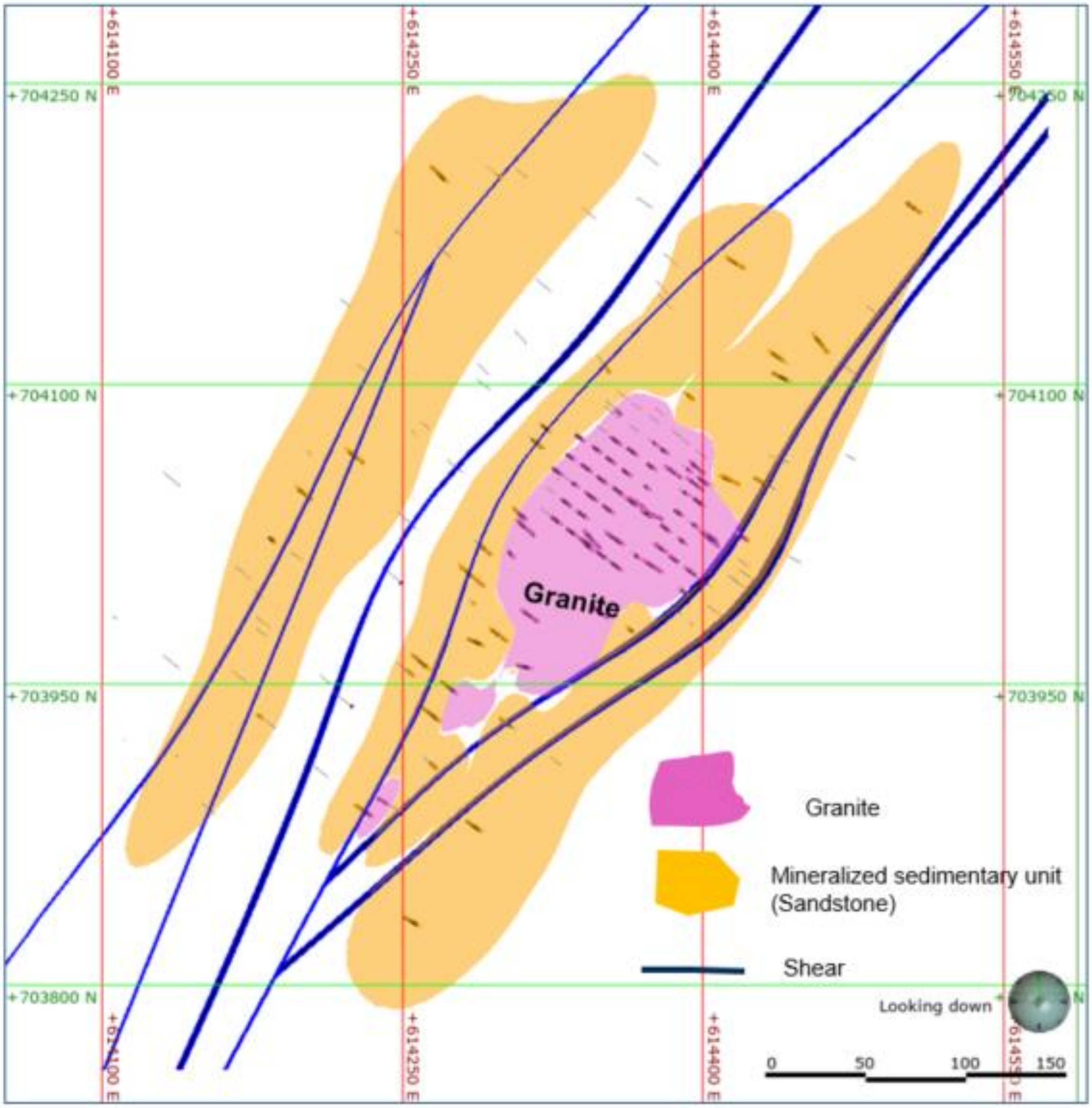
The Akwasiso deposit lies some 4 km NE of the main Nkran deposit and geologically bears many similarities to Nkran. A granite intrusion surrounds a 080° dipping cross structure and mineralization hosted in bounding 035°N sub-vertical shear structures transgressing a sandstone/siltstone sequence.

The deposit is predominantly underlain by Lower Birimian metasedimentary rocks with dominant lithologies being sandstone, siltstone, shales and a granitic intrusion. The contact between these sedimentary units is intruded by granitoids mainly of felsic composition (belt granitoids), which form elongated bodies parallel to the regional shears. In many areas, the contact between the metasedimentary rocks and the granitoids is associated with higher grades of mineralization. The metasedimentary rocks occasionally host disseminated sulphides and carbonates. Pyrite, the most prevalent sulphide, is most often oxidized to limonite or leached out leaving cubic casts. Carbonates, phyllites, graphitic schists and volcaniclastics constitute the major components of these supra crustal rocks. They have well-developed schistosity that is parallel to bedding, striking NE usually between 40° and 50° and often dip steeply to either NW or SE away from the granitic body. The rocks are generally foliated with the shales displaying better development of foliation planes than the sandstones. Foliation dips steeply and slightly oblique to bedding.

The sandstone unit appears to be the favourable host rock for mineralization where more brittle quartz-carbonate veins are localized. A plan view and cross-section at Akwasiso showing the deposit geology is provided in Figure 7-22 and Figure 7-23.

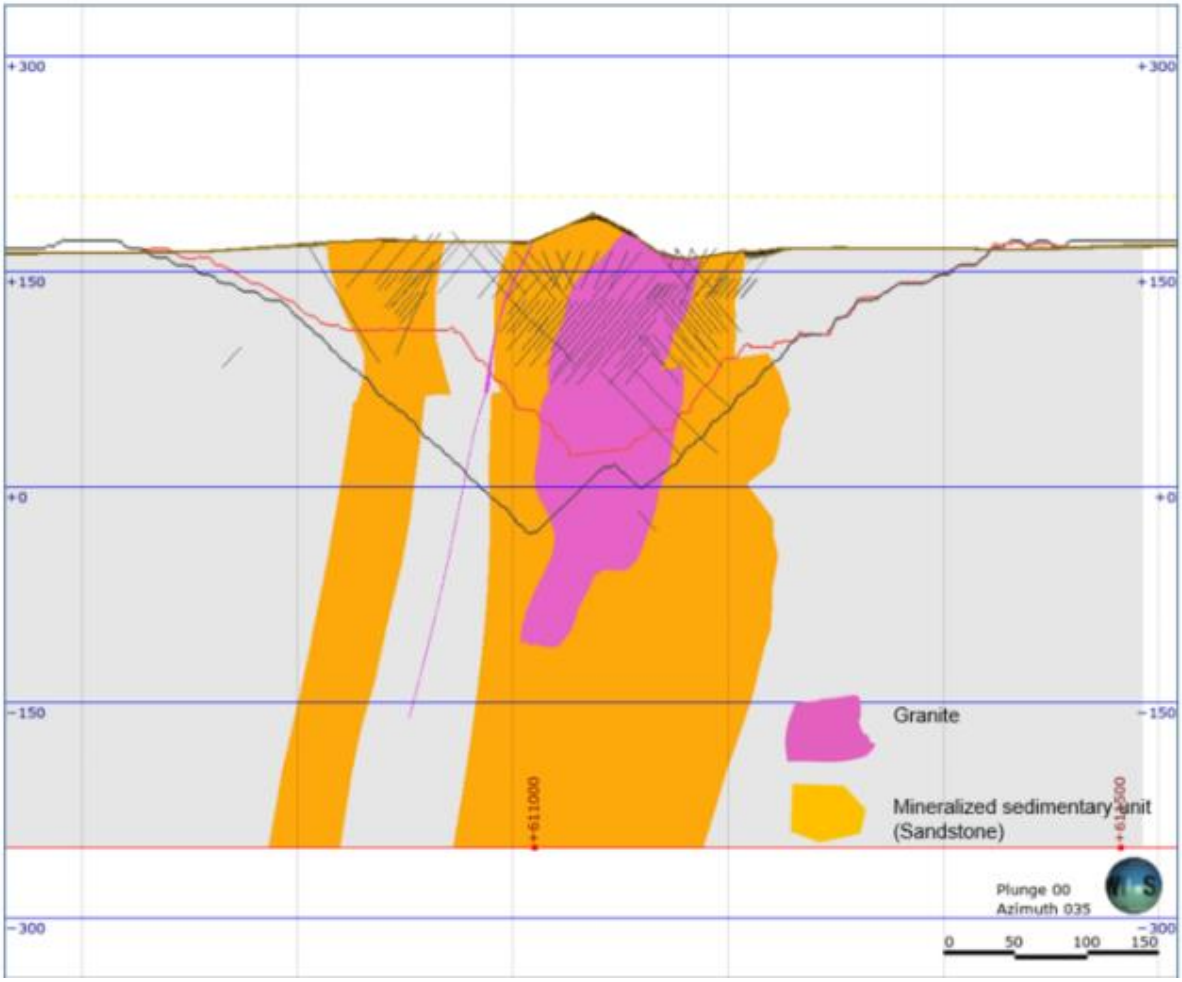
Akwasiso represents a smaller scale version of Nkran. Two shear zones are controlling the mineralization. The eastern mineralized envelope is associated with felsic porphyry emplaced along a sandstone siltstone contact. The intrusive seems to have occurred in a dilation jog with a potato shape plunging steeply to the north and terminated abruptly to the south. It is about 150-170 m along and about 40-50 m across strike.

Mineralization is associated with increased carbonate quartz veining, quartz flooding in the felsic porphyry, arsenopyrite, sericite and chlorite alteration. The alteration is pervasive with the granite and the walls of the country-rock. Higher grade intersections occur at the margins of the sandstone with the granite.



(Source: AGM, 2022)

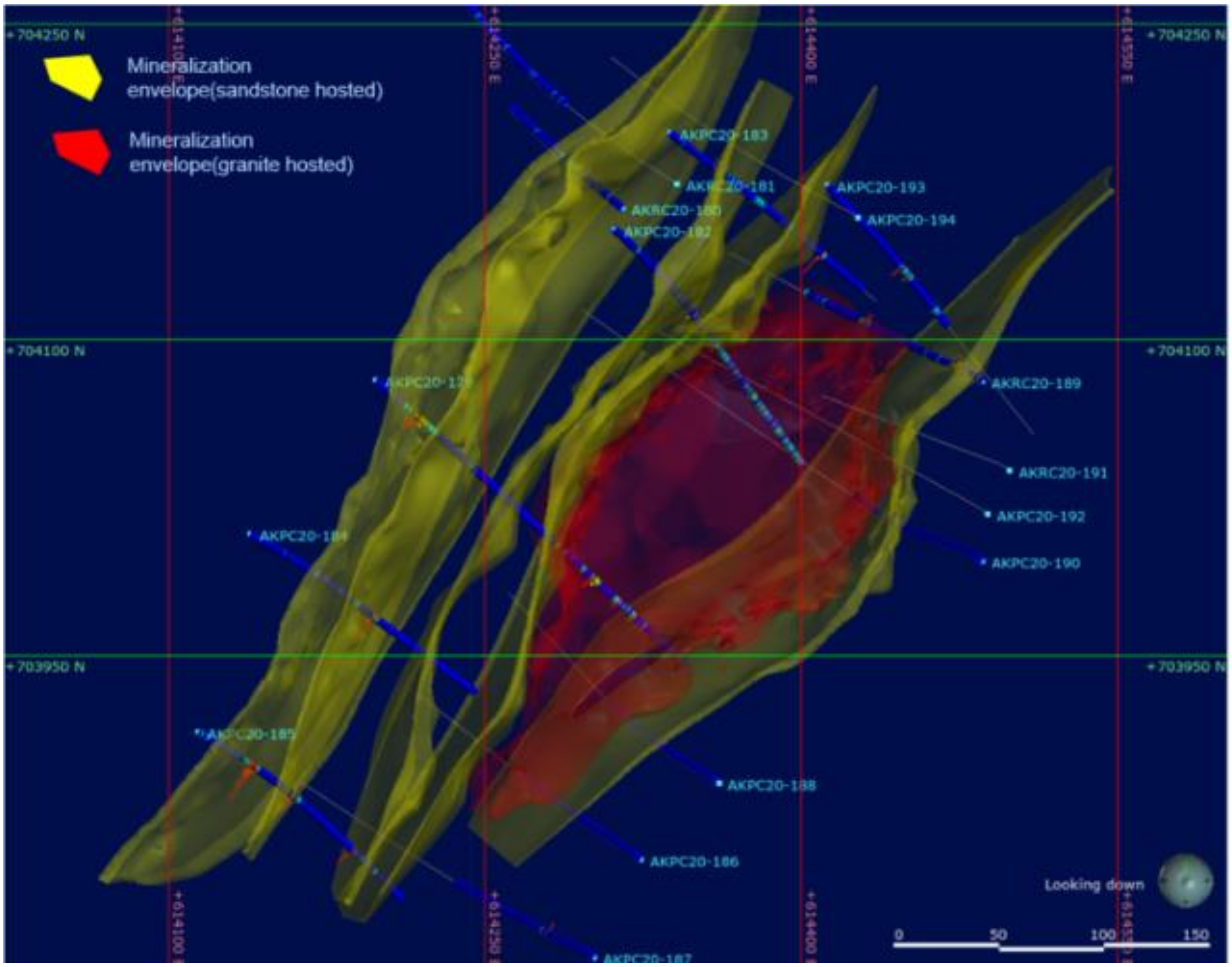
Figure 7-22 Akwasiso plan view showing geology



(Source: AGM, 2022)

Figure 7-23 Akwasiso cross-section through pit showing geology

The other mineralized envelope is a stockwork of extension veins along a shear zone to the west occurring in a sandstone formation. The mineralization is 7-10 m wide and about 300 m along strike, crossing from one end of the pit to the other. The alteration assemblage consists of quartz carbonates, arsenopyrite, sericite and chlorite, and pyrite. Figure 7-24 below shows the plan view of the mineralization envelopes at Akwasiso.



(Source: AGM, 2022)

Figure 7-24 Plan view of Akwasiso mineralization envelopes

7.4.4 Abore

The Abore deposit is located on the Abore-Esaase shear corridor which also hosts the Esaase deposit. The main rock types observed within the Abore pit consist of carbonaceous shale, siltstone (phyllite), thinly bedded wacke and thickly bedded sandstone. The sedimentary sequence has been intruded by a granitic (tonalitic) intrusion. For the development of the geological model, the various lithologies have been grouped into the following:

- Interbedded siltstone dominant: The thinly bedded siltstone and shale (with a minor interbedded wacke component) is the principal geology domain on the western portion of the deposit. This forms the hanging wall host sequence to the granite intrusion.
- Interbedded sandstone dominant: The footwall sandstone and greywacke interbedded sedimentary sequence is the principal lithology on the eastern portion of the deposit. This forms the footwall host sequence to the granite intrusion. The sedimentary rocks dip steeply to the NW between 70° to 85°.

- Granite intrusion: An elongate granite (tonalitic) intrusion has intruded parallel to the main lithological domain boundary. The foliated granite dips steeply to the NW. The granite has been boudinaged and displaced by E-W (060) trending faults.
- Dyke: A late cross-cutting west-east striking dyke features in the northern section of the deposit.

Several foliation and bedding relationships are observed at the Abore deposit. The most common feature is a pervasive foliation that is well developed in the fine-grained siltstones and shales and to a lesser extent in the coarser interbedded sandstone and wacke sequences. A strong foliation (040° strike and steep dip west) is also present on both the hanging wall and footwall margins of the granite, indicating emplacement before deformation. The hanging wall sequence of interbedded siltstone, shale and wacke is significantly more deformed and foliated than the footwall sequence of sandstone with minor wacke, with several shears, trending on a bearing of 020°. These shears developed preferentially within the carbonaceous shale-rich units.

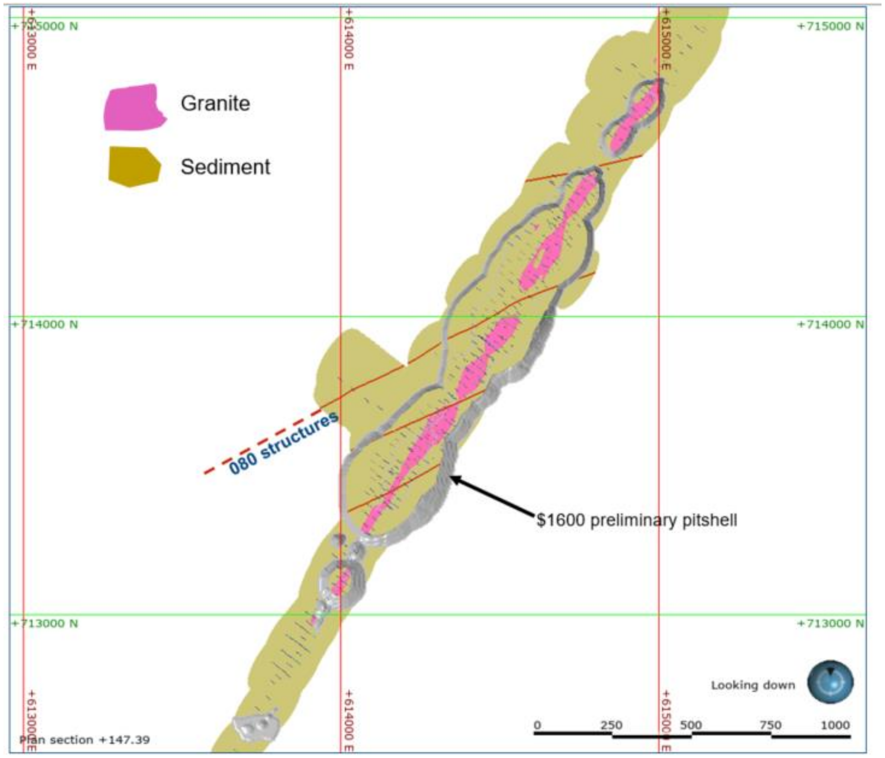
The presence of large-scale folding within the Abore pit is supported by the observation of opposing foliation/bedding relationships within the drill core. The second notable folding event is an NNE trending, steep north-westerly dipping foliation which cuts the earlier 040° trending fabric. Several of these structures are recognizable within the pit. These structures appear to be spatially associated with high-grade gold trends. A plan view and cross-section at Abore showing the deposit geology is provided in Figure 7-25 and Figure 7-26.

At least two (potentially three) phases of mineralization are recognized at Abore. Mineralization is constrained within the granite, with the overall trend of mineralization being parallel to that of the stratigraphy.

The dominant phase of mineralization is hosted in shallow west-dipping 1 cm to 10 cm thick quartz vein arrays which have developed primarily along the eastern margin of the granite contact and the sandstone-wacke dominated stratigraphy. Minor disseminated alteration is observed, despite the significant hydrothermal (sericite and arsenopyrite) alteration associated with the mineralized zones. Vein density, rather than vein thickness, seems to be indicative of higher-grade zones. Analysis of vein orientations showed that two vein types of shallow west-dipping and steep west-dipping occur.

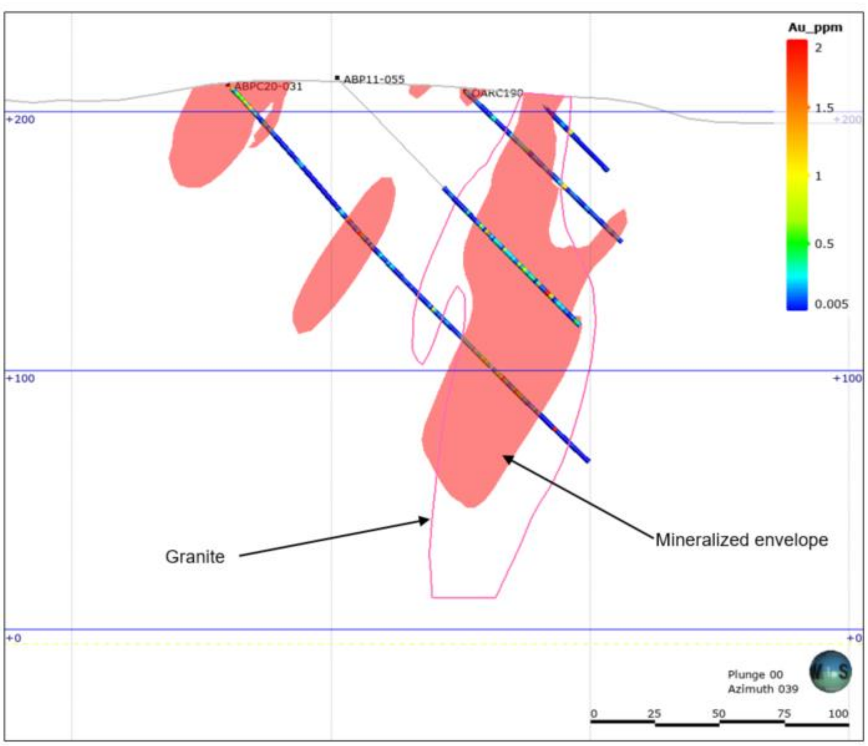
Analysis of the grade control data shows discrete NNE zones of high-grade mineralization that have developed in the boudin necks of the granite bodies relating to early NNE trending structures. It is probable that these pre-dates the quartz vein-hosted mineralization and is similar to that of Nkran, where shallow west-dipping vein arrays overprint steep, high-grade mineralization.

These same NNE bearing structures dextrally offset mineralization in at least three places along the deposit, which in part helps constrain proposed pit shapes (Figure 7-25 to Figure 7-27).



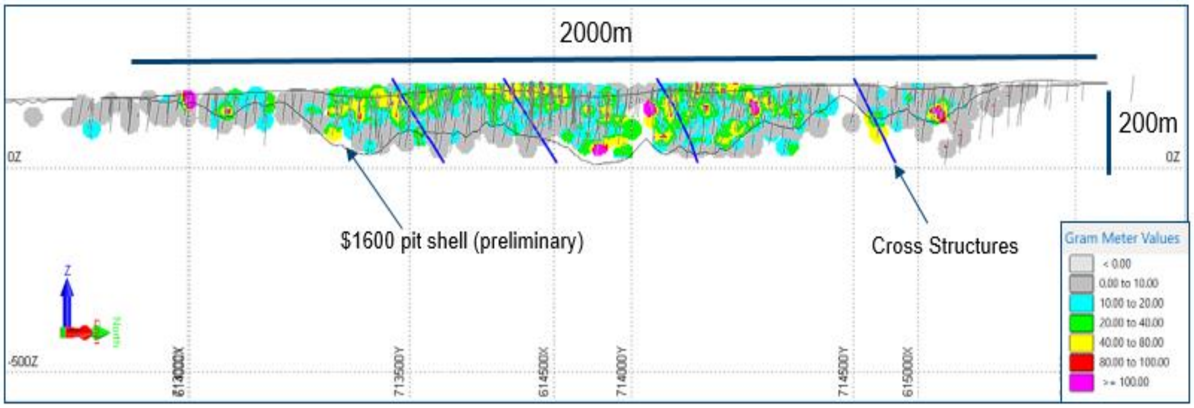
(Source: AGM, 2022)

Figure 7-25 Abore plan view showing drillhole distribution and pit shells



(Source: AGM, 2022)

Figure 7-26 Abore cross-sectional view through pit showing geology



(Source: AGM, 2022)

Figure 7-27 Abore longitudinal section through pit showing geology

7.4.5 Asuadai

The Asuadai deposit is located on the regional NE trending Nkran shear zone, approximately 10 km along strike from Nkran. The prospect features a massive intermediate (tonalite) granitoid hosting a quartz stockwork system.

The main rock types observed within the Asuadai pits consist of thinly bedded carbonaceous shale, siltstone (phyllite) and more thickly bedded wacke and sandstone. Two narrow granitic intrusions (diorite dykes) intrude the metasedimentary sequence on the boundary between the two main sedimentary domains. Extensive shearing in places associated with silica flooding (and associated alteration), makes it difficult to determine the volcanic component of these rocks.

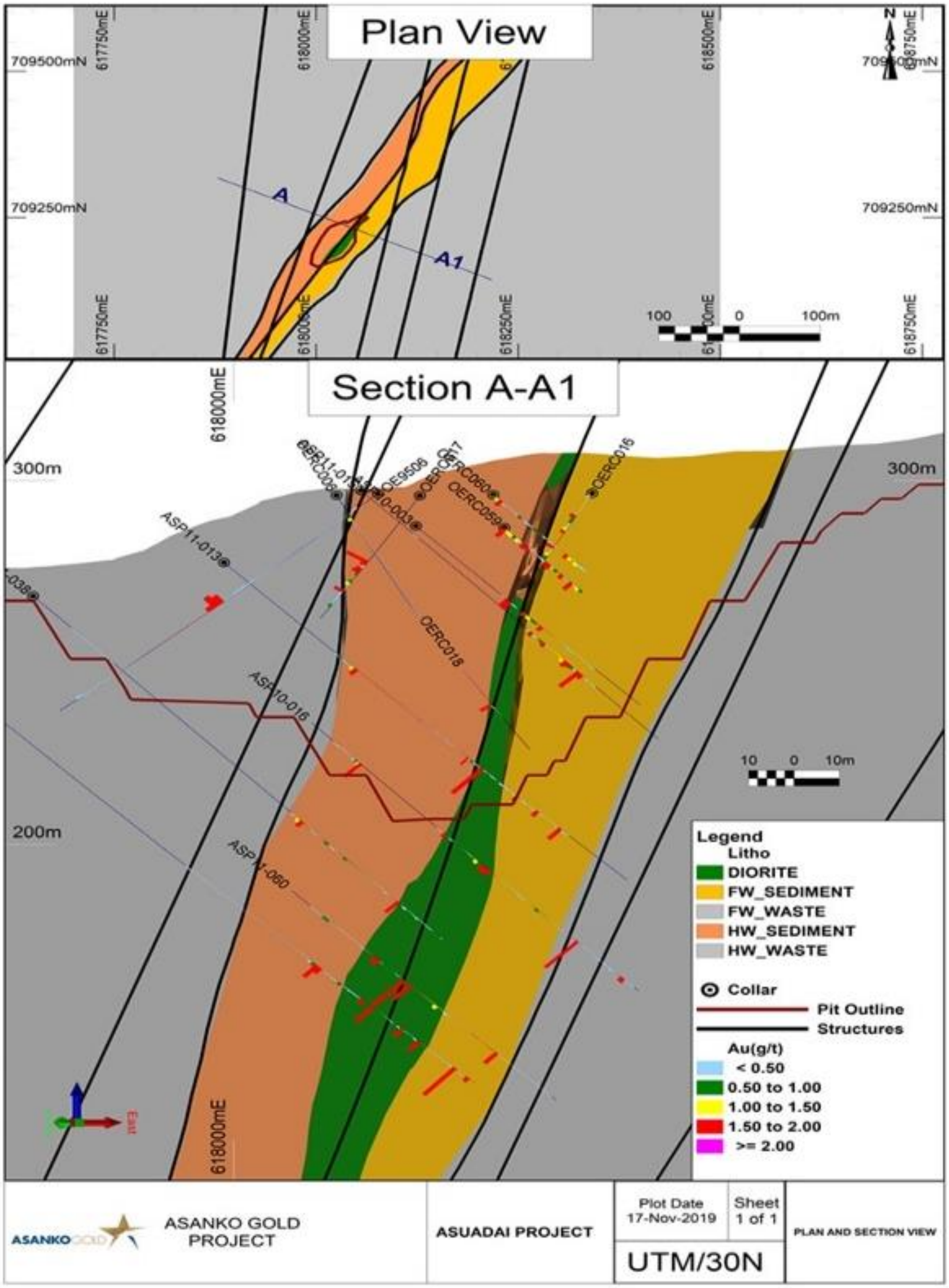
The general geology of the deposit may be broadly subdivided into two main sedimentary domains:

- NW sedimentary sequence comprising interbedded wacke and siltstone (with a minor shale component)
- SE sedimentary sequence consisting of interbedded sandstones and wacke lithologies, with a minor shale component. The sequence is separated by a granitic dyke intruding parallel to this main lithological boundary.

Bedding trends on a bearing of 40°, with local variations, along major structures of up to 00°.The stratigraphy at Asuadai has, like Nkran, been isoclinally folded and dips steeply (approximately 70°) to the west. The stratigraphy is locally imbricated and transposed along major structures which trend on a bearing of 00°.

As with Nkran, Asuadai is located on a 20° trending jog on a regional 35-40° trending structure and is characterized by phyllites dominant on the western margin and sandstone dominant on the eastern portion of the deposit. The granite forms the core of the deposit and is bounded by the two main sedimentary sequences.

Figure 7-28 illustrates the geology at Asuadai in plan view and cross-section.



(Source: AGM, 2022)

Figure 7-28 Asuadai plan view and cross-section through pit showing geology

The Asuadai deposit is characterized by preferential alteration of the sandstone and wacke (to a lesser extent) lithologies to a sericite-magnetite (±albite) assemblage. This alteration style appears to be distinctive to mineralization associated with the Nkran regional structural trend. Various stages of arsenopyrite and pyrite are observed, either disseminated throughout the core or as selvages to gold-bearing quartz veins. Arsenopyrite appears to be dominantly associated with the shallow SW dipping vein arrays, with significant disseminated alteration occurring within the granitic intrusion. Siltstone (and carbonaceous shale) lithologies are generally unaltered.

Early ductile mineralization appears to be associated with silicification and minor pyrite. The extensive overprinting and later reactivation of these structures makes it difficult to establish a distinct alteration package.

The deposit is relatively complex with several controls of mineralization that influences the geometry of the mineralization. Two distinct styles of mineralization are recognized:

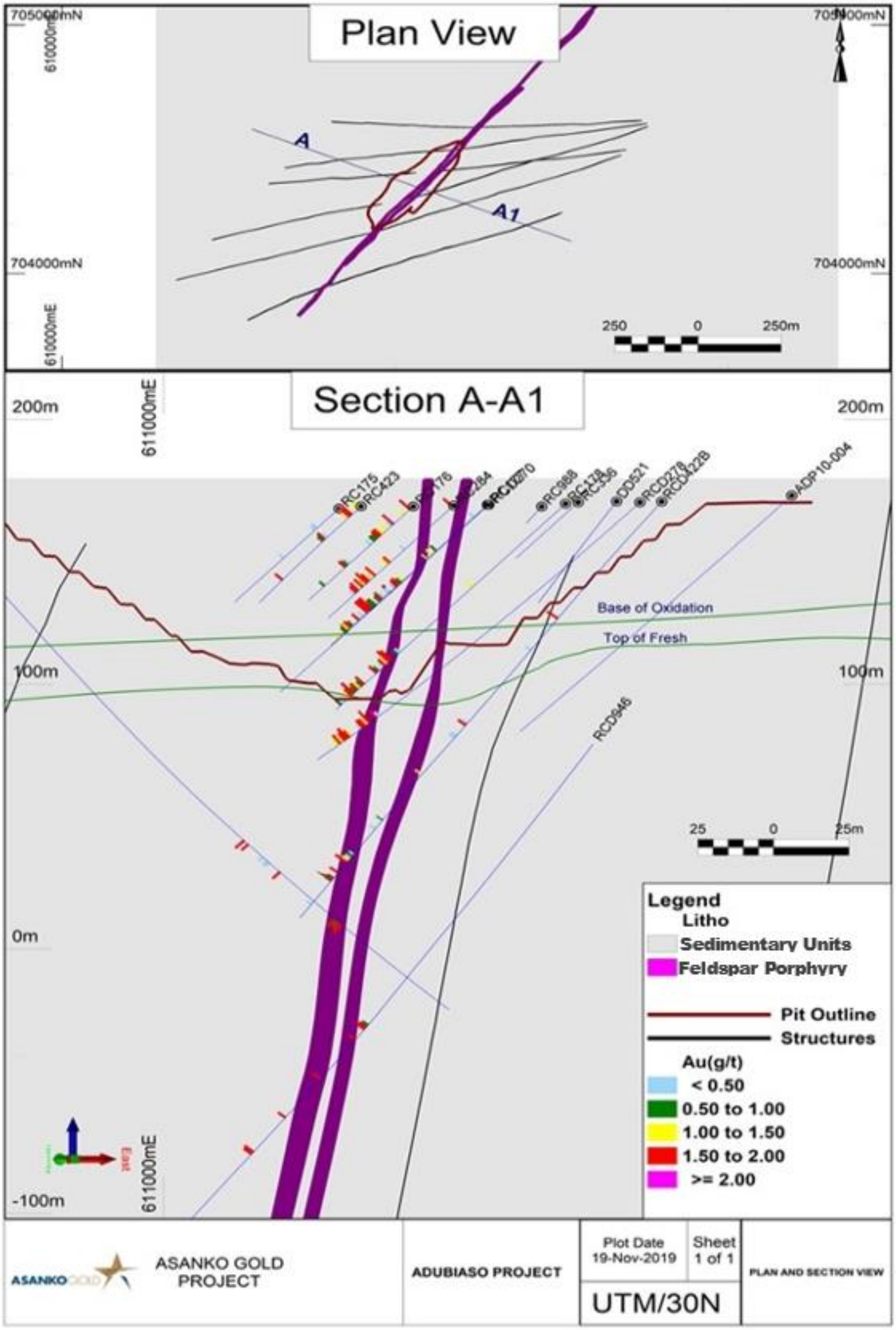
- Steep ductile type mineralization associated with the metasedimentary lithologies: this style was selectively overprinted by a later brittle brecciation event. This mineralization parallels bedding, or foliation. Stereographic projections of vein arrays show a 020° to 040° orientation dipping steeply towards the west. The steep ductile mineralization is seen to bind the granitic intrusion. This mineralization is also associated with structures parallel to the main granitic intrusion.
- Shallow dipping quartz veins: This is the dominant phase of gold mineralization at Asuadai and consists of veins that vary in thickness from 1 cm to 60 cm. The flat-lying vein arrays are best developed in the granite. The veins have associated sericite-albite-arsenopyrite-magnetite alteration.

7.4.6 Adubiaso

The Adubiaso geology comprises a sub-vertical stratigraphy of interbedded greywacke and phyllite, with three sub-vertical granite (porphyry) dykes obliquely cross-cutting the stratigraphy. A steep dipping (65° E) quartz vein system cuts across Birimian metasedimentary rocks, which dip steeply at 75° to the west. The vein system appears to be related to a NE fracture system (distinct from the Nkran structure) along the contact zone between dominantly phyllitic units on the east and coarser greywackes on the west, which host most of the gold-bearing veins. The central part of the vein system is 15 m to 20 m wide, but it tapers to about 10 m at both ends; the vein system has a strike length of about 700 m although the main area of economic significance is the central 300 m of the zone.

As at Nkran, narrow granitoids run generally parallel to the Adubiaso orebody in the pit area, but these are unmineralized. It is also noteworthy that the gold mineralization is restricted to the quartz veins and the metasedimentary host rocks are essentially barren, whereas at Nkran the gold values extend well into the host rocks.

The geology at the main Adubiaso deposit is illustrated in plan view and cross-section in Figure 7-29.



(Source: AGM, 2022)

Figure 7-29 Adubiaso plan view and cross-section through pit showing geology

The Adubiaso Extension (or North) deposit is located to the NE of the main Adubiaso deposit, separated by the broad River Adubia drainage line. The deposit lies on the structure which hosts the Abore deposit known as the Abore shear.

The gold mineralization at Adubiaso occurs along the main NE to SW striking shear vein system in sub-vertically interbedded greywackes and phyllites intruded by later felsic intrusive units. Subtle jogs in the felsic intrusive units give rise to higher grade ore shoots. The orebody plunges shallowly to the NE at 20° parallel to the intersection of ENE dipping veins with the main strike direction.

Mineralization at Adubiaso is split into two phases:

- Ductile, shear-hosted mineralization, within the NNE striking, steeply west-dipping Nkran Shear Corridor. This zone measures approximately 25 m in width in the central area, thinning to approximately 6 m at the northern and southern ends of the pit
- Cross-cutting, NW to NNW striking, moderately east-dipping brittle quartz-carbonate vein hosted mineralization. This mineralization crosscuts the shear zone and porphyry zones and postdates the early phase of mineralization, and is located in the hanging wall and footwall to the central mineralized zone. These structures appear to be spaced 35 m to 60 m vertically.

The deposit extends for some 1,000 m along strike and 180 m depth. The mineralized zones are typically 1 m to 4 m wide, but may occasionally reach up to 20 m. The gold mineralization occurs as free gold and is associated with the NE plunging quartz veins, along the intersection of the metasedimentary units and sheared porphyries.

The mineralized vein set strikes NNW to NNE and dips towards the east, crosscuts the regional NE striking foliation and is variably deformed near the shear zone.

A subtle jog in the strike of the porphyries and carbonaceous schist correlates with ore zone terminations. The ore shoots plunge shallowly to the north, parallel to the intersection of the ENE dipping veins with the sub-vertical north to south striking shear zone and sub-parallel stretching lineation. The orebody occurs parallel to the strike inflection, which would be parallel to the north plunging stretching lineation.

The mineralization shows an overall north-south trend and a broadly anastomosing character. The undulations in the grade outlines are considered to correlate with interpreted NE to SW striking shears that appear to dextrally offset the lithology and mineralization to differing degrees. The overall movement is on a metre to tens of metre scale, with small offsets noted in the geological modelling.

7.4.7 Miradani North

The Miradani North deposit was mined between 1996 and 2016 by previous operators. The pit is 250 m long by about 120 m wide with a depth of about 60 m. Most of the oxide ore is depleted but the fresh rock remains untouched.

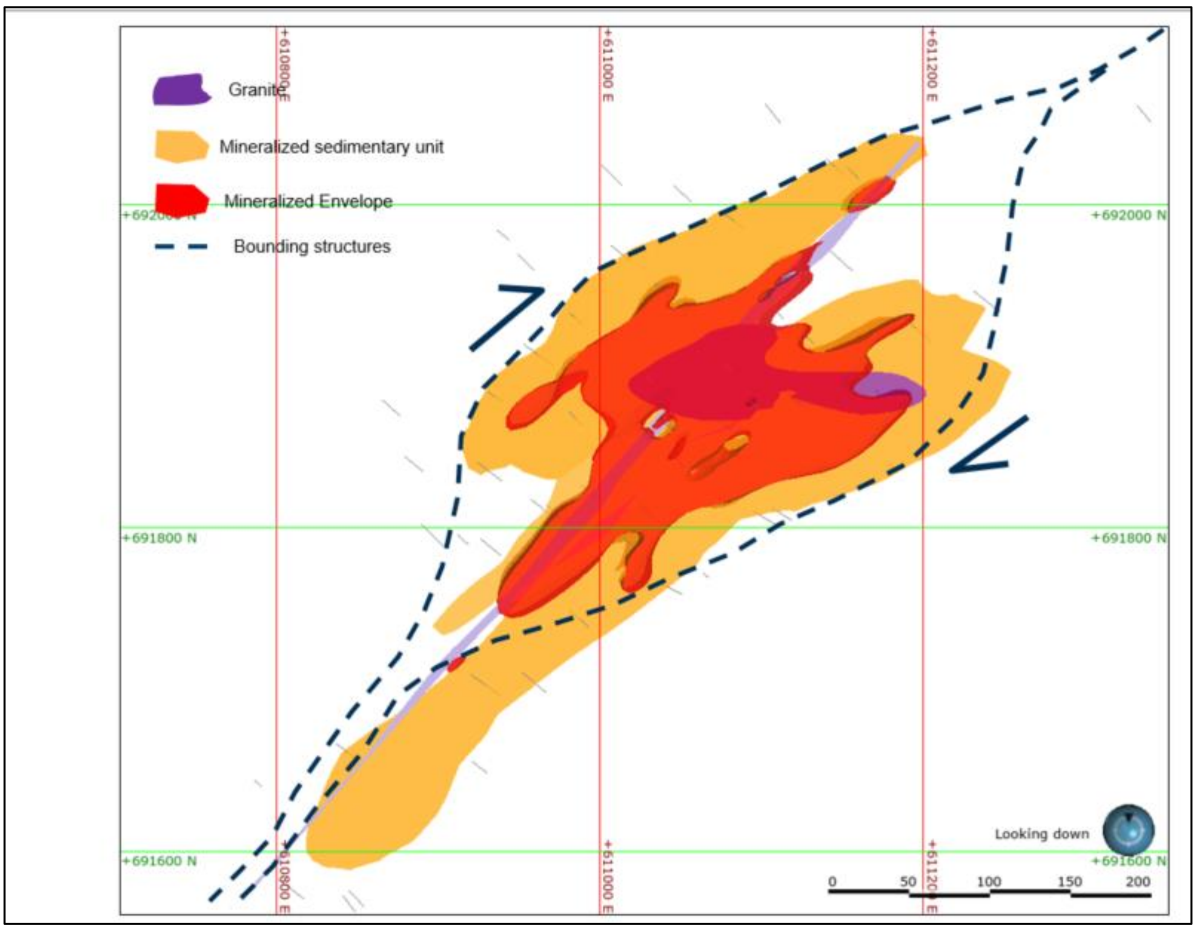
The deposit is located on the Datano Shear zone which is the first from the east of five major fertile shear zones across the Asankrangwa belt. This shear zone is known to traverse the Fromenda area to the south and Datano to the north where there are several active prospects for gold. The deposit is 8 km away from the Nkran processing plant and 3 km south of the Midras South prospect.

The geology of Miradani North deposit is akin to the Nkran deposit in several ways. It is located in a dilational jog at the triple junction of NNE-SSW trending regional structures and East-west (080) structures which are underlain by cryptic basement structures.

The stratigraphy is comprised of wackes and intermittent alternating units of sandstones, siltstones and graphitic shales which are intruded by felsic porphyry. The intrusive unit is about 200 m long, plunges to the south and up to 100 m wide at the middle where it was faulted and rotated by a sinistral movement causing shortening and thickening (see Figure 7-30).

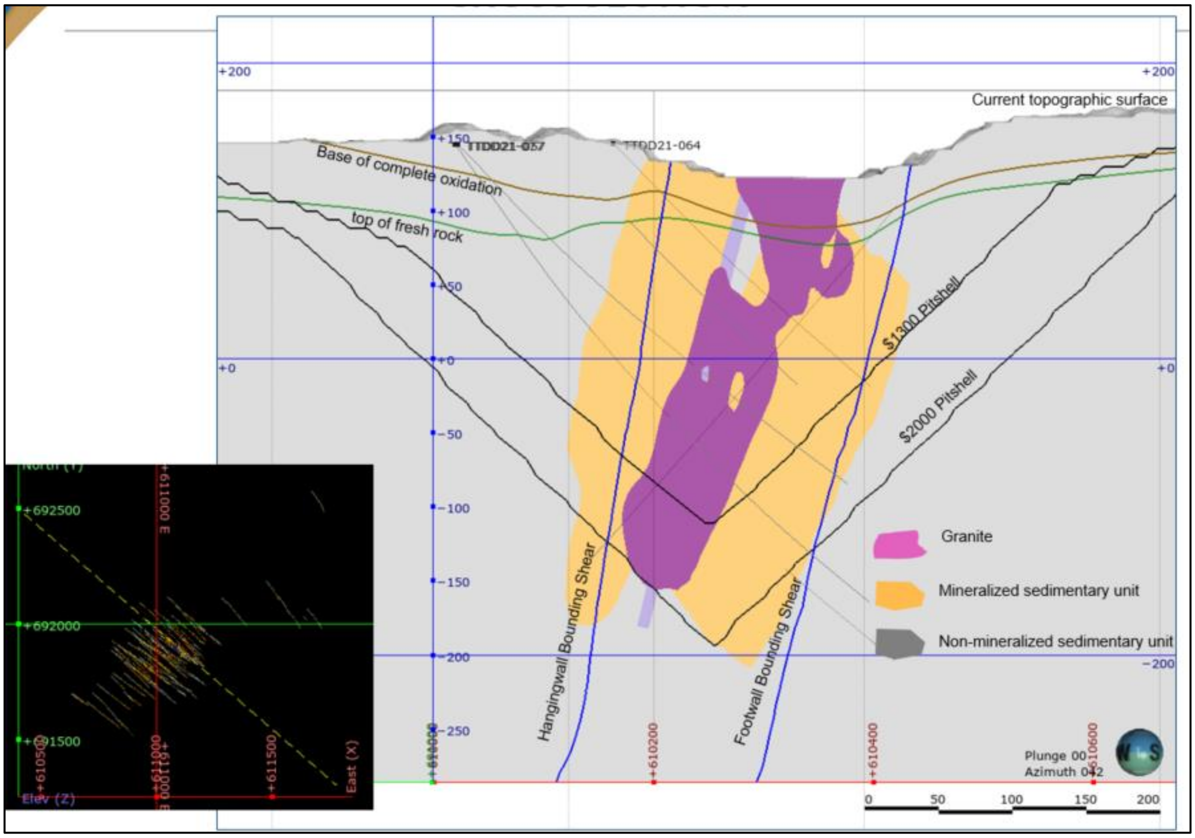
The gold mineralization at Miradani North occurs as free gold in association with hydrothermal alteration of carbonate-sericite-arsenopyrite-chlorite-pyrite. The mineralization occurs in veins that at the sandstone /granitic porphyry contact or in the granite where the veins occur either as stockwork or spiderwebs of 1 cm to 3 cm long veinlets.

The overall mineralization is controlled by a westward dipping shoot that plunges to the north. The mineralization is controlled by the shape of the intrusive unit and has about 100 m thickness, 250 m strike length and is continuous at depth with improved grade (see Figure 7-31).



(Source: AGM, 2022)

Figure 7-30 Miradani North plan view through pit showing geology



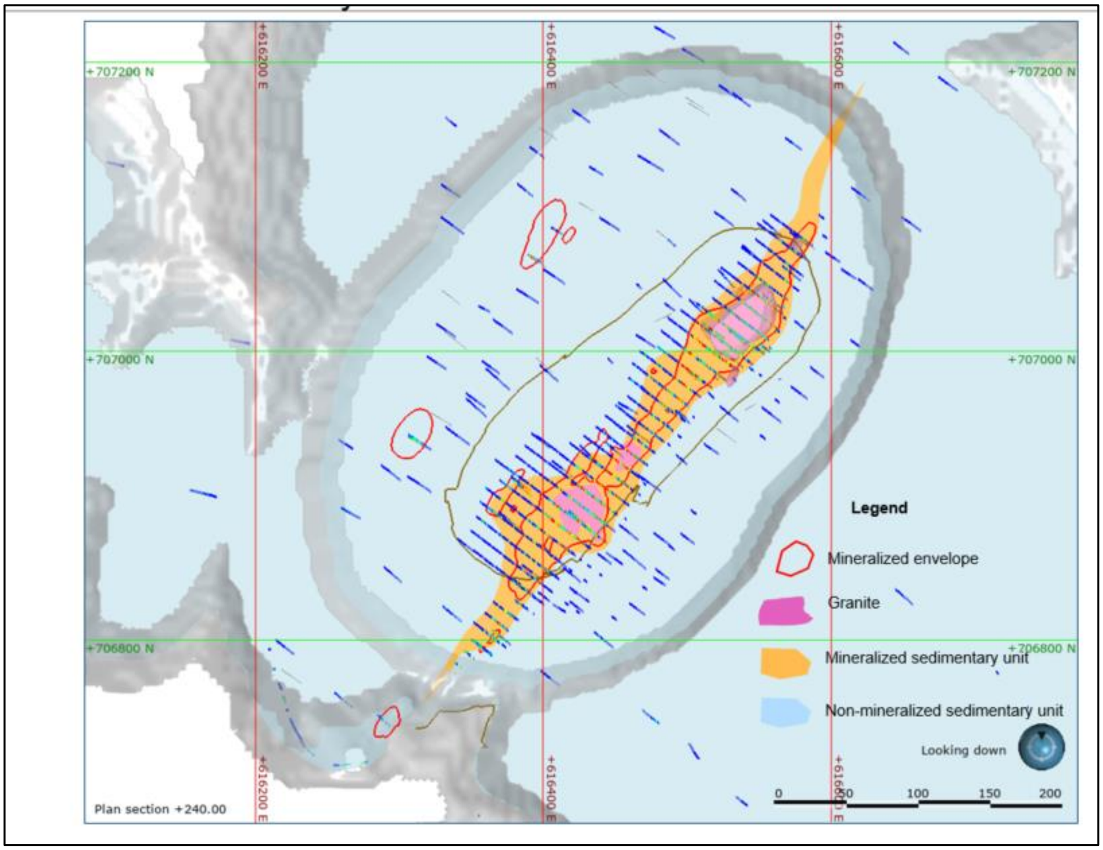
(Source: AGM, 2022)

Figure 7-31 Miradani North plan view and cross-section through pit showing geology

7.4.8 Dynamite Hill

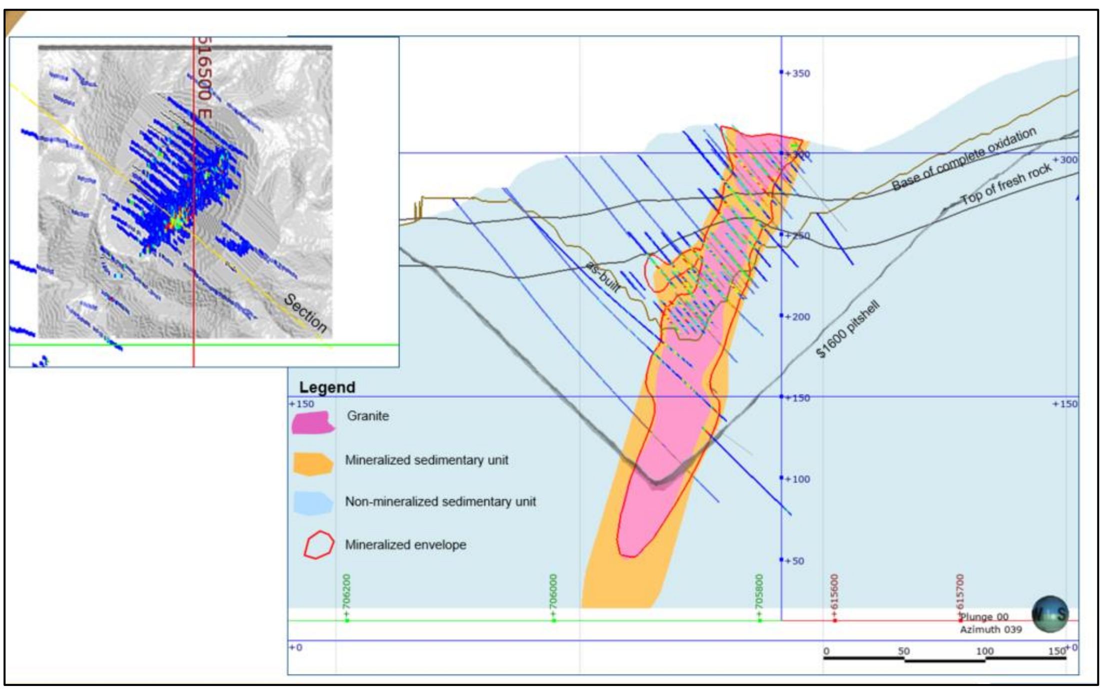
The Dynamite Hill deposit is located on the Nkran shear trend about 7 km north of the Nkran pit and 4 km north of the Akwasiso pit where it offsets a regional north-south mafic dyke and a localized east-west cross-cutting structure. The area is underlain by fine to medium-grained greywackes (intermittent strong alterations) intercalated with argillites (phyllites), and intrusions of altered felsic rock (feldspar quartz porphyry/granitoid), quartz veins and stockworks. The initial depth of oxidation was between 20 to 50 m below the surface on rugged terrain, but a portion of the oxidized rock has been mined out. The deposit was mined in 2018 from an RL of about 330 m to 180 m.

Foliations are mostly parallel to beddings following NE-SW trends and sub-vertically dipping, biased towards the north-west. Local signatures indicate folding of the units with the mineralization localized along the axis of a recumbent fold which is intruded by the feldspar-quartz porphyry plunging steeply to the north. Figure 7-32 and Figure 7-33 are plans and sectional views respectively of the Dynamite Hill deposit showing the US$1300/oz Au and US$1600/oz Au pit shells as well as the mineralized zones and the felsic porphyry intrusion.



(Source: AGM, 2022)

Figure 7-32 Dynamite Hill plan view through pit showing geology



(Source: AGM, 2022)

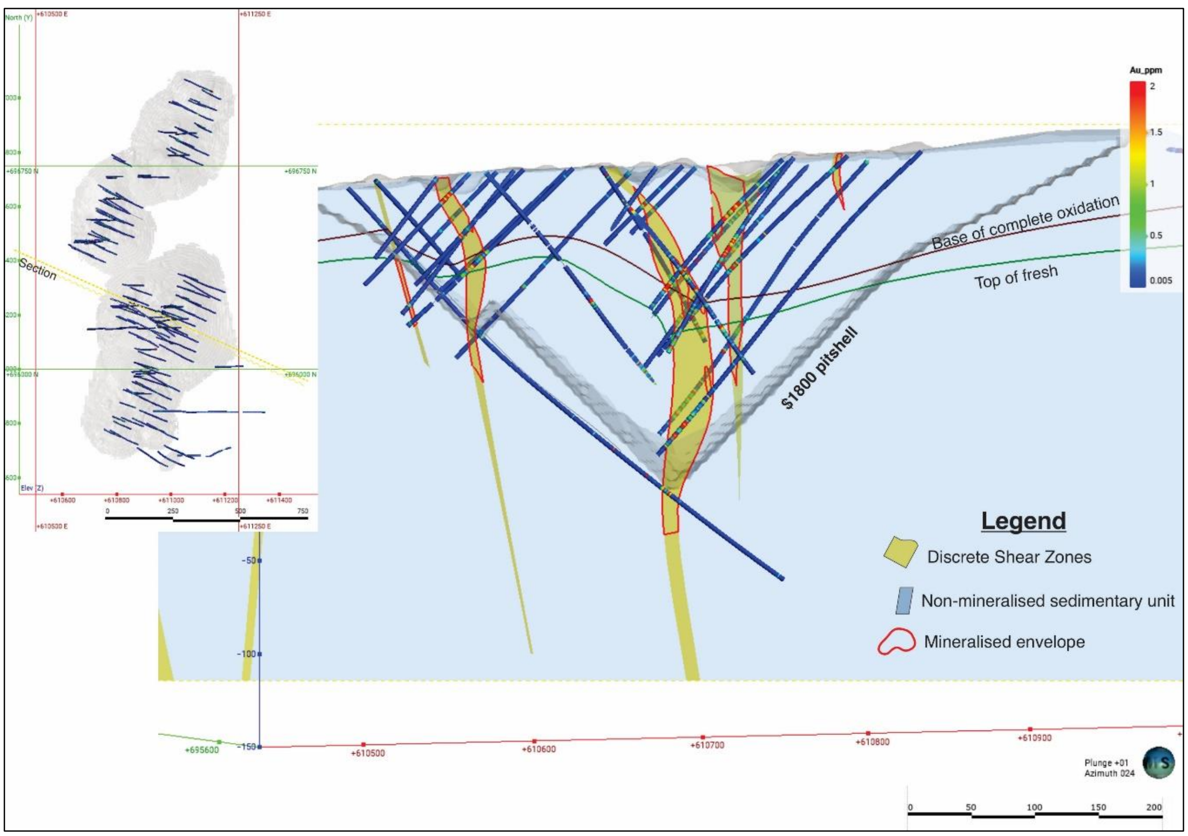
Figure 7-33 Dynamite Hill cross-section through pit showing geology

Gold mineralization at Dynamite Hill is mostly associated with quartz stockwork hosted within the northwest trending, steeply dipping orebody of strongly altered (chloritic, sericitic and silicified) wackes and at the contact between felsic units and foliated meta-sedimentary rocks. Sulphide mineralization, mostly pyrites grading from fine to coarse crystals are present. The defined gold mineralized zone is about 40 m to 50 m in true width and strikes NNE-SSW traced to a depth of about 250 m and still open. The mineralization plunges steeply to the north. Recent drilling does not support continuity to the north, but the mineralization is open to the south but trending progressively weaker. The mined-out area covers a strike length of 250 m to 300 m but mineralization can be traced for 600 m along strike.

7.4.9 Midras South

The Midras South deposit is located on the Datano shear zone approximately 4 km south of the Nkran deposit and 3 km north of the Miradani North deposit.

The main lithologies at Midras South are sandstones, siltstones and shales of the lower Birimian system (Figure 7-34). These rocks are well foliated and locally sheared due to the D2 deformation defining the Datano Shear corridor. Foliation dips steeply and slightly oblique to bedding, and as observed in drilled core the area is tightly folded and sheared as foliation planes switch from NE to NW. The rocks are generally foliated with the shales displaying better development of foliation planes than the sandstones as observed in drill chips and drilled core.



(Source: AGM, 2022)

Figure 7-34 Midras South cross-section through pit showing geology

Gold mineralization is primarily hosted in a strongly sheared quartz sandstone unit with high pyrite dissemination particularly in areas where more brittle quartz-carbonate veins are localized. Alteration mineral assemblages associated with gold mineralization are sericite-quartz-carbonate-pyrite and arsenopyrite.

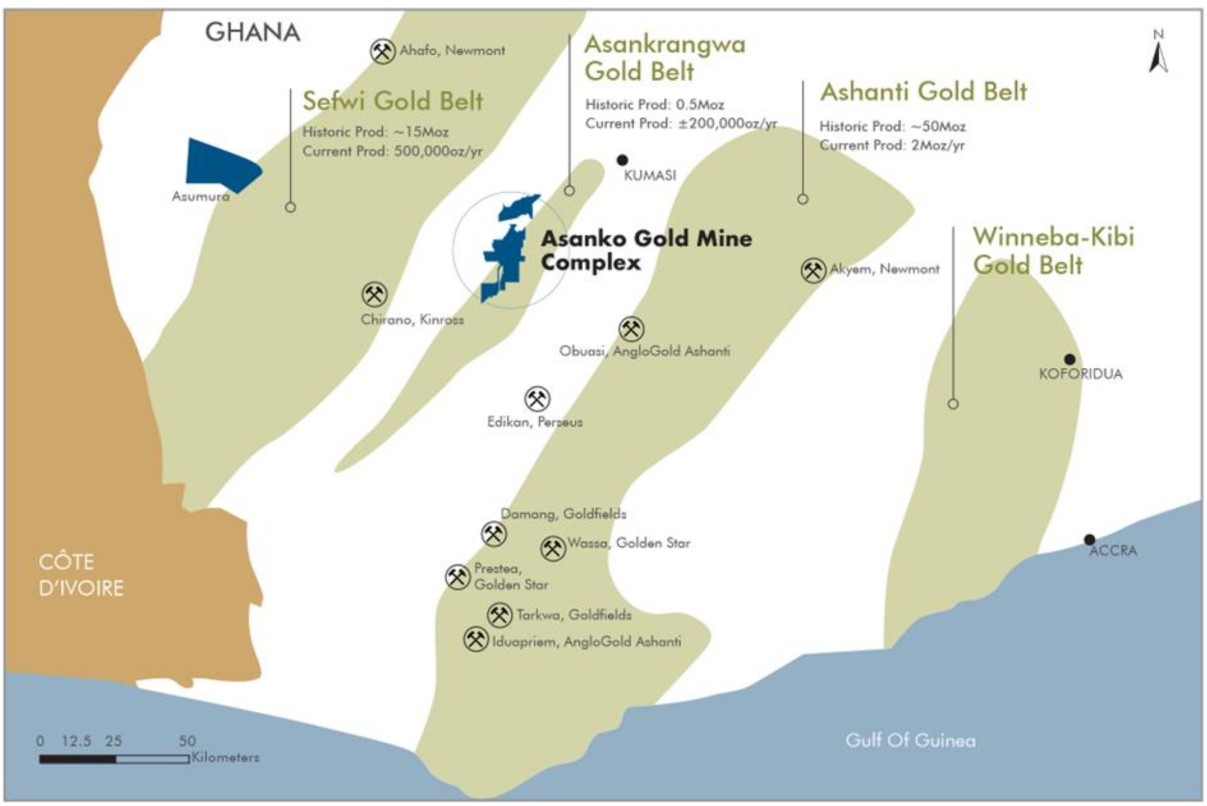
The weathering profile in the vicinity ranges from 5 m to 50 m from the current surface to the bedrock. This saprolite zone is locally overlain by a thin layer of 1 m to 7 m transported alluvial fragments. Complete oxidation of the original sulphides includes all of the saprolite cover, but locally, oxidation extends several metres into the primary bedrock as a partially oxidized zone in which primary structures are preserved.

8 Deposit Types

Two broad styles of gold deposits are present in southwest Ghana:

- Structurally controlled lode or orogenic gold deposits
- Palaeoplacer disseminated gold deposits in Tarkwaian conglomerates

The primary controls on mineralization in the Asankrangwa Belt are structural in origin. Certain sandstone units within the Birimian metasedimentary package provided favourable rheological conditions that optimized gold deposition often close to major lithological contacts with either Birimian metavolcanic rocks, or Tarkwaian metasedimentary rocks (Griffis et al, 2002). The deposit type targeted by the AGM is structurally controlled mesothermal quartz vein style mineralization (orogenic gold type deposits). This is the most important type of gold occurrence in West Africa and is commonly referred to as the Ashanti-type. Milesi et al. (1992) recognized that mesothermal quartz vein style deposits are largely confined to tectonic corridors that are often over 50 km long and up to several kilometres wide and usually display complex, multi-phase structural features, which control the mineralization (Figure 8-1).



(Source: www.asanko.com)

Figure 8-1 Location of AGM within the Asankrangwa Gold Belt

There are at least two separate gold mineralizing events that are linked to the structural evolution of the area. Mineralization is linked to:

- Early isoclinal folding, shearing and/or duplexing of stratigraphy controlling the location of deformation zones and fluid flow
- A late approximate east-west compressional event that generated shallow dipping to flat orientated conjugate vein sets that crosscut the earlier rock fabric and gold mineralization.

This brittle style deformation postdates the emplacement of granitic intrusive units into the core of the existing deformed and sheared sedimentary rocks. Orogenic gold deposits formed between 2.2 and 2.0 Ga, intrusion-related (and skarn) between 2.2 and 2.1 Ga, and palaeoplacer types between 2.06 and 1.8 Ga.

Gold mineralization is associated with major NE striking, 5 m to 40 m wide graphite-chlorite-sericite bearing fault zones. In particular, gold mineralization is developed where the NE fault zones intersect major ENE striking fault zones and especially where they are recognized to have influenced granite emplacement, alteration and gold geochemical trends.

Left stepping flexures (10 km to 30 km scale) in the NE striking fault zones (which produce more northerly striking fault sections), are important for the localization of gold mineralization. Other local complexities in stratigraphy and fault geometry, associated with major NE striking faults, are also important for example, folds in stratigraphy that may produce saddle reef style mineralization, or fault duplexes.

The most common host rock is usually fine-grained metasedimentary units, often in close proximity to graphitic, siliceous, or manganiferous chemical sediments. However, in some areas, mafic volcanic rocks and belt intrusions are also known to host significant gold occurrences. Refractory type deposits feature early-stage disseminated sulphides in which pyrite and arsenopyrite host important amounts of gold overprinted by extensive late-stage quartz veining in which visible gold is fairly common and accessory polymetallic sulphides are frequently observed. This type includes important lode/vein deposits in Ghana such as at the Obotan and Esaase area. A second non-refractory style of gold mineralization occurs in which gold is not hosted within sulphide minerals either in early, or late-stage mineralization. These deposit types have lower sulphide content in general and often lack the needle-like arsenopyrite that is common in the refractory type deposits.

The AGM deposits demonstrate a late (second) phase of gold mineralization generally hosted in granitoids (Nkran basin type granite), emplaced in regional shear corridors. The deposits are situated within the Birimian metasedimentary units, but the granitoid intrusions and mineralization both occur at contacts between greywacke and carbonaceous phyllite units. The deposits are dominated by D2 regional reverse faulting gold and only contain quartz vein-hosted free-milling gold lodes.

The deposit types in the AGM area are sufficiently well understood to support the exploration programs and geological models forming the basis of the Mineral Resource estimates.

9 Exploration

9.1 Introduction

Systematic exploration at the AGM concessions includes regional generative and near mine programs, targeting new gold deposits as well as further delineation of known Mineral Resources. Regional prospecting work was initiated in 2014 in collaboration with Corporate Geoscience Group (CGSG) and advanced drilling programs undertaken thereafter from early 2015. Follow-up to this work since 2017 includes:

- Reconnaissance mapping and sampling in of areas of exposure
- 3,000-line kilometre heli-borne versatile time-domain electromagnetic surveying (VTEM) survey infilling previous gaps in coverage
- Updated regional geological interpretation based on the interpretation of the VTEM survey
- Gradient array electrical geophysics survey over Esaase
- Discovery and drilling of the Miradani North deposit
- RC, RCD and DDH drilling to Indicated Mineral Resource classification on the Miradani North and Abore targets
- Resource expansion of the Dynamite Hill and Abore deposits through exploration drilling

Work completed under Galiano ownership (refers to post-2007 for Esaase concession and post-2014 for all other concessions) is described in the following sections.

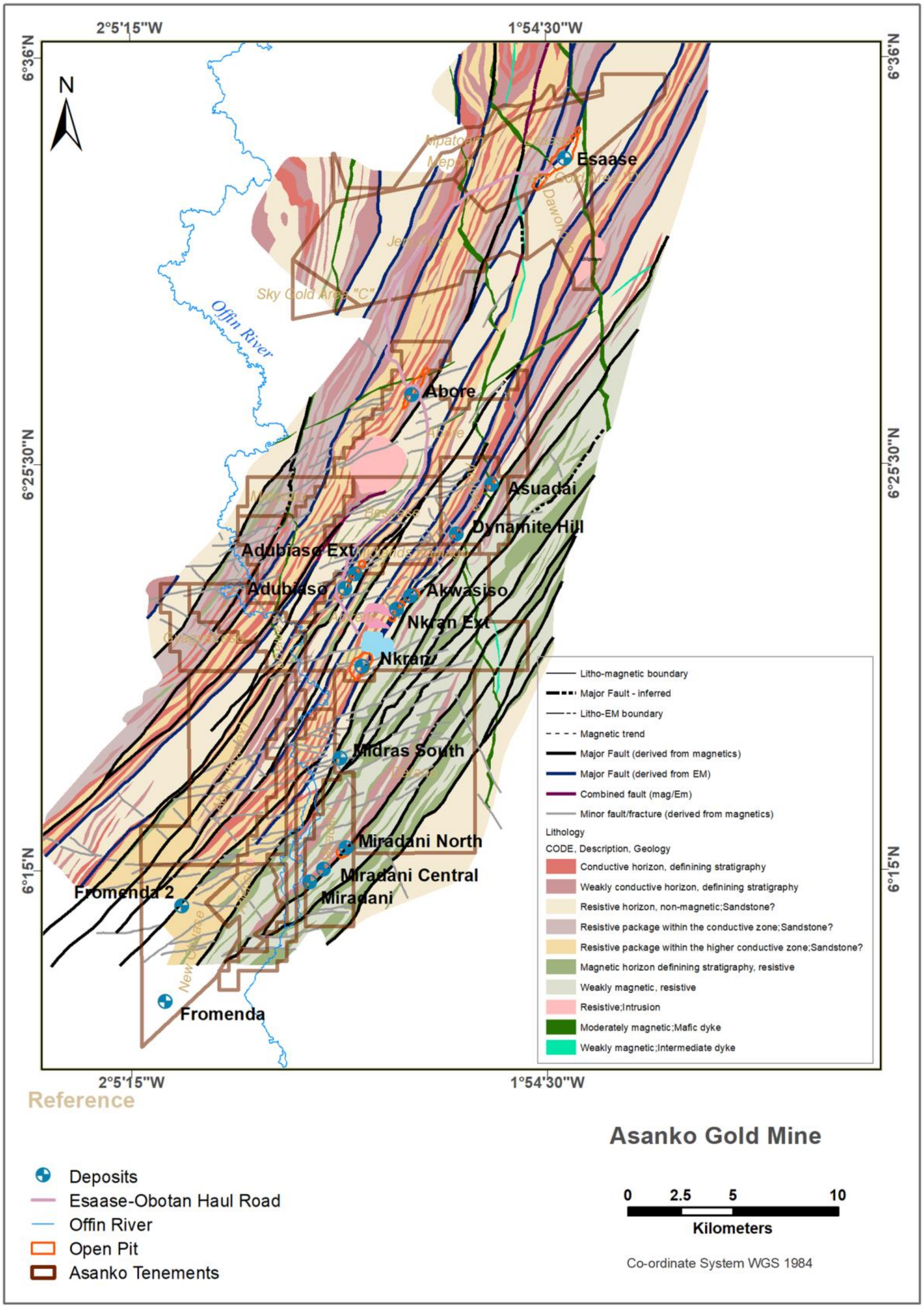
9.2 Grids and Surveys

All survey grid location information is in WGS 84, Zone 30N Universal Transverse Mercator (UTM) coordinates.

9.3 Geological Mapping

The broad framework of geological understanding on the AGM licences comes from geophysical interpretations completed in 2016 (Figure 9-1). This work has been expanded on through geological mapping and from drilling and exposures at the various open pits. Geological mapping on the Asankrangwa Belt is hampered by a paucity of exposed basement rock, with deep weathering and laterite/alluvial cover making it more challenging. Often it is exposures created by artisanal mining workings that provides the most informative outcrop.

Field mapping has been undertaken at the target properties by AGGL geologists. Outcrop and visible features have been mapped and locations identified using handheld GPS. A targeted license-wide program of mapping and sampling was conducted in 2021, focusing on mineralized areas exposed by artisanal miners. This work was beneficial in understanding structural controls on mineralization and targeting of several prospective areas for follow-up reconnaissance-style RC drilling.



(Source: AGM, 2021)

Figure 9-1 Regional geological interpretation from VTEM survey

9.4 Geochemical Sampling

9.4.1 Soil Geochemical Sampling

Multiple soil geochemical surveys have been undertaken on the AGM licences by various explorers. Since 2017, a total of 1,246 surface geochemical samples (grab, soil, stream sediment) have been taken by AGGL geologists across the greater AGM licences with the focus on generation of greenfield targets. Sample media and year of sampling is detailed in Table 9-1 below.

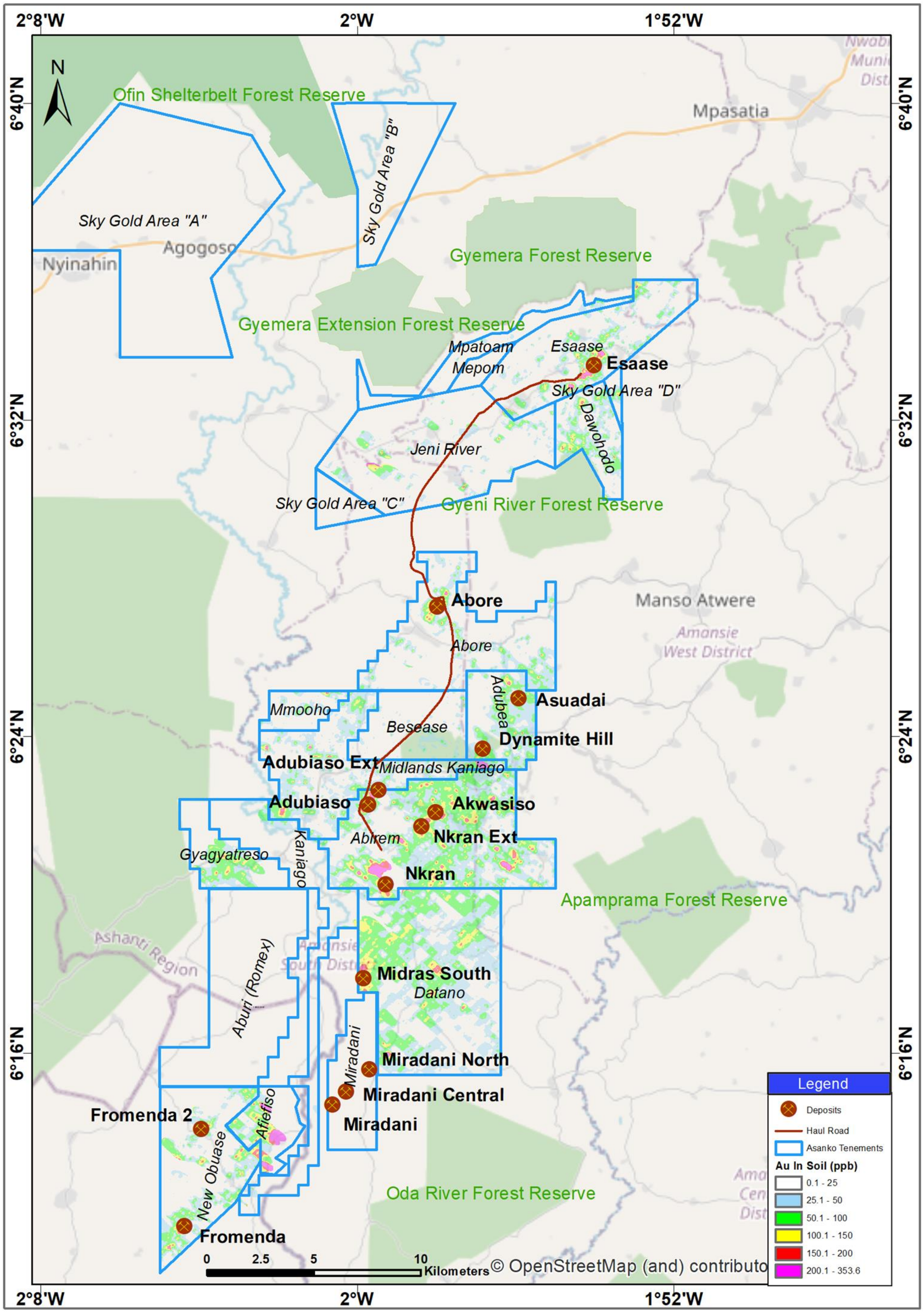
Table 9-1 Summary of surface geochemical samples taken by AGM since 2017

Year	Channel	Grab	Soil	Total
2017		86	740	826
2018	2	11		13
2019		37		37
2021	31	331	8	370
Total	**33**	**465**	**748**	**1,246**

Sampling points are generated using Micromine™ or ArcGIS™ software and downloaded into a handheld GPS. The sampling points are pegged out in the field. Soil geochemical sampling is not conducted in formal settlements, roads, cemeteries and other culturally sensitive areas.

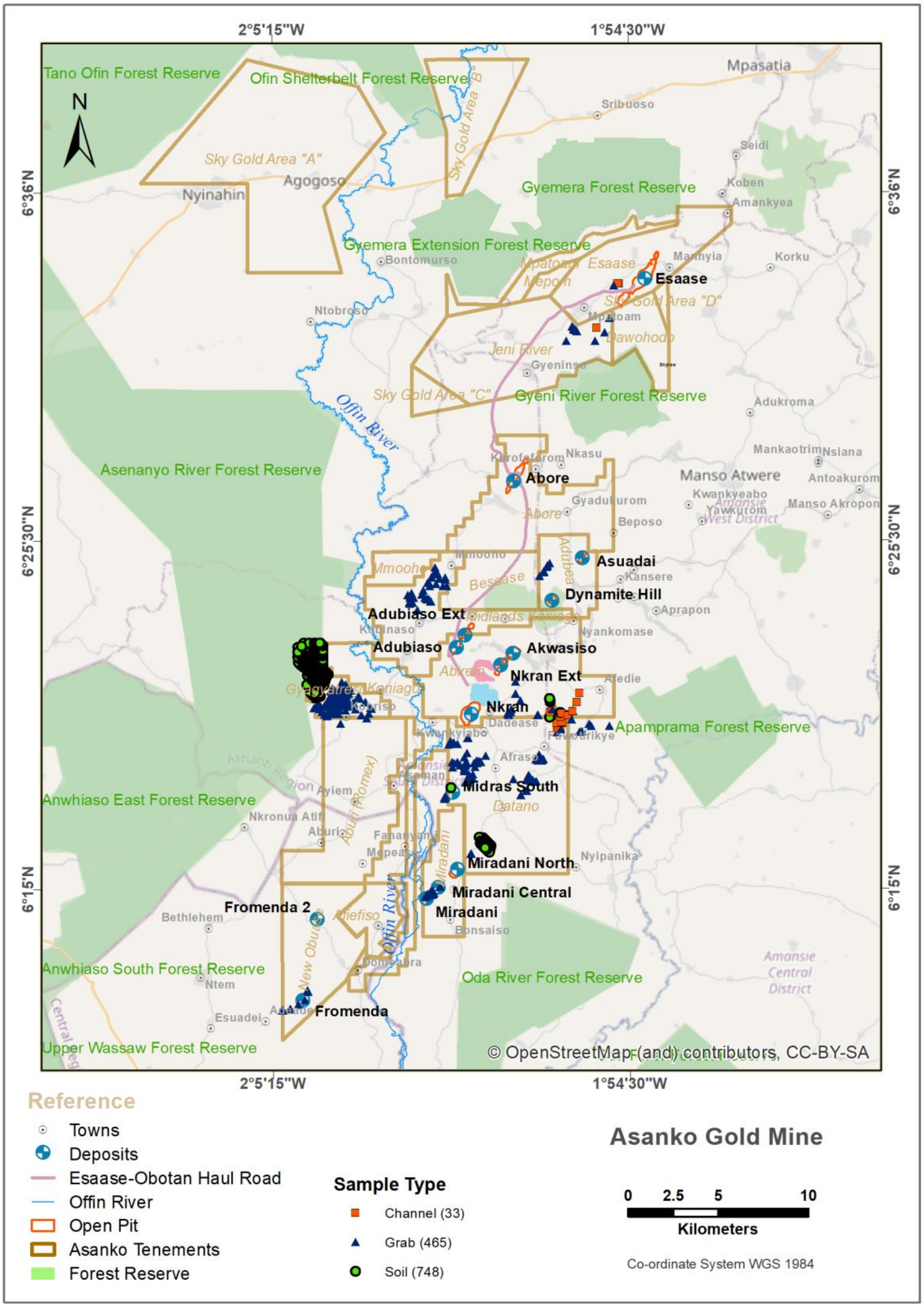
The sampling grid or sampling spacing may vary from one place to another and is determined by factors that control mineralization and the level of information required. Sampling programs are typically undertaken on 400 m x 50 m spacing and the sampling line's azimuth is determined by the orientation of the structure suspected to be associated with mineralization. In some cases, the sample spacing is reduced to 200 m x 25 m or 100 m x 25 m if broad spaced sampling suggests the need for tighter data density. The depth at which geochemical samples are collected is between 20 cm to 50 cm or more precisely on the B-horizon.

Sample sites are located with GPS receiver and entered into database/GIS platform. During sampling, organic material is avoided. The soil fraction is sampled and analyzed (generally either bulk soil or a particular size fraction). The regolith landform setting is recorded and range in clast size is estimated. The proportion of transported and in situ lag (based on degree of clast rounding, size of clasts, composition of clasts) is estimated. Lag is swept up with plastic dustpan and brush over about a 5 m diameter area. A sample of approximately 2.5 kg is sufficient. Coarse pebbles and organic material (greater than 1 or 2 cm) are sieved and picked out on a plastic sheet. Figure 9-2 and Figure 9-3 illustrate, on a regional level, the location of the soil sampling points.



(Source: AGM, 2021)

Figure 9-2 Plan view showing gold-in-soil anomalies



(Source: AGM, 2021)

Figure 9-3 Surface geochemistry sampling locations (2017 - 2021)

9.4.2 Trenching

Given the terrane's deep weathering and generally poor exposure, trenching is often the first tool used to assist with mapping areas of mineralization to collect quality geological information or reliable geochemical samples at surface. This information is not used in Mineral Resource estimation, but rather as a guide to drill targeting.

Trenching is undertaken when deemed appropriate to get preliminary information as to the width and structural features of possible exploration targets. In general topsoil horizons are too thick to use this method extensively.

Planned and approved programs are sited with a GPS by a geologist or technician, and after end points of proposed trenches have been clearly marked, must be ground-truthed by a geologist. The trenches are surveyed by the mine surveyor after or during the course of geological mapping and sampling of the trench. The trenches are excavated by excavator or manual labour. All open trenches are barricaded with caution or flagging tapes.

The saprolite exposure and regolith profile in the trench are mapped and the thicknesses measured with reference to the profile line. Rock type, lithological boundaries, structural measurements, visible mineralization, sample intervals and assay are recorded directly to DataShed™ using in a field computer or on a field data collection sample sheet and later entered into DataShed™.

Trench sampling is carried out by even chipping of the sample using a geological hammer or chisel along the sidewalls of the trench with a collecting cut PVC pipe. The sample is homogenized by rolling it once or twice in a canvas tarpaulin before collecting a split for assay. 2.5 kg of the homogenized sample is collected. The samples are placed in a clean labelled sample bag with the sample number and sample ticket number folded and stapled into a fold at the top of the bag. At the core yard, the labelled samples are sorted and re-checked.

QAQC samples are inserted as per the QAQC protocol (1-3% of total samples for blanks and field duplicates and 1-7% for standards, or 2 to 2.5 per 20 samples). The samples are then placed in a big white bag and labelled with the project name, sample interval for each big white bag and the number of samples in it. The sample sequence numbers must be written on the big sample bags. Once samples have been bagged, they are ready for dispatch and are not reopened until they reach the laboratory. The analytical request sheet (sample submission sheet) is completed, signed and dated by the project geologist prior to dispatch. The project geologist keeps copies of the analytical request form. An AGM item removal form is completed by the project geologist and approved by the head of department (HOD) and the security manager before samples are allowed to be sent out of site.

Sampled intervals in the trench are photographed. The hole ID, sample interval and sample ID are written clearly on a white board and displayed within the sample interval before photographing. An example of a graphical trench map from the recent Jeni River trench program is shown in Figure 9-4. After data collection, all trenches are backfilled to allow vegetation regeneration.

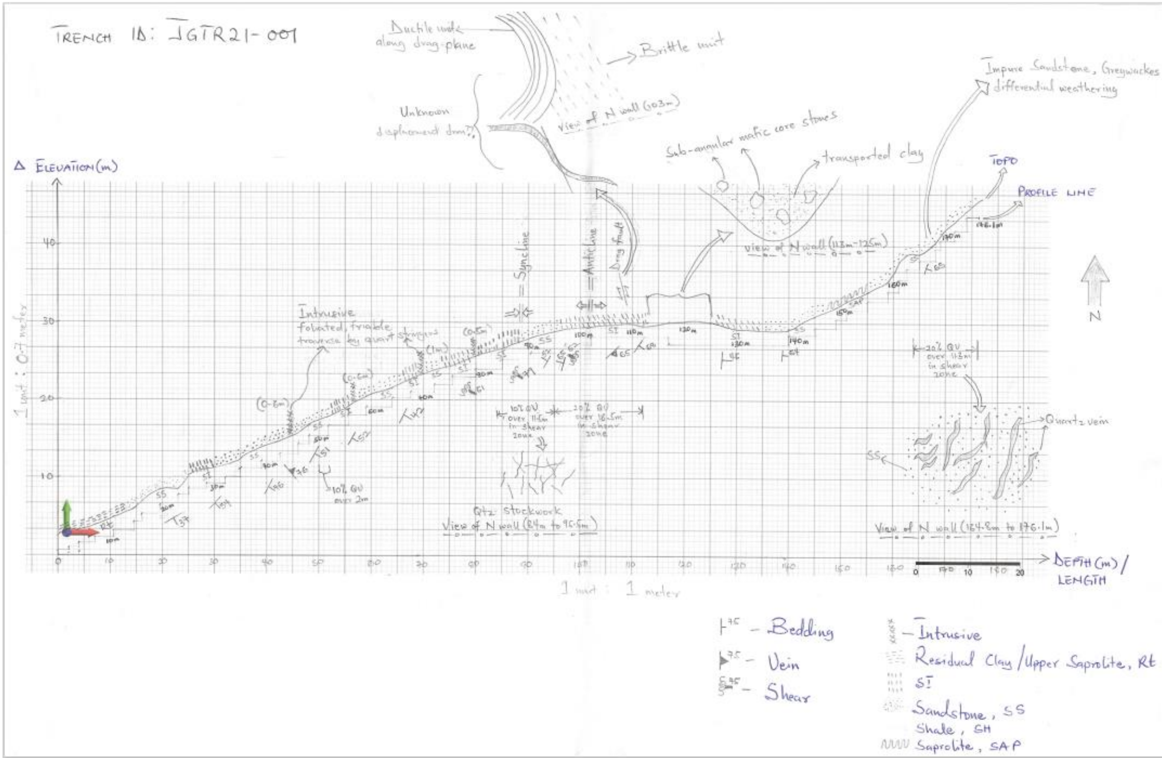
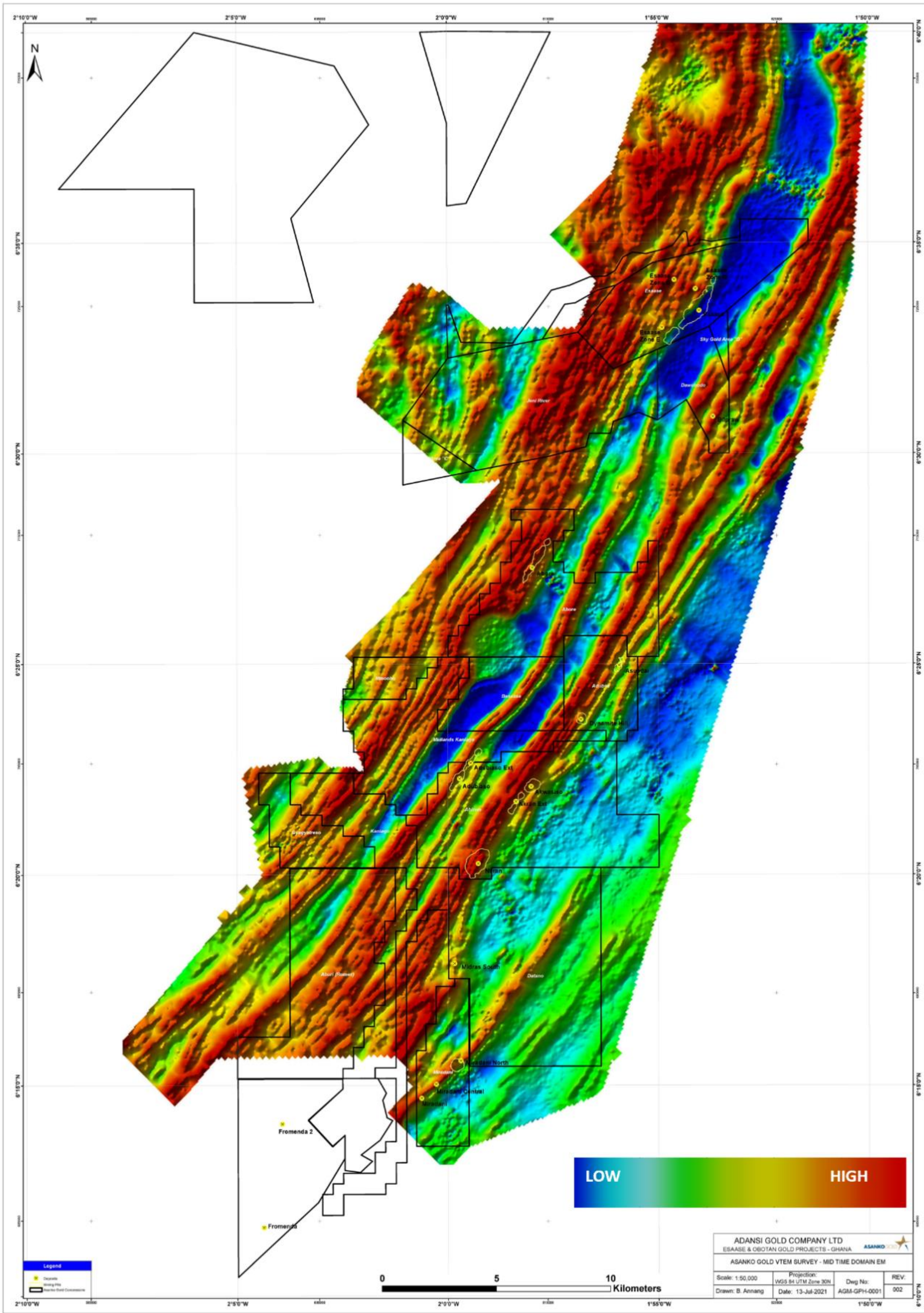


Figure 9-4 Graphical trench map from Trench JGTR21-001, Jeni River prospect

9.5 Geophysical Surveys

Geophysical surveys over the property have included regional aeromagnetic imaging of the Ashanti Belt and adjacent Kumasi Basin by the Ghana Geological Survey, as well as IP ground geophysical surveying and airborne VTEM and magnetic survey centred over specific targets.

Airborne geophysical surveys were commissioned by AGGL during 2015/2016 to advance the understanding of the geological and structural settings of the Asankrangwa Belt. A map of regional VTEM over the AGM license package is shown in Figure 9-5. The regional magnetic and VTEM data for the Ashanti Belt and adjacent Kumasi Basin provide a good indication of the distribution of the principal geological units occurring in the region as well as on the property.



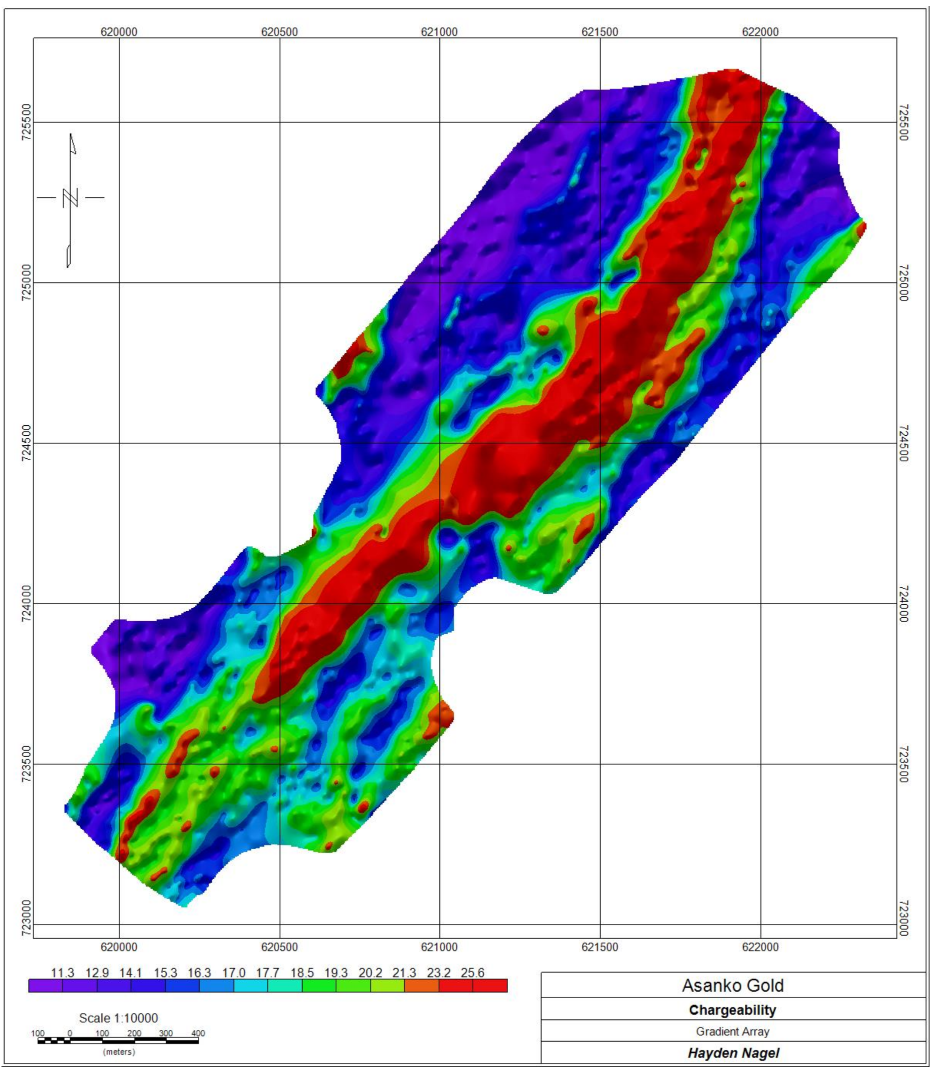
(Source: AGM, 2021)

Figure 9-5 Map of time-domain EM over AGM license package

A ground geophysics orientation study was initiated over the Esaase deposit in 2019 by Planetary Geophysics based in Australia. The orientation survey focused on four surveys that are known to produce useful results for the direct detection of orogenic gold deposits. Surveys completed over the Esaase deposit are as follows:

- Gradient array IP
- Pole-dipole resistivity
- HaiTEM MLEM (electromagnetic)
- Gravity

Eleven Gradient Array blocks and six 2D Pole-dipole lines were read over the Esaase project for a total of 6,700-line metres. The Gradient Array IP survey data was particularly successful and appears to map what is interpreted to be sulphide content at depth (Figure 9-6).



(Source: Planetary Geophysics, 2020; units of measure = milliseconds or 'ms')

Figure 9-6 Gradient array IP survey over Esaase deposit

This work was planned as a 'proof of concept' orientation survey, with the intention of completing a series of much larger gradient array and IP surveys within the AGM license package. However, the global pandemic in 2020-2021 delayed commencement of this activity. Given the success of this Esaase survey, geophysical coverage of this type has a high likelihood of identifying other zones of high chargeability that may be a proxy for gold mineralization.

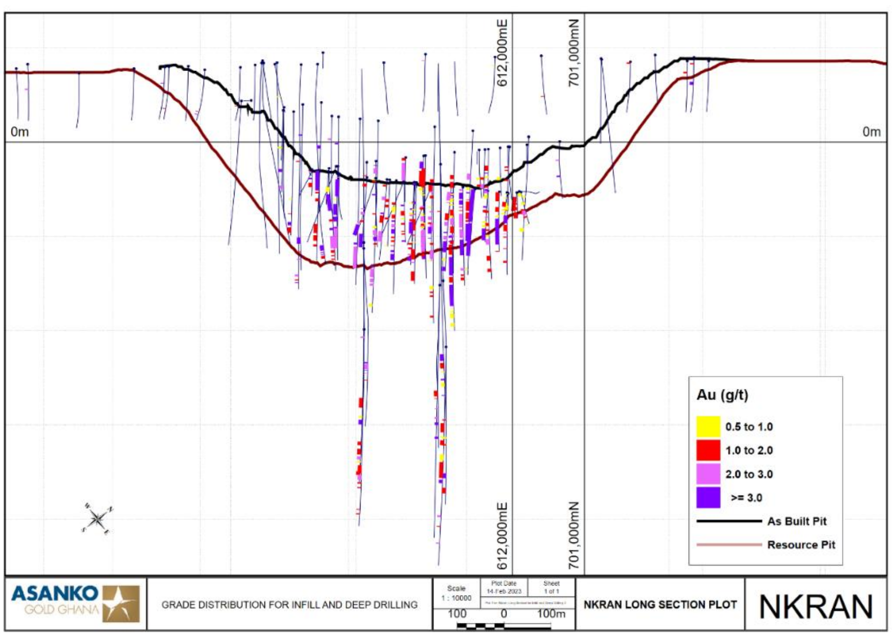
9.6 Exploration Potential

Considerable potential exists for the discovery of additional gold resources on the AGM licenses, near existing operations as well as regionally.

9.6.1 Nkran Deeps

Underground mining scenarios have long been conceptually considered at Nkran. Resolute Mining included a modest underground resource (Spiers, 2010), and AGM have reviewed the idea of underground mining at Nkran, at a conceptual level. Following completion of Cut 2 however, it was believed that insufficient resources remained at Nkran to support an underground operation. Additional deep drilling was recommended to explore for significant down dip and down plunge mineralization at Nkran.

Several possible high grade shoot controls have been interpreted at Nkran, all plunging shallow to steeply northeast. These high-grade structures, if repeated at depth, could represent a significant step change for the AGM resource potential. A first phase drilling of two pilot holes with eight wedges was completed in 2022 to test this concept. This phase of drilling has shown that mineralization is present at depths of up to approximately 650 m below the as-built pit at grades that may be amenable to underground mining (Figure 9-7). Additional drilling is recommended to understand the grade continuity and tonnage potential.



(Source: AGM, 2022)

Figure 9-7 Longitudinal section through Nkran deposit showing mineralized intercepts at significant depths below existing pit

9.6.2 Nkran Southern Extension

Nkran also continues to show exploration potential for Mineral Resource increases and the discovery of new gold mineralization along strike, particularly at the southwestern end of the deposit. Drilling in 2023 will focus on increasing drilling density in areas of Inferred Mineral Resource that have the potential to convert to Indicated Mineral Resource as well as test for continuations of gold mineralization along strike immediately adjacent to the known orebody (Figure 9-8).

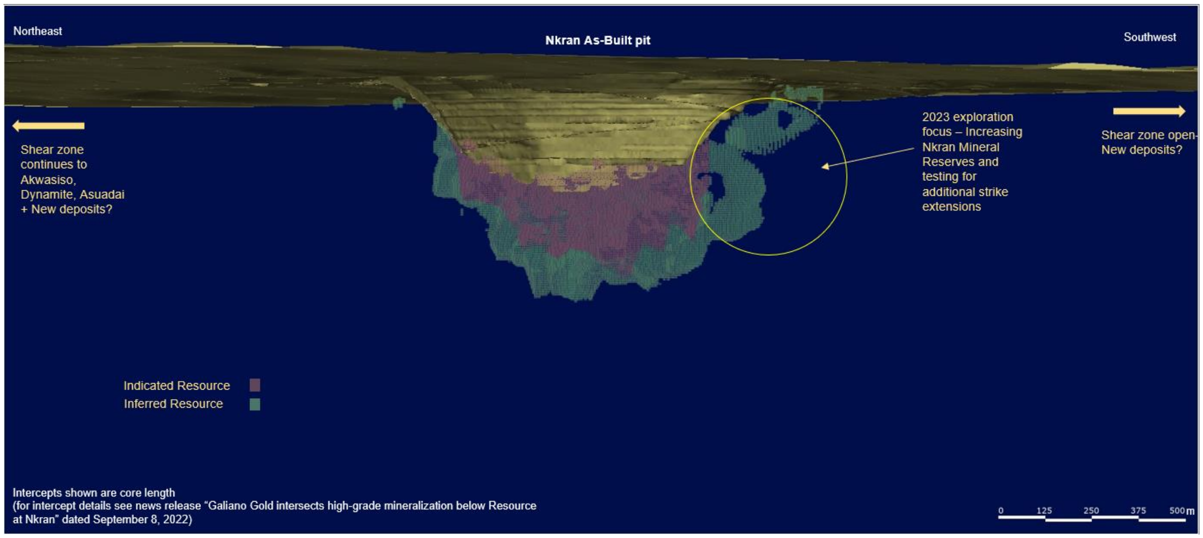
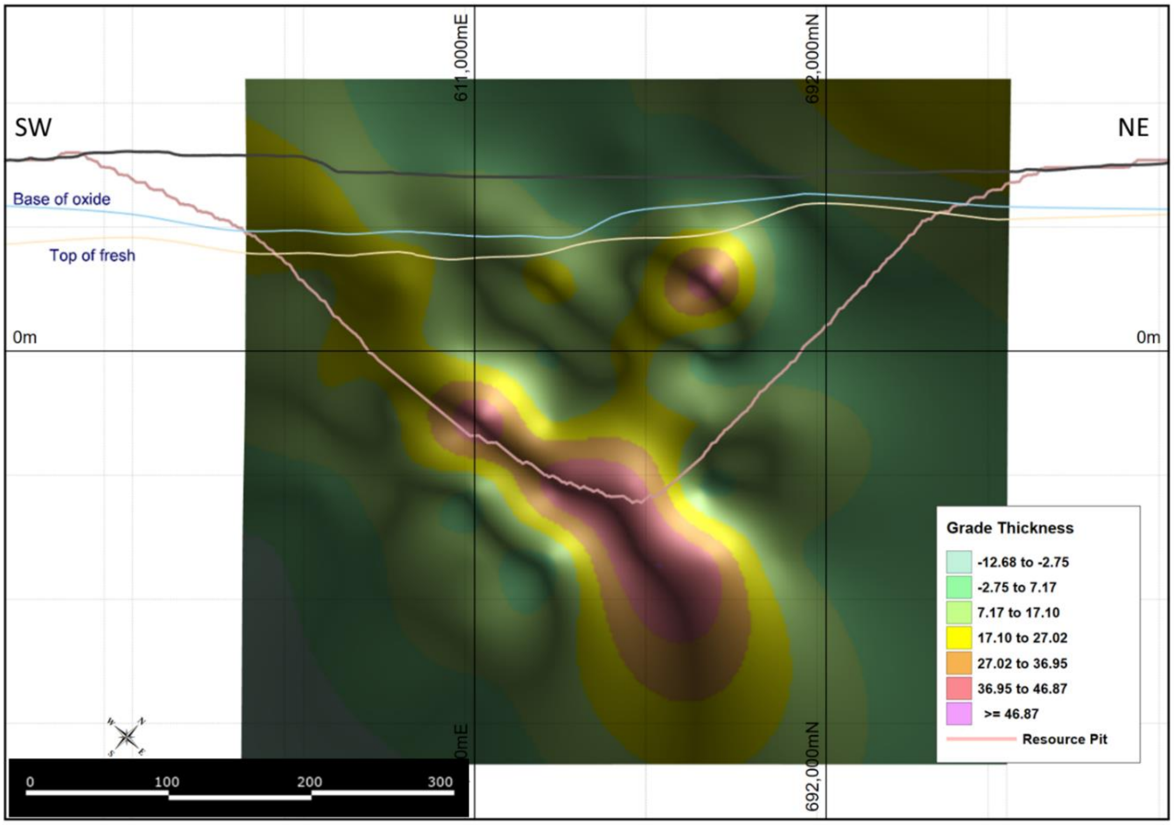


Figure 9-8 Long section through Nkran showing current Mineral Resource and area of current exploration drilling focus (SW end of deposit)

9.6.3 Miradani Deeps

The Miradani North deposit shows many similarities to Nkran, including a tonalite intrusive association and the existence of high-grade shoots. A well-defined steeply northeast plunging shoot is evident in longitudinal section through the deposit, as seen in Figure 9-9 below. This high-grade shoot remains open at depth and further drilling should be considered to explore for extensions and repetitions to this high grade.



(Source: AGM, 2022)

Figure 9-9 Longitudinal section through Miradani North deposit

9.6.4 Kaniago West

The Kaniago West prospect is located on exploration lease PL6/289 and is 5 km NW of the AGM processing plant. It was acquired as part of the Midlands Mineral Corporation property transaction in 2015. Midlands conducted an aggressive drilling campaign between 2011 to 2012, delineating gold mineralization over a 500 m strike length and a depth of 150 m, open in all directions. AGM followed up this work in 2021, intersecting broad zones of quartz breccia and veining with associated visible gold mineralization. Follow-up drilling is recommended for this prospect.

9.6.5 Midras South

Midras South is located on the Datano Mining Lease, 5 km south of the AGM's processing plant. The 2022 drill program at Midras South was designed to expand on the known mineralized systems in the area, and although only partially completed due to access issues, did provide some of the better high grade intercepts this year to date.

The Midras South prospect lies along the Takorase - Afraso shear zone, a laterally extensive structure recognized from airborne VTEM and magnetic surveys and extensively mapped on the ground. Midras South consists of 3 distinct zones of indicated mineralization, inferred to be fault offsets of the one mineralized zone.

Similar in character to Esaase and Kaniago West, indicated mineralization at Midras South is developed within a package of deformed sandstone, siltstone and phyllite. Stratigraphy and structure are both steeply dipping to the northwest as they do for most of the Asankrangwa Belt gold deposits. Indicated gold mineralization at Midras South occurs in association with quartz veining, arsenopyrite and pyrite, within a broader envelope of quartz-sericite-pyrite and carbonate alteration.

9.6.6 Akwasiso

The Akwasiso deposit is one of several satellite deposits mined by AGM. The area lies about 4km to the north of the Nkran deposit on the Abirem mining lease and about 1 km west of Akwasiso township.

The Akwasiso mineralization is located on the Nkran shear structure in a dilation zone intruded by felsic porphyry. The mineralization is bounded to the east and west by arenites occasionally intercalated with argillites. Both bedding and secondary foliation are parallel on an NE-SW trend and dipping steeply westward.

In 2014 Asanko Gold acquired the Abirem mining lease from PMI through a purchase agreement and several rounds of drilling was conducted to prove the resource. Open pit mining commenced in 2017 through to 2018 and suspended in Q1 of 2019. Mining resumed in January 2020 and completed in July 2022. The final cut at the bottom of the current pit provided ore with significant grades. Existing drilling has demonstrated mineralization continues immediately below the existing pit and remains open at depth.

It is recommended that further drilling be conducted to test the quality and continuity of mineralization at depth and the potential for further economic ore (Figure 9-10).

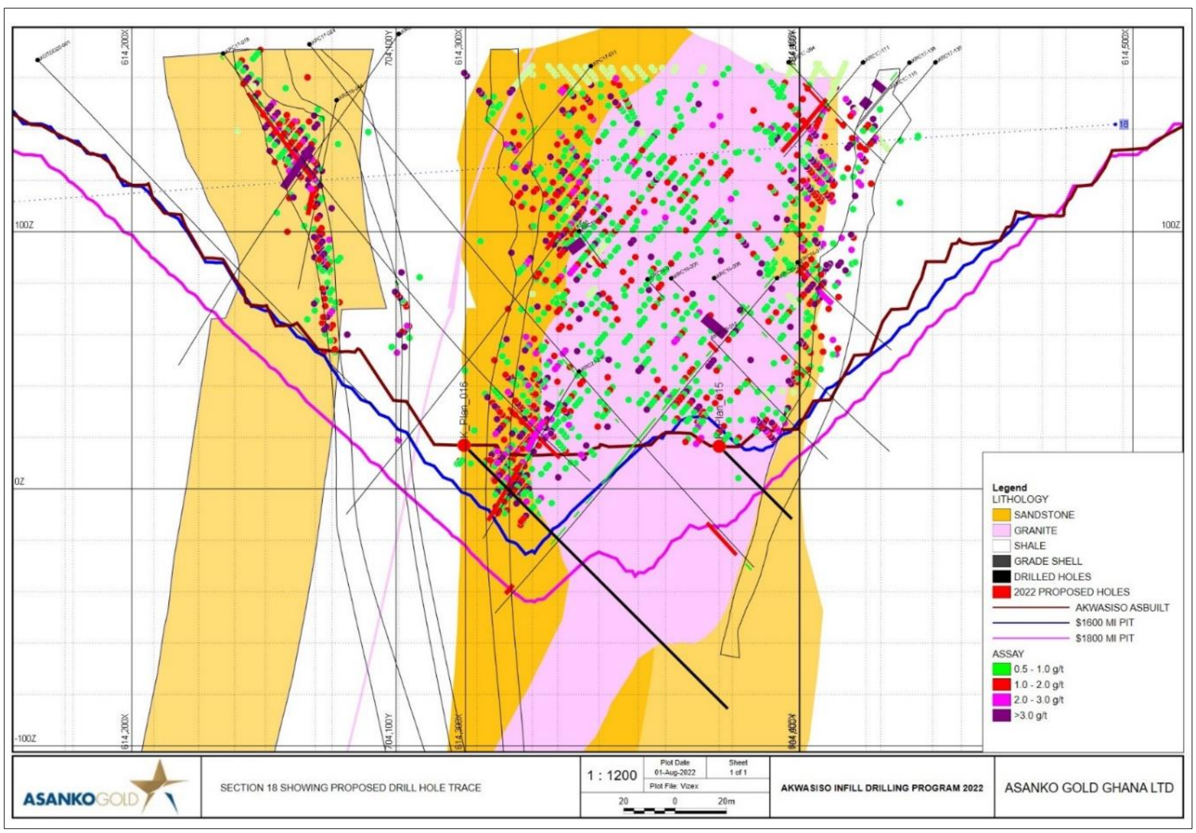
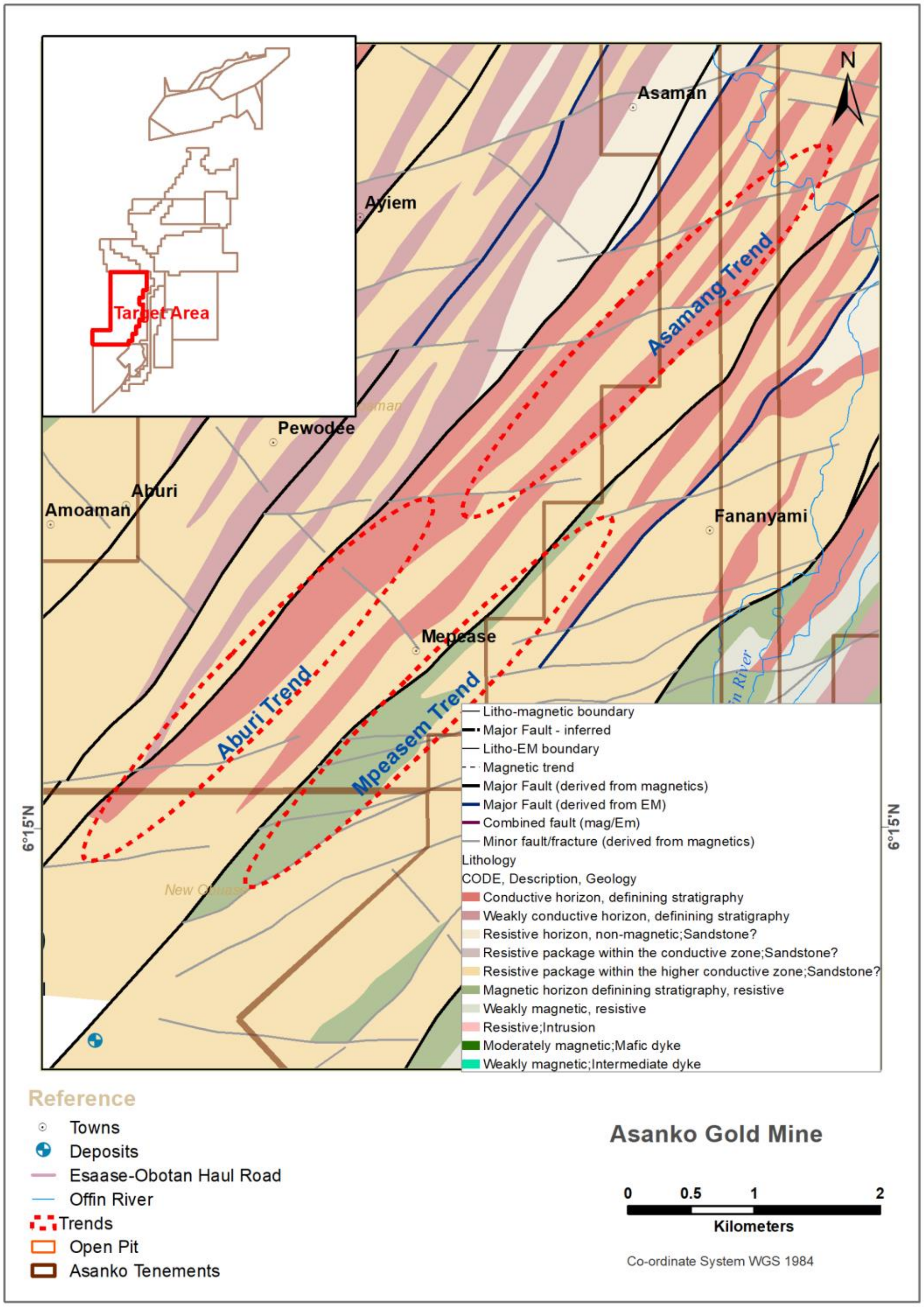


Figure 9-10 Cross-section through Akwasiso pit showing grade continuity

9.6.7 Amoaman

AGM acquired the Aburi lease in early 2020, known at that time as the Hawannah Mining Concession. The name was recently changed from Aburi to Amoaman to reflect the nearest community. Interpreted Geology and mineralized trends on the Amoaman Property is shown in Figure 9-11.



(Source: AGM, 2021)

Figure 9-11 Interpreted geology and mineralized trends on Amoaman property

Previous explorers Romex conducted exploration including a VTEM survey on the Amoaman Property which included acquisition of a DTM, radiometrics, aeromagnetics and electromagnetic (resistivity). Romex also completed geochemical surveys including stream sediment sampling, rock chip sampling and soil sampling. This work assisted in defining three mineralized trends, referred to as Mpeasem, Aburi and Asamang (SEMS, 2013). A phase of trenching to test various soil anomalies and follow-up preliminary drilling was conducted with a focus on these three prospective trends. Fourty-three diamond holes were drilled for 6,930 m and 61 RC holes for 3,840 m. Continued exploration is recommended for this prospect.

9.6.8 Other Prospects

A number of poorly tested prospective trends recognized during earlier prospectivity analysis were followed up by AGM with mapping and sampling and in some cases trenching in 2021. These include the Gyagatreso-Kaniago-Abore trend, the Greater Midras-Nkran-Takorase trend, the Datano-Fawotrikye trend and the Abore-Jeni River-Esaase trend (Figure 9-12). These areas were highlighted due a combination of coincident structural and soil geochemical anomalies and in some cases topographic highs and may relate to zones of veining and silicification associated with mineralized systems. Follow-up exploration is recommended for these prospects.

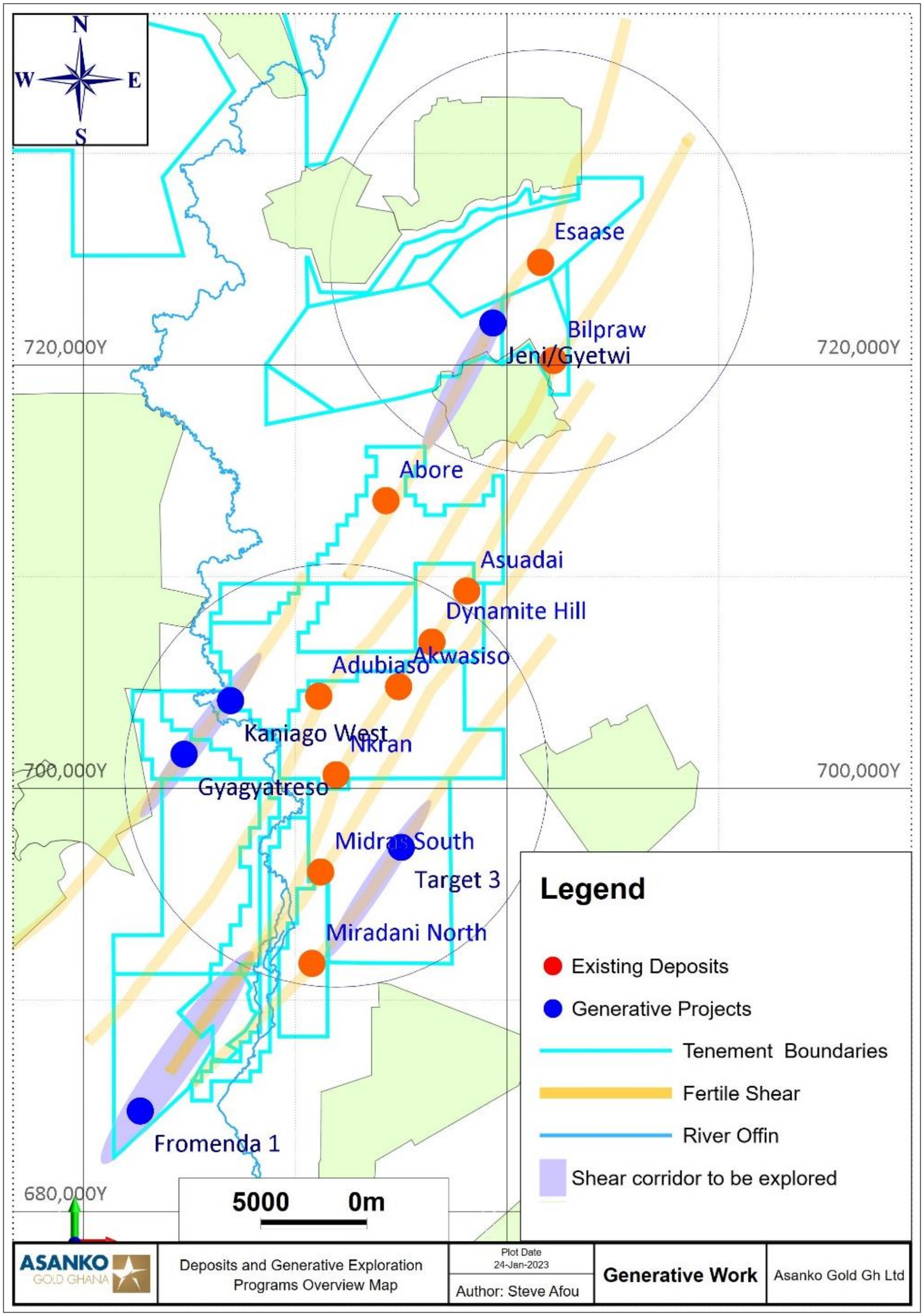
Within these trends several high priority targets have been identified, prioritized for further exploration work using a robust target evaluation and ranking program designed specifically for the AGM.

The Gyagyatreso target is located on the fertile Kaniago- Abore structural trend and is characterized by a robust 3 km long soil geochemistry anomaly and proven gold occurrences in localized drilling conducted by previous operators. Drilling is recommended to test for a subsurface gold mineralization.

Target 3 is situated 5 km from the AGM processing plant along the Fromenda- Miradani shear zone which hosts the Miradani North deposit. The target area consists of a robust geochemical soil anomaly and historic artisanal surface workings. Trenching and surface geophysical surveys are recommended to test the extent of mineralization.

The Gyetwi-Jeni River prospect lies directly along strike to the South of the Esaase deposit along the Abore-Esaase shear zone. Localized trenching carried out in this area in 2021 demonstrated gold is locally present in soils and grab samples. Further trenching and mapping recommended for this area.

Fromenda I located on the Fromenda shear hosts known mineralization associated with a mafic intrusion identified through drilling by previous operators. Mineralization consists of several high-grade intercepts over a strike length of approximately 200 m and remains open at depth and along strike. Follow-up drilling is recommended to test for extensions of mineralization along the untested portions of the Fromenda shear immediately along strike of known mineralization.



(Source: AGM, 2022)

Figure 9-12 Mineralized trends on AGM license package recommended for follow-up

10 Drilling

Asanko Gold have integrated historical databases with more recent and ongoing drilling programs. Drilling completed under AGGL ownership is described in this section. Unless specified otherwise, all diagrams in this section are sourced from AGM (2021).

10.1 Type and Extent of Drilling

Surface drilling at AGM included RC, DDH and RCD drilling. Drilling for Mineral Resource delineation focused on Nkran, Esaase, Miradani North, Dynamite Hill and Abore, although extensive drilling has also been undertaken at Akwasiso and Adubiaso. An overview of the historical drilling per deposit is provided in Section 6. Representative plans and sections of each deposit can be found in Chapter 7 and Chapter 14 of this report.

To date, a combined total of 4,773 evaluation air core (AC), DD, RC and RCD drillholes totaling 652,425 m have been drilled at the AGM deposits that are the subject of this Report, as well as additional grade control and other drillholes. Mineral Resource definition drilling at AGM mainly includes RC and DDH drilling.

A summary of the annual drilling completed by the AGM, Keegan and Legacy Drilling at each deposit that is the subject of this report is provided in Table 10-1, Table 10-2 and Table 10-3, respectively.

These tables only reflect AC, DDH, RC and RCD drilling. Additional drilling activities such as auger and air blast have been completed but were not used in the Mineral Resource estimation.

Table 10-1 Drilling summary by AGM (2014 - 2022)

Company	Prospect	Year	No. Of Holes	Number of Metres Drilled				
				AC	DDH	RC	RCD	Total Meterage
AGM	Abore	2020	33			1,069	4,784	**5,853**
		2021	42		429	4,376	1,082	**5,887**
		2022	108		907	7,046	8,322	**16,276**
	Adubiaso	2016	35			3,460		**3,460**
		2020	5			162	1,150	**1,312**
	Akwasiso	2016	51		5,828	1,742	1,558	**9,128**
		2017	91		315	4,604	4,326	**9,245**
		2020	36		643	2,515	3,698	**6,857**
		2021	4			330		**330**
		2022	4			420		**420**
	Akwasiso South	2018	65			4,946	225	**5,171**
	Dynamite	2016	56			5,176		**5,176**
		2021	30			1,470	4,639	**6,109**
	Midras South	2015	31			3,091		**3,091**
		2016	7			287	632	**919**
		2017	81		563	5,929	5,713	**1,2205**
		2021	22			1,123	2,601	**3,724**
		2022	49			4,916		**4,916**
	Miradani North	2019	12				3,379	**3,379**
		2020	42		5,243	198	3,708	**9,150**
		2021	46		6,238	2,794	1,057	**10,,089**
		2022	22		4,288			**4,288**
	Nkran	2017	11		1,699		2,237	**3,936**
		2020	71		2,526	7,204	1,142	**10,873**
		2022	38		13,892			**13,892**
	Nkran Extension	2014	18			1,785		**1,785**
		2016	38			3,032		**3,032**
		2017	24		257	930	702	**1,889**
	Nkran NE	2015	4			368		**368**
		2016	4			352		**352**
Total			**1,080**		**42,828**	**69,325**	**50,955**	**153,023**

Note: AC – Air core; DDH – Diamond drill hole; RC – Reverse circulation; RCD – Reverse circulation with diamond tail. The following drilling is excluded from the above – Auger (AG), Rotary Air Blast (AB). Esaase B, B1, C, D & E zones do not form part of the declared Esaase Mineral Resources.

Table 10-2 Drilling summary by Keegan (2006 - 2022)

Company	Prospect	Year	No. Of Holes	Number of Metres Drilled				
				AC	DDH	RC	RCD	Total Meterage
Keegan	Aboabo	2010	58			5,522	3,353	**8,875**
		2011	19		489	242	3,918	**4,649**
	Esaase B Zone	2007	16		300	3,023		**3,323**
		2008	17			1,728	1,630	**3,358**
		2011	73		608	7,265	3,659	**11,532**
	Esaase B1 Zone	2007	8		1,009	265		**1,274**
		2009	2				580	**580**
		2010	1				156	**156**
	Esaase C Zone	2007	5		651			**651**
		2010	6			897		**897**
		2011	2			177		**177**
	Esaase D Zone	2007	1		232			**232**
		2008	35			3,035	1,845	**4,880**
		2010	2			150	311	**461**
		2011	18			360	4,202	**4,562**
	Dawahodo	2011	91			11,465		**11,465**
		2012	13			1,488	1,222	**2,710**
	Esaase E Zone	2008	2			251		**251**
		2009	3			351		**351**
		2011	12			1,303	802	**2,105**
	Esaase	2020	30		1,370	3,370	821	**5,561**
		2021	20			1,184	3,579	**4,763**
		2022	82		4,722	4,929	3,039	**12,690**
	Esaase Main Zone NE	2007	2		506			**506**
		2008	28			3,161	642	**3,803**
		2009	87			11,041	2,082	**13,123**
		2010	61			7,787	177	**7,964**
		2011	35		439	2,152		**2,591**
	Esaase Main Zone North	2006	14		4,084			**4,084**
		2007	163		1,464	20,375	14,095	**35,934**
		2008	177		833	23,955	13,624	**38,412**
		2009	20		915	891	3,332	**5,138**
		2010	87		5,096	1,494	18,570	**2,5161**
		2011	84		5,625	5,285	14,169	**25,080**
		2013	6		1,322			**1,322**
		2018	82			4,872		**4,872**
	Esaase Main Zone South	2007	60		3,81	9,831	1,270	**11,482**
		2008	34		224	3,795	3,492	**7,511**
		2010	32		1,063	764	5,936	**7,764**
		2011	33		490	2,513	2,249	**5,253**
		2013	1		100			**100**
		2018	27			2,378		**2,378**
	Sky Gold	2011	16			1,687		**1,687**
Total			**1,565**		**31,542**	**148,986**	**108,755**	**289,668**

Note: AC – Air core; DDH – Diamond drill hole; RC – Reverse circulation; RCD – Reverse circulation with diamond tail. The following drilling is excluded from the above – Auger (AG), Rotary Air Blast (AB). Esaase B, B1, C, D & E zones do not form part of the declared Esaase Mineral Resources.

Table 10-3 Legacy drilling summary

Company	Prospect	Year	No. Of Holes	Number of Metres Drilled				
				AC	DDH	RC	RCD	Total Meterage
Legacy	Abore	2010	30		4,886			**4,886**
		2011	24		4,550			**4,550**
	Abore North	2000	420		1,224	31,594		**32,818**
		2010	2		408			**408**
		2011	2		352			**352**
	Adubiaso	1996	49			5,958		**5,958**
		1997	8			876		**876**
		1998	11			1,745		**1,745**
		2000	173		635	13,113	589	**14,339**
		2009	3		488			**488**
		2010	10		1,567			**1,567**
		2011	35		7,635			**7,635**
		2013	14			1,359		**1,359**
	Akwasiso	1996	1		250			**250**
		1997	18		1,278	1,098		**2,376**
		1998	56		824	2,372		**3,196**
		2000	102		2,736	6,019		**8,755**
	Asuadai	2000	88		329	5,551		**5,880**
		2010	15		1,739			**1,739**
		2011	45		6,063			**6,063**
		2012	3		652			**652**
	Dynamite	2013	90		408	10,446	249	**11,103**
		2014	42		2,094	4,611		**6,705**
	Kaniago	2012	189	7349		4,986		**12,335**
	Midras	2000	99		2,338	6,022		**8,360**
	Nkran	1997	59		100	3,435	1,324	**4,859**
		1998	2			190		**190**
		1999	1			100		**100**
		2000	611		32,376	20,500	3,000	**5,5878**
		2010	21		9,049			**9,049**
		2011	79		34,646		494	**35,140**
		2012	444	20677	546	800	2,426	**24,449**
	Nkran Extension	1998	4			370		**370**
		2000	19			1,591		**1,591**
		2013	10			1,002		**1,002**
Total			**2,779**	**28,026**	**117,173**	**123,738**	**8,082**	**277,023**

Note: AC – Air core; DDH – Diamond drill hole; RC – Reverse circulation; RCD – Reverse circulation with diamond tail. The following drilling is excluded from the above – Auger (AG), Rotary Air Blast (AB). Esaase B, B1, C, D & E zones do not form part of the declared Esaase Mineral Resources.

A property wide drill plan is shown in Figure 10-1.

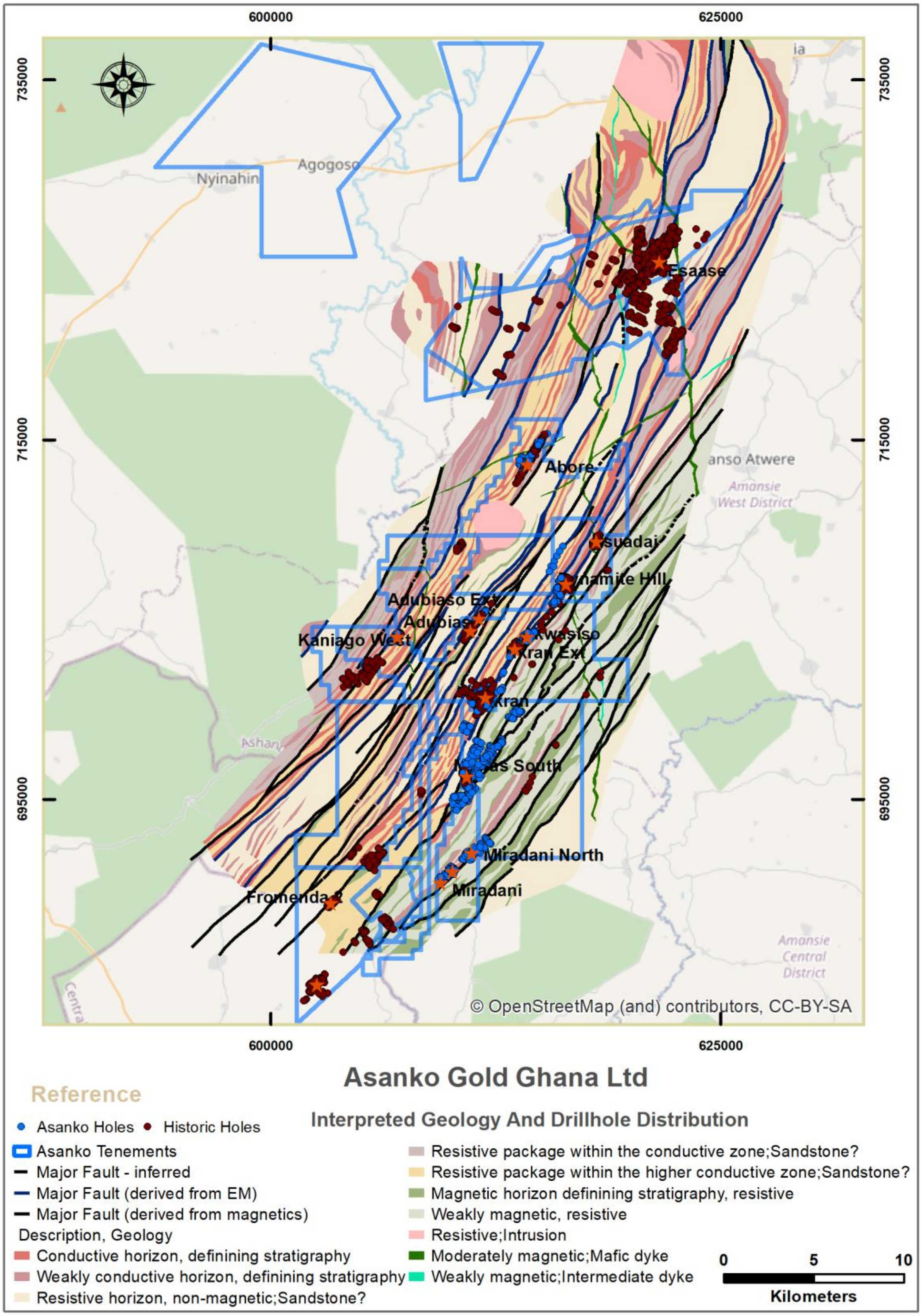


Figure 10-1 Distribution of drilling and trenching across AGM license package (interpreted geology)

Plans showing the location of drill collars and drilling type for each AGM deposit are provided in Figure 10-2 to Figure 10-9 (Note: areas in grey denote artisanal mining disturbance areas).

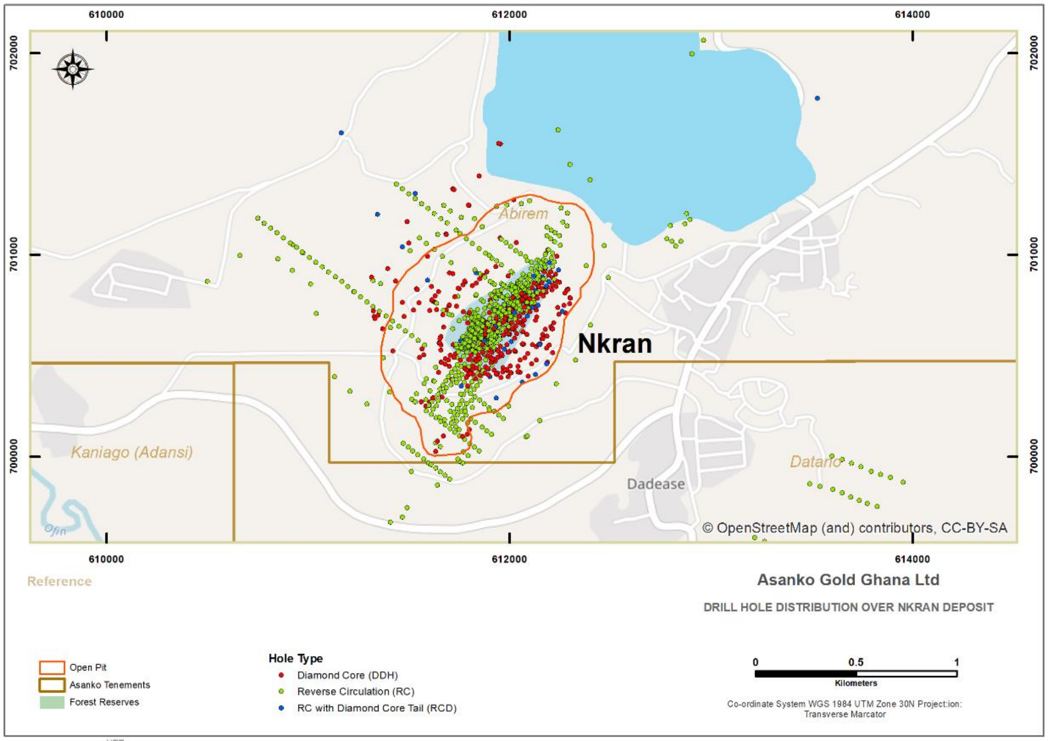


Figure 10-2 Plan showing distribution of drillhole collars at Nkran

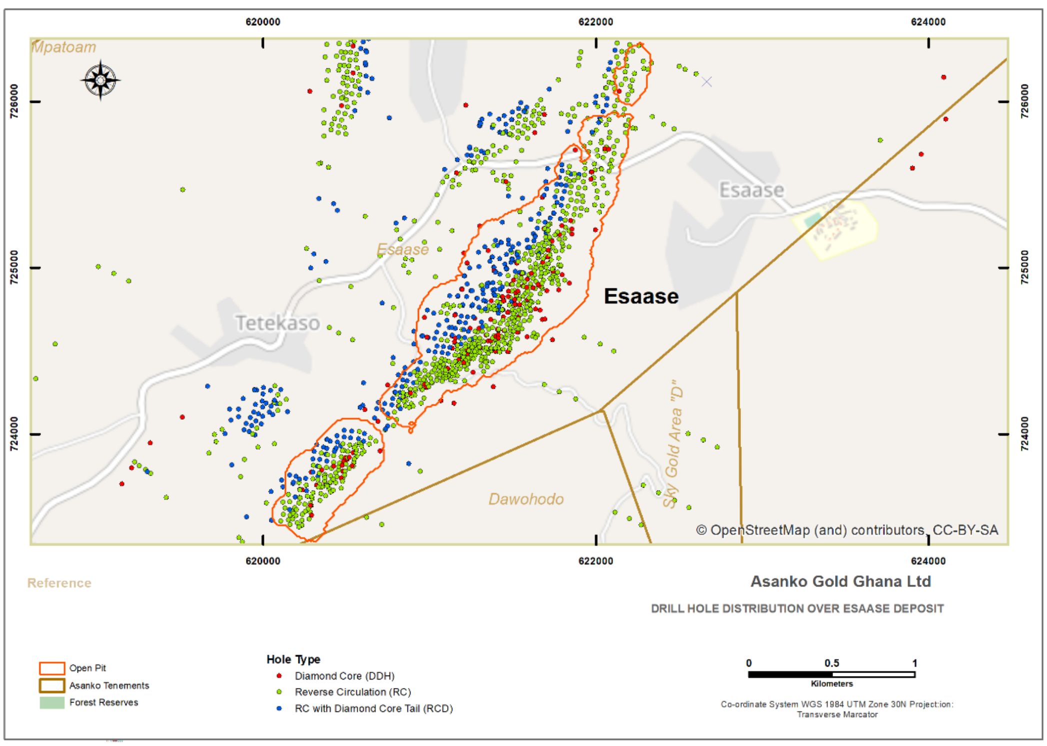


Figure 10-3 Plan showing distribution of drillhole collars at Esaase

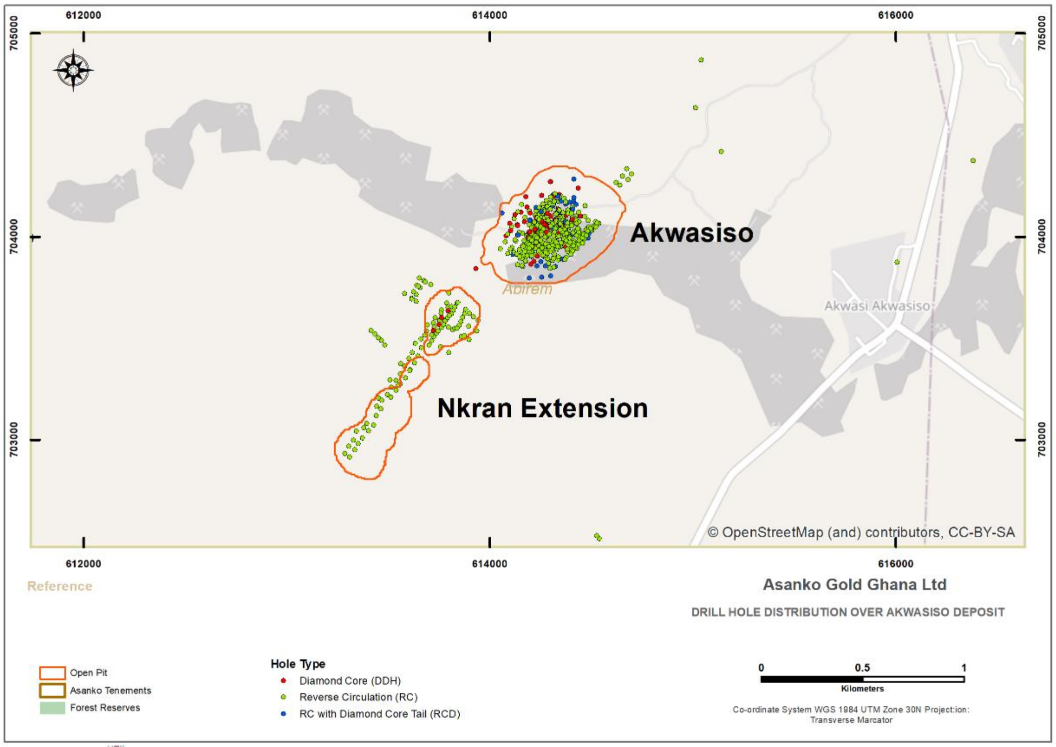


Figure 10-4 Plan showing distribution of drillhole collars at Akwasiso and Nkran Extension

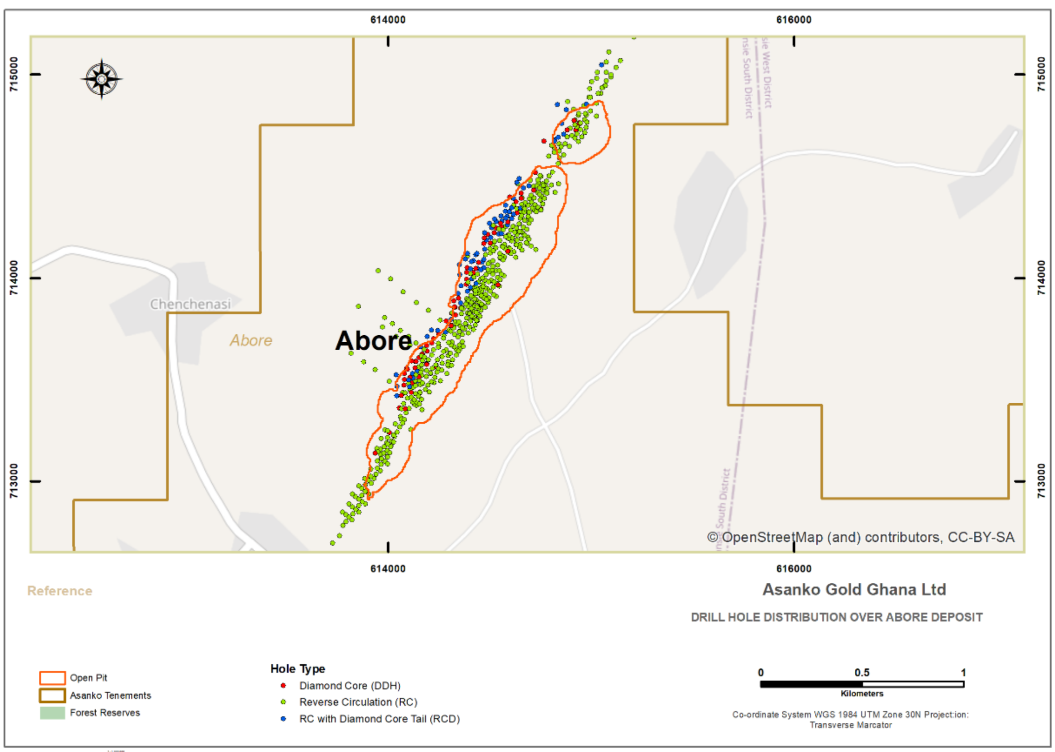


Figure 10-5 Plan showing distribution of drillhole collars at Abore

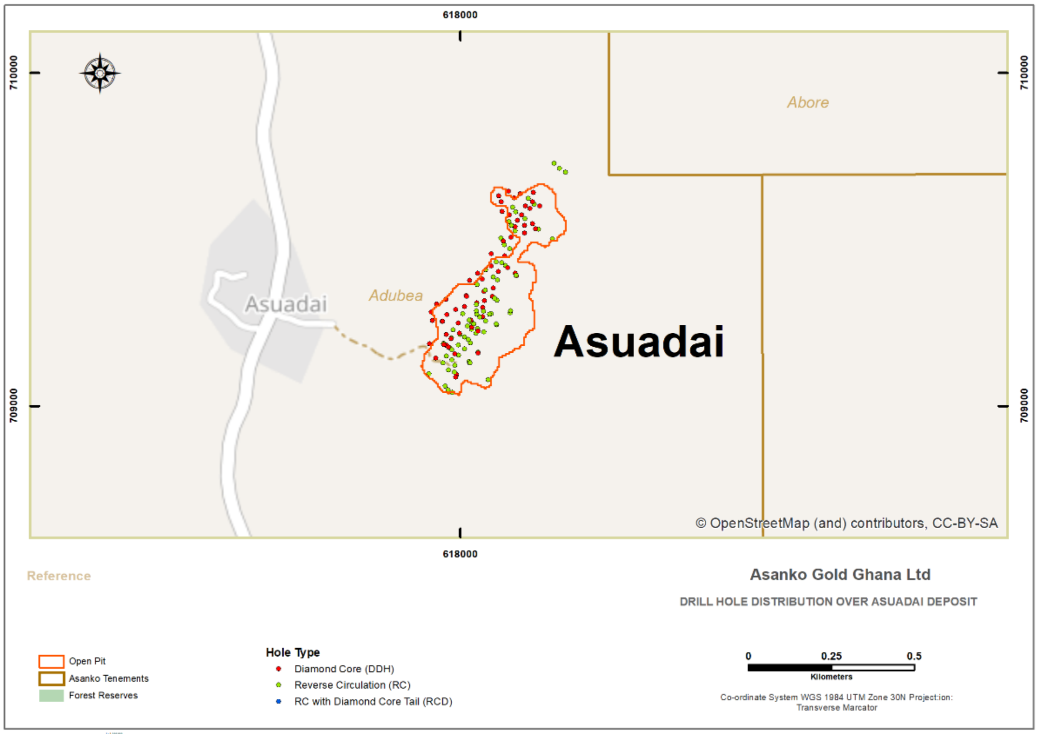


Figure 10-6 Plan showing distribution of drillhole collars at Asuadai

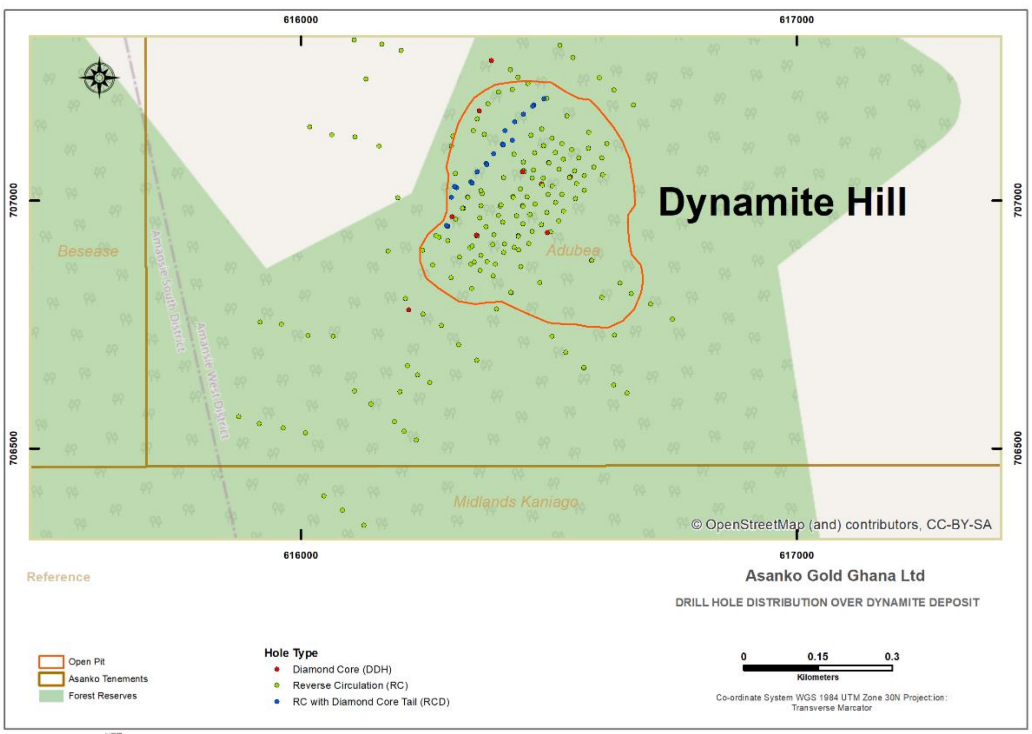


Figure 10-7 Plan showing distribution of drillhole collars at Dynamite Hill

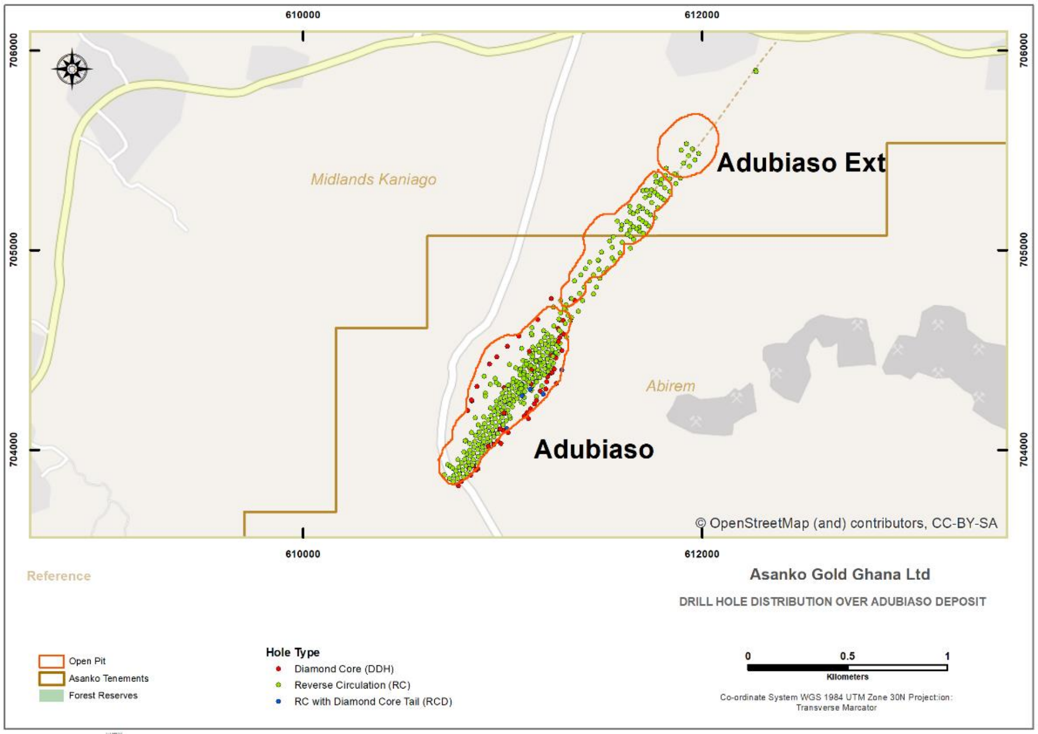


Figure 10-8 Plan showing distribution of drillhole collars at Adubiaso and Adubiaso Extension

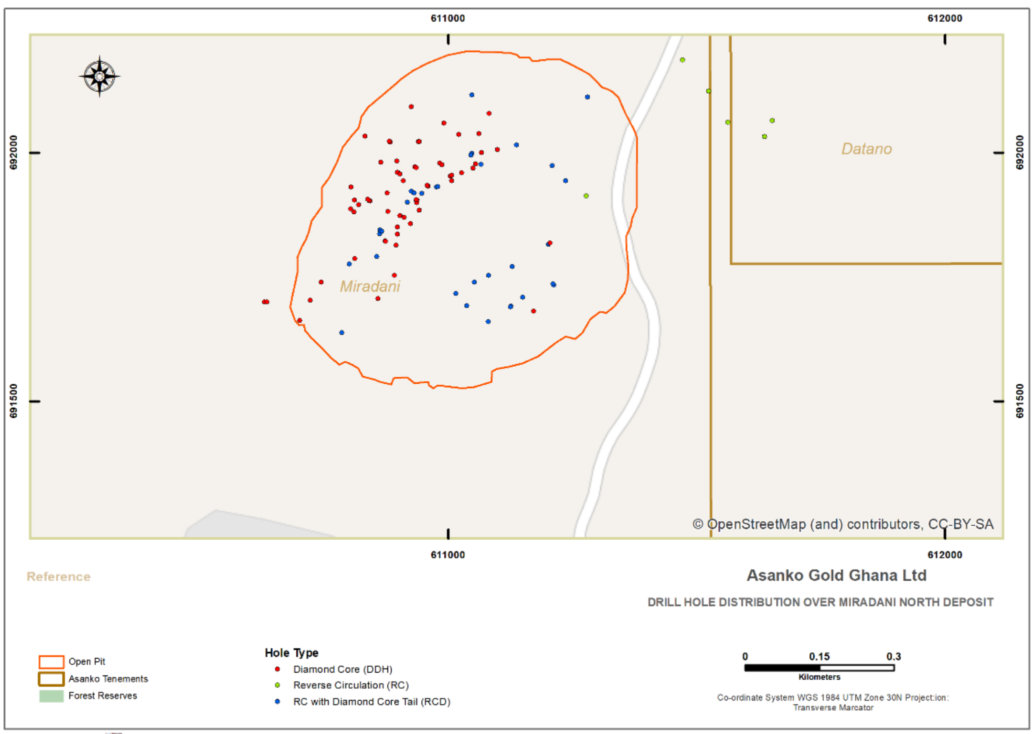


Figure 10-9 Plan showing distribution of drillhole collars at Miradani North

Nkran has been drilled formally from the early 1990s prior to mine establishment and has since undergone numerous RC and DDH drilling and infill drilling programs to define and refine the resource model, as well as relogging of available core materials. Of note, a large proportion of (if not all) Nkran drilled by previous explorers has been mined out.

Drilling at Esaase by Keegan (precursor to Asanko Gold/Galiano) from 2006 to 2012 focused mainly on the NE-striking, main gold bearing structures. An oxide RC infill drilling program was completed in May to June 2018 targeting the two-year oxide pit and drilled a staggered 40 m x 40 m infill pattern to increase the confidence in the mineralization within the upper portion of the deposit. Overall, the drillholes averaged approximately 60 m in depth and were spread along the length of the proposed two-year oxide pit. In addition to this program, 21,000 m of historical diamond drill core was re-logged from a selection of 83 holes covering the full strike of the Esaase Main deposit. A further 6,950 m was re-logged from 38 diamond drillholes covering the Esaase South deposit. In total, approximately 10% of core has been relogged for the purposes of refining the geological model at Esaase. An additional 11,809 m of infill drilling was completed during 2020-2021 to increase confidence and assist with the geological model development.

Resolute originally tested the Akwasiso oxide material in 2001 by RC and DD drilling. After acquiring Akwasiso, Asanko Gold completed further RC and DD drilling, including a second phase of RC and RCD drilling to upgrade the confidence of the Inferred Mineral Resources. Akwasiso was suspended as an operating pit in December 2018 and additional infill RC drilling was undertaken to define the continuation of mineralization below the current pit. Operations recommenced at Akwasiso in 2020. In 2020 to 2021, a program of 7,187 m combined RC and DD drilling was completed to upgrade the resource category and better define granitoid limits.

The Abore and Asuadai project database comprises historical drill hole data from Resolute and PMI. Between 2019 and 2021, AGM drilled an additional 11,311 m from 72 holes at Abore to extend the known resource at depth and along strike to the north. This data is used to upgrade the Abore Mineral Resource.

AGM continued testing the Adubiaso target during 2016 with a RC drilling program successfully identifying over 500 m of strike of additional multiple thin mineralized zones, which have subsequently been infill drilled. During 2016 AGM also conducted RC exploration and RC infill drilling on the NE extension of the Adubiaso pit mineralization. Minor infill drilling was completed at Adubiaso in 2020, for 1,312 m drilled.

Drill traverses for all deposits are generally aligned perpendicular to the local NE-SW mineralized trends. The drill hole spacing varies between the deposits, ranging from 10 m to 20 m across strike to 20 m to 50 m along strike (to define near surface projections of mineralization).

RC, DDH and RCD are the common drilling methods. Shallow drillholes targeting oxidized material and shallow fresh material generally use RC drilling.

The drilling density is considered appropriate to define the geometry and extent of the mineralization for the purpose of estimating Mineral Resources, given the understanding of the local geology, structure and confining formations. AGM's strategy is to conduct drilling sufficient to assume geology and grade continuity to a level to support at least Indicated Mineral Resources and thus support the application of modifying factors in sufficient detail to support mine planning and evaluation of economic viability. Section 14 of this Report summarizes the drill hole data used in the estimation of Mineral Resources. Where concerns over legacy drilling (pre-2014) have been raised and the concerns verified, ensuing drill data has been excluded from use in Mineral Resource estimates. Legacy logging practices (PMI) have been well covered in Spiers (2010) and SRK (2011) and geological information related to these were verified by comparison with nearby AGM drilling where possible. This data has been further validated during generation of drill sections and geological interpretations, where any inconsistencies in geological logs, collar locations and downhole surveys were identified.

RC grade control (GC) drilling is conducted at the Nkran, Esaase, Akwasiso and Adubiaso pits. A summary of the RC grade control drilling completed by Asanko Gold from 2014 to July 2022 is shown in Table 10-4.

Table 10-4 Grade control drilling summary by deposit (2014 - 2022)

Pit	No. of Holes	RC Metres Drilled
Adubiaso	323	11,877
Akwasiso	5,672	126,012
Dynamite	854	28,241
Esaase main	35,308	862,201
Nkran Extension	470	11,028
Nkran	11,545	358,438
Total	**54,172**	**1,397,797**

In addition to this, grade control sampling has occurred as summarized in Table 10-5.

Table 10-5 Grade control sample summary by deposit (2014 - 2022)

Pit	COMP_RC	FC	Grab	RC	RPL	Total
Adubiaso				7,666		**7,666**
Akwasiso				80,315	766	**81,081**
Dynamite				19,028	33	**19,061**
Esaase Main				565,277		**565,277**
Nkran Extension				6,809		**6,809**
Nkran	50,186	23	54	171,242	136	**221,641**
Total	**50,186**	**23**	**54**	**850,337**	**935**	**901,535**

Note: RPL – Ripline; FC – Face channel; RC – Reverse circulation

Since 2014, AGM has taken a total of 328,841 channel, pulp, DDH and RC samples across all the deposits, as shown in Table 10-6. These samples are not applied in Mineral Resource estimation.

Table 10-6 Drillhole sample summary by deposit (2014 – 2022)

Prospect	CHANNEL	CHIPS	DDH	PULP	RC	TOTAL
Abore			7,274		19,044	26,318
Adubiaso			571		3,980	4,551
Akwasiso			10,818		12,266	23,084
Dynamite			2,218		9,558	11,776
Esaase		120	6,590		13,459	20,169
Esaase Main Zone North				960	3,871	4,831
Esaase Main Zone South					2,325	2,325
Midras South			4,612		19,187	23,799
Miradani North			18,093		5,819	23,912
Nkran	9		14,630		7,330	21,969
Total	**9**	**120**	**122,338**	**960**	**174,634**	**328,841**

Note: DDH – Diamond drill hole; RC – Reverse circulation.

10.2 Drill Logging Procedures

Geological information gained through the efforts of legacy operators (such as PMI and Resolute) was first validated by check logging and comparison with nearby AGM logged holes before integration into the current database. Logging procedures by PMI are well covered by Spiers (2010) and SRK (2011). The QP has also reviewed this information and considers it of an appropriate industry standard.

Since 2014, logging records include the prospect name, hole ID, person logging, date of logging, depth from/to:

- Lithology
  - Lithological unit
  - Regolith domain
  - Stratigraphic domain
- Alteration
  - Alteration intensity
  - Alteration mineral
  - Sulphide intensity and type
- Structure
  - Structure type
  - Younging (if visible for beds)
  - Alpha (dip of structure)
  - Beta (strike of structure)
  - Structure style
  - Lode name (if known)
- Structure zones
- Veining
- Veining density

All logging data is captured digitally and then transferred to Maxwell DataShed™ software. Once imported into DataShed™, all data is validated and undergoes QA/QC. Validated data is stored in a SQL database and is exported into appropriate file formats for resource estimation in Isatis™ and Datamine™ RM.

10.3 Collar Survey

The proposed drill hole coordinates are prepared by the geologist and approved by the project manager. The geologist provides the field technician with the proposed drill hole coordinates and corresponding location map; and the proposed coordinates are saved in the drill hole database.

The drill hole collar location is marked and surveyed in the field using a handheld GPS to an accuracy of 1 m. If any deviations in the proposed drill hole location are encountered due to topography or other reasons, alternative locations are determined by the field technician and communicated to the geologist for approval before pad construction begins.

Once the drill hole has been completed, the surveyor returns to pick up the “final coordinate” with a total station GPS.

10.4 Downhole Survey

AGM uses the Reflex EZ Shot single shot survey tool in all RC and DD holes. The first survey is collected within the first run (3 rods or 9 m) and subsequently at 30 m intervals. The last run to end of hole (EOH) is surveyed. The down hole survey is monitored by the rig geologist while drilling so that any excessive deviation (0.2 degrees per metre) can be identified and resurveyed. The Reflex EZ Shot tool is a completely manual single shot tool and only gives a read out of the basic azimuth (AZ), dip (Incl), temperature (Temp) and magnetic susceptibility (Mag Field) data which is manually recorded and reported via a Reflex data (template) which is signed by the drilling supervisor.

10.5 Core Recovery

Core recoveries are typically calculated at the drilling site by qualified technicians or once the trays are delivered back to the core facility/yard and recorded in the geological logs. The recording of recoveries is the responsibility of the geologist. Core recoveries are typically in excess of 95%.

10.6 Core Handling

Prior to loading with core, core boxes are labelled with the drill hole number, box sequence and depth recorded in permanent marker. To ensure that pieces of core are not lost, rotated end for end, or misplaced in the tray the operator reconstructs the core after it has been placed in the tray. Wooden block markers are inserted by the driller to record depth.

A Reflex ACT IID electronic core orientation tool and barrel is used for orienting and marking core. The barrel is oriented using the electronic orientation unit prior to the drill run. The full, oriented barrel is then retrieved, the core aligned and marked using a bottom hole convention. The down hole direction is marked on the core at the base. If two sections of broken core cannot be matched, then no structural mark-up is made for the lower (down hole) part of the core run until the next barrel is retrieved and oriented.

10.7 Core Photography

Prior to cutting, all core is routinely photographed by the geologists both dry and wet. The colour and texture of the rock are best seen when the core is wet but the fracture patterns which are important to the geotechnical study are best viewed when the core is dry.

The project location, drill hole ID, tray number, depths start/end of tray and indication whether the core was dry or wet is written on white board and placed at the top of the box.

10.8 Core Cutting and Sampling

Sampling is undertaken after geological, structural and geotechnical logging. Sampling intervals are selected by the geologist and for both HQ and NQ core, conform to a minimum sample length of 30 cm and maximum of 200 cm. Sample intervals do not cross lithological boundaries as defined by the logging and are defined within similar alteration zones and structural features. The following procedures are followed:

- A coloured orientation line is marked along the length of the core to indicate where the core should be cut in two equal halves. The line is traced perpendicular to the stratification; where there is mineralization, the optimum distribution is used so that 50% of mineralization is represented in each half of the core. The same side of the cut core is removed consistently throughout the drill hole (i.e., the right-hand side from the top to the bottom of the hole). The core is cut completely in two halves using an electric diamond blade saw. In the upper oxide zone, where the core is too friable for diamond saw cutting, the core is dry cut or cleaved.
- A sampling form is completed with the intervals indicated for the samples. Ticket forms are completed with the drill hole ID number and FROM-TO interval for the sample. The samples numbers must be in consecutive order and are derived from the sample ticket book. Only the sample numbers are written on the plastic sample bags.
- Metallic marker blocks are inserted at the start and end of each sample and the number of the corresponding sample is written with felt-tip pen on the core box to the side of the marker (Figure 10-10). Samples of approximately 2 to 3 kg are collected carefully and placed in plastic bags. The sample number is written on the plastic sample bag with a permanent marker pen. The sample ticket is stapled on the upper part of the bag and the bag sample number is checked against ticket sample number. The bag is sealed with plastic ties.

10.9 QC Insertions

Field technicians are responsible for the bulk of QC insertions, overseen by the site logging geologist. Ultimate compliance with procedures is with the Exploration Manager and Unit Manager – Spatial Data. QC insertions are inserted onsite (at the Esaase core yard for Esaase drilling and at the Obotan core yard facility for all other projects).

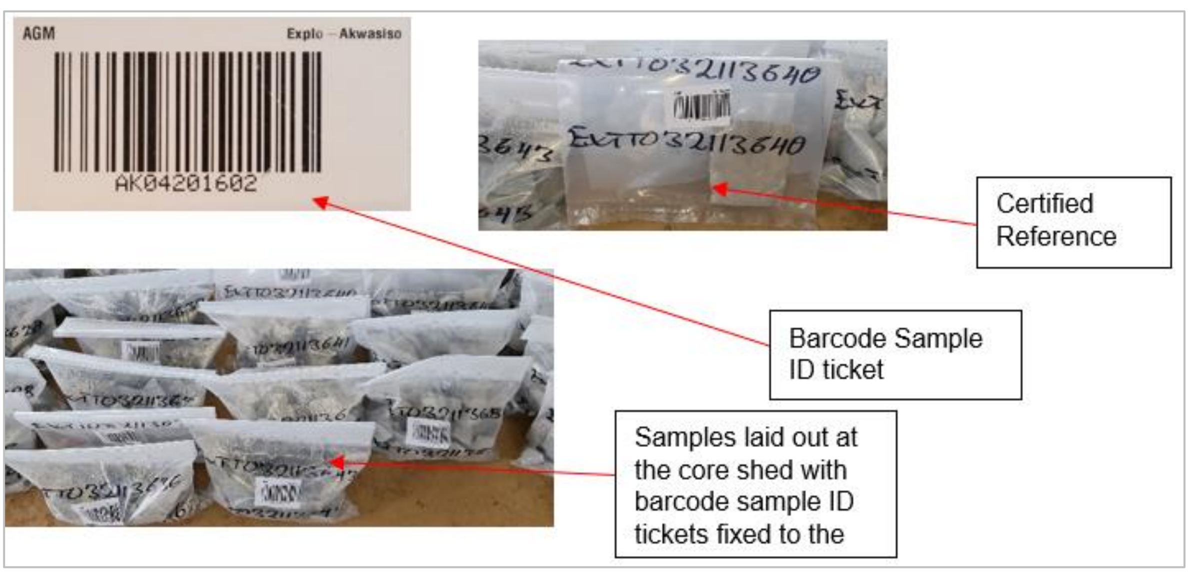


Figure 10-10 Sample label

Each assay/sampling job follows the below steps:

- Barcode sample ID tickets should be printed out. Sample IDs for QAQC materials follow the same sequence as regular samples IDs. Samples must be laid out and QAQC materials inserted at their correct positions before putting everything together in a batch.
- AGM Certified Reference Materials (CRM) are sourced from Geostats Pty, Australia.
- Standards (CRMs) should be inserted into routine sample batches at a rate between 2.5 per 20 samples and 5 per 40 samples. At the very minimum, quality control samples should never be less than two percent of a batch. When a standard is to be inserted, select a standard within the grade-range of the expected values in the routine samples.
- Blanks are similarly inserted onsite, alternating with standards at a rate between 2.5 per 20 samples and 5 per 40 samples.
- Duplicates are inserted into routine analytical batches at a rate of 1% to 3%, depending on the confidence level with the laboratory and the size of the batch. In the case of drill core, duplicates should be quarter (¼) of the drill core.
- DataShed™ software is used to import laboratory files, check for standards, blanks & duplicates and issue a report on standards performance for the batch. Data processing personnel communicate the outcome of the assay results and corresponding standard names for any inserted standards.

10.10 Geotechnical Logging

Geotechnical characteristics of the rock mass are described to provide all necessary data for rock mass classification schemes. Logging records include:

- Depth from/to
- Core diameter
- Recovery
- Rock quality designation
- Lithology
- Alteration
- Defects
- Origin
- Alpha, beta
- Planarity, roughness
- Infill type and thickness
- Hardness
- Broken zone
- Orientation

Four geotechnical rock tests may be undertaken, including point load testing and tilt testing (conducted on-site), and uniaxial compressive strength (UCS) testing and direct shear testing (conducted at off-site laboratory).

10.11 Core Storage

A core shed facility is located at Nkran. This facility has spacious core logging facilities, a dedicated XRF/spectrometer office, a dedicated core saw/splitter facility, covered core storage on pallets and pallet racking with a forklift and containerized storage for pulps. With the exception of Esaase, all core from the other deposits is transported to the Nkran core shed for logging and storage.

The storage facility at Esaase consists of sheds with elevated racks on concrete floors that are sheltered from wind and rain. The core is stored following geological logging, photography, core cutting and sampling.

10.12 Density Sampling

The logging geologist selects a 10 to 20 cm length of half core for the density measurement. One representative sample is taken in each 10 m interval of unmineralized core, or in each 5 m interval of mineralized core. The geologist marks with a permanent marker pen the interval of the half core which is to be sampled. A technician labels the density sample with a black permanent marker indicating the hole number and the “FROM” and “TO” measurements. Details of each sample are recorded on a density sample registration form.

The technician in charge of the density measurement takes a photograph of the sample outside the core box with the sample registration details. The photographs are downloaded to a computer. Photographs are named using the HOLE NUMBER_FROM_TO information and downloaded on the exploration database computer, with a backup in the server. A wooden block is placed in the core box where the sample was taken. The sample interval (“FROM” and “TO”) is written on the wedge, together with the word ‘Density’. Density is measured at the AGM lab onsite following the Archimedes method, outlined in Section 11.

Duplicate measurements were taken by the laboratory for every tenth sample. Selected samples (1 in 30), located adjacent to the primary samples, were sent to a second laboratory (Intertek – Tarkwa) for check density measurements.

10.13 RC Sampling

Prior to commencing drilling, a series of sample bags for each hole are labelled with “FROM” and “TO” depths. For the original samples, 40 cm x 50 cm bags are used and for the reject samples, 50 cm x 100 cm bags are used. Chip trays are labelled with Hole ID, sample number and From-To depths, as well as any quality control samples with FB (field blank) or FD (field duplicate).

The hole is drilled dry to maximize sample recovery and avoid losing fines and a rig mounted rotary splitter is used wherever possible. In exploration drilling, a triple-tiered riffle splitter is used whenever a rotary splitter is not available. In GC drilling, a stationary cone splitter is used whenever a rotary splitter is not available. The auxiliary booster and compressor must be operational and used if water is encountered.

The cyclone is continuously monitored to avoid contamination from clogging and to ensure it is cleaned as required, and at a minimum, after completing each hole. The drill rods, down-hole hammer bit and the sampling equipment are cleaned regularly using compressed air, at each rod addition and after each hole. Sample buckets/bags are removed when the hole is flushed by the driller at the change of rods. The triple-tiered riffle splitter is frequently inspected and cleaned with compressed air or by hammering the side of the splitter between each sample, to avoid contamination and ensure representative samples.

Samples are taken at precise 1 m intervals for exploration drilling and 1.5 m intervals for GC drilling with no lag in the sampling. For every sample, the complete sample interval is collected from the cyclone.

Samples of approximately 2-3 kg are collected in the pre-labelled (FROM_TO) plastic bags and sealed with plastic tags. Samples are collected from the drill site every shift and transported to the Obotan (Nkran) and Esaase camp.

In exploration drilling, rejects are placed in plastic bags correctly labelled with FROM-TO depths and the samples bag securely closed. Reject bags are placed on the ground in organized piles. After each sample is placed in a sample bag, the technician takes a sub-sample of the field reject, sieves and washes the sample where fresh and spoons the sample into the sequential trays. This provides a permanent record of the geology of each sample.

The sampling method (riffle splitter, rotating cone splitter, rotating wet splitter), estimation of recovery (%) and sample condition (dry, damp, wet) are recorded in a log.

A sample weighing program is undertaken on the RC rig, across each shift over a 24-hour period, to ensure that the optimal sample size is being taken and to determine the recovery. All material reporting through the splitter is weighed for every interval drilled. The A and B samples are weighed to ensure a representative split and the field reject is weighed to allow calculation of total sample recovery per interval drilled. The A and B samples must be consistently within 10% of the weight of each other. If this is not achieved it must be communicated to the driller, drilling manager and Project Manager so that the rotary/cone splitter can be calibrated.

As the samples are drilled, they are lined-up in order according to the FROM-TO intervals. The ordered samples are checked against the log sheet from the drill rig. The technician then writes the sample bag number on the plastic sample bag according to the number in the log sheet. Sample tickets are stapled to the plastic bags (bag sample number against ticket number is checked).

As with diamond core sampling summarized above, field technicians are responsible for the bulk of QC insertions, overseen by the site logging geologist. Ultimate compliance with procedures is with the Exploration Manager and Unit Manager – Spatial Data. QC insertions are inserted onsite (at the Esaase coreyard for Esaase drilling and at the Obotan core yard facility for all others). QC insertions are made as follows:

- Standards (CRM's) should be inserted into routine sample batches at a rate between 2.5 per 20 samples and 5 per 40 samples. At the very minimum, quality control samples should never be less than two percent of a batch. When a standard is to be inserted, select a standard within the grade-range of the expected values in the routine samples.
- Blanks are similarly inserted onsite, alternating with standards at a rate between 2.5 per 20 samples and 5 per 40 samples.

Duplicates are inserted into routine analytical batches at a rate of 1% to 3%, depending on the confidence level with the laboratory and the size of the batch.

Detailed logging is undertaken by the exploration or grade control RC geologist using the MaxGeo LogChief™ data collection system.

10.14 Pre-2014

Drilling procedures for PMI prior to 2014 are covered in Spiers (2010) and SRK (2011). Procedures followed by Resolute are not well documented. In summary:

- Once core is thoroughly washed, individual core trays are photographed when wet
- Core boxes are laid onto logging racks in numerical order and the recoveries measured, reconciled by drillers core blocks
- Metre marks are directly on the core
- Logging includes detailing all relevant lithologies, fractures, foliations, laminae, crenulations, cleavages and angles of formational contacts
- Rock Quality Designation (RQD), indicating the strength of the rock units, are also noted and recorded

Relogging and inspection of sample results from this period indicates drilling, logging and sampling procedures were similar to the current methods. Recovery and density measurements are less frequent or not recorded. QC insertion types and rates are less than current and in some cases no QC insertion is evident, however this data contributes to an insignificant portion of the Mineral Resource estimate.

11 Sample Preparation, Analyses and Security

Resolute, PMI and AGM have used various laboratories to prepare and assay samples collected on the various deposits within the AGM. These included SGS in Accra, Bibiani and Tarkwa, Min Analytical in Perth, ALS in Kumasi, Intertek in Tarkwa, Trans World (TWL) in Tarkwa, Performance Labs in Bibiani and AGM internal laboratory at the Nkran site (Table 11-1).

Since 2014, exploration samples are sent to either ALS laboratory in Kumasi, Intertek laboratory in Tarkwa, or the AGM laboratory. ALS and Intertek are independent from Galiano. The AGM laboratory is not independent from Galiano.

Table 11-1 Laboratories and associated accreditations used at AGM (1996 - 2021)

Laboratory	Locality	Company	Period	Accreditation*
SGS	Accra	Historical	1995	Unknown
Inchcape	Obuasi	Resolute	1995-1997	Unknown
Analabs	Nkran Site	Resolute	1997-1998	Unknown
SGS	Bibiani	PMI	2009-2012	Unknown
SGS	Tarkwa	PMI	2010-2011	Unknown
Min Analytical	Perth	PMI	2011-2014	Unknown
ALS	Kumasi	PMI & AGM	2006-2021	2014-2018 – none 2018 – ISO/IEC 17025:2005 2020 – ISO/IEC 17025:2017
Trans World (TWL)	Tarkwa	PMI	2009-2010	Unknown
Intertek	Tarkwa	PMI & AGM	2010-2021	2014-2017 – none 2017-2019 – ISO/IEC 17025:2005 2019-2021 – ISO/IEC 17025:2017
Performance Labs	Bibiani	PMI	2010-2014	Unknown
AGM Laboratory	Nkran Site	PMI & AGM	2017-2022	None

** Scope of accreditation includes analysis for gold by fire assay followed by acid digestion and atomic absorption finish*

The accreditation statuses for laboratories used prior to 2014 were largely unknown, however all these laboratories were operated by reputable commercial companies independent of AGM.

ALS Ghana in Kumasi received accreditation of ISO/IEC 17025:2005 in 2018 and received ISO/IEC 17025:2017 accreditation in 2020. The scope of accreditation includes analysis for gold by fire assay followed by acid digestion and AAS finish. Before 2018 the laboratory was operating as per the ISO standards but was not certified or accredited.

The Intertek laboratory in Tarkwa received ISO/IEC 17025:2005 accreditation in 2017 and received ISO/IEC 17025:2017 accreditation in 2019. The scope of accreditation included analysis for gold by fire assays followed by acid digestion and AAS finish. Before 2017 the laboratory was operating as per the ISO standards but was not certified or accredited.

The AGM Mine laboratory holds no certification or accreditation.

11.1 Sample Preparation and Analyses

Historical information below was largely sourced from Spiers (2011) and Miller et. al (2022).

11.1.1 Resolute (1996-2006)

The details of data collection and analyses procedures used by Resolute between 1996 and 2006 were not well-documented and available to the qualified person for review.

11.1.2 PMI (2006-2014)

All sampling procedures were completed under the direct supervision of PMI senior staff.

Sampling of revere circulation chips were collected at the drill site in one-meter intervals. The entire length of the interval was sampled, amounting to approximately 25 kilograms per sample, which was reduced to approximately two to three kilograms by riffle splitter. Two duplicate splits were taken, one for assaying and the other for ‘pan’ gold counts.

Each sample was bagged, identified by permanent marking, recorded and secured by the geologist. Bagged samples were transported to PMI’s sorting facility by the geologist where they were laid out in numerical order and checked for consistency. At the end of each shift, they were transferred to PMI’s field office where they were stored in a dry storage room until delivery to the laboratory.

Gold panning results generated from the duplicate samples was typically available within a day of collection. The results from this work were recorded in PMI’s database and was used to cross-check assay results.

After logging the core, the geologist determined samples typically in one-metre intervals for zones considered mineralized, adjusted to respect mineralization boundaries. Zones that were considered waste were sampled in four-metre intervals. Intervals to be assayed were marked on core with a permanent marker. Sample numbers were pre-written on plastic bags.

Core was sawn in half using a diamond core saw. Half of the core was placed in the sample bag and the other half was returned to the core box for future reference. In some cases where visible gold was present, the second half was also sampled. Sample bags were stapled closed.

11.1.2.1 Laboratory Preparation and Analysis

All core and RC samples were submitted for both preparation and analysis at SGS / Analabs in Bibiani and Transworld and SGS Laboratories in Tarkwa. Check samples were submitted to SGS Commercial Laboratory in Kumasi.

All samples were analyzed for gold, either by 50-gram Fire Assay (FA) or screen metallic fire assay with Atomic Absorption (AA) finish (method code AA26); or for cyanide leach depending on peculiar features and characteristics of the rock or the drill cuttings (Table 11-2). Screen metallic fire assaying was often used for samples suspected of containing higher gold grades or where coarse gold was anticipated. Samples expected to represent unmineralized intervals were analyzed by fire assay.

Table 11-2 Summary of analytical laboratories sample preparation and gold assay techniques (pre-2014)

Laboratory	Period	Preparation	Gold Assay Method	Lower Detection Limit
SGS Accra	1995	Jaw crush to -6 mm, then cone crushed, or disk milled to -2 mm. Pulverization of 300 g to 1 kg split -200 mesh in labtechnic homogenizing mill.	Fire assay	0.01 g/t
Inchcape Obuasi	1995-1997	Dry, crush, pulp 2 kg. SFA dry at 105 °C, ringmill 500 g to 1.5 kg 75 μms.	Fire assay, screen fire assay	0.01 g/t
Analabs Nkran Site	1997-1998	Drying, jaw crushing to nominal 6 mm to 12 mm. Sample volume reduction - riffle split. Ringmill <1 kg, nominal 75 microns.	Fire assay	0.01 g/t
SGS Bibiani	2009-2012	3 kg or less of sample is dried, disaggregated, and jaw crushed to 3 mm. Sample is pulverized to 95% passing 75 μm using an LM2 pulverizer. Two pulp samples are taken for analysis and pulp storage.	Fire assay	0.01 g/t
SGS Tarkwa	2010-2012	3 kg or less of sample is dried, disaggregated, and jaw crushed to 3 mm. Sample is pulverized to 95% passing 75 μm using an LM2 pulverizer. Two pulp samples are taken for analysis and pulp storage.	Fire assay, screen fire assay	0.01 g/t
Min Analytical Perth	2011-2014	3 kg or less of sample is dried, disaggregated, and jaw crushed to 3 mm. Sample is pulverized to 95% passing 75 μm using an LM2 pulverizer. Two pulp samples are taken for analysis and pulp storage.	Fire assay	0.005 g/t
ALS Kumasi	2006-2014	3 kg, or less of sample is dried, disaggregated, and jaw crushed with 70% passing 2 mm. Sample is pulverized to 85% passing 75 μm using an LM2 pulverizer. Two pulp samples are taken for analysis and pulp storage.	Fire assay, Leachwell bottle roll, screen fire assay	0.01 g/t
Trans World (TWL) Tarkwa	2009-2010	3 kg or less of sample is dried, disaggregated, and jaw crushed to 3 mm. Sample is pulverized to a nominal 95% passing 75 μm using an LM2 pulveriser. Two pulp samples are taken for analysis and pulp storage.	Fire assay	0.01 g/t
Intertek Tarkwa	2010-2014	Samples are crushed to 2 mm and pulverized to 75 μm.	Fire assay, Leachwell bottle roll	0.01 g/t
Performance Labs Bibiani	2010-2012	Samples are crushed to 2 mm and pulverized to 90% passing 75 μm in LM2 pulverisers. 250 g pulp sample taken for analysis.	Fire assay, BLEG	0.01 g/t

11.1.3 Asanko Gold Mine (2014-2022)

Information regarding AGM's sample preparation methods were largely sourced from Miller et. al (2022) and AGM (2021).

All sampling was performed by AGM staff. No metal jewelry is permitted to be worn by the AGM samplers to avoid contamination.

Core samples were typically between 30 to 150 centimeters in length and weighed between 2 to 3 kilograms. Sample intervals were determined by the logging geologist respecting lithological boundaries, alteration zones and structural features.

Core cutting procedures vary slightly from historical operators. In both cases an orientation line was drawn on the core and an electric diamond core saw used to cut the core retaining the left-hand side for reference (when looking down hole).

Historical samples were cut 1-centimetre to the right of the line and AGM samples were cut along the line. AGM procedures state that the line should be traced perpendicular to the stratification, or where there is mineralization, one should try to get the optimum distribution so that 50% of mineralization is represented in each half of the core.

Where core was too friable to cut with a diamond saw, the core was dry cut or cleaved.

For RC samples, chips of approximately 2 to 3 kilograms were collected from the cyclone in 1-metre intervals and split in a riffle splitter. If the resultant sample was greater than 3 kilograms, then the entire sample was re-split. The cyclone was continuously monitored to avoid contamination from clogging and at a minimum cleaned after every hole. The drill rods, down-hole hammer bit and the sampling equipment were cleaned regularly using compressed air. Sample recovery is monitored by weighing samples at the RC drill rig to ensure that sufficient material is collected.

Nkran exploration RC samples were taken from the drilling rig using a rotary splitter which produced equal aliquots to mitigate any bias. A 3-kilogram sample was collected for laboratory submission and coarse rejects of all samples were kept as a backup for at least three months for GC and six months for exploration.

Esaase and other RC samples were split using a three-tier riffle splitter (1 in 8 split) to obtain a sub-sample of 3 kilograms or less and collected in pre-labelled plastic bags. Rejects are stored in plastic bags.

Samples with visible gold were routinely submitted for either screen fire assay or a bulk cyanide leach assay.

Grade control (GC) samples were collected by reverse circulation drilling at an optimal drilling depth of 30 meters. Samples were taken at regular 1.5 metres intervals. A total of approximately 2.5 to 3.0 kilograms were collected using automatic cone splitter mounted on the GC drill rig. All samples were collected into plastic bags, labelled and sealed on site before being transported to the AGM laboratory for preparation and analysis.

11.1.3.1 Laboratory Preparation and Analyses

The sample preparation and analyses methodology used by the primary laboratories is summarized in Table 11-3.

Table 11-3 Summary of analytical laboratories sample preparation and gold assay techniques (2014-2022)

Laboratory	Locality	Period	Preparation	Au Assay Method	Lower Detection Limit
ALS	Kumasi	2014-2022	PREP-31 - 3 kg, or less of sample is dried, disaggregated, and jaw crushed with 70% passing 2 mm. Sample is pulverized to 85% passing 75 µm using an LM2 pulveriser. Two pulp samples are taken for analysis and pulp storage.	30 g FA AAS 30 g screen FA	0.01 g/t 0.5 g/t
Intertek	Tarkwa	2014-2022	Samples are crushed to 2 mm and pulverized to 75 µm.	FA, Leachwell bottle roll*	0.01 g/t 0.001 g/t
AGM	Nkran Site	2017-2022	Samples are crushed to 2 mm and pulverized to 90% passing 75 µm in LM2 pulverisers. 250 g pulp sample taken for analysis.	FA, Leachwell bottle roll*	0.01 g/t 0.001 g/t

11.2 Specific Gravity

General AGM samples are sent for laboratory bulk density analysis using the Archimedes methodology as follows:

- 10 to 20 cm length of half core from each 10 m interval of unmineralized core, or 5 m interval of mineralized core (dried in an oven at 105°C) was weighed (W1)
- Samples were coated with paraffin wax and reweighed (W2)
- The volume of the sample was measured (V1)

Esaase bulk density measurements were collected over a range of lithological and weathered profiles. The Archimedes principal was used and is summarized as follows:

- 10 cm billet of clean, dry core (core dried in oven for 4 hours at 60°C) was weighed
- Core was immersed in paraffin wax and then reweighed (to determine wax weight)
- Billet was suspended and weighed in water
- Bulk density (BD) calculated as: BD = [Mass Core] / [(Mass Air - Mass Water) – (Mass Wax / 0.9)]

Density was calculated from the following equation:

- Density= W1 / (V1- ((W2-W1)/DP) where DP = wax density (0.8 g/cm^3)

Duplicate measurements were taken by the laboratory for every tenth sample. Selected samples (1 in 30), located adjacent to the primary samples, were sent to a second laboratory for check density measurements.

11.3 Sample Security

The geologist was responsible for sample security. All samples collected by PMI were photographed and firmly secured and locked in a designated sample room at PMI’s field office or sampling and storage facility in Nkran, Sefwi or Dunkwa. Once bagged, batches of 5-10 samples were packed in polyweave or heavy plastic sacks and tied with binding wire and prepared for transport to the laboratory. Samples were secured firmly and locked in a designated sample room at the company’s field office, only accessible to the geologist. The chain of custody was kept from the geologist to receival at the laboratory.

Sample pulps and coarse reject material is returned to PMI only after completion of both the initial sample analysis and any additional checks that PMI may require following receipt of the initial sample assays.

With the exception of Esaase and Akwasiso, all exploration samples collected by AGM were processed and stored at the AGM exploration facilities at Obotan. Esaase RC chips, half-core and core photographs, duplicate pulps and residues of all submitted samples are retained and stored at the AGM exploration camp at Tetrem. Esaase and Akwasiso sampling procedures required samples to be collected in staple-closed bags once taken from the rig or core-cutting facility. The samples were then transported to the project camp to be picked up by the laboratory truck and taken directly to the laboratory.

The AGM procedure for sample submission is as follows:

- RC samples are collected from the drill site every shift and transported to the Obotan and Esaase camp
- Samples are packed in 50-kilogram bags and stored in the logging shed until shipped to the laboratory
- The geologist supervises loading of samples on to the truck
- A sample dispatch form accompanies the samples and another signed by the exploration manager is provided to the security guards to authorise the shipment to leave the camp
- At the laboratory, the laboratory representative signs the sample dispatch form confirming receipt and change of custody for the samples

11.4 Quality Assurance and Quality Control Programs

Quality control measures are typically set in place to ensure the reliability and trustworthiness of exploration data. These measures include written field procedures and independent verifications of aspects such as drilling, surveying, sampling and assaying, data management and databases integrity. Appropriate documentation of quality control measures and regular analysis of quality control data are important as a safeguard for project data and form the basis for the quality assurance program implemented during exploration.

Analytical control measures typically involve internal and external laboratory control measures implemented to monitor the precision and accuracy of sampling, preparation and assaying. They are also important to prevent sample mix-up and to monitor the voluntary or inadvertent contamination of samples.

Assaying protocols typically involve regularly duplicating and replicating assays and inserting quality control samples to monitor the reliability of assaying results delivered by the assaying laboratories. Check assaying is normally performed as an additional test of reliability of assaying results. This generally involves re-assaying a set number of sample rejects and pulps at a secondary umpire laboratory.

This technical report reviews the analytical quality measures implemented by AGM and historical operators where available.

Both PMI and AGM implemented external analytical quality control sample measures consisting of control samples (blanks, certified reference materials and duplicate samples) inserted regularly into sample batches submitted for assaying.

A total of 38 certified reference materials were used by PMI and AGM between 2010 to 2022, sourced from Geostats Pty (Geostats) of Australia (Table 11-4). Unprepared bulk blanks were sourced from material that is known to contain background or very low concentrations of gold.

Table 11-4 Specifications of control samples used by PMI and AGM (2006-2022)

Reference Material	Expected Value (g/t)	SD*	Inserts		Source
			PMI	AGM	
		Low-grade gold (<1 g/t)			
PM436	0.39	0.018	50	-	Rocklabs Ltd
G996-4	0.51	0.04	85	-	Rocklabs Ltd
PM198	0.51	0.025	32	-	Rocklabs Ltd
PM441	0.53	0.025	384	-	Rocklabs Ltd
PM450	0.56	0.03	62	-	Rocklabs Ltd
PM442	0.62	0.019	129	-	Rocklabs Ltd
G910-2	0.9	0.05	-	15	Rocklabs Ltd
PM433	0.94	0.021	3	-	Rocklabs Ltd
		Medium-grade gold (1-5 g/t)			
G313-1	1.01	0.07	-	102	Rocklabs Ltd
G310-7	1.011	0.053	50	-	Rocklabs Ltd
G300-8	1.07	0.06	132	360	Rocklabs Ltd
G02	1.2	0.08	205	-	Rocklabs Ltd
G911-10	1.3	0.05	114	-	Rocklabs Ltd
G311-5	1.32	0.06	-	259	Rocklabs Ltd
G910-1	1.43	0.06	-	444	Rocklabs Ltd
G300-9	1.53	0.06	243	982	Rocklabs Ltd
G311-8	1.57	0.08	-	506	Rocklabs Ltd
PM432	2.03	0.042	65	-	Rocklabs Ltd
G914-2	2.48	0.08	-	20	Rocklabs Ltd
G308-3	2.5	0.11	-	621	Rocklabs Ltd
G912-2	2.51	0.15	-	271	Rocklabs Ltd
G901-1	2.58	0.13	-	4	Rocklabs Ltd
G995-1	2.75	0.18	100	34	Rocklabs Ltd
PM431	2.78	0.07	693	-	Rocklabs Ltd
G901-3	2.87	0.14	-	199	Rocklabs Ltd
G910-6	3.09	0.13	-	868	Rocklabs Ltd
G914-6	3.21	0.12	-	252	Rocklabs Ltd
G310-9	3.29	0.14	-	8	Rocklabs Ltd
PM147	3.58	0.059	2	-	Rocklabs Ltd
G905-7	3.92	0.15	88	32	Rocklabs Ltd
G397-6	3.95	0.18	31	-	Rocklabs Ltd
G397-2	4.49	0.18	3	-	Rocklabs Ltd
PM443	4.75	0.125	410	-	Rocklabs Ltd
		High-grade gold (>5 g/t)			
PM444	5.36	0.221	97	-	Rocklabs Ltd
G906-8	7.24	0.27	3	121	Rocklabs Ltd
G907-6	7.247	0.285	1	-	Rocklabs Ltd
G914-10	10.26	0.38	-	237	Rocklabs Ltd
G317-2	12.97	0.41	-	76	Rocklabs Ltd
Total			**2,982**	**5,411**	

11.4.1 Resolute (1996-2006)

The details of the analytical quality control procedures used by Resolute between 1996 and 2006 were not well-documented and were not available to the qualified person for review.

11.4.2 PMI (2006-2014)

PMI used a quality control monitoring system consisting of coarse blanks, certified reference materials and duplicate samples. Additionally, pulp and coarse reject samples were randomly selected and submitted as check assays at umpire laboratories.

PMI typically inserted random blank samples into the assay stream at a rate of 1 per batch of samples. Additionally, any samples in which visible gold was noted, during the logging or in the case of panning RC drill chips, or any samples which returned high gold grades, were routinely submitted for either screened metallics or a bulk cyanide leach assay.

PMI produced the coarse blanks from a range of sources which in part may account for the fluctuation in the returned grades upon analysis. Some of the blanks were composed of the local Muoho Granite from surface outcrop, felsic dyke from ADP09-001 (115.55-117.59m), 50% greywacke – 50% phyllite, quartz felsic porphyry and felsic dyke from ADP09-004 and various felsic dyke from other drill unspecified drillholes.

11.4.3 Asanko Gold Mine (2014-Present)

The AGM employed a quality control program involving the insertion of blanks, certified reference materials, duplicates and umpire check assay samples. Quality control samples (blanks, certified reference materials and field duplicates) were inserted by the logging geologist at the core shed using sequential sample numbering according to the position inserted in the sample stream.

The insertion rate of quality control sample materials was aimed at 1 in 8, with a absolute minimum of 1 in 40. This includes a 1% to 5% insertion rate for certified reference materials, a 1% to 2% insertion rate for blanks.

Any identification labels were removed prior to submitting to the laboratory. Certified reference materials were selected based on the grade-range of the expected values of the zone.

The geologist monitored the dispatch of the samples to the laboratory. A two-to-three-kilogram duplicate sample was taken in an identical manner as the original and stored in a separate, pre-labelled sample bag.

All sample preparation is undertaken by the preparation and analytical laboratories.

11.5 Qualified Person’s Comments on Adequacy of Sample Preparation and Security

In general, the sample preparation, analysis and security procedures described by AGM for drilling samples are considered acceptable and are therefore adequate to support mineral resource modeling.

The analysis of the analytical quality control data is presented in Section 12.

12 Data Verification

12.1 Verification by AGM

The exploration work carried out at the AGM during 2014 to 2022 was conducted by AGM personnel. AGM implemented a series of routine verifications to ensure the collection of reliable exploration data. All work was conducted by appropriately qualified personnel under the supervision of qualified geologists.

To ensure procedural consistency for data collection on the AGM, AGM followed written Standard Operating Procedures (SOPs) for all data collection. This includes procedural documents for collar surveys, down-hole surveys, drill core logging, sampling of drill core, RC chips and core density, and analytical quality control.

The AGM database is stored in Maxwell DataShed™ (MDS version 4.6.4) software, used to import laboratory files, check results for certified reference materials and issue a report on batch performance. AGM partly relied on the built-in data verification tools, which have standard constraints, keys and triggers to ensure that only validated data can be loaded. If these constraints, keys, or triggers have been edited or removed, invalidated data can be merged into the database, (e.g., overlapping intervals, data that exceeds the maximum depth of the drill hole, etc.).

Assay results were delivered by the primary laboratories electronically to AGM and imported into the Datashed database.

As an additional check on the reliability of assay results from the primary laboratories, both PMI and AGM instituted check assay programs at several laboratories. This is completed after a drilling program is completed, or as batches of pulps are being returned from the laboratory. The samples selected are a representative subset of grades across the deposits.

There were no check assays for exploration samples done in 2014. Exploration samples were initially analyzed at the AGM lab from 2015 to 2016 and were check assayed at the ALS lab in Kumasi. Exploration samples analyzed at the Intertek Laboratory during 2017-2021 were sent to ALS. No check samples have been submitted for grade control samples.

Previous extensive data verification was undertaken by several independent consultants over the periods when Keegan and PMI owned the Esaase and Nkran properties respectively, prior to the AGM takeover of PMI and the merger of the two entities as Asanko Gold and the commencement of mining from the Nkran pit in 2015. These independent consultants included SRK (2011, 2012), Muller and Umpire (2014, 2016), and CSA Global (2016, 2019). In November 2020, AGM commissioned independent consultant Richard Minnitt (Minnitt, 2020) to review the AGM laboratory procedures and data. Based on his review, no significant issues were identified. Mr. Minnitt visited the AGM mine laboratory multiple times in 2021, reviewed the process and interviewed the laboratory personnel and is of the opinion that AGM laboratory was operating at industry standard.

As part of AGM's regular procedures, project staff visit the laboratories processing their samples on a regular basis. This was done to review the sample handling, preparation and analytical procedures. A compilation of weekly, monthly, quarterly, bi-quarterly and annual analytical quality control reporting, including data charting and results, is completed on the control sample assays.

12.2 Verification by SRK

12.2.1 Site Visit

In accordance with National Instrument 43-101 guidelines, several members of the SRK team visited the AGM to inspect the properties, conduct field investigations and discuss with AGM personnel.

Qualified persons Dr. Oy Leuangthong, PEng (Mineral Resources) and Mr. Glen Cole, PGeo (Geology) visited the project from 6-11 August 2022 accompanied by various technical AGM staff. The purpose of the site visit was to review all aspects that could materially impact the integrity of the exploration database, including core logging and sampling, as well as review the controls on gold mineralization. SRK was given full access to all relevant project data.

During the site visit, all the project areas were visited to review local geology as well as historical mining activities and to verify information used for mineral resource modeling. The lithological contacts checked by SRK matched the information reported in the core logs. Drill collars from various deposits were captured by GPS as digital control points and were found to compare reasonably well to the digital database provided (Table 12-1, Figure 12-1). The qualified persons examined core from several boreholes and found that the logging information accurately reflects actual core (Figure 12-2).

Table 12-1 SRK drill collar verifications

Drill Collar		Deposit	Reported		SRK Check		Variance	
			EAST	NORTH	EAST	NORTH	EAST	NORTH
1	DYRC21-145	Dynamite Hill	616,429	707,218	616,427	707,224	-2	7
2	DYRC21-143	Dynamite Hill	616,381	707,189	616,378	707,195	- 3	6
3	DYRC21-142	Dynamite Hill	616,356	707,160	616,356	707,164	1	4
4	AMPC22-080	Abore	614,621	714,388	614,618	714,391	3	-3
5	ABPC20-019	Abore	614,824	714,674	614,821	714,679	- 4	5
6	ABPC20-020	Abore	614,837	714,687	614,836	714,692	-1	5
7	ABPC20-022	Abore	614,868	714,701	614,864	714,706	- 3	5
8	RC448	Adubiaso	611,280	704,499	611,281	704,510	-1	-11
9	ADP11-022	Adubiaso	611,272	704,456	611,266	704,458	6	-2
10	ADPC20-004	Adubiaso	611,258	704.474	611.253	704,476	5	-2
	Average:						**0**	**1**

Figure 12-1 Drill collar location for ABPC-20-019 at Abore

Figure 12-2 Core logging and storage facility at AGM

12.2.2 Verifications of Analytical Quality Control Data

AGM provided SRK with external analytical control data containing the assay results for the quality control samples for the AGM. All data were provided to SRK in Microsoft Excel spreadsheets. SRK aggregated the assay results of the analytical control samples for further analysis. Control samples (blanks and certified reference materials) were summarized on time series plots to highlight their performance.

The external quality control data produced by PMI and AGM between 2010 and 2022 are summarized below.

12.2.2.1 Resolute (1996-2006)

No analytical quality control data was available for drilling programs conducted by Resolute between 1996 and 2006.

12.2.2.2 PMI (2006-2014)

SRK received analytical quality control data produced by PMI on the Abore, Adubiaso, Asuadai, Dynamite and Nkran deposits. The available data are summarized in Table 12-2 and applies to the drilling programs conducted between 2006 to 2014.

The external quality control data produced on these deposits represents approximately 18% of the total number of drilling samples collected and submitted for assaying. Although most of the deposits had over 12% representivity, only 0.4% and 2% of samples assayed at Abore and Asuadai, respectively, were quality control samples. This is considered low in accordance with industry best practices.

The performance of blank samples analyzed by Min Analytical and Performance Lab were acceptable, with only a few samples returning values over 10x the detection limit. Some of these samples may represent an error in the labeling of certified reference materials. Although only 1 sample returned values past the warning limit, the performance of ALS blank samples indicates minor contamination throughout. Samples analyzed at SGS indicate potential contamination throughout, with 4% of blank samples returning values above 10x the detection limit of the lab.

Analysis of certified reference materials between 2010 and 2014 exhibited variable performances for different materials analyzed by different laboratories. Overall, the results indicate a moderate performance, exhibiting some instances of minor biases and variability from calibration drifting, possibly insufficient homogenization of materials and potential mislabeling of certified reference materials by the logging staff. Certain reference materials (e.g., G901-1, G300-9, PM431) exhibited poor accuracy and/or precision, which may be attributed to poor sample homogenization since these results often occurred across multiple laboratories. Other reference materials (e.g., PM432, PM444, PM450) exhibited positive and/or negative biases resembling calibration drift. Additionally, many failures were due to apparent mislabeling of certified reference material samples (e.g., PM443, PM450, PM431). The accuracy of certain reference materials (e.g., G905-7, G996-4) improved overtime or by changing laboratories (e.g., G911-10, G311-5).

Table 12-2 Summary of external analytical QC data produced by PMI on Asanko Gold deposits (2006-2014)

QC Parameter	Abore	(%)	Adu-biaso	(%)	Asua-dai	(%)	Dyna-mite	(%)	Nkran	(%)	Total	(%)
Sample Count	5,102		4,162		4029		15,011		21,094		**49,398**	
Blanks	9	0.2%	272	6.5%	0	0.0%	520	3.5%	2,116	10.0%	**2,917**	**5.9%**
Reference Materials	0	0.0%	200	4.8%	0	0.0%	507	3.4%	2,275	10.8%	**2,982**	**6.0%**
G02	-		-		-		-		205		**205**	
G300-8	-		22		-		68		42		**132**	
G300-9	-		18		-		81		144		**243**	
G310-7	-		-		-		50		-		**50**	
G397-2	-		-		-		-		3		**3**	
G397-6	-		15		-		-		16		**31**	
G905-7	-		-		-		88		-		**88**	
G906-8	-		-		-		3		-		**3**	
G907-6	-		1		-		-		-		**1**	
G911-10	-		8		-		106		-		**114**	
G995-1	-		-		-		62		38		**100**	
G996-4	-		11		-		49		25		**85**	
PM147	-		-		-		-		2		**2**	
PM198	-		-		-		-		32		**32**	
PM431	-		14		-		-		679		**693**	
PM432	-		4		-		-		61		**65**	
PM433	-		-		-		-		3		**3**	
PM436	-		-		-		-		50		**50**	
PM441	-		4		-		-		380		**384**	
PM442	-		92		-		-		37		**129**	
PM443	-		7		-		-		403		**410**	
PM444	-		4		-		-		93		**97**	
PM450	-		-		-		-		62		**62**	
Field Duplicates	10	0.2%	30	0.7%	-	0.0%	916	6.1%	851	4.0%	**1,807**	**3.7%**
Coarse Duplicates	-	0.0%	22	0.5%	-	0.0%	-	0.0%	-	0.0%	**22**	**0.0%**
Pulp Duplicates	-	0.0%	60	1.4%	86	2.1%	-	0.0%	938	4.4%	**1,084**	**2.2%**
Total QC Samples	**19**	0.4%	**584**	14.0%	**86**	2.1%	**1,943**	12.9%	**6,180**	29.3%	8,812	17.8%
Check Assays												
SGS & ALS	5	0.1%	4	0.1%	1	0.0%	-	-	10	0.0%	**20**	**0.0%**
Min Analytical & ALS	-	-	4	0.1%	4	0.1%	-	-	-	-	**8**	**0.0%**
Performance Lab & Min Analytical	-	-	-	-	-	-	999	6.7%	-	-	**999**	**2.0%**

Paired field duplicate results were available for Dynamite and Nkran only, which indicate moderate reproducibility for samples. Overall, approximately 39% to 48% of samples returned results with Half Absolute Relative Difference (HARD) values below 10%, which is not unexpected for this type of deposit with potential for nuggety gold to occur. Field duplicate samples analyzed at Min Analytical in 2013 display a potential sampling bias for samples grading over 1 g/t gold. However, the number of pairs for this dataset is low, with only 108 samples analyzed. All other paired field duplicate sets displayed no obvious evidence of sampling or analytical bias.

Only a small number of samples (between 1 and 5 sample pairs) were submitted to an umpire laboratory for Abore, Adubiaso and Akwasiso for this period. The sample sizes were too small to draw representative conclusions.

A total of 99 pulp samples originally assayed at Performance Lab from Dynamite deposit were submitted to Min Analytical. Results from paired analysis reveal good reproducibility between the two labs. Although only 27% of paired data returned HARD values below 10%, many samples in the dataset were below 0.1 g/t gold, which are approaching detection limit and will have lower precision. Higher grade samples (>10 g/t gold) demonstrate good reproducibility at the umpire laboratory.

Umpire sample pairs were not available for other deposits during this period.

12.2.2.3 Asanko Gold Mine (2014-2022)

The external analytical quality control data produced by AGM after 2014 is summarized in Table 12-3. The external quality control data produced on these projects represents approximately 3% of the total number of drilling samples collected and submitted for assaying for this period. Individual deposits have between 1% and 16% control sample coverage for exploration drilling data. Abore, Adubiaso, Dynamite and Esaase each have less than 5% control sample coverage, which is lower than AGM's protocol and considered lower than industry best practices.

The results from blank materials submitted by AGM to the AGM Lab indicate little to no contamination, with no samples returning assay values higher than the warning of 10x the detection limit. Blanks submitted to ALS and Intertek during this period demonstrate some variability, although very few (<2%) of samples returned assay values above the warning limit.

In general, the results of certified reference material sample analyses for this period are acceptable, with typically below 6% of samples returning values outside of three standard deviations, considered as failures. However, the performance of certain reference materials and laboratories during this period was better than others. A summary of some of the findings related to the performance of certified reference materials for this period are listed below:

- Overall, results obtained from SGS did not have the same precision (sometimes worsening, e.g., G901-3) than the other labs, which should be monitored and corrected for when possible
- Assay results for the AGM lab often demonstrated better precision when compared to Intertek for the same materials (e.g., G311-5), however for G910-1 and G311-5 consistently returned values lower than the expected value, indicating a negative bias for this grade range during this period. Likewise, material G910-1 analyzed at Intertek, ALS and AGM lab between 2016 and 2019 display lower precision for Intertek and ALS.

Table 12-3 Summary of external analytical QC data produced by AGM on Asanko Gold deposits (2014-2022)

QC Parameter	Abore	(%)	Adubiaso	(%)	Akwasiso	(%)	Dynamite	(%)	Esaase	(%)	Midras	(%)	Miradani North	(%)	Nkran	(%)	Total	(%)
Sample Count	26,223		6,725		27,488		8,508		26,2273		18,927		22,714		7,715		**380,573**	
Blanks	381	0.8%	140	0.5%	1,032	2.6%	338	1.4%	813	0.3%	1,053	5.6%	780	3.4%	790	1.0%	**5,327**	**1.0%**
Reference Materials	359	0.7%	741	2.6%	1,073	2.7%	330	1.4%	910	0.3%	1,018	5.4%	837	3.7%	755	0.9%	**6,023**	**1.1%**
G300-8	-		35		177		49		-		63		-		36		**360**	
G300-9	84		42		218		47		78		256		124		133		**982**	
G308-3	58		-		14		62		108		91		159		129		**621**	
G310-9	-		-		2		-		-		6		-		-		**8**	
G311-5	1		-		93		-		86		79		-		-		**259**	
G311-8	49		-		21		48		83		60		69		176		**506**	
G313-1	-		-		72		-		-		30		-		-		**102**	
G317-2	5		-		-		-		51		-		17		3		**76**	
G901-1	-		-		4		-		-		-		-		-		**4**	
G901-3	22		11		82		-		9		40		35		-		**199**	
G905-7	-		-		-		-		-		-		32		-		**32**	
G906-8	1		23		-		-		-		90		7		-		**121**	
G910-1	3		3		96		21		171		27		123		-		**444**	
G910-2	-		-		-		-		-		-		1		14		**15**	
G910-6	89		15		75		67		164		86		179		193		**868**	
G912-2	-		-		171		36		-		29		-		35		**271**	
G914-10	44		-		-		-		80		2		75		36		**237**	
G914-2	3		-		-		-		1		-		16		-		**20**	
G914-6	-		-		48		-		79		125		-		-		**252**	
G995-1	-		-		-		-		-		34		-		-		**34**	
Field Dups	525	1.1%	173	0.6%	743	1.9%	57	0.2%	656	0.3%	1,023	5.4%	773	3.4%	683	0.8%	**4,633**	**0.9%**
Pulp Dups	-	0.0%	-	0.0%	-	0.0%	328	1.4%	-	0.0%	3	0.0%	-	0.0%	-	0.0%	**331**	**0.1%**
Total QC Samples	**1,265**	**2.6%**	**1,054**	**3.7%**	**2,848**	**7.2%**	**1,053**	**4.5%**	**2,379**	**0.9%**	**3,097**	**16.4%**	**2,390**	**10.5%**	**2,228**	**2.8%**	**16,314**	**3.0%**
Check Assays																		
Intertek and ALS	194	0.4%	47	0.2%	107	0.3%	-	0.0%	-	0.0%	-	0.0%	182	0.8%	112	0.1%	**642**	**0.1%**

- Material G300-8 returns consistent negative bias in 2017 for both the AGM lab and Intertek, which may indicate an issue with the material and should be investigated further by AGM
- Material G317-2 exhibits a negative bias prior to May 2021, which was corrected in subsequent batches. Certain reference materials improved in performance over time, including G914-10.

The performance of field duplicate data for all deposits was generally acceptable, with between 35% and 80% of samples returning values of less than 10% HARD. For the most part, results did no present obvious evidence of sampling or analytical bias. Sample pairs with poor reproducibility of results may indicate the presence of nuggety gold, which is not unexpected for these types of deposits. Overall, the field duplicate results are considered acceptable.

The number of field duplicate sample pairs for some deposits over certain periods was low, preventing any meaningful conclusions being drawn. These included datasets from Adubiaso in 2020 and Dynamite in 2016. Additionally, results from low-grade sample pairs will have a poor correlation when approaching detection limit and may influence the overall statistical evaluation, which should be taken into consideration during review.

Umpire pulp duplicate program results were available for Abore, Adubiaso, Akwasiso, Miradani North and Nkran deposits, using ALS as the umpire laboratory. Typically, the re-analysis of pulp material at an umpire laboratory should produce excellent results, with no analytical bias.

The umpire duplicate samples were originally analyzed by Intertek and resubmitted to ALS for repeat analysis. For samples submitted for Adubiaso, there were insufficient data available for meaningful conclusions to be drawn, with only 47 sample pairs available.

The umpire pulp duplicate results for 2020 indicate poor repeatability for this type of sample, with between 27% and 35% of sample pairs returning values below 10% HARD. Furthermore, a consistent positive bias for Intertek is observed for all grade ranges. This may be due to issues with analytical accuracy at one of the labs, or improper homogenization of the sample during the preparation stage. Since this bias is apparent across all deposits analyzed during this period, AGM should perform further analysis to determine the cause of this bias to mitigate its affect in future analytical programs.

Miradani sample pairs analyzed between 2021 and 2022 demonstrated less variability, however still had 40% of sample pairs returning values of less than 10% HARD, which is low. This dataset still demonstrates a positive bias for samples analyzed by Intertek, however not as strong as earlier samples.

12.3 Qualified Person’s Comments and Recommendations

Overall, the insertion rates of analytical quality control samples are considered low in comparison to industry best practices. Considering the variable performance of control samples, the qualified persons recommend inserting blanks and certified reference materials at a rate of 1 in 25 each for all future drilling programs, standardized across all deposits. The SOP for analytical quality control data should be prescriptive, accurately followed, and include clear and concise wording involving as to what constitutes a control sample failure as well as the corrective action that should be taken. Continued diligence in monitoring and instituting corrective action is strongly recommended.

Field duplicate data indicates that the variability between core samples and RC splits is high. AGM should consider instituting a comprehensive check program involving the regular insertion of field duplicates (at a rate of 1 in 25), as well as the regular resubmittal of coarse reject and pulp duplicates to the primary lab (at least 2% of samples, each) to give a better indication of the source of this variability (i.e., whether it is inherent variability of the mineralization style, or is also introduced during sample preparation and analysis). Additionally, AGM could consider changing to 50-gram aliquot for analysis to determine whether increasing the sample size would significantly improve the representivity of samples.

Considering the biases observed in umpire pulp duplicate results, the qualified persons strongly recommend instituting a more regular analysis of 5% of samples for all drilling programs. An investigation should take place to determine the source of the bias to mitigate any future uncertainty in laboratory performance or sample homogenization. AGM could consider performing a check assay program using two umpire laboratories to test the reproducibility of results at multiple laboratories or ask the primary or secondary laboratories to perform an investigation of sample homogenization.

13 Mineral Processing and Metallurgical Testing

13.1 Introduction

Metallurgical testwork programs were conducted during 2022 in support of the Feasibility Study for Esaase, Nkran, Abore and Midras. The results of these programs are discussed in this section in detail. Results for earlier programs, which have been reported in earlier Technical Reports covering the various mineral assets, are presented in summary form.

13.2 2022 Testwork– Esaase Main Pit

13.2.1 Samples

Composites were prepared for testwork from the interval samples that had been dispatched to Bureau Veritas (BV) in Vancouver. These samples were obtained from diamond drilling undertaken in 2022. The data on which the composites were selected consisted of:

- Oxidation state: Oxide, Transition, Fresh
- Stratigraphy: Upper Sandstone, Cobra, Central Sandstone. Assignment of stratigraphy was based on geological logging, except for the initial three holes where it was inferred from the block model using the lithostratigraphic model as it was at the time
- Carbon content based on the geological logging: None, Trace, Weak, Moderate and Strong
- Au grade: data available included both cyanide-soluble Au (from the site PAL 1000 analyzers) and total Au (from fire assays of the PAL 1000 tails)

For the initial three drillholes generated in Q1 2022, the above data was available on the basis of 6 m interval composites. For the remaining drillholes generated in Q2 2022, the above data was available on a 1 metre interval basis.

The selected as-received half drillcore intervals were crushed to 6.7 mm then split in half, with one half used in the composite and the other half retained separately for reference purposes and for potential future use. Based on sample mass requirements and the available timeframe in which to conduct the testwork, eight composite samples were generated: one Oxide, one Transition and six Fresh, designated as follows:

- Composite 1 – Oxide (all three stratigraphy units combined)
- Composite 2 – Transition (Upper Sandstone and Cobra combined – there was no Central Sandstone material available)
- Composite 3 – Upper Sandstone
- Composite 4 – Cobra Low Au (expected grade 0.98 g/t Au)
- Composite 5 – Cobra High Au (expected grade 1.89 g/t Au)
- Composite 6 – Central Sandstone Low Organic Carbon (OC) (intervals logged as None or Trace)
- Composite 7 – Central Sandstone High OC (intervals logged as Weak, Moderate or Strong)
- Composite 8 – Central Sandstone Low Au Recovery (selected intervals that reported a low cyanide recoverable content – expected Au recovery 72% versus 83-94% for the other composites)

Where possible, contributions to composites were made on the basis of selecting at least three adjoining intervals. As the data for the initial three drillholes was only available for 6 m composites, these intervals were either selected in their entirety (i.e., the full 6 m interval), or not selected in their entirety. The target composite mass for testwork was 80 kg per composite.

13.2.2 Testwork

The testwork program conducted by BV (Report 2201006) included:

- Head assay – Au by screen fire assay, multi element analysis by ICP-OES/MS, Hg by cold vapour and S and C speciation (Total S, Sulphide S, Total C, Organic C) by Leco
- Preg-Robbing Index (PRI) using the so-called Newmont method (Dunne et al., 2007), consisting of parallel leach tests, one using a caustic cyanide solution and the other a gold spiked caustic cyanide solution
- Gravity recovery – 8 kg samples were ground to the target P_{80} then passed once through a 7.5 cm Knelson concentrator. The concentrate was amalgamated with mercury with the tailings from the Knelson and amalgamation stages combined for the subsequent leach tests.
- Cyanidation – bottle roll tests based on 2 kg samples at 50% solids and a target P_{80} of 106 μm. A pre-leach stage consisted of 30 minutes of agitation at pH 10.5 with the addition of 100 g/t $Pb(NO_3)_2$ and oxygen injection to maintain a dissolved oxygen (DO) level of 15 ppm. The leach tests were conducted also at pH 10.5 with an initial addition of cyanide equal to 850 ppm NaCN in solution, with cyanide added to maintain a minimum free NaCN level of 300 ppm throughout the test. CIL format tests were conducted on all samples for 18 hours without intermediate sampling. The baseline carbon addition was 25 g/l of regenerated carbon from site. Further CIL tests (Composites 2-8 only) used 25 g/l of fresh carbon (which had been conditioned in an alkaline cyanide solution) and 40 g/l of regenerated carbon. CIP format tests were also conducted on composites 2-8; these tests consisted of 18 hours leaching without carbon addition, with intermediate sampling after 2, 4, 7 and 18 hours, followed by 6 hours of leaching with the addition of 25 g/l of fresh carbon.

Investigative testwork was conducted on the baseline CIL test residues for Composites 3, 4, 5, 7 and 8. This testwork consisted of size-by-size assays (37-150 μm, assayed for Au, S (Total/Sulphide) and C (Total/Organic)) and diagnostic (speciation) tests (cyanide-soluble followed by associated with carbonaceous material, calcite/dolomite/pyrrhotite/goethite, sulphide minerals and locked in silicate minerals).

Grind size sensitivity tests were conducted following a review of the baseline tests. For those composites with lower baseline recoveries (3, 4, 5, 7 and 8), a finer grind size (target P_{80} 75 μm) was tested, whereas for those composites with higher baseline recoveries (1, 2 and 6), coarser grind sizes (target P_{80} 125 μm and 150 μm) were tested. These tests were conducted using fresh 2 kg samples, first subjected to gravity separation, with the cyanidation tests run under the baseline CIL conditions but using fresh carbon.

13.2.3 Results

The results of this testwork are summarized in Table 13-1. The PRI values shown have been calculated according to the Newmont method (Dunne et al., 2012) for benchmarking purposes; BV reports PRI values using a different formula.

Table 13-1 2022 Testwork results (Esaase)

Comp	Head Assay					PRI	Test No	P_{80}	Test conditions			Calc Head	Au Recovery (%)			NaCN Cons	Lime Cons
	Au (g/t)	S (%)	S^{2-} (%)	C (%)	OC (%)	(g Au/t)		(mm)		Carbon type	Carbon Con (g/l)	(g/t Au)	Gravity	Leach	Total	(kg/t)	(kg/t)
1	1.26	0.05	<0.05	0.18	0.08	0.03	CIL1-1	102	CIL	regen	25	1.45	35.9	56.6	92.5	0.61	0.96
							CIL1-2	148	CIL	fresh	25	1.27	28.9	61.4	90.3	0.63	0.87
							CIL1-3	117	CIL	fresh	25	1.32	30.4	60.1	90.3	0.50	0.76
2	1.52	0.17	0.14	0.32	0.07	0.18	CIL2-1	96	CIL	fresh	25	1.18	54.3	38.1	92.4	0.48	0.65
							CIL2-2	96	CIL	regen	25	1.28	50.1	43.1	93.2	0.61	0.67
							CIL2-3	96	CIL	regen	40	1.34	47.3	45.4	92.8	0.65	0.68
							CIP2-4	96	CIP	fresh	25	1.15	53.5	30.9	84.4	0.45	0.76
							CIL2-5	140	CIL	fresh	25	1.10	26.6	62.0	88.6	0.66	0.46
							CIL2-6	122	CIL	fresh	25	2.20	65.5	30.2	95.7	0.67	0.46
3	1.35	0.34	0.23	1.80	0.50	1.40	CIL3-1	103	CIL	fresh	25	1.42	50.5	31.2	81.7	0.38	0.65
							CIL3-2	103	CIL	regen	25	1.55	46.2	32.8	79.0	0.53	0.66
							CIL3-3	103	CIL	regen	40	1.49	49.0	35.2	84.1	0.64	0.68
							CIP3-4	103	CIP	fresh	25	1.32	49.3	19.0	68.3	0.40	0.70
							CIL3-5	70	CIL	fresh	25	2.98	62.3	18.3	80.6	0.56	0.40
4	1.35	0.25	0.15	1.53	0.41	1.41	CIL4-1	104	CIL	fresh	25	0.99	33.3	42.7	76.0	0.62	0.53
							CIL4-2	104	CIL	regen	25	1.28	25.7	53.3	78.9	0.73	0.61
							CIL4-3	104	CIL	regen	40	1.42	23.2	62.6	85.8	0.76	0.55
							CIP4-4	104	CIP	fresh	25	0.82	33.5	27.0	60.6	0.48	0.65
							CIL4-5	72	CIL	fresh	25	0.75	27.5	52.1	79.6	0.55	0.40
5	0.77	0.57	0.40	1.20	0.35	1.08	CIL5-1	98	CIL	fresh	25	2.03	18.8	60.6	79.3	0.64	0.77
							CIL5-2	98	CIL	regen	25	2.00	19.0	61.7	80.7	0.76	0.73
							CIL5-3	98	CIL	regen	40	2.03	18.8	62.6	81.4	0.77	0.67
							CIP5-4	98	CIP	fresh	25	1.81	16.9	54.9	71.8	0.52	0.87
							CIL5-5	73	CIL	fresh	25	1.82	47.1	41.1	80.7	0.56	0.73

Comp	Head Assay					PRI	Test No	P_{80}	Test conditions			Calc Head	Au Recovery (%)			NaCN Cons	Lime Cons
	Au (g/t)	S (%)	S^{2-} (%)	C (%)	OC (%)	(g Au/t)		(mm)		Carbon type	Carbon Con (g/l)	(g/t Au)	Gravity	Leach	Total	(kg/t)	(kg/t)
6	1.36	0.29	0.22	1.12	0.33	1.27	CIL6-1	101	CIL	fresh	25	1.65	60.4	32.0	92.4	0.50	0.60
							CIL6-2	101	CIL	regen	25	1.70	58.5	34.1	92.6	0.60	0.46
							CIL6-3	101	CIL	regen	40	2.05	48.6	45.1	93.7	0.68	0.45
							CIP6-4	101	CIP	fresh	25	1.71	57.0	25.9	83.0	0.38	0.57
							CIL6-5	145	CIL	fresh	25	2.02	64.4	29.4	93.8	0.60	0.30
							CIL6-6	120	CIL	fresh	25	2.43	65.9	27.9	93.8	0.60	0.30
7	2.44	0.39	0.31	1.25	0.27	1.58	CIL7-1	99	CIL	fresh	25	1.38	28.9	51.0	79.9	0.55	0.68
							CIL7-2	99	CIL	regen	25	1.50	26.6	53.4	79.9	0.55	0.68
							CIL7-3	99	CIL	regen	40	1.63	24.3	61.1	85.5	0.71	0.62
							CIP7-4	99	CIP	fresh	25	1.22	28.9	36.4	65.3	0.46	0.74
							CIL7-5	72	CIL	fresh	25	1.48	43.5	43.7	87.2	0.61	0.54
8	1.31	0.42	0.30	1.28	0.25	2.86	CIL8-1	105	CIL	fresh	25	1.91	29.8	43.3	73.1	0.63	0.56
							CIL8-2	105	CIL	regen	25	2.52	42.3	36.5	78.7	0.69	0.54
							CIL8-3	105	CIL	regen	40	2.56	41.4	41.2	82.6	0.72	0.54
							CIP8-4	105	CIP	fresh	25	2.26	45.8	19.0	64.9	0.57	0.64
							CIL8-5	71	CIL	fresh	25	1.62	32.1	40.4	72.6	0.62	0.40

The Oxide Composite 1 showed high Au recoveries for all three tests, thereby showing negligible sensitivity to grind size over the range tested. All of the other composites showed, to a greater or lesser extent, a decrease in recovery under CIP conditions compared to CIL conditions, indicating preg-robbing behavior (the Oxide composite was not tested under CIP conditions).

Dunne et al. (2012) characterize ores with a PRI of 0 as not preg-robbing, values <1.0 indicative of low preg-robbing and values above 2.5 indicative of highly preg-robbing behavior. On that basis, Composite 1 can be considered to be not preg-robbing, Composite 2 low preg-robbing and Composite 5 borderline low preg-robbing, whereas Composite 8 is classified as highly preg-robbing. By this definition, the remaining composites fall somewhere in between low preg-robbing and highly preg-robbing.

None of the samples showed any significant difference in response between the use of fresh or regenerated carbon at the 25 g/l addition level. Composites 2 and 5 showed no significant difference in recovery between the use of 25 g/l carbon and 40 g/l carbon, however Composites 3, 4, 6, 7 and 8 did report a higher overall Au recovery at the higher carbon concentration level.

Composite 2 showed little sensitivity to grind size for the coarser sizes tested – the lower recovery at the 140 μm P_{80} may be due to the lower calculated head grade, or it may reflect the significantly lower gravity recovery at that grind size. Composite 1 also exhibited a reduction in gravity recovery with increasing grind size. Composite 6 however showed no sensitivity to either total or gravity recovery at the coarser sizes tested.

The samples where a finer grind size was tested also exhibited little sensitivity to recovery at the finer grind size. Composite 3 reported a significantly higher residue grade, however as the calculated head grade was also significantly higher the total recovery was largely unchanged. The gravity recovery for this sample was also significantly higher at the finer grind size. Composites 4, 5 and 8 also reported lower residues grades at the finer grind size, however the head grades were also lower and so the total recoveries showed little difference. The gravity recovery for Composite 5 was significantly higher at the finer size, however for Composites 3 and 8 it was not significantly different. Only Composite 7 reported a lower residue grade at the finer grind size, which when coupled with a higher calculated head grade gave a significantly higher total recovery. The gravity recovery for this sample at the finer grind size was also significantly higher.

The baseline test residue size-by-size assays for these composites showed some increase in Au grade in the coarser fractions, more so for Composites 3 and 5 than the others. Carbon and sulphur grades tended to be higher in the intermediate size fraction, however there were no discernible relationships between Au and S or C in the size fractions.

The diagnostic leach tests showed between 8% and 25% of the residual Au was cyanide recoverable, 6% or less was associated with carbonaceous minerals, 36% to 69% was associated with calcite/dolomite/pyrrhotite/goethite, 10% to 18% with sulphide minerals and 6% to 19% locked in silicate minerals. The Composite 4 samples exhibited the lowest cyanided recoverable Au and Au associated with sulphides, but the highest Au associated with calcite/dolomite/pyrrhotite/goethite. The Composite 8 sample exhibited the highest Au locked in silicates and associated with sulphides, but the lowest Au associated with calcite/dolomite/pyrrhotite/goethite.

As noted above, all of the samples tested showed an increase in recovery under CIL conditions compared to the direct leach component of the CIP tests and some of the samples showed a further increase in CIL recovery at the higher carbon concentration. These effects are illustrated in Figure

13-1, which shows the ratio of CIL (25 g/l carbon) to direct leach recovery versus PRI and the ratio of 40 g/l carbon to 25 g/l carbon CIL recovery versus PRI. The recovery figures on which these ratios are based are the leach stage recoveries (i.e., the recovery with respect to the leach feed / gravity tailings grade) and so are different to the recoveries shown in Table 13-1, which are the recoveries with respect to the total sample head grade.

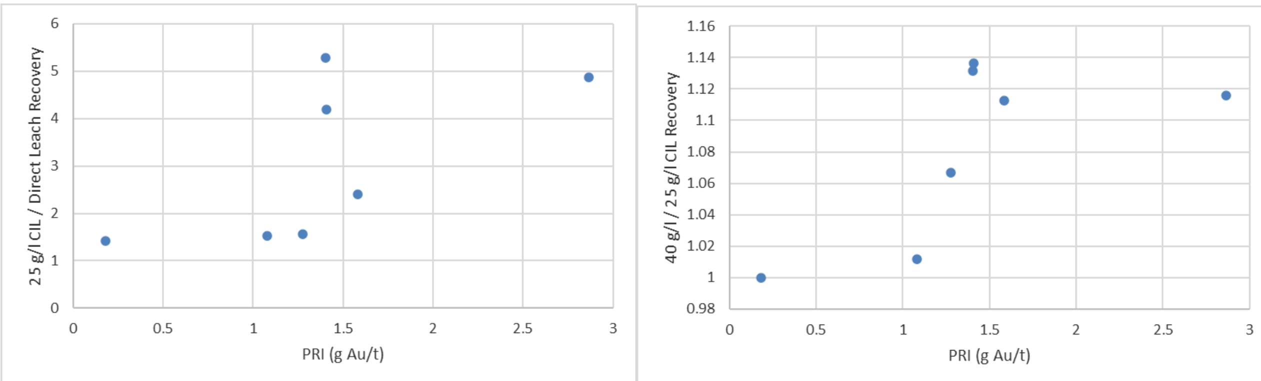


Figure 13-1 CIL to direct leach ratio (left) and 40 g/l to 25 g/l CIL leach ratio (right) versus PRI

These results show what amounts to virtually a step change in behavior over a narrow range of PRI values between 1.0 and 1.5, from a response indicating mild preg-robbing behavior at a PRI of just over 1.0 or less to behavior indicating a significant preg-robbing response at PRI values of just under 1.5 and above.

13.3 2022 Testwork– Nkran and Obotan Satellite Deposits

13.3.1 Nkran

Four samples were submitted for testwork at BV generated from 2022 drilling. The samples were from the base of the pit, aimed to represent “Cut 3” of the pit design. Three of the samples were of Sandstone and the other was of Granite.

The testwork followed the same scheme as for the 2022 Esaase testwork (see Section 13.2), with comprehensive head assays, gravity recovery and cyanide leaching testwork, however in this case the focus was on sensitivity to grind size, which had not previously been extensively tested for Nkran; the cyanide tests (see Section 13.2.2) were conducted in CIL format only and with a single carbon concentration – 25 g/l of fresh carbon. The baseline grind size was a P_{80} of 90 µm and coarser grind sizes – up to a P_{80} of 150 µm, were tested for each sample.

The results of this testwork (Report 2201708) are summarized in Table 13-2.

The head assays showed the samples to be free of deleterious elements, consistent with AGM’s knowledge of, and experience with, Nkran ore. The PRI values indicate the samples to be low (Sandstone samples) or not (Granite sample) preg-robbing.

Table 13-2 2022 testwork results (Nkran)

Comp	Head Assay					PRI	Test No	P_{80}	Calc Head	Au Recovery (%)			NaCN Cons	Lime Cons
	Au (g/t)	S (%)	S^{2-} (%)	C (%)	OC (%)	(g Au/t)		(μm)	(g/t Au)	Gravity	Leach	Total	(kg/t)	(kg/t)
Western Sandstone	1.41	0.75	0.56	1.25	0.21	0.77	GCIL1	141	1.33	39.4	51.6	91.0	0.52	0.36
							GCIL2	119	1.20	31.0	59.9	90.9	0.55	0.36
							GCIL3	101	1.48	22.5	71.3	93.8	0.53	0.36
							GCIL4	91	1.76	39.1	55.3	94.4	0.54	0.36
Central Sandstone	1.02	0.64	0.43	1.57	0.24	0.68	GCIL5	151	1.09	26.3	62.8	89.1	0.53	0.34
							GCIL6	127	1.14	38.1	52.2	90.4	0.50	0.36
							GCIL7	103	1.25	44.9	47.3	92.2	0.53	0.34
							GCIL8	88	1.21	52.4	41.0	93.4	0.54	0.34
Eastern Sandstone	2.24	1.07	0.88	2.27	0.72	0.27	GCIL9	142	2.75	36.5	53.9	90.4	0.49	0.37
							GCIL10	121	2.24	29.1	61.0	90.2	0.45	0.51
							GCIL11	101	2.16	24.1	65.4	89.5	0.33	0.41
							GCIL12	86	2.36	32.2	60.5	92.7	0.49	0.51
Granites	1.24	0.73	0.56	0.35	0.23	0.05	GCIL13	156	1.16	29.9	60.6	90.5	0.36	0.46
							GCIL14	134	2.15	53.2	41.6	94.8	0.45	0.42
							GCIL15	104	1.27	47.4	46.5	93.9	0.45	0.46
							GCIL16	91	1.26	42.1	53.0	95.1	0.43	0.46

The leach tests reported high Au recoveries with little sensitivity to grind size over the range of sizes tested. While the recoveries for the Western and Central Sandstone sample showed a slight decrease with increasing grind size, this was more an artifact of the calculated head grades, as the leach residue grades showed essentially no variation with grind size. The residue grades for the Granites sample showed something of a step change between the P_{80} 134 μm and 104 μm tests and this is reflected in the recovery values, although the figure for the P_{80} 134 μm test is clouded by the much higher calculated head grade.

The results for the Eastern Sandstone sample showed a decrease in recovery for the grind sizes coarser than the baseline figure. Size-by-size assays conducted on the leach residue from test GCIL11 indicated that a grind size of P_{80} 75 μm may be a more optimum figure for this material.

13.3.2 Abore

A small testwork program was undertaken at the AGM site laboratory to test the metallurgical response of the Sandstone lithology type at Abore. This lithology type had only been tested previously as a minor blend component with the predominant Granite lithology.

Two samples were generated from 2022 infill drilling, one from intervals of diamond drill core and the other from intervals of RC chip. Both samples were of Fresh material and the samples were composited from coarse assay reject material.

The test procedure was as follows:

- Head assay – Au by PAL 1000 with fire assay of the residue and S and C speciation (Total S, Sulphide S, Total C, Organic C) by Leco
- Gravity recovery – 2 kg samples were ground to the target P_{80} of 106 μm then passed once through a 7.5 cm Knelson concentrator. The concentrate was subjected to intensive cyanidation with the tailings from the Knelson and intensive cyanidation stages combined for the subsequent leach tests.
- Cyanidation – bottle roll tests based on 1 kg samples under typical AGM plant parameters:
  - 50% solids
  - pH 10.5
  - 100 g/t $Pb(NO_3)_2$
  - oxygen injection: DO initially 20 ppm then maintained at 15 ppm
  - initial addition of cyanide equal to 850 ppm NaCN in solution
  - carbon addition of 25 g/l of fresh (conditioned) carbon
  - 18-hour residence time with monitoring of pH, free NaCN and DO

The results of these tests (AGM, 2022) are summarized in Table 13-3.

The leach results show high recoveries for both samples – the lower recovery for Composite 1 is a function of the low head grade – the leach residue grades in both cases were 0.06-0.08 g/t.

Table 13-3 2022 testwork results (Abore)

Item			Unit	Composite 1 (diamond core)	Composite 2 (RC chip)
Head Assay	Au		g/t	0.41	1.42
	S		%	0.73	0.68
	S^{2-}		%	0.44	0.60
	C		%	1.10	1.03
	OC		%	0.73	0.58
Leach test	Calc head		g/t Au	0.58	1.49
	Recovery	Gravity	%	56.8	64.8
		CIL	%	29.0	31.0
		Total	%	85.8	95.8
	NaCN Consumption		kg/t	0.61	0.57
	Lime Consumption		kg/t	1.20	1.10

13.3.3 Midras South

A small testwork program was undertaken at ALS Kamloops on samples from Midras South. This was the first metallurgical testwork program undertaken for this orebody.

Three samples were generated from 2021/22 drilling, one each of Oxide, Transition and Fresh. The Oxide sample was made from intervals of RC chip and the Transition and Fresh samples were made from intervals of diamond drill core.

Based on the testwork result spreadsheets received as of the effective date of the report (ALS Kamloops, 2022), the test procedure appears to have been as follows:

- Gravity recovery – 2 kg samples were ground to the target P_{80} of 106 μm then passed once through a 7.5 cm Knelson concentrator. The concentrate was subjected to intensive cyanidation with the tailings from the Knelson and intensive cyanidation stages combined for the subsequent leach tests.
- Cyanidation – bottle roll tests based on the recombined 2 kg samples with the following parameters:
  - 50% solids
  - pH 10.5
  - 30 minute pre-aeration with 100 g/t $Pb(NO_3)_2$
  - oxygen injection: DO maintained at 15 ppm
  - initial addition of cyanide equal to 850 ppm NaCN in solution
  - carbon addition of 25 g/l
  - 18 hour residence time with monitoring of pH, free NaCN and DO

The results of these tests are summarized in Table 13-4.

The leach results show recoveries of between 93% and 96% for the three samples; the leach residue grades ranged from 0.04g/t to 0.08 g/t.

Table 13-4 2022 testwork results (Midras South)

Item			Unit	Oxide	Transition	Fresh
Leach test	Calc head		g/t Au	1.07	0.98	0.85
	Recovery	Gravity	%	30.9	66.6	63.6
		CIL	%	61.6	29.8	29.3
		Total	%	92.5	96.4	92.9
	NaCN Consumption		kg/t	0.33	0.25	0.22
	Lime Consumption		kg/t	1.23	0.79	0.54

13.4 Previous Project Testwork

13.4.1 Esaase

13.4.1.1 ALS Global Testwork Programs 2018-2021

A number of testwork programs were conducted over this period at the ALS Global laboratory in Perth. All of the programs used core that was stored on site and which had been generated by drilling in the period of 2007-2011.

The initial four programs were conducted in support of the AGM LoM 2020 study and sought to better understand the variability in the orebody, particularly with respect to the principal stratigraphic zones (Upper Sandstone, Cobra and Central Sandstone).

The first program (A18754) tested 10 composite samples made up from RC chip – three Oxide, two Transition and five Fresh. The sample had Organic Carbon contents ranging from 0.15% to 0.57%. An in-house Preg-Robbing Index test was conducted, where a solution containing 10 ppm Au, but from which the free NaCN had been removed (by oxygen sparging), was contacted with each sample, and the decrease in Au content after 24 hours was recorded as the PRI (in terms of % Au absorbed). Parallel gravity-leach tests were conducted on each sample, with the sample ground to the target P_{80} of 106 μm before gravity concentration, with the gravity concentrate subjected to intensive cyanidation (with parallel mercury amalgamation tests conducted on four composites). The leach test conditions were: 50% solids, 24 hours, 500 ppm initial NaCN addition with maintenance at 250 ppm and oxygen sparging to achieve 20 ppm DO. The parallel tests compared direct cyanide leach conditions (i.e., no carbon) with CIL conditions (15 g/l carbon concentration).

All samples reported high Au recoveries under CIL conditions (89-98%), with only three samples exhibiting any appreciable preg-robbing behavior (the lowest recovery reported under direct leach conditions was 78%).

The aim of the second program (A19208) was to select diamond core intervals for Raman spectroscopy work, conducted at Curtin University in Perth. Thirty-nine small interval (100-280 mm) intervals were selected on the basis of visible OC content; subsequent assays showed the intervals to have OC contents ranging from <0.03% to 3.99%. PRI tests were also conducted on these samples using the ALS method, before they were transferred to Curtin University for the spectroscopy work.

The third program (A19437) tested 25 diamond core interval samples. The scope of testwork and test procedures were similar to the first program, with head assays, PRI and gravity-cyanidation tests.

Differences in the test procedures included: gravity concentrates subjected to amalgamation, the leach free NaCN was 500 ppm initially and maintained at 120 ppm, and in the configuration of the CIL tests. Direct leach tests were initially conducted on 7 samples with low head grades (<0.5 g/t Au). These tests reported low recoveries consistent with the low head grades and all also showed evidence of preg-robbing (leach recovery decreasing with time). No further testwork was conducted on samples with similarly low head grades, meaning that only 14 samples were progressed to parallel CIL tests. Two CIL tests were conducted per sample, one with an addition of 10 g/l of fresh (preconditioned) carbon and the other using carbon sourced from site: carbon from Tank 1 was added initially, to be replaced after 8 hours with carbon from Tank 2, which was replaced after a further 8 hours with carbon from Tank 3.

Au extractions were quite variable, however there was a distinct improvement in performance under CIL conditions, with the average Au recovery increasing from 54% under direct leach conditions to 70% under CIL conditions using fresh carbon and 75% under CIL conditions using plant carbon. However, several samples still exhibited a reduction in recovery with time even with carbon added.

A Combined Gravity Tailings Composite was prepared using some of the worst performing samples and was subjected to further direct leach and CIL tests to test different operating conditions and reagent additions. Under direct leach conditions, the only options that improved the recovery significantly above the baseline (2.5%) were intensive cyanidation and the addition of carbon blanking agents kerosene (2 kg/t) or sodium lauryl sulphate (200 g/t) – higher cyanide concentrations, greater oxygenation and heating were ineffective. Under CIL conditions, the recovery improved from the baseline 31% (10 g/l carbon) to 51% with 50 g/l carbon, 74% with 50 g/l carbon and regrind to P_{80} 45 μm and to 80-81% with kerosene addition and 10 g/l or 50 g/l carbon.

The fourth program (A19681) tested a further 20 samples, again selected on the basis of high visible OC content. The test conditions were identical to the third program except for the “plant” CIL tests, where plant carbon from Tank 3 was used for the first 8 hours, after which it was replaced with lab sourced “barren” carbon, which was subsequently found to assay 510 g/t Au. For these tests, the average Au recovery increased from 57% under direct leach conditions to 75% under CIL conditions using plant carbon and 80% under CIL conditions using fresh carbon.

Three of the samples were combined to make composites for additional testwork – one composite combining the as-received material and one combining the gravity tailings. The as-received composite was tested using the full gravity-CIL flowsheet, but at finer grind sizes – P_{80} 75 μm and 45 μm. These tests showed no benefit to finer grinding. The gravity tailings composite was leached under CIL conditions with the addition of different levels of diesel fuel as a carbon blanking agent. Additions of 75 g/t and 250 g/t of diesel fuel showed no improvement in recovery over the calculated baseline (CIL) recovery of 66%, however the recovery with a 500 g/t addition of diesel fuel was 75%.

A subsequent testwork program (A22281) was conducted in 2021 which sought to ensure representation in the testwork database of samples other than from Cobra and samples therefore not specifically selected on the basis of high visible OC. The testwork also sought to address the fact that much of the previous testwork had been conducted using relatively low free cyanide levels in the leach test; levels lower than those used in the plant.

A total of 42 variability composites were made from the selected drillcore and from them 14 bulk composites were made. The testwork procedures were largely as had been used previously – head assay (but no PRI test), gravity separation based on 8 kg samples at a P_{80} of 106 μm with amalgamation of the gravity concentrate and CIL tests on the gravity tailings. The samples were pre-conditioned ahead of the leach tests – 2 hours at pH 10.8 with 30g/t $Pb(NO_3)_2$ and oxygen addition to 20 ppm DO. The CIL tests were conducted for 24 hours, with initial additions of NaCN to a free NaCN level of 600 ppm (bulk composites) or 1000 ppm (variability composites) and 15 g/l of fresh carbon. Intermediate sampling was undertaken to maintain conditions of pH above 10, free NaCN above 250 ppm and DO above 10 ppm.

Diagnostic testwork was conducted on the bulk composite samples and consisted of size-by-size assays on the leach feed and leach tailings samples and diagnostic leach tests on the leach tailings, comparing a CIL re-leach with a re-leach using acetonitrile.

For the bulk composite samples, the average recovery was 84% (range 60% to 96%) with a general trend of increasing recovery with increasing head grade – the lowest recovery was from the sample with the lowest head grade (0.53 g/t Au). For the variability composite samples, the average recovery was 90% (range 65% to 99%) with again a general trend of increasing recovery with increasing head grade – the lowest recovery in this case was also from the sample with the lowest head grade (0.20 g/t Au). Combining the recoveries for the variability composites into the corresponding bulk composites showed in several cases an increase in recovery for the variability composites over the corresponding bulk composites. This increase was attributed to the use of the higher free cyanide concentration in the variability tests.

The size-by-size assays should a reasonably consistent distribution of grades in the leach feed samples, with some elevated grades in the mid-range size fractions. For the tailing samples, there was a general increase in grade with increasing size. The CIL re-leach diagnostic leach tests reported an addition recovery in only 5 of the 14 samples, of 0.02-0.06 g/t Au. The re-leach tests using acetonitrile reported additional Au recovery in all samples, of 0.04-0.19 g/t Au. Given that the acetonitrile re-leach tests also involved a further cyanide addition, the reason for the greater Au extractions was thought to be due to additional leaching of gold due to this further cyanide addition.

13.4.1.2 Amdel/ALS Testwork Programs 2011-2016

A three-part testwork program was conducted by Amdel, Perth in 2011 and 2012 in support of the 2012 Feasibility Study (Project 3098), supplemented by a further program at Amdel in 2012 in support of the 2013 Pre-Feasibility Study (Project 3486). Three programs were subsequently undertaken by ALS, Perth between 2013 and 2016 in support of the plant expansion program (A15168, A16268 and A16645). These testwork programs have been grouped together as they all used the same core samples, which again been generated by drilling in the period 2007-2011.

The 2011/12 Amdel program tested three master composites and a number of variability composites. The composites considered the oxidation state (the master composites were Oxide, Transition and Fresh), but the stratigraphy was not considered. The first part of the program undertook comminution tests of varying types on the master and variability composites. The second part covered flowsheet development using the three master composites. The first stage of testwork tested gravity concentration using a Knelson concentrator followed by intensive cyanidation of the concentrate and CIL leaching of the tailings. Several grind sizes were tested over the range P_{80} 75 μm to P_{80} 300 μm. This testwork concluded that a P_{80} of 150 μm was the optimum grind size. Further optimization testwork considered the cyanide addition, pulp density and oxygen addition. Further testwork on the gravity stage consisted of adding an upgrading stage using a Mozley Concentrator on the Knelson concentrate and amalgamation of the Knelson concentrate. Flotation was then tested, with the gravity concentrate, flotation concentrate and flotation tailings all leached separately. Larger scale testwork was then conducted in which a Wilfley table was used for gravity separation, with leaching of the various table products, at grind sizes of P_{80} 150 μm and 106 μm. Other testwork consisted of cyanide detoxification, rheology, preg-robbing (testing the Au absorption with varying additions of kerosene), thickening and oxygen uptake.

Testwork on the variability composites then commenced and continued into the third part of the program. A further Fresh Master Composite was also made for this program. Testwork with gravity separation using a Wilfley table at a grind size P_{80} of 106 μm tested the effect of table concentrate regrind size and the activity of the carbon. Larger scale testwork was then conducted using a spiral, followed by a PRI test using the Newmont test procedure. Testwork was then conducted on the variability composites using a Wilfley table (the variability testwork conducted during the second part of the testwork used Knelson and Mozley concentrators) PRI determinations using the Newmont test procedure were conducted on 7 samples (the Fresh Master Composite, and two Oxide, two Transition and two Fresh variability composites). Finally, further testwork was conducted on the original three master composites – further Wilfley table testwork, rheology, thickening and materials handling.

The subsequent Amdel program tested four “domain” composites (Laterite, Oxide, Transition and Fresh) and three Life of Mine composites. Comminution testwork was followed by gravity separation (Mozley and Knelson concentrators) and flotation (on gravity tailings) testwork. Leach tests were then conducted on the gravity tailings samples and the flotation concentrate samples. The gravity tailings leach tests also tested the impact of pre-conditioning under high shear conditions. Finally, a cyanide detoxification test was conducted on a sample of flotation concentrate leach tailings.

The first ALS reported testwork program, which commenced in 2013 and was reported in 2014, was undertaken in two phases - “Phase 5” and “Phase 6”. Some of the samples provided to ALS came from Amdel and they were supplemented with additional core from site. The Phase 5 tested Oxide and Fresh master composites and Phase 6 tested Oxide, Transition and Fresh master composites, a number of variability composites, a Life of Mine composite and some flotation concentrate samples from the Amdel work. The aim of the testwork was to produce flotation concentrates for leaching. In most cases, an initial gravity separation stage was incorporated and a number of flotation reagent combinations were used. The test conditions employed for the leach tests also tested options including a further gravity separation stage, regrinding of the concentrate and pre-treatment using oxygen and/or diesel fuel. Subsequent testwork included a continuous SO_2/air detoxification test, arsenic precipitation, diagnostic leaches, rheology and flocculation and settling testwork.

The next ALS program commended in late 2014 and tested three Esaase composites – Oxide, Transition and Fresh, as well as a composite of Nkran Fresh. Much of the testwork (gravity-flotation) was conducted on blends of the Esaase and Nkran samples of various ratios, however gravity-cyanidation tests were conducted on the Esaase composite samples individually, as well as on the blends.

The third ALS program commenced in July 2015 and again tested Esaase (Oxide and Fresh) and Nkran (3 Fresh) composites. Testwork included gravity-leach and gravity-flotation tests on the Esaase composites, both individually and as a blend, and on blends of the Esaase and Nkran composites. Follow-up testwork conducted in late 2016 / early 2017 focused on optimizing the gravity-leach conditions for the Esaase Fresh sample. A P_{80} of 106 μm was determined to be the optimum grind size and the slight preg-robbing that was observed was effectively countered using CIL conditions.

13.4.1.3 Earlier Testwork Programs

Earlier testwork programs, conducted over the period 2007-2011, are reported in summary form in several technical reports issued over that period. The first testwork was conducted by IML in Perth in 2007 on Oxide, Transition and Fresh samples that were cyanide leached at their as-received (RC chip) sizes and following grinding to a P_{80} of 75 μm.

Subsequent testwork programs were undertaken at Amdel. The first tested seven Oxide, two Transition and nine Fresh samples, however the testwork was preliminary in nature, with samples ground fine (P_{80} 45 μm) and cyanide leached under CIP conditions. Some preg-robbing behavior was observed.

The next phase of testwork formed Oxide and Fresh composites from the same samples and tested a gravity-cyanidation flowsheet using a CIL format. The third phase tested new Oxide, Transition and Fresh composites, as well as material representing a “down dip” extension and a “northern” extension. This testwork program included comminution testwork, mineralogy and gravity-CIL testwork where operating conditions including grind size, free NaCN level and pulp density were investigated.

13.4.2 Nkran

Processing of Nkran ore commenced in 1997, and while no testwork reports from that period are available, a Technical Report authored by DRA in 2014 (Heher, 2014) presents a summary of work conducted over that period. Gravity-leach recoveries for Oxide ore samples were consistently high, whereas while the corresponding recoveries for Fresh ore samples were generally high, some inconsistent behavior was noted and preg-robbing was reported in one instance.

A number of subsequent testwork programs have been undertaken on samples from Nkran. The first reported program was in 2011 where ALS Perth tested three Nkran composites in a program with other Obotan ores (A13906). The samples had head grades of between 0.7 and 5.7 g/t Au. The testwork consisted of comminution tests and gravity-leach tests under CIP conditions (initial NaCN 660 ppm, free NaCN maintained at >400 ppm). The samples reported high total recoveries (95-98%) with a high gravity recoverable component (52-82%). An SO_2/air cyanide detoxification test was conducted on one of the leach tailings samples.

The next reported program was undertaken by SGS, Johannesburg in 2014 (Report No. 14/522), again testing Nkran samples in a program with other Obotan ores. Five Nkran Fresh ore samples were tested, with head grades ranging from 0.9 g/t Au to 4.4 g/t Au. The testwork consisted of gravity-leach tests under CIL conditions (1 kg/t initial NaCN addition, free NaCN maintained at >170 ppm, 15 g/l carbon) and the Nkran samples reported an average total recovery of 94.8% (range 87.3% to 97.5%).

This was followed by a program undertaken at ALS which commenced in late 2014 and tested a composite of Nkran Fresh and three Esaase composites (A16268). Much of the testwork (gravity-flotation) was conducted on blends of the Esaase and Nkran samples of various ratios, however a gravity-cyanidation test conducted on the Nkran composite at a P_{80} of 106 μm (initial NaCN 820 ppm, free NaCN maintained at >400 ppm, 20 g/l carbon) reported an overall recovery of 94.0% (43% gravity recovery) and a head grade of 2.37 g/t Au.

A further ALS program (A16645) commenced in July 2015 and tested three Nkran Fresh composites in conjunction with Esaase composites. While much of the testwork used blends of the Nkran and Esaase samples, gravity-leach and gravity-flotation tests were conducted on one of the Nkran composites. The gravity-leach test conducted on the Nkran composite at a P_{80} of 106 μm (1 kg/t initial

NaCN addition, free NaCN maintained at >170 ppm, 20 g/l carbon) reported an overall recovery of 90.2% (50% gravity recovery) and a head grade of 1.99 g/t Au.

The next ALS program (A20208) was in 2019 and tested five Nkran composites with head grades ranging from 0.37 g/t Au to 4.08 g/t Au. The samples were subjected to gravity separation followed by leaching under direct leach and CIL conditions. The leach conditions included an initial NaCN addition of 300 ppm with the free NaCN maintained at >120 ppm. The carbon addition in the CIL tests was 10 g/l. The direct leach test recoveries ranged from 55% to 94% and the CIL test recoveries ranged from 72% to 93%. Four of the five samples exhibited preg-robbing behavior, with the difference between the direct leach and CIL recoveries ranging from 3% to 17%. PRI tests were conducted on these samples, which showed an increasing, although non-linear, trend between the PRI and the difference between the direct leach and CIL test recoveries.

Samples from this testwork program were sent to Curtin University for Raman spectroscopy work. While the results were not formally reported, the feedback from Curtin University was that in terms of the spectral response, the Nkran material was slightly more preg-robbing than Esaase. However, comparing the PRI results with OC assay for Nkran and Esaase indicates that the Nkran ore may also contain a graphitic (i.e., non preg-robbing) component.

The final phase of historic testwork was conducted at ALS in 2021 (A22441) testing samples from Nkran, Abore and Miradani. Seven Nkran composites were tested. Gravity-leach tests were conducted on all samples initially under conditions of a P_{80} of 106 μm and an initial NaCN addition equivalent to 300 ppm free NaCN with the free NaCN maintained at >120 ppm throughout the test. The carbon concentration was 15 g/l. These tests returned an average Au recovery of 90.4% (range 81.5-94.0%). Tests were then re-run on five of the samples with a NaCN concentration of 600 ppm initially and maintained at >300 ppm. The average recovery under these conditions was 94.9% (range 93.1-96.0%), an increase of 2.8% over the average recovery for these samples at the lower cyanide addition level. Gravity tailings from two of the composites were combined for further testing, however none of the different conditions employed (higher free NaCN, finer grind, kerosene addition, $Pb(NO_3)_2$ addition) produced any increase in recovery.

13.4.3 Abore

Ore from Abore was fed to the original Obotan plant over the period November 2001 to December 2002. While no testwork reports from that period are available, the 2014 DRA Technical Report (Heher, D, 2014) reports one item of testwork on Abore, where a recovery of 78.0% was reported for a sample with a head grade of 2.33 g/t Au.

Three subsequent testwork programs have included samples from Abore. The first was the 2011 ALS Perth program (A13906) which tested a single Abore Fresh ore composite in a program with other Obotan ores. This sample had a head grade of 0.31 g/t Au. The testwork consisted of comminution tests and a gravity-leach test under direct leach conditions (initial NaCN 660 ppm, free NaCN maintained at >400 ppm). The sample reported a total recovery of 90.3% with a gravity recovery of 53.9%.

The next program was the 2014 SGS program (Report No. 14/522), again testing Abore samples in a program with other Obotan ores. Four Abore Fresh ore samples were tested, with head grades ranging from 0.4 g/t Au to 1.8 g/t Au. The testwork consisted of gravity-leach tests under direct leach conditions (1 kg/t initial NaCN addition, free NaCN maintained at >170 ppm, 15 g/l carbon) and the Abore samples reported an average total recovery of 95.6% (range 92.2% to 98.8%).

The third phase of historic testwork was the 2021 ALS program (A22441) that tested samples from Nkran, Abore and Miradani. Seven Abore composites were tested; the head grades of the samples ranged from 0.39 g/t Au to 1.52 g/t Au. Gravity-leach tests were conducted on all samples initially under conditions of a P_{80} of 106 μm and an initial NaCN addition equivalent to 300 ppm free NaCN with the free NaCN maintained at >120 ppm throughout the test. The carbon concentration was 15 g/l. These tests returned an average Au recovery of 86.3% (range 67.1-96.7%). The tests were then re-run at the higher NaCN concentration which resulted in an average recovery of 94.1% (range 84.5-97.9%). The lowest recovery reported in these later tests was for the sample that had the highest head grade; the leach residue grades for the other 6 samples were all 0.06 g/t or less.

Of these seven samples, six were of Granite and the seventh, the high-grade sample, was a composite of Granite (27%) and Sandstone (73%). On the basis of the low recovery for this sample and the high recovery for the Granite-only samples, a recovery for the Sandstone lithology type of 80% was inferred. The recent testwork conducted on Abore Sandstone material (Section 13.3.2) was undertaken in order to provide a more robust estimate of the recovery for the Sandstone lithology type at Abore.

13.4.4 Miradani North

The only historic testwork conducted for Miradani North was the 2021 ALS program (A22441) that tested samples from Nkran, Abore and Miradani. Sixteen composites of Miradani North material were tested; two Oxide, two Transition and 14 Fresh. The head grades of the samples ranged from 0.20 g/t Au to 3.79 g/t Au. The results of gravity-leach tests for the two Oxide samples showed little impact of the two different free cyanide levels used – 96.2% at the lower level and 97.2% at the higher level. The two Transition samples showed a greater sensitivity, with the average recovery increasing from 76.5% at the lower cyanide level to 94.0% at the higher level. For the Fresh samples the average recovery increased from 90.6% at the lower cyanide concentration (range 65.4%-97.0%) to 93.4% at the higher concentration (range 87.7%-97.6%). The average leach residue grade at the higher cyanide concentration was 0.10 g/t Au. The average gravity stage recovery was 48.4%.

13.4.5 Adubiaso

Ore from Adubiaso was also fed to the original Obotan plant, as a blend component, commencing in December 1999 and continuing until December 2000. The 2014 DRA Technical Report (Heher, 2014) reports testwork conducted on two samples of Oxide ore from Adubiaso and one of Fresh ore. The reported recoveries from gravity-cyanidation tests on the Oxide samples were 95.8% and 98.7% for samples with head grades of 2.52 g/t Au and 1.93 g/t Au. For the Fresh sample, a recovery of 93.7% was reported for a sample with a head grade of 3.02 g/t Au.

Two of the previously referred to testwork programs have also included samples from Adubiaso. The 2011 ALS Perth program (A13906) tested a single Adubiaso Fresh ore composite with a head grade of 2.61 g/t Au. The result of the gravity-leach test under direct leach CIL conditions was a total recovery of 91.4% with a gravity recovery of 70.6%.

The 2014 SGS program (Report No. 14/522) tested three Adubiaso Fresh ore samples, with head grades ranging from 1.6 g/t Au to 4.0 g/t Au. The results of the gravity-leach tests under CIL conditions were an average total recovery of 95.4% (range 91.7% to 98.4%) with an average gravity stage recovery of 55.8%.

13.4.6 Akwasiso

The 2011 ALS Perth program (A13906) tested one Oxide and one Fresh ore sample from Akwasiso. The Oxide sample reported recoveries under gravity-direct leach conditions of 90.2% at a low (330 ppm) initial free NaCN addition and 93.9% at a higher (860 ppm) initial free NaCN addition. The gravity stage recovery was 38% and the head grade 2.44 g/t Au. The Fresh sample reported a recovery under gravity-direct leach CIL conditions of 94.4% with a gravity stage recovery of 35%. The head grade of this sample was 5.26 g/t Au.

13.4.7 Dynamite Hill

The 2014 SGS (Report No. 14/522) program tested four samples from Dynamite Hill; one Oxide, one Transition and two Fresh. The head grades of the samples ranged from 1.0 g/t Au to 2.3 g/t Au. Under gravity-CIL conditions the Oxide sample returned a gravity recovery of 27.2% and a total recovery of 90.4%, the Transition sample a gravity recovery of 59.3% and a total recovery of 98.5% and the Fresh samples gravity recoveries of 44.3% and 74.6% and total recoveries of 95.7% and 97.5%.

13.5 Life-of-Mine Recovery Estimates

13.5.1 Esaase

13.5.1.1 Recoveries Based on Testwork

The focus of the metallurgical testwork conducted in support of this FS for Esaase was on Fresh ore material; while a sample of Oxide material was included in the testwork program this was largely for confirmation purposes.

The recovery model that has been used by AGM in recent times for Oxide material from Esaase has been based on the use of a fixed tailings grade of 0.10 g/t Au. SRK considers this approach to be valid going forward, noting that the tailings grade reported for the Oxide sample in the recent Esaase testwork was also 0.10 g/t Au.

The recoveries developed for Esaase Fresh and Transition ore considered all of the relevant metallurgical testwork data (i.e., CIL format, appropriate grind size etc.) and for which data was available that identified the drillhole intervals that made up each particular composite or sample. The interval information was then cross-checked against the new lithostructural model developed as part of this FS (see Section 7.4.2) to assign an oxidation stage and a lithology (Upper Sandstone (USS), Cobra, Central Sandstone (CSS) and Footwall Sandstone (FWS)) to each sample based on the most recent interpretation of the orebody. The small number of samples identified as FWS were excluded from further analysis and composite samples containing a mixture of lithologies were only considered for further analysis if they contained a majority of a single lithology. Transition and Fresh samples were considered together.

The recovery relationships were developed based on the Au head grade alone. While the recovery for Esaase ores is likely to be dependent on several factors in addition to Au head grade, such as Organic Carbon content, Preg-Robbing Index etc., the only assay parameter available in the geological block model to base recovery relationships on is the Au grade. Some degree of scatter is therefore to be expected in the data over and above typical experimental “noise” due to these secondary influences that cannot be accounted for in the analysis.

Upper Sandstone

The impact of new lithostructural model has been that a lot of material that was previously classified as USS has been reclassified as Cobra. The net effect of this for the recovery estimation is that there were only seven samples classified as USS according to the new lithostructural model available for analysis – three from the Amdel work (two Transition, one Fresh) and four from the 2019 ALS work (all Fresh). Unfortunately, the USS composite used in the BV testwork had to be excluded, as according to the new lithostructural model all of the intervals used for this composite were all classified as Cobra.

The data was therefore supplemented by site data that was generated using the PAL 1000. The site lab has conducted a large volume of PAL 1000 assays, together with parallel lab scale CIL testwork for comparison purposes. While neither procedure incorporates a gravity recovery stage, the high cyanide intensity of the PAL 1000 procedure is intended to leach any coarse and/or slow leaching gold present. The PAL 1000 procedure also does not require a fine crushing/grinding stage ahead of the test as the procedure integrates leaching and grinding. By contrast, the site CIL tests use sample that has been prepared using pulverizing, with the attendant risks in terms of free gold smearing. In an attempt to overcome the likely presence of coarse gold in the CIL tests, they were run for an extended residence time. A comparison of the PAL 1000 and CIL test results showed a reasonable correspondence, sufficient to give confidence that the PAL 1000 test results provide a reasonable simulation of laboratory CIL test conditions, at least for the purposes of this analysis.

Using the new lithostructural model had a similar impact on the PAL 1000 database, with only 12 samples (with head grades greater than 0.2 g/t Au) classified under the new model as USS that could be added to the analysis. This was considered appropriate as this limited number of applicable PAL 1000 results did not overwhelm the external lab CIL data set.

The data is shown in Figure 13-2. A logarithmic regression equation has been fitted in keeping with relationships derived in recent studies for Esaase.

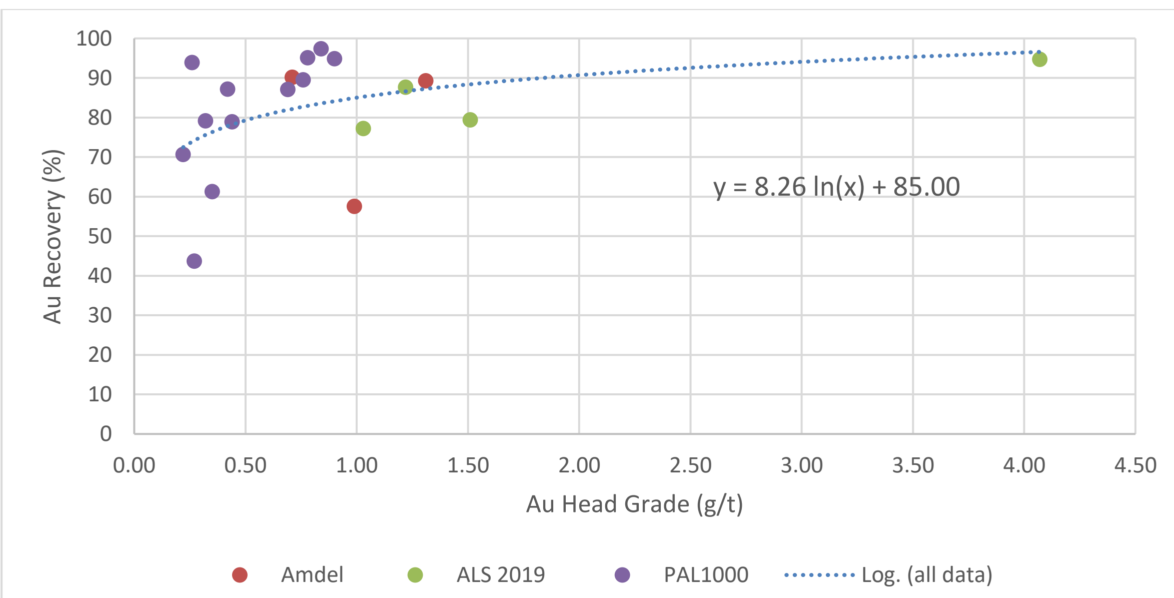


Figure 13-2 Gold grade – recovery relationship (Upper Sandstone)

Cobra

The Cobra dataset contained 33 data points and is shown in Figure 13-3. Incorporating all of the data into the regression line gave a line that sat several percentage points above the results for the three BV samples (which included the sample originally identified as USS but which was reinterpreted as Cobra). Eliminating the data for the two RC chip samples (from the ALS testwork – purple and light blue triangles) and the two ALS Transition samples (dark blue triangles) lowered the curve slightly; as there was no logical basis to exclude any other data from the regression, the regression is therefore based on data for Fresh ore samples from the Amdel, ALS and BV testwork programs.

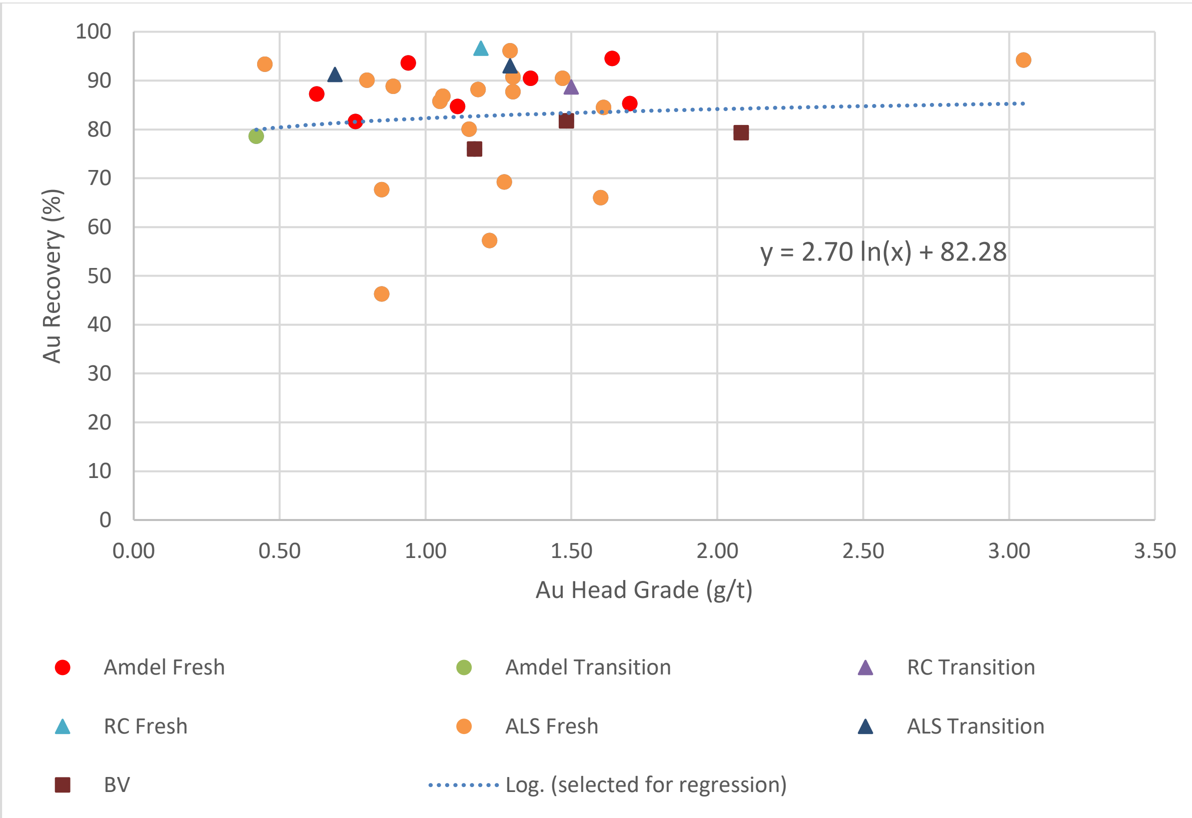


Figure 13-3 Gold grade – recovery relationship (Cobra)

Central Sandstone

The CSS dataset contained 95 data points. The full dataset is shown in Figure 13-4. Only Composites 6 and 7 from the BV testwork were included; Composite 8, having been selected for testwork on the basis of low recoveries from the PAL 1000 tests, was excluded on the expectation that this material is not representative of the CSS orebody.

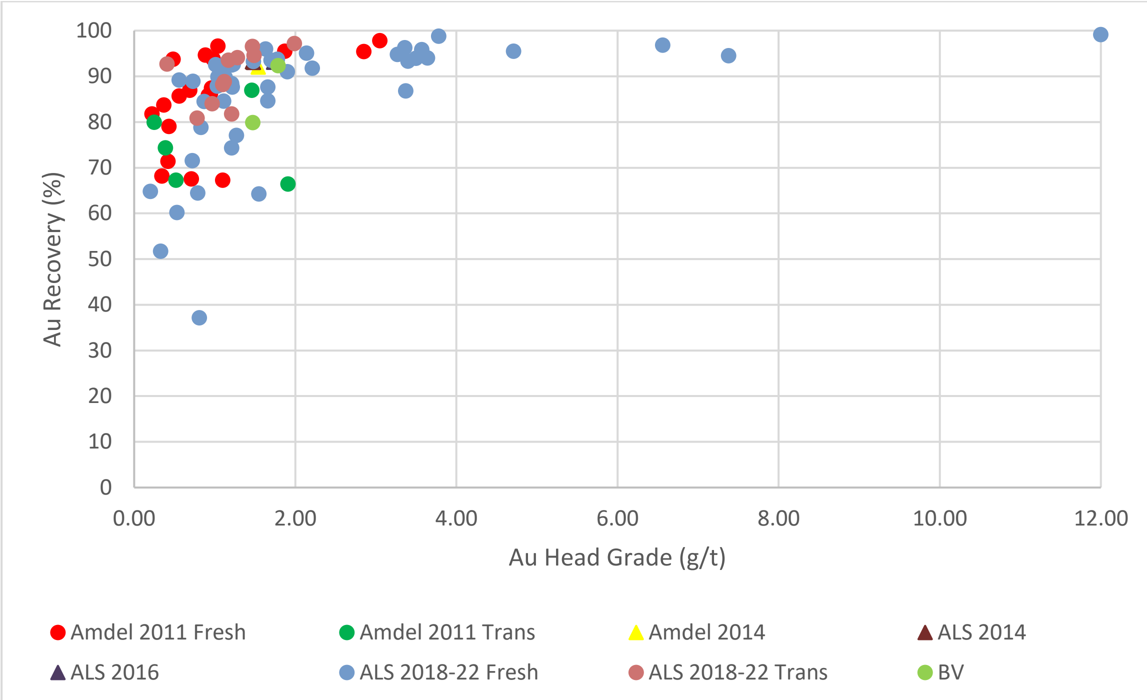


Figure 13-4 Gold grade – recovery relationship (Central Sandstone)

Figure 13-5 shows the same data as above, with x-axis limited to 4.0 g/t Au and the y-axis starting at 50% recovery to improve clarity.

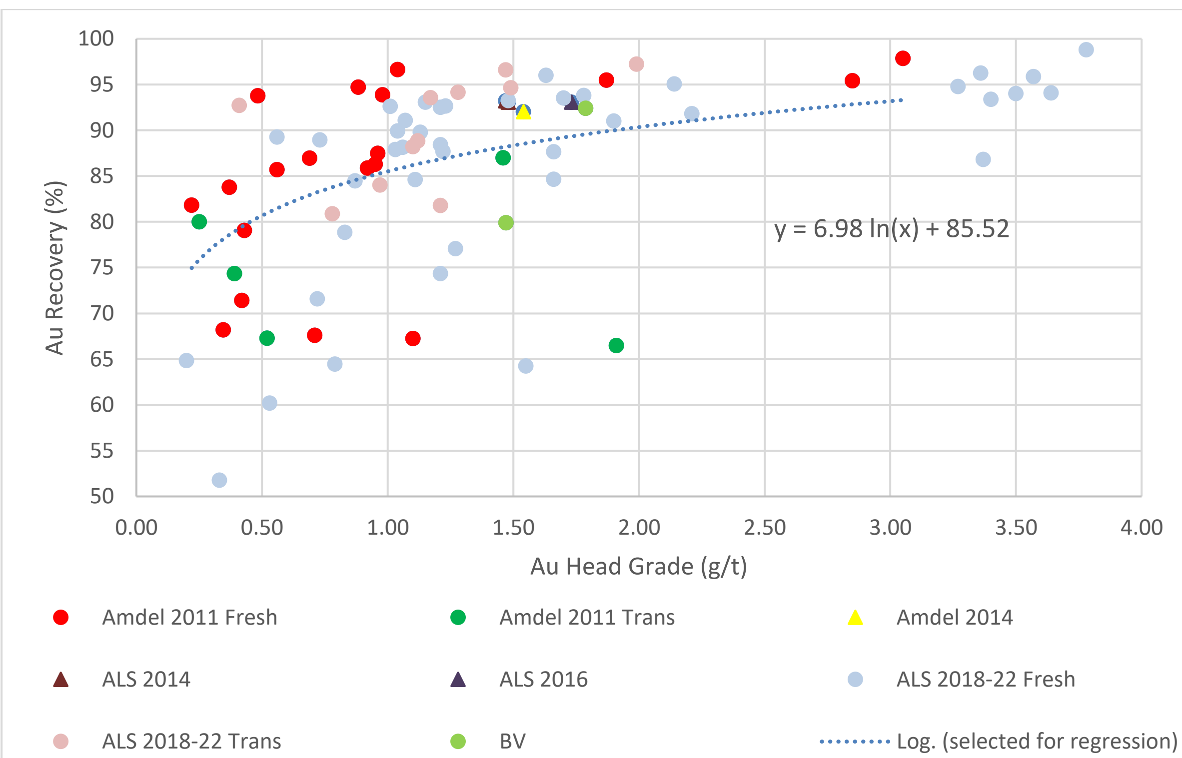


Figure 13-5 Gold grade – recovery relationship (Central Sandstone subset)

A number of subsets of the overall dataset were tested to develop the regression equation. Eliminating the RC chip samples and the few composites that were not totally made of CSS based on the new lithostructural model made negligible difference to the regression. Ultimately, the regression as shown above was based on a data subset that also eliminated all of the data from the ALS programs conducted between 2018 and 2022, on the basis that these programs had used core that had been in storage on site for a minimum of seven years. This regression, based on a data set of 35 points, gave an equation where the recovery did not fall off at low head grades as much as the other options had, and which maintained similar recoveries at moderate grades.

13.5.1.2 Recoveries Moderated by Comparison with Plant Data

The relationships derived above are based on testwork, which can be considered to have been conducted under idealized conditions. The question then arises as to whether the equations need to be moderated to account for non-idealized plant conditions, particularly considering the preg-robbing nature of a portion of the Esaase orebody.

A comparison was therefore made between the recoveries using these equations and relevant plant data. However, and for entirely valid operational reasons, typical AGM practice is to feed the plant with a blend of ores. The only plant data available for when Esaase material was fed to the plant as the sole feed source was a period of approximately one week in July 2022 when AGM conducted a trial feeding the plant with stockpiled Esaase low grade material.

The plant data (overall recovery) from the MO trial period is shown in Figure 13-6, where it is compared to the predicted recovery calculated using the regression equation for Cobra ore shown in Figure 13-3. Notwithstanding the degree of variability in the data, in most cases the reported plant recovery was lower than that predicted on the basis of the testwork. The average difference between the two sets of recovery data was 11.14%.

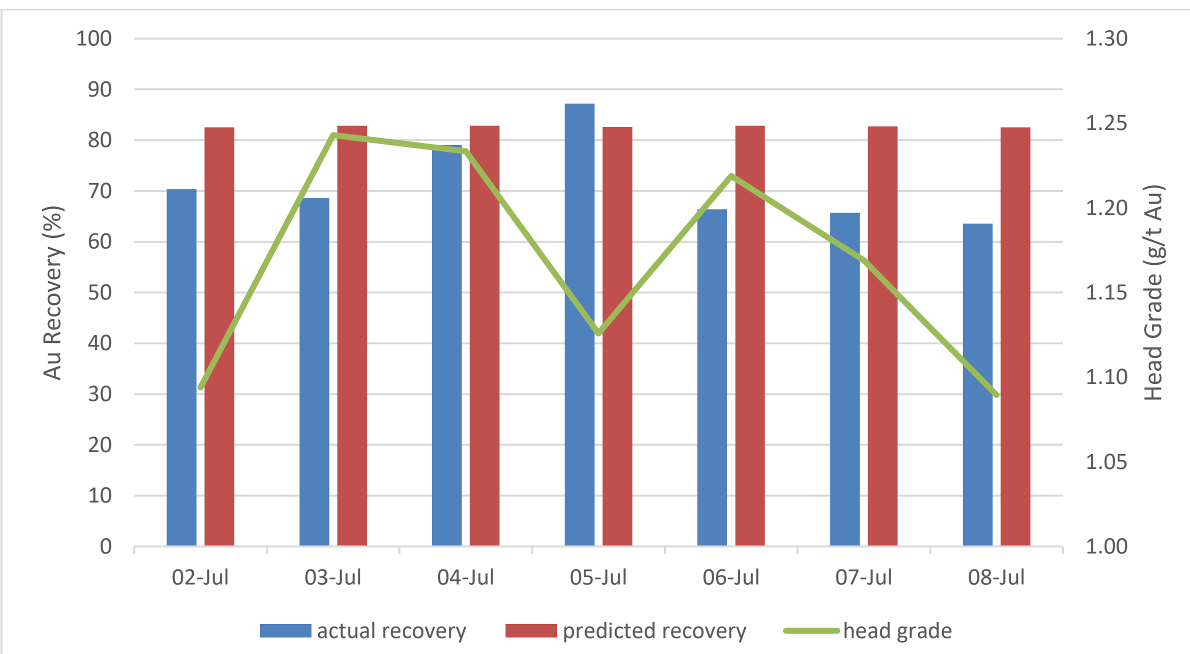


Figure 13-6 Comparison of testwork predicted recovery with plant operating data

The recovery-head grade equations derived from the testwork have therefore been moderated by reducing the predicted recoveries by this figure of 11.14%. As all three lithology types at Esaase have exhibited preg-robbing behavior under laboratory conditions, this level of discount has been applied to all three lithology types, giving the following recovery-head grade equations:

USS: Au recovery = 8.26 * ln(Au head grade) + 73.86

Cobra: Au recovery = 2.70 * ln(Au head grade) + 71.14

CSS: Au recovery = 6.98 * ln(Au head grade) + 74.38

There should be no need to apply a cap on the recovery calculated using these equations, as the maximum recovery value reported in the testwork will not be encountered using these equations except for very high head grade values (~20 g/t Au for USS, >30 g/t Au for CSS and values significantly higher than these for Cobra).

There are two additional lithology types identified at Esaase – Hawk and Footwall Sandstone (FWS), although they make only a small contribution to the overall Resource volume. In the absence of any (Hawk) or any significant (FWS) testwork data, recoveries for these two lithology types have been assumed based on their adjoining lithologies, namely USS for Hawk and CSS for FWS.

13.5.2 Nkran

A LoM average recovery figure of 94% has been quoted in recent technical reports for Nkran, based on operational history from the plant over the period 2017-2019, and in particular based on the monthly operating data for 2018 and 2019, which reported an average monthly recovery of 93.8% at an average head grade of 1.47 g/t Au.

The available testwork data for Nkran (see Sections 13.3.1 and 13.4.2) supports the ongoing use of this recovery figure. The testwork programs conducted by ALS and SGS in 2011 and 2014 all reported average recovery figure for the Nkran samples of 94% or above. While the ALS programs in 2015 and 2019 reported lower recoveries, the latter of these programs used relatively low free NaCN levels (max 300 ppm) in the leach tests. The subsequent ALS program from 2019 showed that some of the Nkran ore is sensitive to the free NaCN level, and that by using free NaCN levels in the testwork more akin with those typically employed in the plant, average recoveries of the order of 95% were achieved. Finally, the testwork conducted in support of this FS also produced recoveries that support the use of the 94% recovery figure for Nkran.

13.5.3 Abore, Miradani North, Akwasiso, Dynamite Hill, Adubiaso and Midras South

Similarly, recovery figures of 94% have been quoted for the Obotan satellite deposits, mainly based on those periods over the past few years when these ores were fed to the AGM plant, albeit as a minor blend component, with Nkran ore representing the major blend component. However, the available historic testwork, together with some older sole plant feed data, do support the ongoing use of this figure for these deposits:

- Abore: The "Abore Open Pit – Final Report" prepared by Resolute Amansie Ltd in July 2002 (Lee & Dontoh, 2002) tabulates monthly operational data for the period November 2001 to December 2002, when Abore ore was the sole feed source to the old Nkran plant. The average Au recovery over that period was 96.3% and the average head grade was 1.95 g/t Au. It is likely that this was all Oxide ore. The more recent historic testwork programs (2011-21, see Section 13.4.3) reported Au recoveries of 90.3% for one sample, 95.6% average for four samples and 94.1% average for seven samples. The testwork conducted in support of this FS (see Section 13.3.2) reported a Au recovery of 95.8% for the sample with a head grade of 1.49 g/t Au. These testwork figures support the assigned 94% Au recovery figure for this material.

- Miradani North: The 2021 testwork (see Section 13.4.4) reported an average Au recovery for the 14 Fresh ore samples tested of 93.4%, endorsing the assumed recovery figure of 94% as a reasonable estimate for this material.
- Akwasiso: In recent times Akwasiso ore had been fed to the AGM plant as a minor blend component and no adverse impact on the overall recovery was observed. The 2021 testwork (see Section 13.4.6) reported a gold recovery of 93.9% for the Oxide sample tested and 94.4% for the Fresh ore sample tested, again suggesting that the assumed recovery figure of 94% is a reasonable estimate for this material.
- Dynamite Hill: Dynamite Hill ore was fed into the AGM plant over the period November 2017 to August 2019 as a minor blend component, with Nkran ore as the major blend component. The average Au recovery over this period was 94% and the recovery showed no material difference for Dynamite Hill contributions to the feed ranging from 2% to 38% on a monthly basis over that period. The 2014 testwork on this material (see Section 13.4.7) reported Au recoveries of 90.2% for the Oxide sample, 98.5% for the Transition sample and 95.7% and 97.5% for the two the Fresh samples. These testwork figures support the assigned 94% Au recovery for this material.
- Adubiaso: The “Adubiaso Open Pit – Final Report” prepared by Resolute Amansie Ltd in February 2001 (Brinckley, 2001) tabulates monthly operational data for the period November 1999 to December 2000, the period when Adubiaso ore was fed as a blend component to the old Nkran plant (monthly blend proportion 5-68%). The average Au recovery over that period was 96.4% and the average head grade was 2.43 g/t Au. Again, it is likely that this was all Oxide ore. The more recent historic testwork programs (2011-14, see Section 13.4.5) reported Au recoveries of 91.4% for one sample and 95.4% average for three samples. These testwork figures support the assigned 94% Au recovery for this material.
- Midras South: The results of the recent testwork conducted on samples of ore from Midras South suggest that the Au recovery of 94% assumed for this material is a reasonable estimate.

13.5.4 Stockpiles

AGM stockpile balances are based on grade control procedures which employed standard bottle roll bulk leach extractable gold (BLEG) techniques up to 2021, followed by a combination of BLEG and PAL 1000 analyzers thereafter. These methods report cyanide soluble gold. As a result, the stockpile grades are considered cyanide soluble gold rather than total gold.

The stockpiles have an estimated a recovery of 85% on cyanide soluble gold, subject to a minimum imposed tailings grade of 0.1 g/t Au.

13.5.5 Summary

The recovery relationships developed for Esaase, Nkran, the Obotan satellite deposits and the site stockpiles are summarized in Table 13-5.

Table 13-5 Summary of recovery relationships

Orebody	Oxidation Level	Lithology	Recovery Relationship
Esaase	Oxide	All	Fixed tails grade: 0.1 g/t Au
	Transition & Fresh	Hawk & USS	Recovery = 8.26 * ln(Au head grade) + 73.86
		Cobra	Recovery = 2.70 * ln(Au head grade) + 71.14
		CSS & FWS	Recovery = 6.98 * ln(Au head grade) + 74.38
Nkran	All	All	Fixed recovery: 94%
Abore	All	All	Fixed recovery: 94%
Miradani North	All	All	Fixed recovery: 94%
Akwasiso	All	All	Fixed recovery: 94%
Dynamite Hill	All	All	Fixed recovery: 94%
Adubiaso	All	All	Fixed recovery: 94%
Midras South	All	All	Fixed recovery: 94%
Stockpiles	All	All	Fixed recovery: 85%; minimum 0.1 g/t Au tails grade

14 Mineral Resource Estimates

The AGM is comprised of nine deposits: Nkran, Esaase, Abore, Miradani North, Midras South, Adubiaso, Akwasiso, Asuadai and Dynamite Hill.

The mineral resource model for Nkran was prepared by Malcolm Titley, MAIG and Jane Coll, MAusIMM, MAIG of CSA Global Ltd (UK) in October 2022.

The mineral resource models for Esaase, Abore, Miradani North, Midras South and Adubiaso were prepared by SRK, led by Dr. Oy Leuangthong, PEng and Mr. Glen Cole, PGeo. Mr. Jones Duah, an exploration geologist with AGM, constructed the geology and mineralization model for Abore, Miradani North, Midras South and Adubiaso. Dr. Shawn Kitt, MAusIMM, of SRK Consulting UK Ltd, reviewed the geology interpretation and 3D model constructed by Mr. Duah for these four deposits. Dr. Kitt constructed the geology and mineralization model for the Esaase deposit. In addition to Dr. Leuangthong, the SRK team involved in resource estimation included Ms. Joycelyn Smith, PGeo, Ms. Sheila Ulansky, PGeo and Mr. Ilkay Cevik. Dr. Leuangthong, Mr. Cole and Dr. Kitt visited the AGM between 6-11 August 2022.

The mineral resource models for Akwasiso, Asuadai and Dynamite Hill were not updated in 2022. The Akwasiso and Dynamite Hill models were constructed by Mr. Eric Chen, PGeo of Galiano in February 2021 and November 2021, respectively. The Asuadai model was constructed by Mr. Shaun Hackett of Gold Fields in 2018 and peer reviewed by AGM at the time. SRK audited these three mineral resource models in September 2022.

Section 14 has been divided into three subsections:

1. Nkran mineral resource model updated by CSA
2. Esaase, Abore, Miradani, Midras South and Adubiaso models updated by SRK
3. Akwasiso, Dynamite Hill and Asuadai models audited by SRK

Mr. Titley, Dr. Leuangthong and Mr. Cole are independent Qualified Persons as this term is defined in National Instrument 43-101.

Mineral Resources and Mineral Reserves have been prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated 19 May 12014 (CIM (2014) definitions) and CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines dated 29 November 2019. The effective date of the Mineral Resource Statement (Table 14-1) is 31 December 2022.

The QPs are 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.

Table 14-1 Mineral Resource Statement* for AGM, Ghana, as at 31 December 2022

Category	Deposit	Tonnage (Mt)	Grade (g/t Au)	Contained Metal (koz Au)
Measured	Nkran			
	Esaase			
	Abore			
	Miradani North			
	Adubiaso			
	Midras South			
	Akwasiso			
	Asuadai			
	Dynamite Hill			
	Stockpiles	7.4	0.67	158
	Total Measured	**7.4**	**0.67**	**158**
Indicated	Nkran	15.3	1.89	931
	Esaase	30.6	1.25	1,227
	Abore	12.8	1.16	477
	Miradani North	7.9	1.39	352
	Adubiaso	3.1	1.47	148
	Midras South			
	Akwasiso	1.4	1.16	52
	Asuadai	1.6	1.23	64
	Dynamite Hill	2.2	1.34	95
	Stockpiles			
	Total Indicated	**75.0**	**1.39**	**3,346**
Measured + Indicated	Nkran	15.3	1.89	931
	Esaase	30.6	1.25	1,227
	Abore	12.8	1.16	477
	Miradani North	7.9	1.39	352
	Adubiaso	3.1	1.47	148
	Midras South			
	Akwasiso	1.4	1.16	52
	Asuadai	1.6	1.23	64
	Dynamite Hill	2.2	1.34	95
	Stockpiles	7.4	0.67	158
	Total Mea + Ind	**82.3**	**1.32**	**3,504**
Inferred	Nkran	3.6	1.83	209
	Esaase	8.2	1.26	334
	Abore	3.6	1.14	131
	Miradani North	2.9	1.30	122
	Adubiaso	0.1	1.05	3
	Midras South	5.4	1.32	232
	Akwasiso	0.2	1.28	9
	Asuadai	0.1	1.29	4
	Dynamite Hill	1.0	1.24	40
	Stockpiles			
	Total Inferred	**25.1**	**1.34**	**1,084**

** Mr. Malcolm Titley, MAIG of CSA Global UK is the Qualified Person responsible for the Nkran Mineral Resource statement. Dr. Oy Leuangthong, PEng and Mr. Glen Cole, PGeo of SRK Consulting (Canada) Inc. are Qualified Persons responsible for Mineral Resource statements for Esaase, Abore, Miradani North, Adubiaso, Midras South, Akwasiso, Asuadai and Dynamite Hill.*

Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect the relative accuracy of the estimates. Due to rounding, some columns or rows may not compute exactly as shown.

Reported within an optimized pit shell assuming a price of USD1,800 / oz gold and using various cut-off grades: 0.40 g/t gold for Nkran; 0.50 g/t in Oxides and 0.60 g/t gold in Transition and Fresh for Esaase; and 0.45 g/t gold for all other deposits. Metallurgical recovery of 94% for all deposits, except in Esaase, where gold recoveries vary based on lithology.

All tonnages are reported as in situ dry tonnes.

Mineral Resources are inclusive of Mineral Reserves.

Galiano's share of the project on an equity basis is 45%. All quantities are reported on a 100% basis.

14.1 Nkran Mineral Resource Estimate

14.1.1 Drilling Database

The exploration data set consisting of RC and Diamond drilling was used to update the MRE, the database was closed on 22 July 2022. Drill data from 23 new exploration diamond drillholes was added to the estimate since the last MRE completed in 2020.

The 30 RC GC drillholes, which intersect below the current mining surface (June 2020) and were used in the 2020 MRE, were retained in this estimate.

The Nkran MRE is modelled below the 31 May 2017 mined surface. Drilling above this surface intersected oxide material which is not considered appropriate for use in estimation of the resource which entirely in fresh rock. The exploration data was restricted to data up to 10 m above the 31 May 2017 mined surface. A summary of the exploration drilling data used in the MRE is shown in Table 14-2. All subsequent data analysis, statistics and estimation for the MRE are from the validated and restricted dataset.

Table 14-2 Nkran database – summary of exploration drill data used in the MRE

	DDH	RC + GC RC	RCD	Total
Number of holes	224	251	30	505
Metres drilled	80,737	20,585	10,037	111,359
Number of assays	43,059	14,475	4,965	62,499
Number of BD measurements	816	-	-	816

Note: DDH – Diamond core drill hole; RC – Reverse circulation hole; RCD – Reverse circulation hole with diamond tail; BD – In-situ dry bulk density

CSA Global visited the Nkran gold mine between 12-14 July 2022 and considers the exploration dataset at Nkran to be of sufficient quality to support the MRE update.

14.1.2 Geological Interpretation

14.1.2.1 Lithology Domains

The Nkran lithological model was updated by CSA Global using Leapfrog software (Figure 14-1). The interpretation was based a structural and lithology review completed by site geologists, which included the additional 23 diamond drillholes completed during 2021/2022.

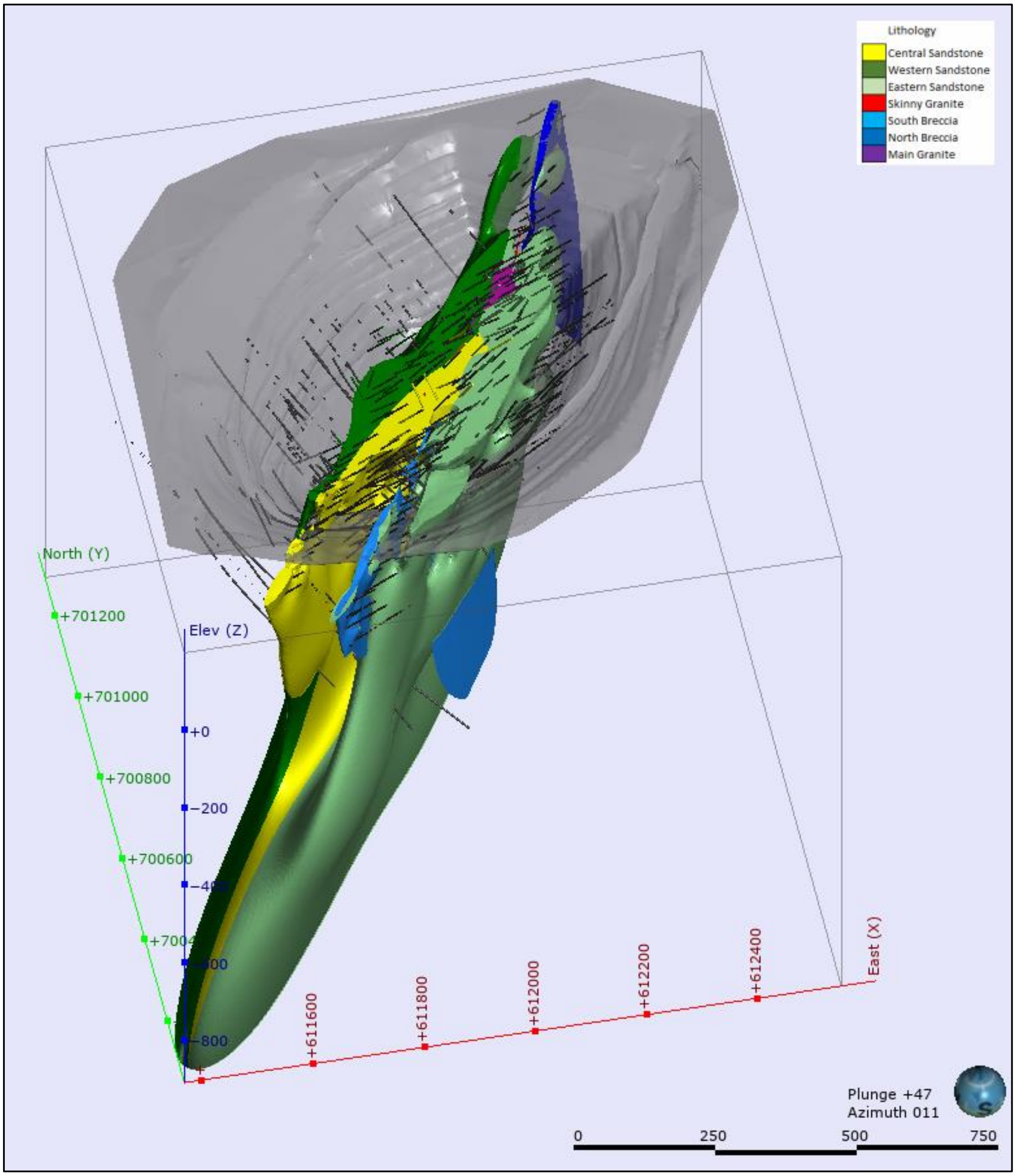


Figure 14-1 Lithology 3D model

14.1.2.2 Weathering Domains

AGM geologists created weathering profiles for the bottom of complete oxidation (base_oxide) and the top of fresh (top_fresh) material in Leapfrog™, based on logged oxidation/weathering state prior to the 2018 estimate – these surfaces were used to flag weathering into the updated model and assign density values into the blocks. CSA Global checked the logged weathering surfaces in the new drilling against the interpreted surfaces. The new drilling is collared in the pit, which is in fresh rock.

14.1.2.3 Mineralization Domains

The main lithological units form the basis for delineating geological domains (Table 14-3).

Mineralization composites were generated in Leapfrog using a gold cut-off of 0.15 g/t and a minimum mining width of 6 m to guide sample selection. The interval select tool in Leapfrog was used to ensure that just the mineralized material was selected, not the lower grade dilution added either side of the 0.15 g/t intervals to create the minimum width composite.

A binary numeric code was set-up using the calculation function in Leapfrog for the selected intervals. This code was used as an input into an indicator model within the Leapfrog numeric modelling function. The indicator model was guided by structural trends were provided by AGM geologists.

Table 14-3 Summary of estimation domains and descriptions

Field	Code	Description
OXIDE	1 2 3	Oxide Transitional Fresh/Sulphide
GEOL	210 220 230 310 320 510 520 900	Western Sandstone Central Sandstone Eastern Sandstone Main Granite Skinny Granite South Breccia North Breccia Siltstone/Waste
ESTZON	210 220 230 310 320 510	Western Sandstone mineralization Central Sandstone mineralization Eastern Sandstone mineralization Main Granite mineralization Skinny Granite mineralization South Breccia/North Breccia mineralization

14.1.3 Bulk Density

The Nkran MRE is wholly within fresh rock where BD variance is very low so the application of an average BD to the entire MRE fresh rock is appropriate. There is no difference in BD between mineralized and un-mineralized (waste) rock.

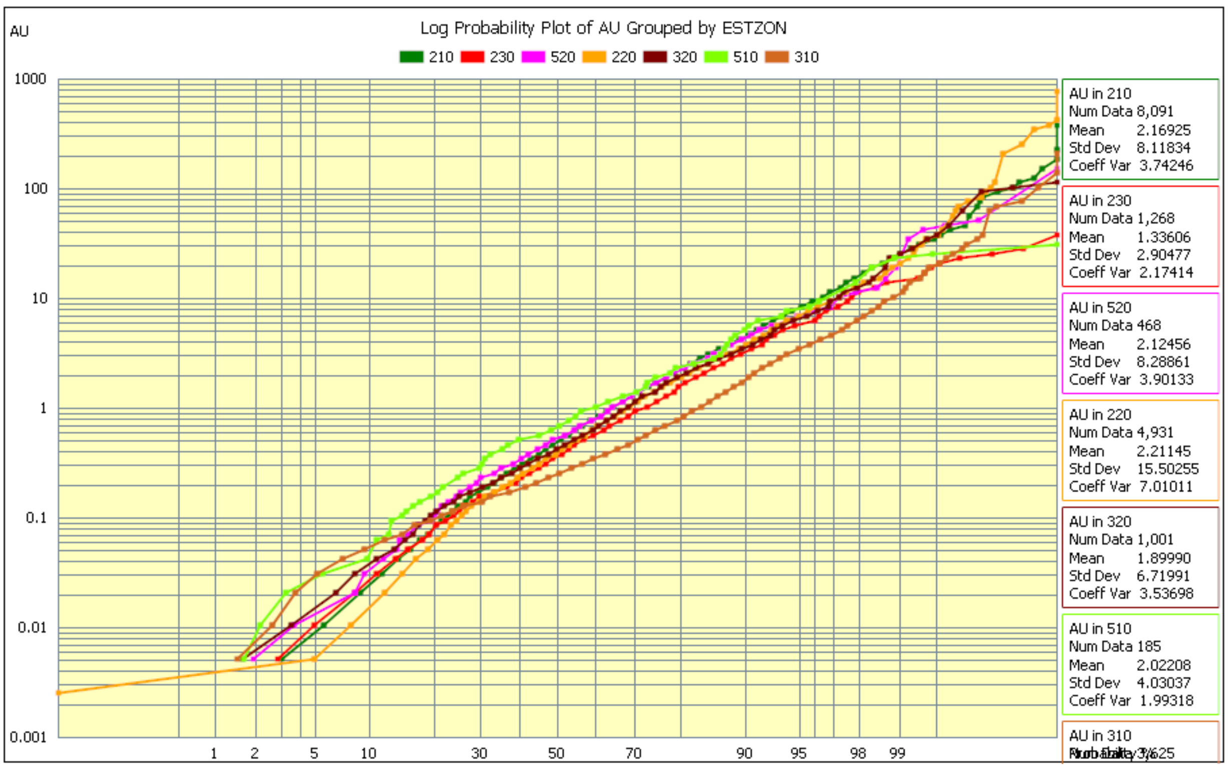
A total of 555 bulk density measurements, including data from drilling completed for the MRE update, was used to calculate the mean density value of 2.73 for fresh rock. This density value is an increase of 2% from the value used in the previous (2020) estimate (2.68).

14.1.4 Assays, Composites and Capping

The naïve statistics, per ESTZON, are presented in Table 14-4 and Figure 14-2.

Table 14-4 Naïve statistics per ESTZON

Domain (ESTZON)	No. of samples	Minimum	Maximum	Mean	Variance	Coefficient of Variation
210	8,091	0.01	364	2.17	65.91	3.74
220	4,931	0.00	726	2.21	240.33	7.01
230	1,268	0.01	37	1.34	8.44	2.17
310	3,625	0.01	207	1.03	28.68	5.21
320	1,001	0.01	106	1.90	45.16	3.54
510	185	0.01	30	2.02	16.24	1.99
520	468	0.01	153	2.13	68.70	3.90



(Source: CSA Global, 2022)

Figure 14-2 Log probability overlay plots of uncut Au g/t within estimation domains (ESTZON)

CSA Global reviewed all sample lengths for the exploration drill data in the mineralization envelope. The dominant as well as the mean sample length within the exploration drill data is 1 m, which was selected as the compositing length in previous MREs.

The descriptive analysis for the estimation domains (ESTZON) is shown in Table 14-5.

Table 14-5 Composite statistics per ESTZON

Domain (ESTZON)	No. of samples	Minimum	Maximum	Mean	Variance	Coefficient of variation
210	8,086	0.01	45	1.88	18.22	2.28
220	4,961	0.00	45	1.59	15.83	2.50
230	1,279	0.01	18	1.28	6.43	1.98
310	3,678	0.01	35	0.88	6.23	2.84
320	981	0.01	35	1.67	14.19	2.26
510	669	0.01	28	1.68	11.31	2.00

Grade-cutting (top-cutting) is applied to data used for grade estimation in order to reduce the local high-grade bias of high-grade samples in the grade estimate. In cases where individual samples would unduly influence the values of surrounding model cells, without the support of other high-grade samples, top cuts are applied. These top-cuts are quantified according to the statistical distribution of the composite population, additionally the spatial distribution of high-grade composites was reviewed to ensure no additional grade domaining was required.

Cutting strategy was applied based on the following:

- Skewness of the data
- Probability plots
- Spatial position of extreme grades

Histograms and probability plots were reviewed for Au g/t within each individual estimation domain to determine the top-cut. High grade samples were viewed in 3D, with consideration of whether high grades were spatially clustered or isolated.

The number of extreme values cut was minimal compared to the total domain population and cutting these values generally had little impact on the mean grade of the domains.

Composites greater than the top-cut values were reset to the respective top-cut values. The uncut and top-cut statistics, including the number of samples cut, per estimation domain, are shown in Table 14-6.

Table 14-6 Top-cut statistics per ESTZON

ESTZON	Total	Top cut	#Cut	Uncut Mean	Cut Mean	%Diff	Uncut CoV	Cut CoV
210	8,086	45	20	2.02	1.88	-7%	3.60	2.28
220	4,961	45	18	1.90	1.59	-16%	5.58	2.50
230	1,279	18	8	1.32	1.28	-3%	2.16	1.98
310	3,678	35	7	0.99	0.88	-11%	5.18	2.84
320	981	35	4	1.82	1.67	-8%	3.16	2.26
510	669	28	4	1.75	1.68	-4%	2.29	2.00

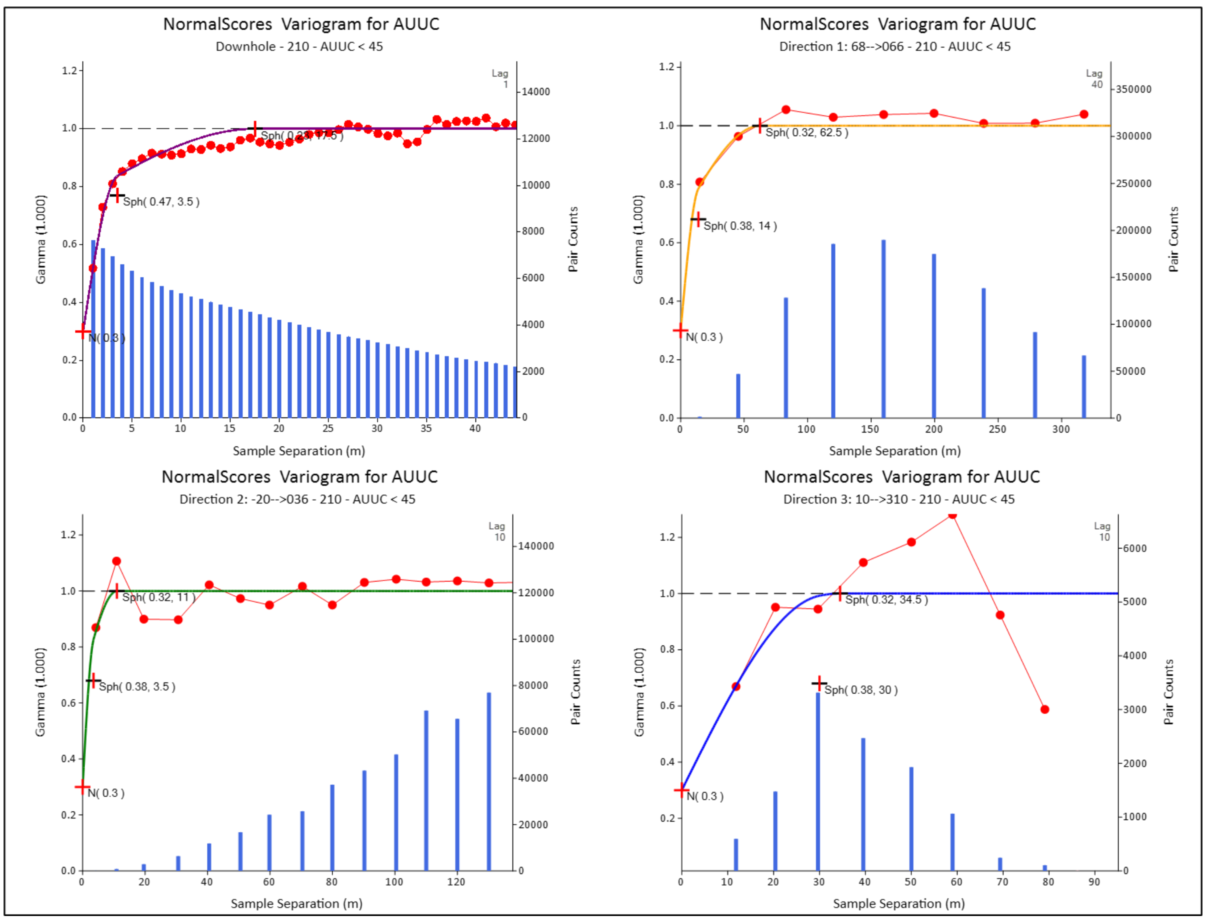
CoV – Coefficient of Variation

14.1.5 Variogram Analysis

Variography (spatial analysis) was completed using Snowden Supervisor software.

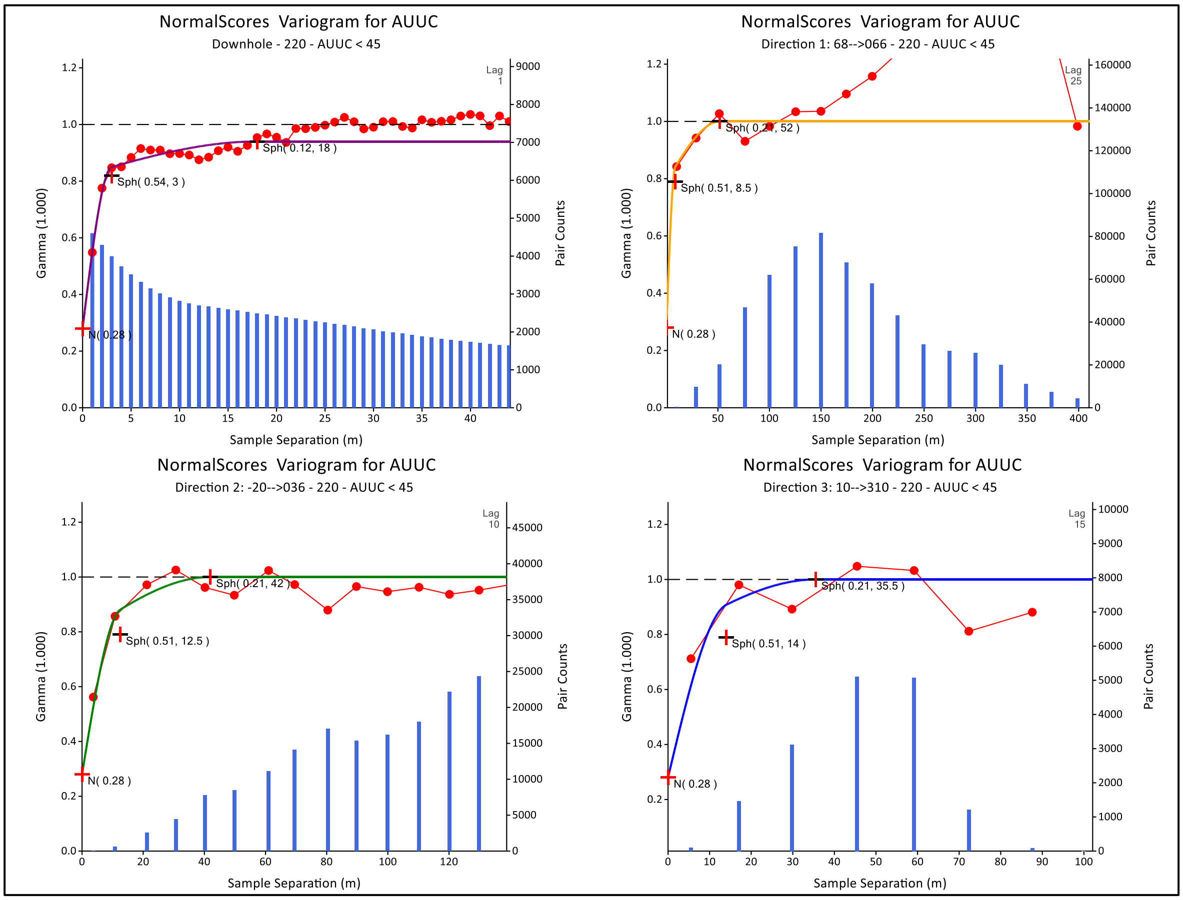
Nugget values were modelled from the downhole variograms, where the lag was set equal to the composite length of 1 m. Directional experimental semi variograms were calculated in Gaussian space and modelled. The variograms were back transformed to raw space prior to using them in estimation or change of support calculations.

Variogram orientations reflect the steep southwest plunge of the mineralization envelope, with direction of maximum continuity down plunge. The semi-variograms were moderately structured (smaller ESTZONs 230, 310 and 320) to well structured (larger ESTZONs 210 and 220). The variogram for the Eastern Sandstone was applied to the North/South Breccia domain because the experimental semi-variogram was not robust due to low sample numbers The long axis of variogram models reflects the steep south-westerly plunge of the mineralization. Variograms were characterized by moderate to high nuggets (c. 43%), short scale structures of approximately 15 m and longer scale structure of approximately 50 m (Figure 14-3 and Figure 14-4).



(Source: CSA Global, 2022)

Figure 14-3 Experimental variogram and model (Gaussian space) for Au g/t in ESTZON 210



(Source: CSA Global, 2022)

Figure 14-4 Experimental variogram and model (Gaussian space) for Au g/t in ESTZON 220

Parameters from the variogram models fitted to the composite data in Supervisor were exported using Isatis rotations for use in the LUC estimation workflow. The nuggets and sills were re-scaled to the variance of the composite dataset for each domain declustered with OK estimation weights. The variogram parameters used in the Isatis workflow are listed in Table 14-7.

Table 14-7 Variogram models for Au g/t

ESTZON	Isatis rotation	Isatis axis	Nugget	Structure 1		Structure 2	
				Sill	Range	Sill	Range
Western Sandstone	24.5	Z	6.53	5.69	14	2.66	62.5
	-68	Y			3.5		11
	-63	X			30		34.5
Central Sandstone	24.5	Z	8.53	9.83	8.5	2.33	52
	-68	Y			12.5		42
	-63	X			14		35.5
Eastern Sandstone	24.5	Z	2.14	0.9	36.5	2.11	77.5
	-68	Y			26.5		46
	-63	X			9.5		23
Main Granite	24.5	Z	2.17	2.16	16.5	0.75	51
	-68	Y			13.5		31.5
	-63	X			4		15
Skinny Granite	24.5	Z	6.82	6.32	31.5	2.1	73
	-68	Y			49		55.5
	-63	X			8		15.5
Breccias	24.5	Z	6.4	2.7	36.5	6.3	77.5
	-68	Y			26.5		46
	-63	X			9.5		23

14.1.6 Block Model Definitions

A volume model was built in Datamine StudioRM™ using lithology, mineralization, oxide and depletion wireframes. Grade was estimated into parent cells of 5 m x 5 m x 6 m (X x Y x Z) and subcells were applied where appropriate to honour wireframe volumes.

The model was cut to below the 31 May 2017 depletion surface. The model prototype parameters, including cell dimensions and model extents, are shown in Table 14-8. The model was not rotated.

Table 14-8 Block model dimensions

Dimension	Origin	Extent	Number	Block size	
				Parent (m)	Sub-cell resolution (m)
East	610,500	613,000	500	5	2.5
North	699,600	702,000	480	5	2.5
Elevation	338	1,706	228	6	3

14.1.7 Grade Estimation

The Nkran MRE has been estimated using post-processing of ordinary kriged large panel estimates to produce a recoverable MRE. This method provides SMU scale block estimates that honour the theoretical grade-tonnage relationship determined from discrete Gaussian change of support. Uniform Conditioning (UC) results for the large OK panels are transferred to SMU blocks using Localised Uniform Conditioning (LUC). The quality of the results is dependent on the availability of drill hole data and the nature of the spatial variance.

The biggest contributors to gold metal are ESTZON 210 and 220, where examples are presented to document the workflow.

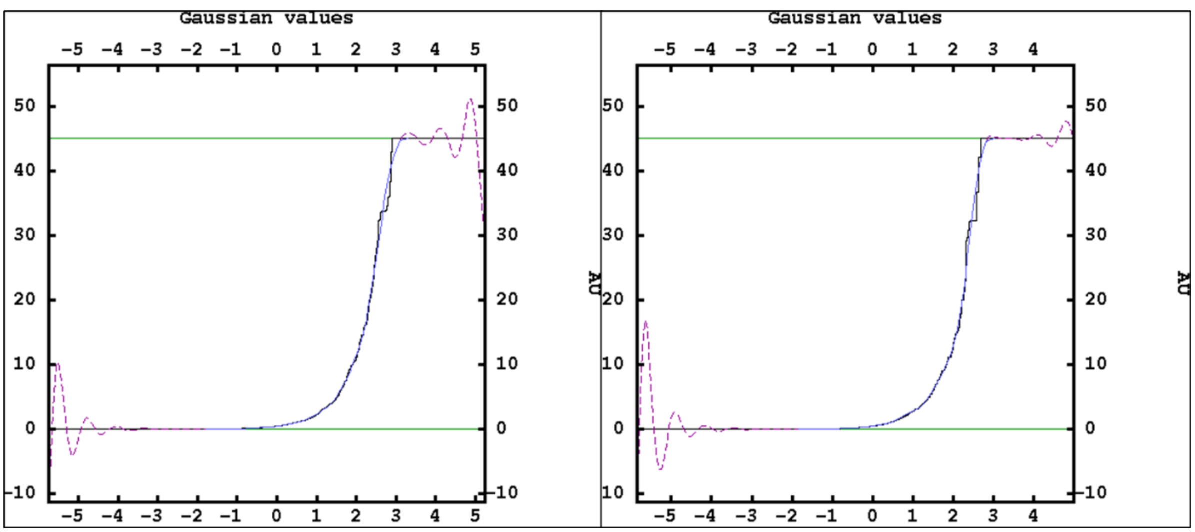
14.1.7.1 Declustering

Declustering at Nkran was undertaken in two stages. For preliminary statistics and first pass estimation, a cell weighting strategy was used, which considers all samples when determining the average. This method involved placing a grid of cells (20 m x 40 m x 24 m (X x Y x Z)) over the data. Each cell that contains at least one sample is assigned a weight of one. That weight of one is distributed evenly between the samples within each cell. Following first pass OK, the Kriging weights were applied and the process was re-run. The Kriging declustered weights were used to generate the final estimate and are presented here.

14.1.7.2 Gaussian Anamorphosis Modelling

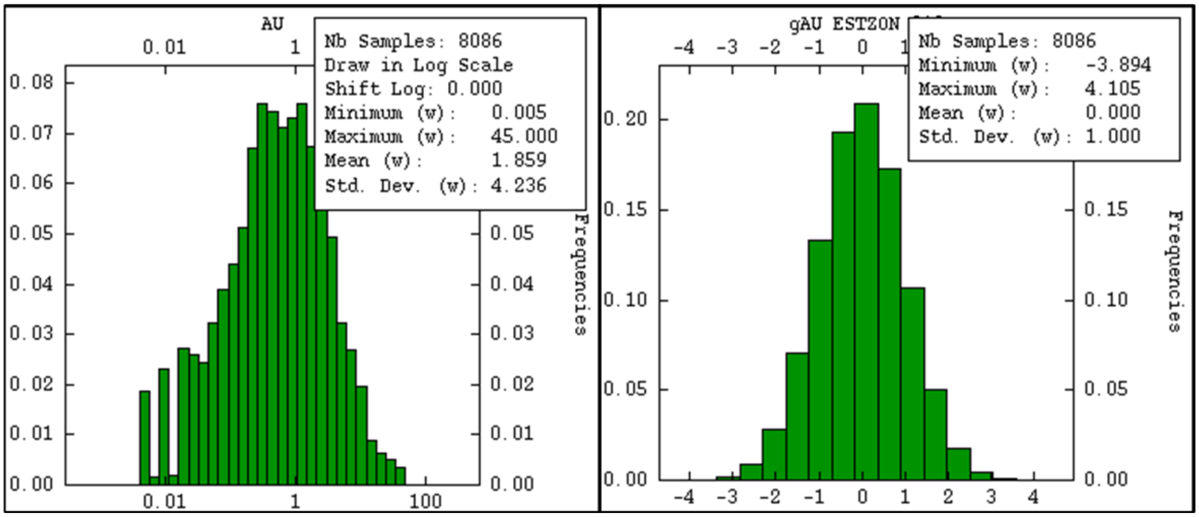
UC uses the Gaussian anamorphosis and Hermitian polynomial formalism to define the distributions of point, SMU and panel scale estimates. Eighty Hermite polynomials were used for the gold composites after top-cut with declustering weights derived through OK.

The models for ESTZONs 210 and 220 are presented in Figure 14-5. The histograms for raw Au grades for these domains are presented in Figure 14-6 and Figure 14-7 alongside the Gaussian transformed values. The Gaussian transform has resulted in a mean of zero and a variance of one, as expected.



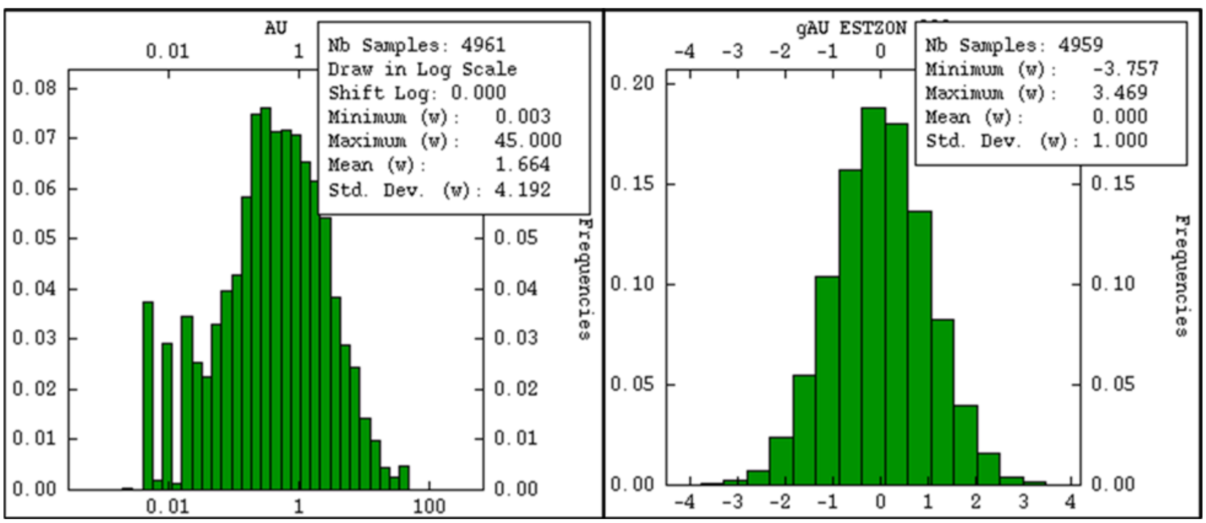
(Source: CSA Global, 2022)

Figure 14-5 Gaussian Anamorphosis models for ESTZON 210 (left) and ESTZON 220 (right)



(Source: CSA Global, 2022)

Figure 14-6 Histogram of Au (left) and Gaussian transformed Au (right) for ESTZON 210



(Source: CSA Global, 2022)

Figure 14-7 Histogram of Au (left) and Gaussian transformed Au (right) for ESTZON 220

14.1.7.3 Ordinary Kriging

UC estimation was by OK into 10 m x 20 m x 12 m (X x Y x Z) panels with 5 m x 5 m x 6 m (X x Y x Z) LUC SMUs in ISATIS^{TM}.

The search neighbourhood parameters (Table 14-9) for panel kriging are chosen to ensure a smoothed panel estimate for use in conditioning the panel. For the ranking of SMUs the minimum and maximum number of samples were decreased substantially. Search ellipsoid orientations for SMU kriging were defined by dynamic anisotropy, derived from the interpreted structures and geological controls.

Table 14-9 Search parameters

Estimation	Ranges	Composites	
		Min.	Max.
Panel	200 x 200 x 200	10	100
SMU	200 x 200 x 200	10	30

14.1.7.4 Support Correction

Block and point anamorphosis modelling of the estimated values and sampled data were undertaken as the primary input for UC. The support definition for the block anamorphosis is based on the SMU size. Information effect was computed using a grade control sampling equivalent cell spacing of 5 m x 10 m x 2 m. Block support correction values for each of the ESTZONs range from 0.68 to 0.8 and following application of the information effect, from 0.64 to 0.76 (Table 14-10).

Table 14-10 Change of support calculations

ESTZON	Real Block Support Correction (r)	Kriged Block Support Correction (s)
210	0.68	0.64
220	0.74	0.7
230	0.8	0.76
310	0.72	0.68
320	0.75	0.72
510	0.79	0.75

14.1.7.5 Uniform Conditioning (UC)

Estimation of recoverable resources was completed using UC.

The input for UC was the ordinary kriged model at the panel (large block) scale and the output was a grade-tonnage curve for each panel, at the SMU scale, for the target element, Au g/t.

For a discretized grade tonnage curve, 90 cut-offs were used and five iso-frequency classes. The dispersion variance estimated through OK was used alongside the Kriged panel grade per domain.

14.1.7.6 Localised Uniform Conditioning (LUC)

The UC grade (Q) tonnage (T) factors of the panel were proportioned based on the domain SMU in the panel to accurately represent Q (metal), T (tonnes) and M (grade) in the domain.

To provide a block model for use in mine planning, SMU sized blocks were Ordinary Kriged and the resultant SMUs were ranked from 1 to 32 (highest to lowest grade), with the actual grades being discarded and only the ranking remaining. Grades were then read off the panel grade-tonnage curve for each SMU (from highest to lowest grade) and assigned based on the estimated ranking, through a process called LUC. The result is the assignment of single grades to SMU sized blocks so that the 32 SMUs in each panel achieve a grade-tonnage tabulation matching that of the panel estimated through UC.

To assess the performance of the LUC process, grade tonnage curves from LUC were compared to those derived from UC for the main domains. These were found to be very comparable.

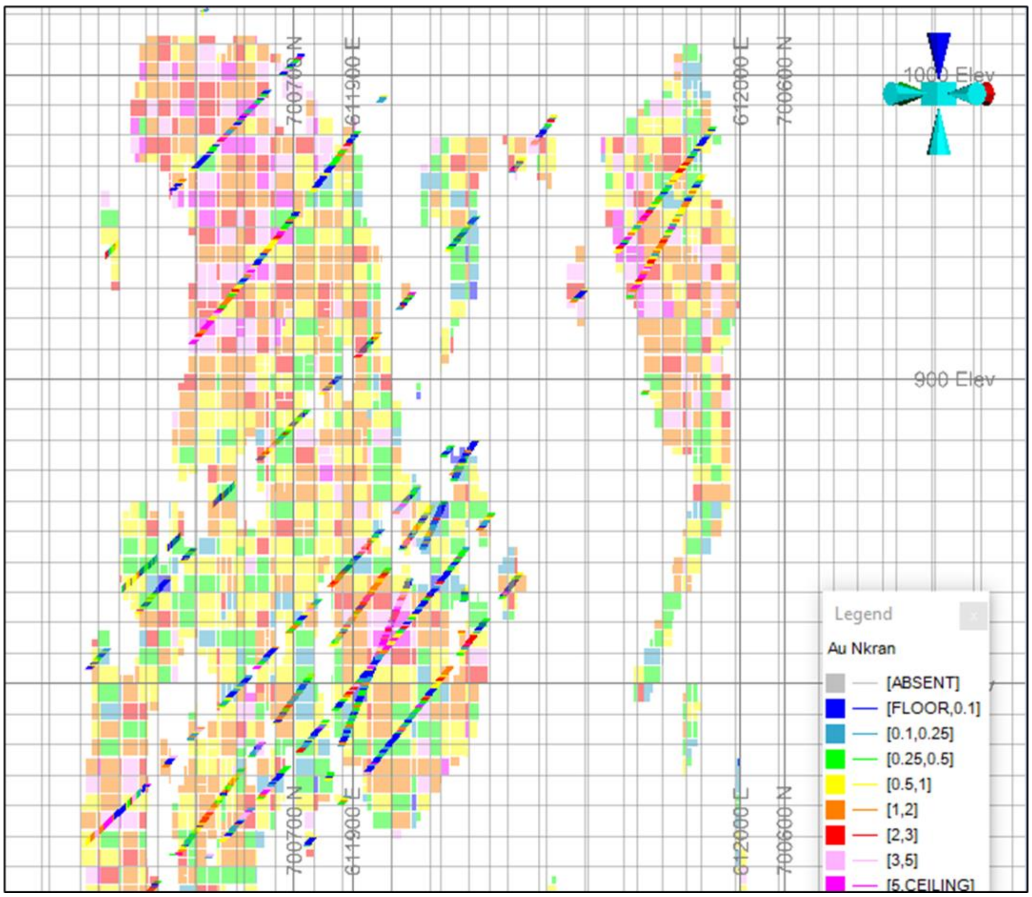
14.1.8 Model Validations

Validation of the block model was completed by comparing input and output means. Several techniques were used for the validation. These included:

- Visual review (cross/long section/plan views and 3D)
- Statistical comparison of blocks and composites
- Swath plots
- Validation of LUC processes

14.1.8.1 Visual

The block model was visually reviewed section by section and in 3D to ensure that the gold grade tenor of the input data was reflected in the estimate. Generally, the estimate compares well with the input data. An example cross-section is shown in Figure 14-8.



(Source: CSA Global, 2022)

Figure 14-8 Cross-section view – LUC model estimates and composites

14.1.8.2 Statistical

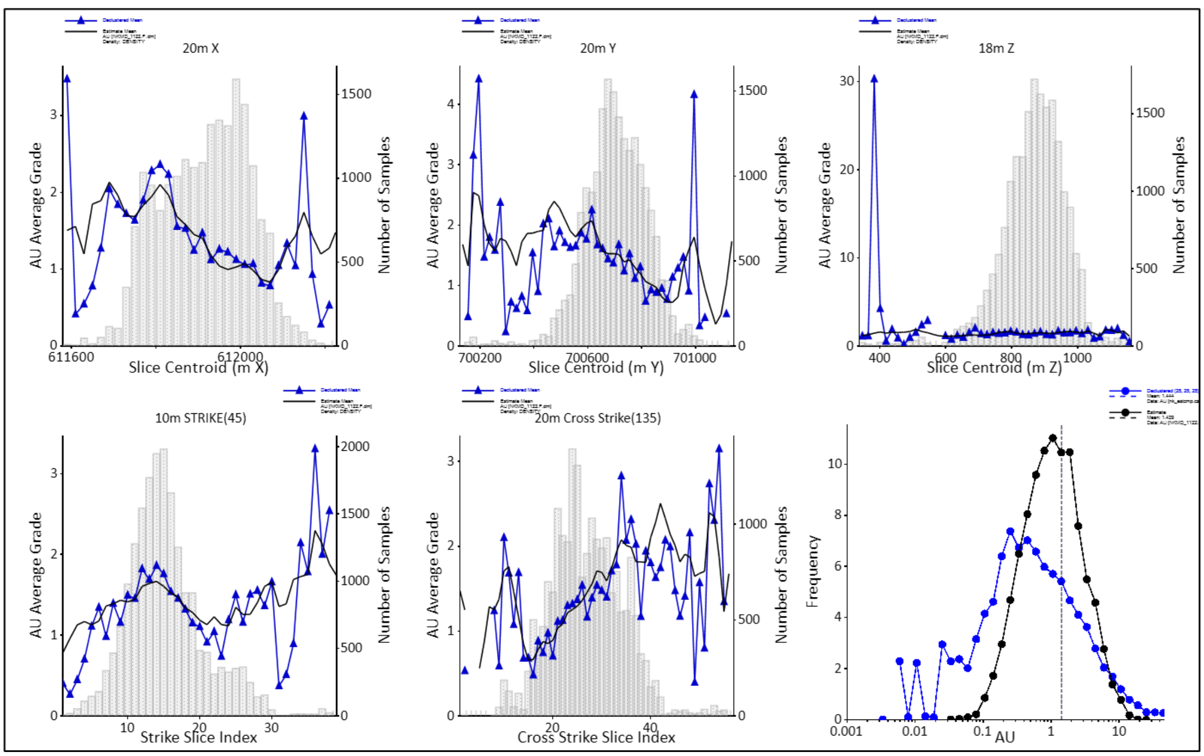
Composite samples were declustered using the declustering optimization function in Supervisor™, the cell size selected was 25 m x 25 m x 25 m, which reflects the closer spaced drilling. The statistical difference between the declustered composites against the LUC block grades were calculated both globally and for individual domains. Table 14-11 documents the global comparison; there is less than 1% difference between the composites and the block estimates.

Table 14-11 Global statistical validation

Mean composites - declustered	Mean blocks	% Difference
1.44	1.43	-1%

14.1.8.3 Swath Plots

Swath plots were generated as part of the validation process globally and for individual domains, by comparing the model block grades and input composites in spatial increments of northing, easting, elevation and at 45 and 135 degree slices. The global swath is shown in Figure 14-9; the distribution of block grades honours the distribution of input composite grades. The degree of smoothing is appropriate and accounts for volume variance effects, where block grades should be smoother than point grades. The general trend of the composite grades is reflected in the block models.



(Source: CSA Global, 2022)

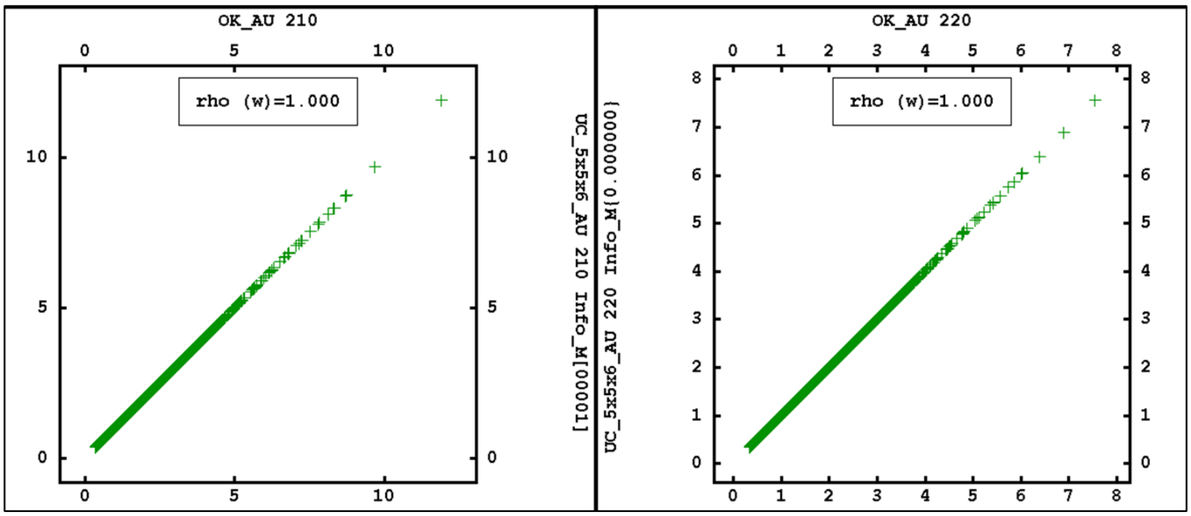
Figure 14-9 Global swath plots and log histogram; LUC estimate (black) and declustered composites (blue)

14.1.8.4 LUC Validations

In addition to the statistical and visual validation steps outlined above, the LUC estimate was subject to additional checks including:

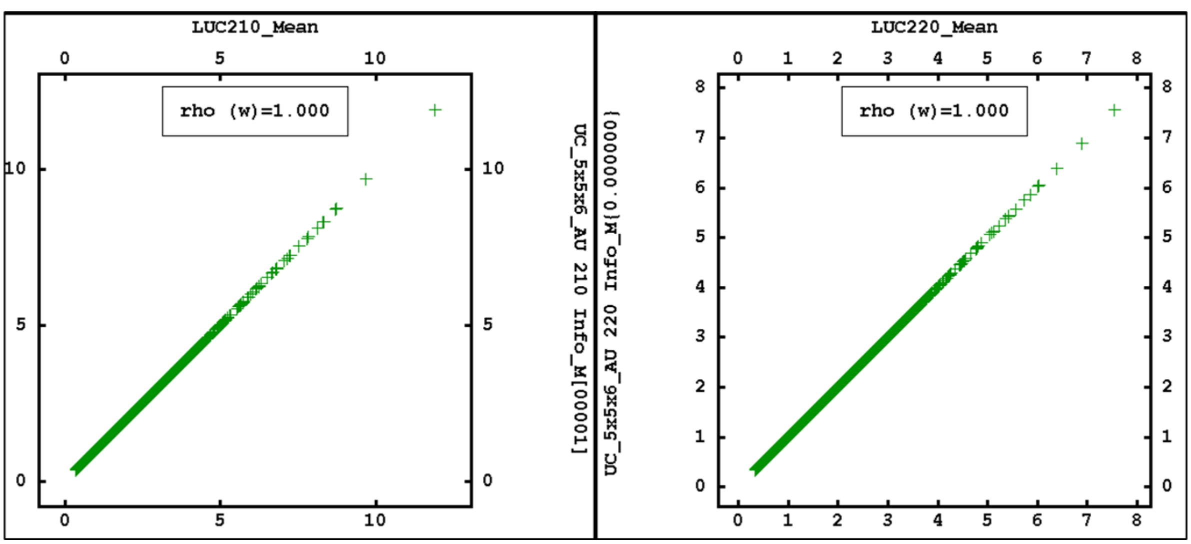
- UC and OK panel estimates – illustrated on a scatterplot (Figure 14-10)
- Comparing the mean grade of LUC grades within the panel with the mean grade of the panel (Figure 14-11)
- Comparing the grade-tonnage curve of UC and LUC estimates (Figure 14-12 and Figure 14-13)

Example plots are shown for ESTZON 210 and 220.



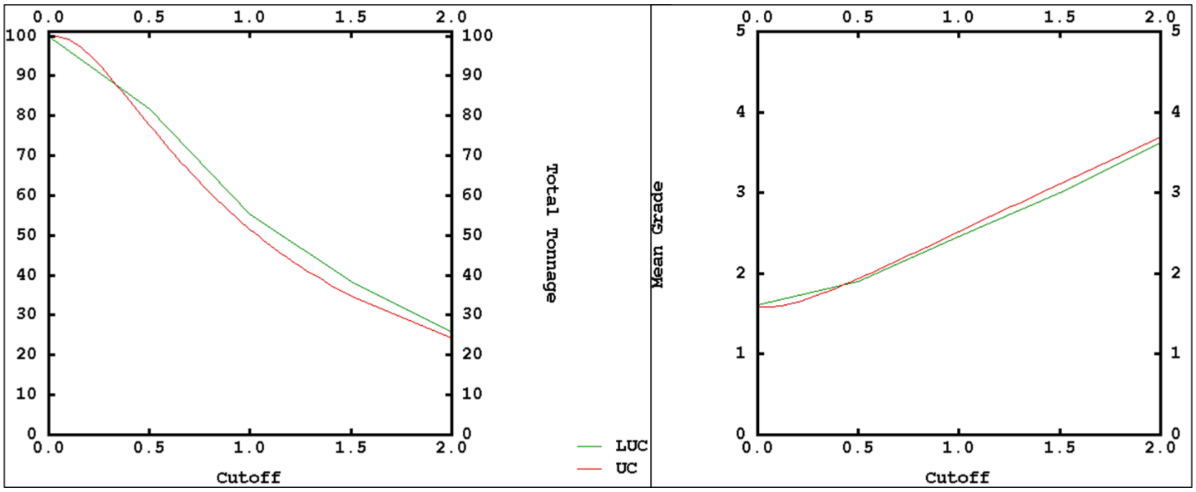
(Source: CSA Global, 2022)

Figure 14-10 Scatterplots showing UC panel grade (x-axis) versus OK panel grade (y-axis), both at a zero cut-off (ESTZON 210 -left; ESTZON 220 - right)



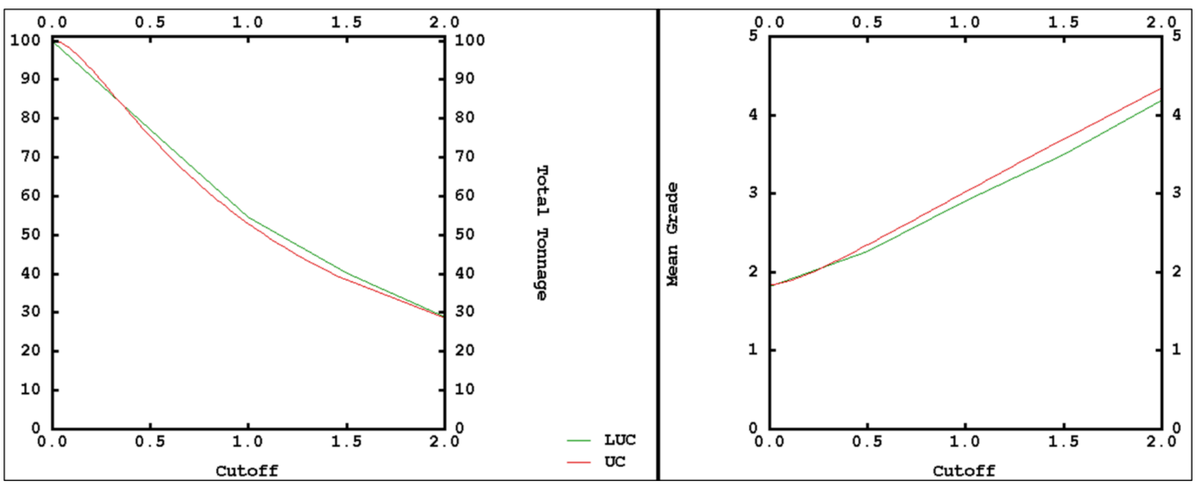
(Source: CSA Global, 2022)

Figure 14-11 Scatterplots showing mean LUC grade of SMUs (x-axis) versus UC grade (y-axis), both at a zero cut-off (ESTZON 210 - left; ESTZON 220 - right)



(Source: CSA Global, 2022)

Figure 14-12 Grade (left) and tonnage curves (right) for ESTZON 210 with UC model in red and LUC in green



(Source: CSA Global, 2022)

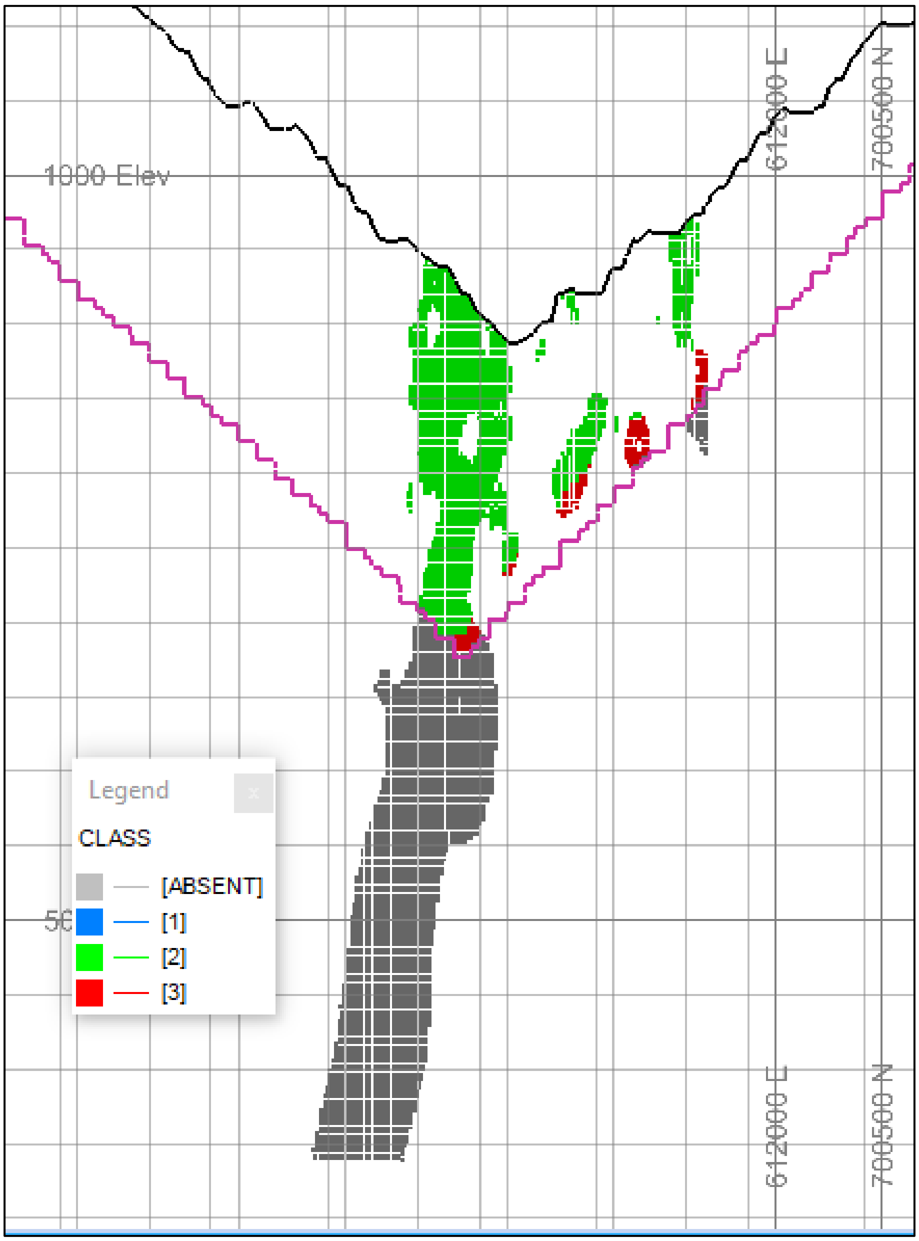
Figure 14-13 Grade (left) and tonnage curves (right) for ESTZON 220 with UC model in red and LUC in green

14.1.9 Resource Classification

The classification category is based upon an assessment of geological understanding of the deposit, geological and mineralization continuity, drill hole spacing, quality control results, search and estimation parameters and the analysis of in-situ dry bulk density data.

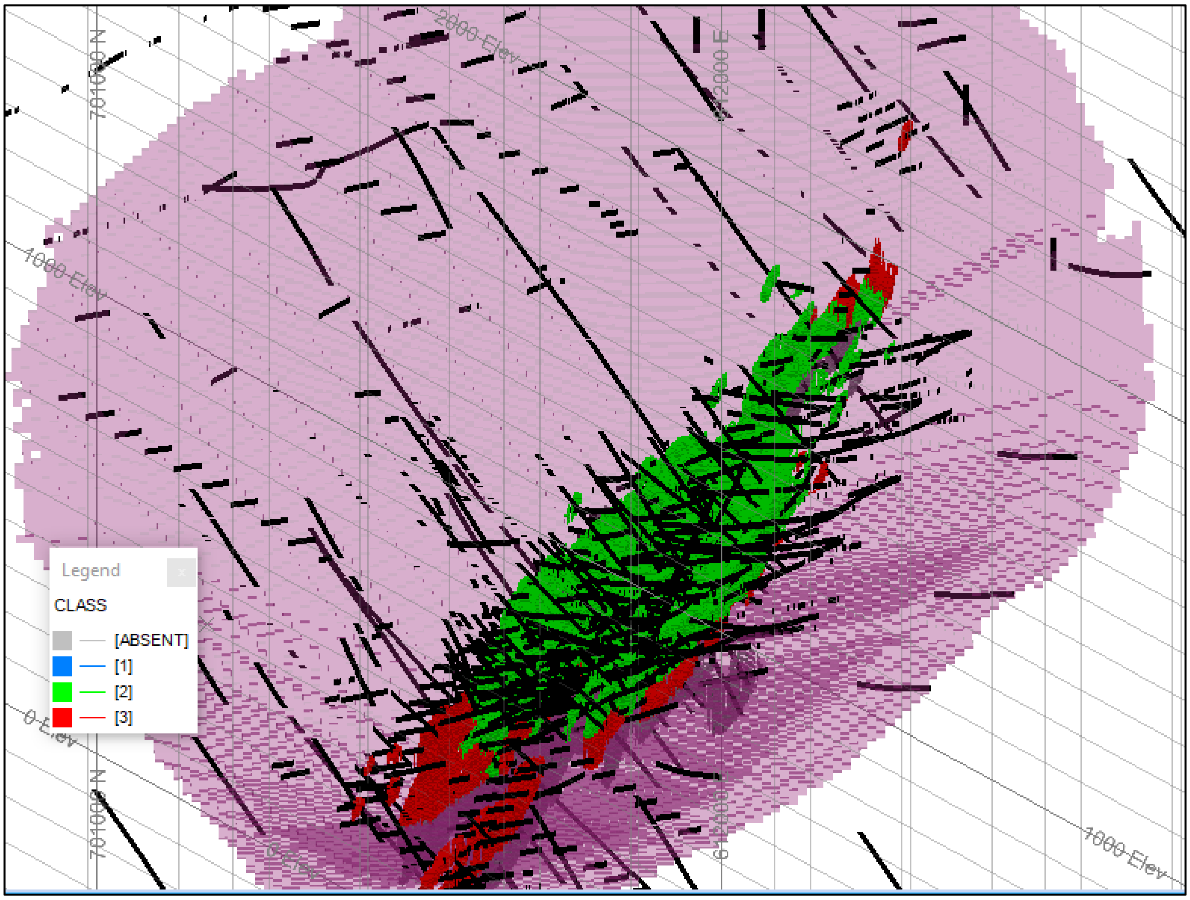
The Nkran deposit shows reasonable continuity of mineralization within well-defined geological constraints. Drillholes are located at a nominal spacing of 25 m on 25 m sections extending out from 50 m to 100 m on the periphery of the deposit. The drill spacing is sufficient to allow the geology (and associated mineralization) to be modelled into wireframes for each domain. Reasonable consistency is evident in the orientations, thickness and grades of the mineralized zones.

There is no material classified as Measured Mineral Resource as the short-range mineralization trends defined by grade control drilling (in previously mined areas) cannot be defined by the exploration drilling. Indicated Mineral Resource was informed by Slope of Regression statistics, the average distance of samples used to estimate block grades and where drilling includes zones of 25 m x 25 m spacing. The remaining material above a wireframe surface nominally based on a US$1,800/oz gold price conceptual Whittle pit shell (generated for the purposes of defining a constraint underpinning “reasonable prospects of eventual economic extraction” as required under CIM guidelines) was classified as Inferred Mineral Resource (Figure 14-14, Figure 14-15).



(Source: CSA Global, 2022)

Figure 14-14 Cross-section view of classified grade model, constrained within nominal US$1,800/oz Au pit shell (pink outline) bounded by the June 2020 mining surface (black outline)



(Source: CSA Global, 2022)

Figure 14-15 3D view of classified grade model, view towards NW; nominal US$1,800/oz pit shell shown in pink

14.1.10 Reasonable Prospects for Eventual Economic Extraction

CIM Definition Standards for Mineral Resources and Mineral Reserves defines a Mineral Resource as:

"A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction (RPEEE). The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling."

The Nkran deposit satisfies RPEEE for open pit extraction based on the assumptions listed in Table 14-12.

Table 14-12 Assumptions considered for selection of reporting cut-off grade

Parameter	Value
Mining Cost (US$/tonne)	2.47
General and Administration (US$/tonne)	11.84
Process Cost (US$/tonne of ore)	10.66
Gold Recovery (%)	94%
Mining Recovery/Mining Dilution (%) Built into Regularised model used for Whittle optimisation	94/8
Gold Price (US$/ounce)	1,800
Reporting cut-off grade in Au g/t	0.4 g/t

14.1.11 Mineral Resource Statement

The Mineral Resource Estimate for the Nkran deposit of the Nkran Gold Project as at 31 December 2022 is presented in Table 14-13. The Mineral Resource Statement has been depleted for mining to 31 December 2022.

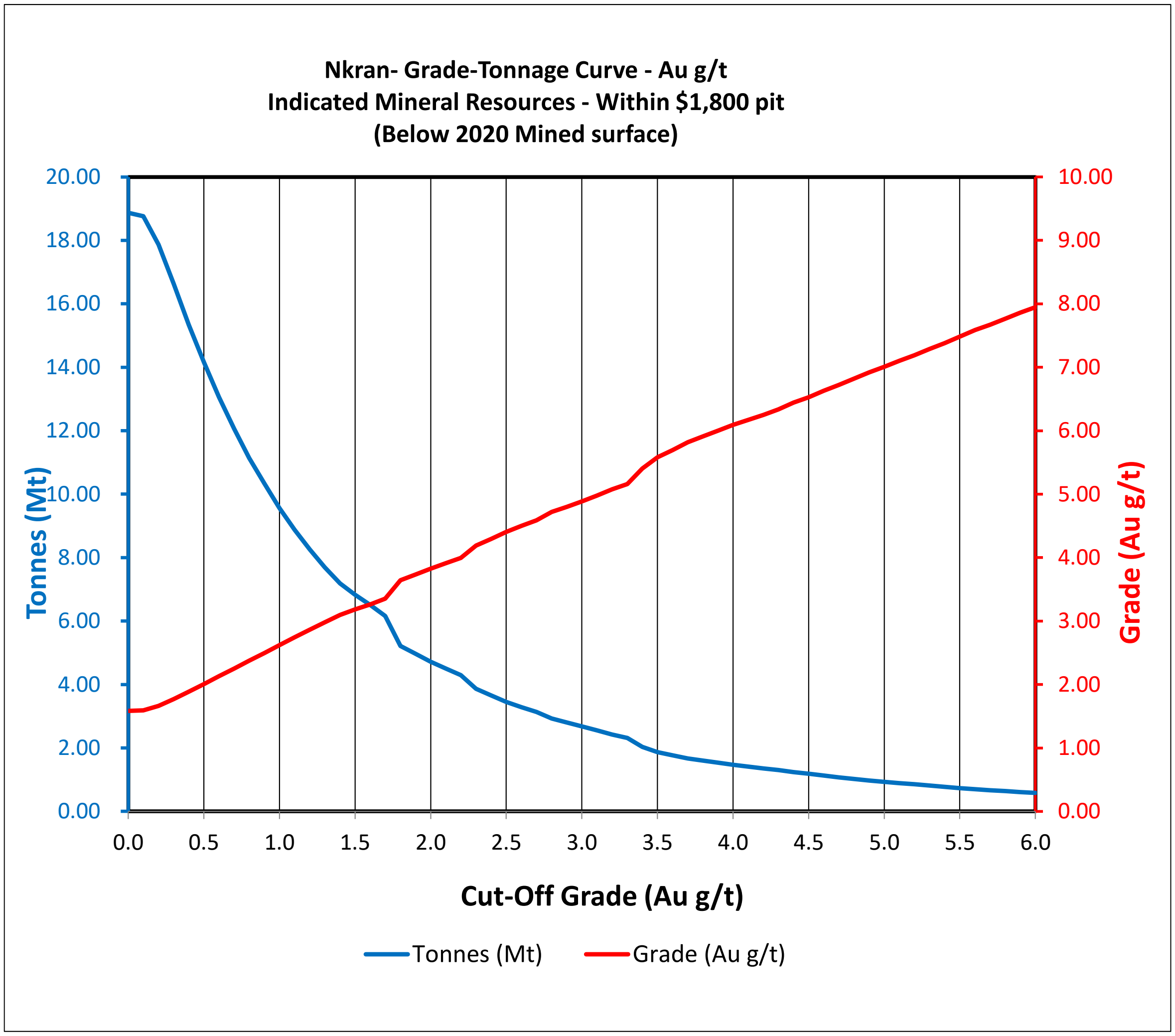
Table 14-13 Mineral Resource Estimate for Nkran Deposit, Ghana, as at 31 December 2022

Category	Tonnes (Mt)	Au Grade (g/t)	Au Metal (koz)
Indicated	15.34	1.89	931
Measured and Indicated	**15.34**	**1.89**	**931**
Inferred	3.57	1.83	209

Notes:

1. *The effective date of the Mineral Resource Estimate is 31 December 2022*
2. *The Mineral Resource Estimate has been depleted for mining up to 31 December 2022*
3. *The Mineral Resource Estimate is reported at a cut-off grade of 0.4 g/t gold assuming: metal price of US$1,800 per ounce of gold, mining cost of US$2.47 per tonne, G&A cost of US$11.84 per tonne, processing cost of US$10.66 tonne, process recovery of 94%*
4. *Figures have been rounded to the appropriate level of precision for the reporting of the MRE*
5. *Due to rounding, some columns or rows may not compute exactly as shown*
6. *The MRE is stated as in situ dry tonnes. All figures are in metric tonnes*
7. *The MRE has been classified under the guidelines of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council (2014) and procedures for classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administrators National Instrument 43-101 (NI 43-101)*
8. *Mineral resources that are not mineral reserves do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.*
9. *Mineral Resources have been reported inclusive of Mineral Reserves, where applicable*

The grade and tonnage curves for the Measured and Indicated MRE categories for the Nkran deposit are shown in Figure 14-16.



(Source: CSA Global, 2022)

Figure 14-16 Nkran grade-tonnage curve – Indicated Mineral Resources

14.1.12 Reconciliation with Previous Mineral Resource Statement

The Nkran deposit was previously estimated and reported in December 2020 at a 0.5 g/t Au cut-off above US$1,600 optimized pit shell by CSA Global.

For the purposes of comparison, the December 2020 MRE is presented alongside the current MRE in Table 14-14.

Table 14-14 Nkran MRE comparison – December 2020 versus December 2022

MRE	Resource Category	Tonnes (Mt)	Grade Au (g/t)	Au Metal (koz)
CSA Global December 2020	Indicated	12.12	2.09	815
	Inferred	1.34	2.23	96
CSA Global December 2022	Indicated	15.34	1.89	931
	Inferred	3.57	1.83	209
% Difference	Indicated	27%	-10%	14%
	Inferred	166%	-18%	118%

The 2022 MRE has 27% more tonnes and 10% lower grade than the previous 2020 statement within Indicated material, resulting in an increase of contained metal of 14%. These changes are mainly driven by changes to the reporting parameters:

- an increase in the gold price from US$1,600 to US$1,800 for calculation of the RPEEE optimized pit shell
- reduction in cut-off grade from 0.5g/t Au to 0.4g/t Au

The updated pit shell is deeper as a result of the increased gold price – the additional material results in a higher tonnage at a lower grade. The reduction of the reporting cut-off grade also increases reporting tonnage and decreases the grade.

The other contributing factor to the increased tonnage is the change in the density value used for fresh rock which increased by 2% from 2.68 t/m^3 to 2.73 t/m^3.

14.1.13 Risk

A summary of key risk factors is presented in Table 14-15.

Table 14-15 Risk matrix for the Nkran Mineral Resource Estimate

Factor	Risk	Comment
Sample collection, preparation and assaying	Moderate	The database has been reviewed and while issues were identified, the dataset used for the MRE is considered of sufficient quality for estimation of Mineral Resources. Drilling has been completed by RC and DD drilling. There is no bias between the different drilling methods. Field duplicate gold grade variance is relatively high which not unexpected for a gold deposit with a nugget of around 40%.
QAQC	Low	QAQC reporting indicates sampling is adequate.
Geological data and model	Moderate	The mineralization wireframes, which act as bounding volumes, have been modelled to have a reasonable degree of continuity along strike. If the continuity along strike is not as great as has been modelled, there is a risk of overstatement of metal.
Grade estimate	Moderate	The mineralization envelope is defined within interpreted lithological units using grade data. The wireframe is generated implicitly in Leapfrog using a 0.5 probability indicator, which reconciles reasonably well with the historical mined areas modelled with close spaced grade control drilling. Drill configuration at Nkran is clustered and irregular, which inherently carries a higher risk. This is primarily related to access for appropriate drilling due to historical mining, pit slope geotechnical stability issues and ground water ingress preventing access to the pit floor.
Tonnage estimate	Moderate	There are adequate in-situ dry density values, which are spatially representative of the deposit. The method for defining the mineralizsed envelope is the most significant change since the previous MRE. In 2020, Indicator Kriging with threshold selection based bench-marking against GC data was used. The updated MRE used Leapfrog (LF) indicator modelling to interpret the mineralized envelope. The overall volume using the new LF method is comparable to the previous MRE with a decrease of 7% in the Western Sandstone domain which is attributed to new infill drilling. The infill drilling reduced tonnage risk from the 2020 MRE in areas where there was low data density.
Resource upgrading and extension	Low	The Mineral Resource is open at depth, though it may not be economic.
Economic factors including mineral processing	Low	Nkran processing history is well known and the mining licence is still valid.
Accuracy of the estimate	Moderate	No simulation studies have been undertaken to quantitatively evaluate accuracy at Nkran. Conditional simulation and risk analysis may quantify risk for defined production periods/volume.
Overall rating	**Moderate**	**The current Mineral Resource estimate carries moderate uncertainty and risk. The risk is principally related to the indicator mineralization interpretation.**

14.2 Esaase, Abore, Miradani North, Adubiaso and Midras South

14.2.1 Drillhole Database

The Mineral Resources for Esaase, Abore, Miradani North were updated to reflect new drilling in 2022. The mineral resource model for Adubiaso was updated to reflect new geological interpretation, while the Mineral Resource for Midras South represents a maiden resource. In all cases, the mineral resource block models are estimated using DD and RCD holes. RC holes are available in some cases where grade control drilling is available; however, grade control drilling was not used explicitly for geological interpretation or grade estimation. It was, however, used to validate the mineralization model where available.

All final collar locations were surveyed and reported in WGS 84, Zone 30N Universal Transverse Mercator (UTM) coordinates. The breakdown of available drilling by deposit is summarized in Table 14-16. The effective dates for the database are:

- Esaase: 20 October 2022
- Abore: 12 October 2022
- Miradani North: 19 October 2022
- Midras South: 14 August 2021
- Adubiaso: 15 October 2022

Table 14-16 Drillhole database used for resource estimation

Deposit	Data	Exploration				Grade Control		
		DDH	RCD	RC	Total	RC	RAB	Total
Esaase	Collar	152	357	951	**1,460**	34,810	2	**34,812**
	Length (m)	135,102	109,085	32,189	**276,377**	849,148	48	**849,196**
	Assay Count	22,778	107,539	131,956	**262,273**	563,326	32	**563,358**
	Assay Length (m)	26,444	108,630	134,842	**269,916**	844,986	48	**845,034**
Abore	Collar	75	78	507	**660**	3,006		**3,006**
	Length	12,233	14,657	44,049	**70,939**	596,861		**596,861**
	Assay Count	6,175	13,465	28,269	**47,909**	41,842		**41,842**
	Assay Length	6,131	13,422	41,889	**61,441**	41,842		**41,842**
Miradani North	Collar	65	32	17	**114**			
	Length	14,730	8,146	2,334	**25,210**			
	Assay Count	12,506	7,956	2,252	**22,714**			
	Assay Length	13,254	7,870	2,253	**23,377**			
Midras South	Collar	8	44	93	**145**			
	Length	563	8,902	10,256	**19,721**			
	Assay Count	482	8,316	10,129	**18,927**			
	Assay Length	562	8,410	10,150	**19,122**			
Adubiaso	Collar	53	8	325	**386**	5,309		**5,309**
	Length	10,327	1,740	30,117	**42,184**	77,135		**77,135**
	Assay Count	3,695	1,477	23,507	**28,679**	62,683		**62,683**
	Assay Length	4,301	1,652	29,290	**35,243**	66,516		**66,516**

Based on SRK’s site visits completed in August 2022, SRK believes that drilling, logging, core handling, core storage and analytical QC protocols used by AGM meet generally accepted industry best practices. As a result, SRK considers that the exploration data collected by AGM and previous project operators are of sufficient quality to support mineral resource evaluation.

14.2.2 Geology and Mineralization Model

SRK produced lithological, weathering and mineralization domains for Esaase and reviewed domains for Abore, Miradani North, Midras South and Adubiaso.

14.2.2.1 Lithological domains

A simplified lithological model was produced for Esaase by consolidating the logged lithology codes into a refined lithology field. In total, five refined lithology codes (FW Sandstone, Central Sandstone, Cobra Unit, Upper Sandstone and Hawk Unit) were produced in Leapfrog Geo (Figure 14-17). SRK notes that some discrepancies between logging campaigns of each rock type have resulted in inconsistencies and recommends these intervals are relogged and refined, for use in future iterations of the lithology modelling. Historical drillholes with inconsistent logging data were excluded from the model. The consolidation of the lithological field to produce a simplified lithological model was guided by structural and lithological data collected during a site visit, drone imagery, previous maps and reports and structural data from drillholes. Polylines were used to constrain the geological domain boundaries to observable contacts seen in drone imagery from the open pit.

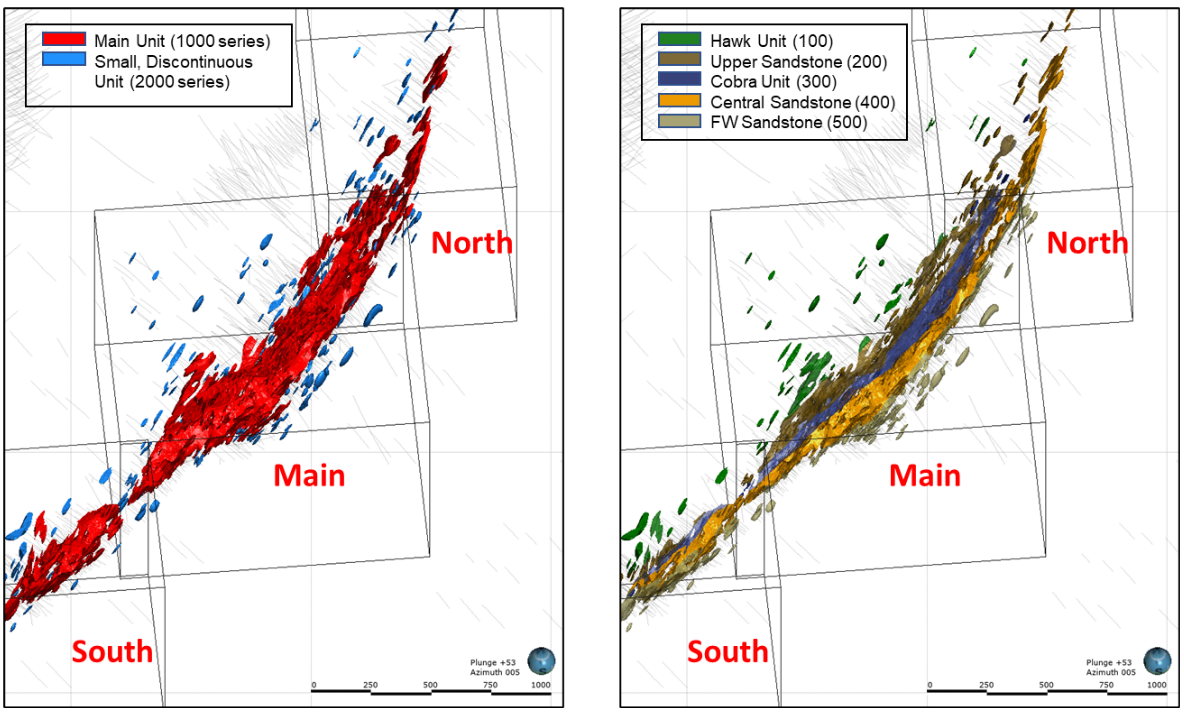


Figure 14-17 Oblique view of domain coding for Esaase

Lithological models for Abore, Miradani North, Midras South and Adubiaso were constructed by Galiano's site geologists and reviewed by SRK. Lithological domaining followed a similar workflow as for Esaase and were produced by consolidating the logged lithologies into a refined lithological field.

The lithological domains in Abore consists of a central granite, feldspar porphyry sills and domains for sandstone and shale. Miradani North is made up of refined lithological domains for granite, FW and HW sandstone and siltstone. Midras South, lithological domains were produced for sandstone and shales and for Adubiaso, FW and HW graywacke and phyllites and feldspar porphyry sills.

14.2.2.2 Weathering domains

Weathering surfaces were modelled for the base of oxidation and top of fresh using the oxidation column in exploration drillhole logging. The final surfaces were constructed from a modified and grouped oxidation column.

14.2.2.3 Mineralization domains

SRK produced a mineralization domain for Esaase and reviewed the mineralization domains for Abore, Miradani North, Midras South and Adubiaso that was produced by the client site geologists.

For Esaase, SRK selected a modelling cut-off by assessing the extent and continuity of a series of indicator interpolant shells at different cut-off grades with respect to the assay grades of visually continuous mineralised structures. A nominal modelling cut-off grade of 0.15 g/t Au was selected for the modelling of Au mineralisation, using an indicator interpolant with a probability (called 'ISO value' in Leapfrog software) of 0.35. Given the clear structural and lithological control on mineralisation, a deposit-scale structural framework was first constructed from a series (>100) of structural trend surface that was modelled from the interpreted 3D continuation of high-grade gold intercepts. Structural data from orientated drill core and surface mapping was used to guide the construction of the trend surfaces. The surfaces were used to produce a structural trend, where the trend and orientation of these surfaces influenced the trend and degree of continuity of the indicator interpolant volumes in each direction.

For Abore, Miradani North and Midras South, Galiano geologists modelled the mineralization domains using an indicator interpolant approach with raw assay data. For Abore and Midras South, a threshold of 0.2 g/t gold was selected, while in Miradani North, a threshold of 0.3 g/t gold constrained within lithology. For Adubiaso Main and North, thresholds of 0.15 g/t gold and 0.10 g/t gold were used together with the interval selection feature to provide some flexibility through manual inclusion and exclusion of the desired intervals, and mineralization is modelled with implicit modelling approach via intrusion modelling tool.

For Abore, SRK was of the opinion that the mineralization interpretation for the granite unit, which hosts the majority of the gold mineralization, was reasonable overall; however there was opportunity to improve constraints and continuity. Further refinement was performed by SRK utilizing Leapfrog Geo's economic compositing tool to smooth the interval selection used for wireframe interpolation and constrain the volumes at depth to be within 30 to 40 m of nearby data. Final resource domains are shown in Figure 14-18.

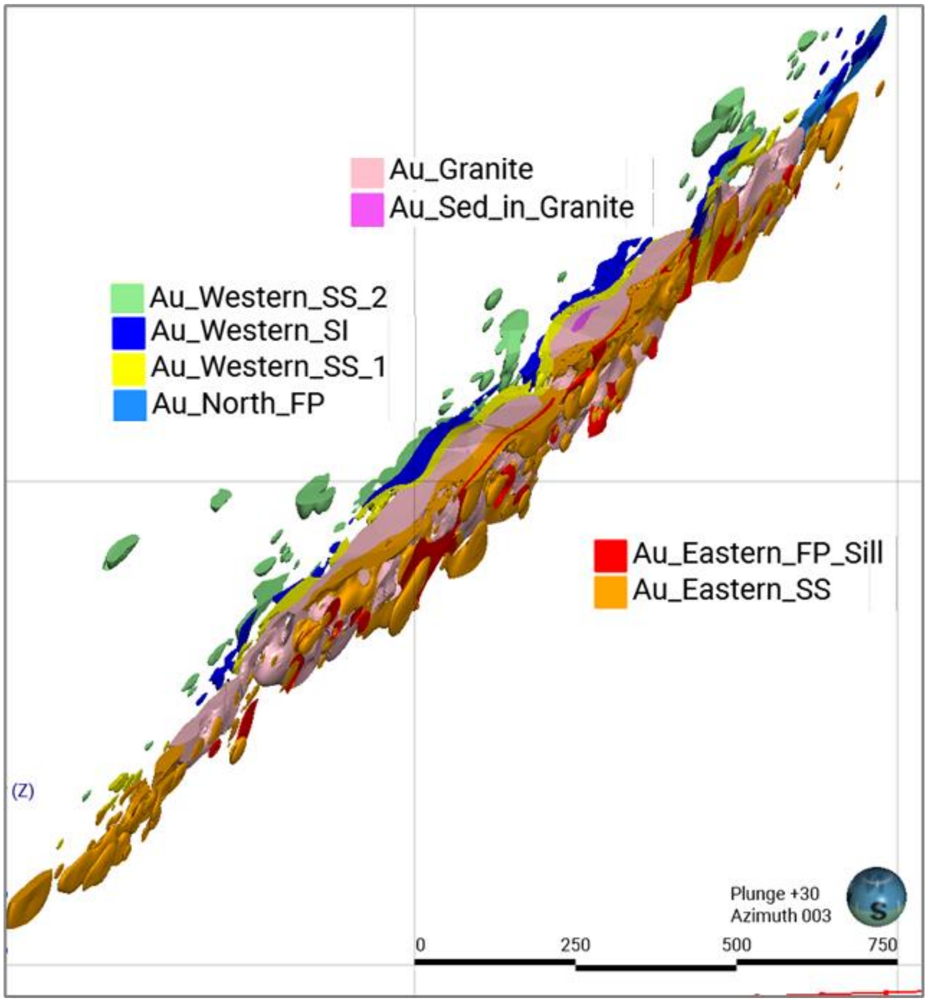


Figure 14-18 Oblique view of mineralization for Abore

Mineralization domains in Miradani North were based on a similar indicator interpolant approach using raw assays and a threshold of 0.3 g/t gold constrained within lithology units. A structural trend was applied in some instances and polylines were used to further constrain the mineralized domains. The final model consists of a sequence of hanging wall and footwall sandstones disrupted by a granite intrusion, which sits within the central portion of a dilational jog. Narrow granite porphyries demarcate the NNE-SSW trend and hanging wall and footwall siltstones primarily occur outboard of this structural feature (Figure 14-19).

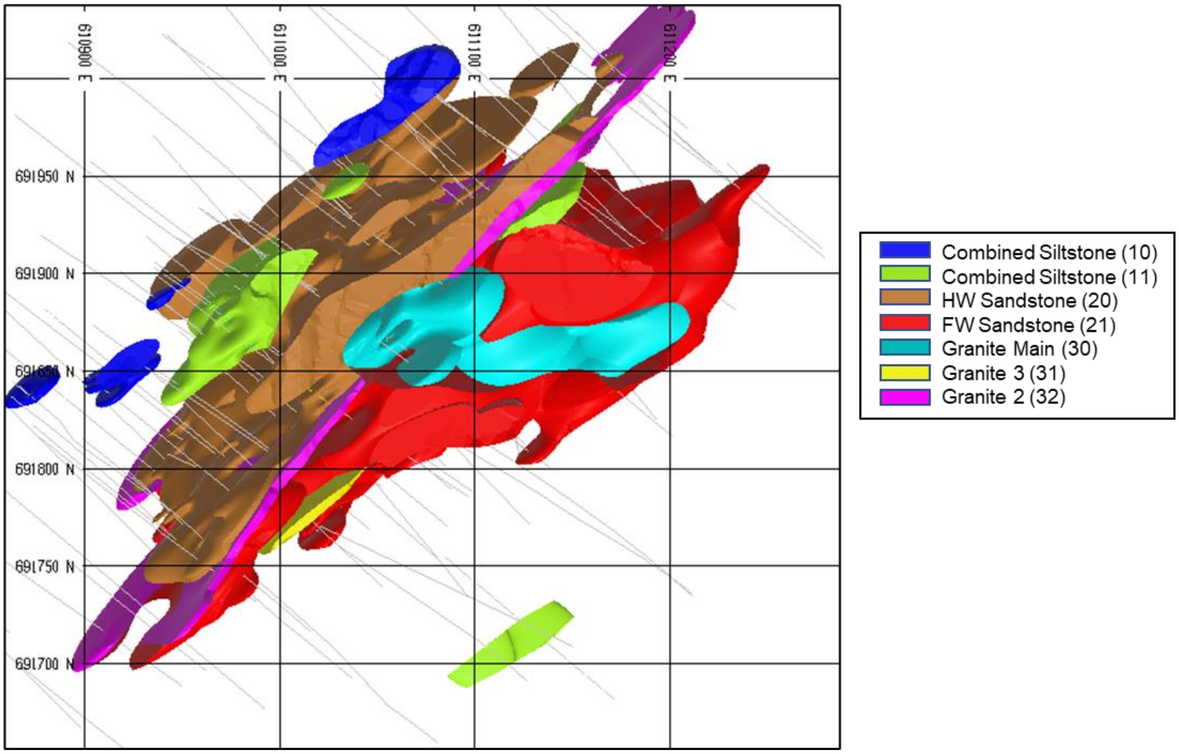


Figure 14-19 Plan view of mineralization domains for Miradani North

The Midras South mineralization was constrained within lithological units and is interpreted to be a series of auriferous shear veins hosted within sandstone units (Figure 14-20). A NE-trending structural trend that is comparable to known regional and deposit-scale shear trends was applied to further constrain the mineralized domains. This deposit is an early-stage project and understanding of the controls on mineralization are not as well-developed as other deposits within the AGM.

Similar to Abore, SRK also refined the mineralization wireframes for the North domain, in the Adubiaso deposit, to reduce the extrapolation of mineralized volumes at depth to around 25 m from the nearest drillhole. Further, SRK included an additional domain to represent the porphyry sills which crosscut the mineralized envelope; while the sills are mostly unmineralized, SRK understands that there may be some local mineralization within the sills due to a later mineralization event. A plan view of the North and Main domain for Adubiaso is shown in Figure 14-21.

A summary of the estimation domains and descriptions by deposit is provided in Table 14-17.

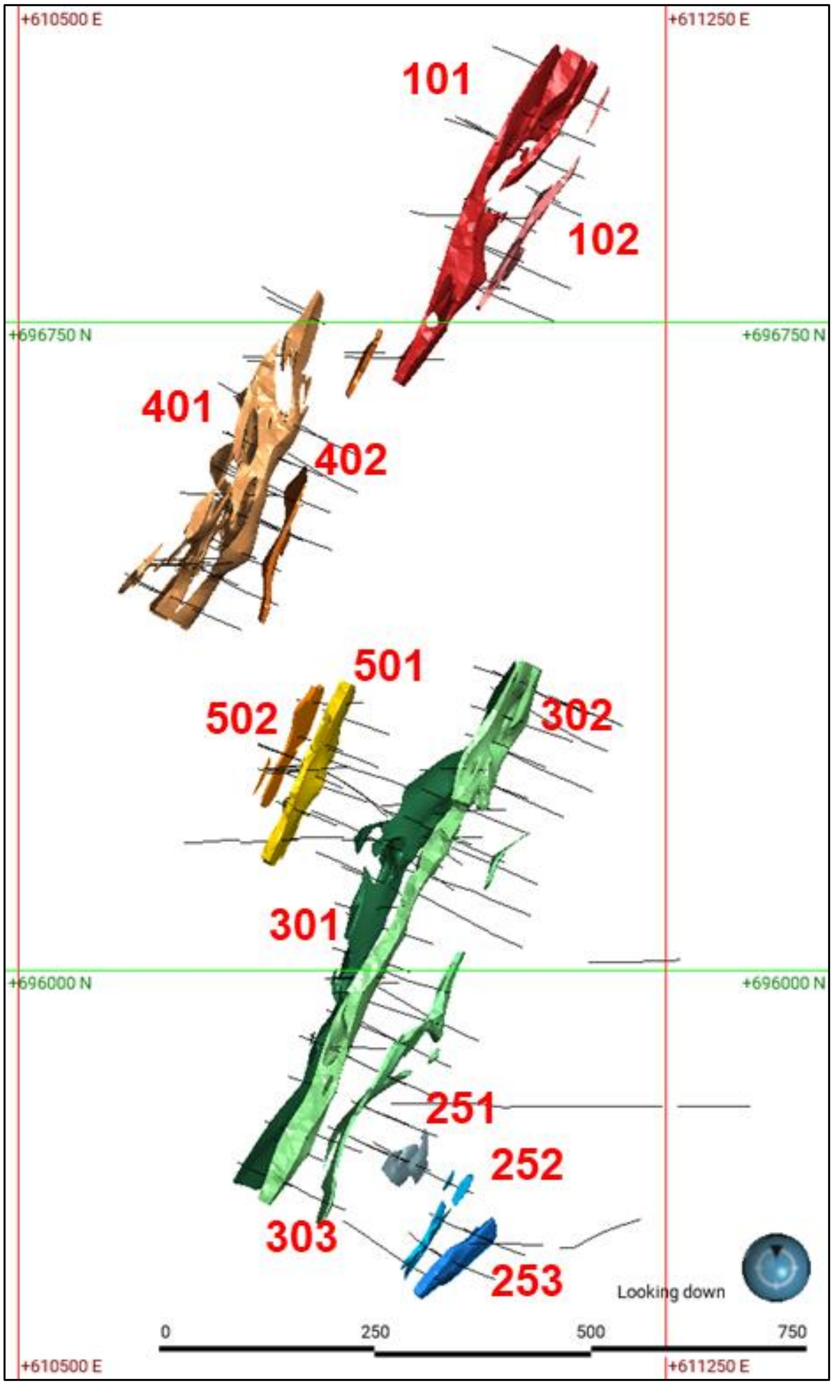


Figure 14-20 Plan view of mineralization domains for Midras South

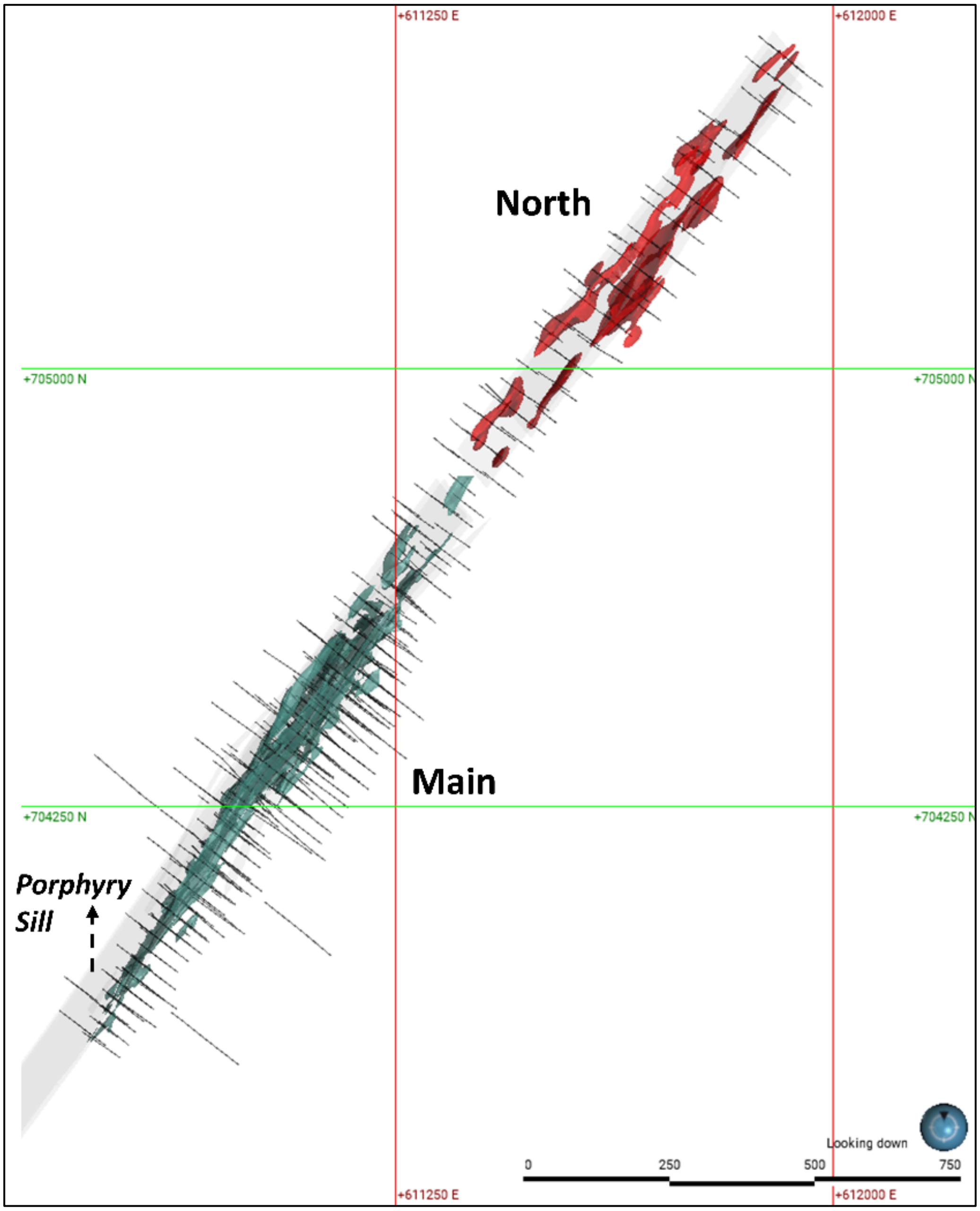


Figure 14-21 Plan view of mineralization domains for Adubiaso (unmineralized sills are shown in pale gray)

Table 14-17 Summary of estimation domains and descriptions by deposit

Deposit	Domain Code	Description
Esaase	1100	Hawk (Main)
	1200	Upper SST (Main)
	1300	Cobra (Main)
	1400	Central SST (Main)
	1500	FW SST (Main)
	2100	Hawk (Small)
	2200	Upper SST (Small)
	2300	Cobra (Small)
	2400	Central SST (Small)
	2500	FW SST (Small)
	9100	Hawk (Unmz)
	9200	Upper SST (Unmz)
	9300	Cobra (Unmz)
	9400	Central SST (Unmz)
	9500	FW SST (Unmz)
	9900	Not modeled (Unmz)
Abore	100	Au_Western_SS_2
	200	Au_Western_SI
	300	Au_Western_SS_1
	400	Au_North_FP
	500	Au_Granite
	600	Au_Sed_in_Granite
	700	Au_Eastern_FP_Sill
	800	Au_Eastern_SS
	900	Waste
Miradani	10	HW Siltstone 2
	11_2	HW Siltstone
	11_3	FW Siltstone 1B
	11_4	Eastern Min
	20	HW Sandstone
	21	FW Sandstone
	30	Granite Main
	31	Granite 3
	32	Granite 2
	1	Waste
Midras South	101, 102, 251, 252, 253, 301, 302, 303, 401, 402, 501, 502	Mineralized Domains
	900	Waste
Adubiaso	1000	Main
	2000	North
	3000	Sill
	9000	Unmineralized (Unmz)

14.2.3 Bulk Density

14.2.3.1 Esaase

Specific gravity (SG) was measured at the Performance Laboratories in Bibiani using hot wax coating and standard weight in water/weight in air methodology on core. The SG database contains 16,696 measurements across all weathering zones of which 15,071 are in the modeling area. The average SG in different weathering zones is quite different. Although there is a variability for different lithologies in oxide and transition zone, average SG for various lithologies is stable in fresh zone which contains bulk of the mineralization.

Approximately 2% of the data were discarded as they were deemed as erroneous after reviewing the distribution of each weathering zones and identifying potential outliers and visualizing the outliers in 3D.

An Inverse Distance Squared model is used to interpolate SG values by weathering zones. For the unestimated blocks, average of the corresponding weathering zone was assigned. No composites were generated for the SG data as most of the samples were collected at 0.10 m to 0.15 m and are not collected continuously down the core. Given the small support, estimation parameters for specific gravity were chosen to yield a smooth interpolation result.

14.2.3.2 Abore, Miradani North, Midras South and Adubiaso

A total of 248 specific gravity measurements were available at the Abore deposit, which represents a 36% increase from the previous Mineral Resource estimation. A total of 183 were measured by Archimedes method and the remaining 65 were calculated in the lab by pycnometry. No significant outlier values were present in the database. SRK assigned average specific gravity values based on weathering domains for the purpose of volume to tonnage conversion.

For Miradani North, there are 289 specific gravity measurements available from the database. In addition, the 64 density measurements from the nearby and analogous Midras South deposit were considered in the density assignment for the Miradani North deposit. Density was applied based on lithology type and oxidation status.

Similarly, the 64 bulk density measurements available for the Midras South deposit were used to determine an average density to assign to each modeled weathering zone.

Adubiaso applies the same set of rules based on lithology type and oxidation status used in February 2022 model to assign density as there is no additional measurement. The specific gravity database with a total of 83 samples is aligned with these averages except the Oxidation zone, which is represented by a small number of samples (n=8) and yields an average that is unusually lower than the averages of Oxide zones in the surrounding project areas. For this zone, SRK chose to adopt the previous approach, which used the density value from the Asuadai deposit, as it was deemed to have the most similar rock types to Adubiaso. SRK subsequently analyzed the impact of this assumption to the Mineral Resource Statement and found that the impact is around a 2% increase in total metal content.

Table 14-18 summarizes the specific gravity values that were applied to the resource block model.

Table 14-18 Summary of density measurements available and average assigned to block models

Deposit	Weathering Domains	Count	Mean
Esaase	Oxide	2,218	2.31
	Transition	906	2.43
	Fresh	11,947	2.74
Abore	Oxide	27	1.65
	Transition	12	2.14
	Fresh	209	2.64
Miradani*	Oxide, Siltstone	17	1.71
	Oxide, Sandstone	21	1.80
	Oxide, Granite	17	1.71
	Transition, Siltstone	5	2.60
	Transition, Sandstone	37	2.66
	Transition, Granite	12	2.62
	Fresh, Siltstone	3	2.67
	Fresh, Sandstone	198	2.68
	Fresh, Granite	66	2.64
Midras South	Laterite / Oxide	12	1.74
	Transition	2	2.38
	Fresh	50	2.69
Adubiaso*	Oxide	8	1.50 (1.90)
	Transition	13	2.30
	Fresh, Sedimentary	44	2.70
	Fresh, Porphyry	16	2.60

** Density value of 1.9 t/m^3 is assigned to Oxide zone in Adubiaso*

14.2.4 Assays, Composites and Capping

SRK reviewed the assay database and investigated missing intervals to determine an appropriate treatment for these values. Those intervals deemed to be missing, as a result of poor core recovery, geotechnical holes, missing sample batches, or pending assays were still pending at the time of resource evaluation, were treated as absent. These intervals are not necessarily unmineralized intervals. Those missing intervals deemed to be unmineralized, based on 3D investigation of surrounding drillholes, were assigned a background value of 0.01 g/t gold. In all cases, SRK provided to Galiano a list of drillholes and intervals to investigate prior to finalizing the assay data used for mineral resource evaluation.

For most deposits, assays are sampled at 1.0 m intervals. SRK chose to composite to 1.0 m lengths constrained by mineralization domain. The only exception is the Abore deposit, where over 99% of all assays are sampled at 2 m intervals or less, with nearly 30% of assays sampled at 2 m; SRK chose to composite assay data to 2 m lengths for the Abore deposit. In all cases, any residual intervals less than 50% of the composite length were added to the previous composite interval. Table 14-19 shows the comparison of summary statistics for assays and composites for each deposit.

Table 14-19 Comparison of assay and composite statistics by deposit and domain

Deposit	Domain	Assays (Length Weighted)							Composites (Unweighted)							% Diff	
		Count	Length	Mean	Std	CoV	Min	Max	Count	Length	Mean	Std	CoV	Min	Max	Length	Mean
Esaase	1100	604	552	0.60	1.79	2.97	0.00	33.00	557	552	0.59	1.46	2.46	0.00	23.50	0%	-2%
	1200	5,395	4,851	0.81	3.11	3.83	0.00	112.36	4,877	4,851	0.81	2.51	3.11	0.00	74.54	0%	0%
	1300	16,841	15,683	0.93	3.58	3.86	0.00	214.32	15,719	15,683	0.92	2.92	3.15	0.00	149.63	0%	0%
	1400	30,605	29,066	1.10	5.07	4.60	0.00	360.99	29,132	29,066	1.10	4.07	3.71	0.00	223.86	0%	0%
	1500	5,070	4,489	0.80	3.36	4.22	0.00	173.10	4,507	4,489	0.80	3.05	3.84	0.00	164.79	0%	0%
	2100	859	800	0.83	3.44	4.14	0.00	78.00	805	800	0.82	3.27	3.97	0.00	78.00	0%	-1%
	2200	787	700	0.67	2.16	3.24	0.00	46.80	696	700	0.67	1.67	2.49	0.01	31.91	0%	0%
	2300	142	129	1.02	2.48	2.44	0.01	20.00	130	129	1.01	1.96	1.95	0.01	15.01	0%	-1%
	2400	366	329	1.60	9.45	5.90	0.01	125.00	331	329	1.60	8.46	5.29	0.01	121.91	0%	0%
	2500	606	546	0.58	2.12	3.69	0.01	35.04	549	546	0.57	1.73	3.01	0.01	28.32	0%	0%
	ALL MZ	**61,275**	**57,143**	**0.99**	**4.37**	**4.42**	**0.00**	**360.99**	**57,303**	**57,143**	**0.99**	**3.57**	**3.62**	**0.00**	**223.86**	**0%**	**0%**
	9100	31,144	31,662	0.07	0.73	11.06	0.00	65.10	31,670	31,662	0.07	0.69	10.35	0.00	59.60	0%	0%
	9200	31,322	30,577	0.07	0.52	7.68	0.00	42.70	30,584	30,577	0.07	0.44	6.48	0.00	35.32	0%	0%
	9300	24,446	22,997	0.08	0.58	7.07	0.00	76.66	23,036	22,997	0.08	0.46	5.52	0.00	25.40	0%	0%
	9400	36,622	34,679	0.07	0.51	6.85	0.00	39.00	34,739	34,679	0.07	0.39	5.29	0.00	19.80	0%	0%
	9500	34,305	35,173	0.07	0.81	11.91	0.00	135.50	35,187	35,173	0.07	0.67	9.84	0.00	91.07	0%	0%
	9900	40,308	41,814	0.13	1.00	7.54	0.00	89.00	41,809	41,814	0.13	0.96	7.24	0.00	80.20	0%	0%
	ALL UNMZ	**198,147**	**196,902**	**0.08**	**0.74**	**8.76**	**0.00**	**135.50**	**197,025**	**196,902**	**0.08**	**0.66**	**7.82**	**0.00**	**91.07**	**0%**	**0%**
	Total	**259,422**	**254,045**	**0.29**	**2.21**	**7.67**	**0.00**	**360.99**	**254,328**	**254,045**	**0.29**	**1.83**	**6.36**	**0.00**	**223.86**	**0%**	**0%**
Abore	100	229	214	0.69	0.77	1.12	0.01	5.17	114	208	0.68	0.66	0.96	0.01	3.42	-3%	-1%
	200	1,482	1,640	0.74	1.58	2.13	0.01	30.30	829	1,624	0.73	1.32	1.81	0.01	19.74	-1%	-2%
	300	14,898	19,005	1.19	4.48	3.78	0.01	209.54	9,515	19,003	1.18	3.48	2.94	0.01	115.32	0%	0%
	400	79	75	0.51	0.53	1.03	0.01	2.47	37	74	0.51	0.40	0.78	0.15	1.63	-1%	0%
	500	115	136	1.31	5.18	3.95	0.01	125.30	70	135	1.25	2.24	1.79	0.04	15.14	0%	-5%
	600	516	472	0.81	3.59	4.44	0.01	65.60	234	467	0.80	2.83	3.54	0.01	34.70	-1%	-1%
	700	1,282	1,318	1.02	4.14	4.06	0.01	74.00	663	1,308	1.02	3.10	3.04	0.01	43.99	-1%	0%
	800	706	727	0.47	1.38	2.91	0.01	20.10	356	723	0.47	1.19	2.51	0.01	17.15	0%	0%
	All MZ	**19,307**	**23,586**	**1.11**	**4.11**	**3.63**	**0.01**	**209.54**	**11,818**	**23,542**	**1.11**	**3.18**	**2.83**	**0.01**	**115.32**	**0%**	**0%**
	900	31,223	42,612.1	0.046	0.43	9.415	0.01	69.74	21,343	42,568.8	0.046	0.31	6.665	0.01	30.102	0%	1%
	Total	**50,530**	**66,198.4**	**0.425**	**1.74**	**7.355**	**0.01**	**209.54**	**33,161**	**66,110.4**	**0.424**	**1.33**	**5.3**	**0.01**	**115.32**	**0%**	**0%**
Miradani N.	10	75	89	0.82	1.33	1.62	0.01	9.19	92	89	0.8	1.28	1.59	0.01	9.19	0%	-2%
	11_2	175	290	1.18	2.3	1.95	0.01	21.73	204	290	1.18	1.9	1.61	0.01	14.57	0%	0%
	11_3	25	30	0.48	0.4	0.84	0.01	1.3	33	30	0.48	0.36	0.75	0.01	1.17	0%	0%
	11_4	6	6	0.92	0.95	1.03	0.01	2.78	6	6	0.92	0.95	1.03	0.01	2.78	0%	0%
	20	935	986	1.41	3.16	2.24	0.01	68	1,014	986	1.4	3	2.14	0.01	68	0%	-1%
	21	1,990	2,068	1.81	10.4	5.76	0.01	305.12	2,093	2,068	1.79	9.35	5.22	0.01	305.12	0%	-1%
	30	862	882	1.43	5.74	4.02	0.01	125.55	904	882	1.42	5.21	3.66	0.01	113	0%	0%

Deposit	Domain	Assays (Length Weighted)							Composites (Unweighted)							% Diff	
		Count	Length	Mean	Std	CoV	Min	Max	Count	Length	Mean	Std	CoV	Min	Max	Length	Mean
	31	92	97	1.87	4.16	2.23	0.01	29.85	100	97	1.82	3.76	2.07	0.01	29.85	0%	-3%
	32	253	259	1.23	3.68	2.99	0.01	55.16	275	259	1.27	2.76	2.17	0.01	22.14	0%	3%
	Total	**4,413**	**4,707**	**1.57**	**6.91**	**4.18**	**0.01**	**305.12**	**4,721**	**4,707**	**1.55**	**5.82**	**3.75**	**0.01**	**305.12**	**0%**	**-1%**
Midras South	101	497	421	1.23	3.92	3.17	0.01	49.51	425	421	1.22	3.38	2.77	0.01	43.57	0%	-1%
	102	87	83	0.75	0.95	1.27	0.01	3.65	82	83	0.75	0.91	1.21	0.02	3.65	0%	0%
	251	35	25	1.06	1.71	1.62	0.01	7.22	27	25	1.02	1.20	1.18	0.01	4.86	0%	-3%
	252	37	31	0.48	0.56	1.15	0.02	2.30	29	31	0.50	0.51	1.03	0.08	2.30	0%	2%
	253	47	45	0.58	0.79	1.37	0.03	3.34	44	45	0.59	0.62	1.05	0.03	2.55	0%	1%
	301	701	645	1.84	6.76	3.68	0.01	120.14	648	645	1.77	5.26	2.96	0.01	72.46	0%	-3%
	302	645	602	0.95	1.48	1.55	0.01	15.62	599	602	0.95	1.44	1.52	0.01	15.62	0%	0%
	303	123	110	0.58	0.73	1.26	0.01	5.00	110	110	0.59	0.64	1.10	0.01	3.94	0%	1%
	401	923	820	1.30	6.97	5.36	0.01	159.12	831	820	1.28	5.07	3.97	0.01	90.39	0%	-2%
	402	73	66	1.50	3.26	2.18	0.01	19.60	68	66	1.45	3.21	2.22	0.02	19.60	0%	-3%
	501	143	129	1.40	3.15	2.25	0.01	30.50	127	129	1.39	2.99	2.15	0.01	30.50	0%	-1%
	502	13	11	0.36	0.27	0.74	0.02	0.94	11	11	0.36	0.25	0.71	0.05	0.94	0%	-1%
	900	16,671	16,616	0.05	0.27	5.71	0.01	25.50	16,628	16,616	0.05	0.26	5.51	0.01	25.50	0%	0%
	Total	**19,995**	**19,603**	**0.23**	**2.08**	**8.85**	**0.01**	**159.12**	**19,629**	**19,603**	**0.23**	**1.64**	**7.05**	**0.01**	**90.39**	**0%**	**-1%**
Adubiaso	Main	5,980	5,571	1.76	7.25	4.13	0.01	213.70	5,592	5,571	1.75	6.96	3.97	0.01	213.70	0%	0%
	North	1,256	1,323	0.67	3.69	5.48	0.01	84.90	1,325	1,323	0.67	3.69	5.48	0.01	84.90	0%	0%
	All MZ	**7,236**	**6,894**	**1.55**	**6.73**	**4.35**	**0.01**	**213.70**	**6,917**	**6,894**	**1.55**	**6.48**	**4.19**	**0.01**	**213.70**	**0%**	**0%**
	Sill	4,039	3,711	0.56	3.87	6.85	0.01	107.50	3,724	3,711	0.58	3.67	6.28	0.01	107.50	0%	3%
	Outside	19,327	30,596	0.06	0.70	11.80	0.01	77.20	30,622	30,596	0.06	0.69	11.56	0.01	77.20	0%	0%
	Total	**30,602**	**41,201**	**0.35**	**3.10**	**8.75**	**0.01**	**213.70**	**41,263**	**41,201**	**0.36**	**2.99**	**8.38**	**0.01**	**213.70**	**0%**	**1%**

To limit the influence of high gold grade outliers during grade estimation, SRK performed capping analyses for the gold composites using a combination of probability plots, capping sensitivity plots and 3D visual inspection of data distribution to determine if capping was required. Figure 14-22 shows an example of capping plots generated and reviewed by SRK for gold within the Central Sandstone unit in main mineralization envelope while the Table 14-20 shows the selected capping values and its impact on composite statistics. A visual review of the spatial distribution of these potential capped values was also performed.

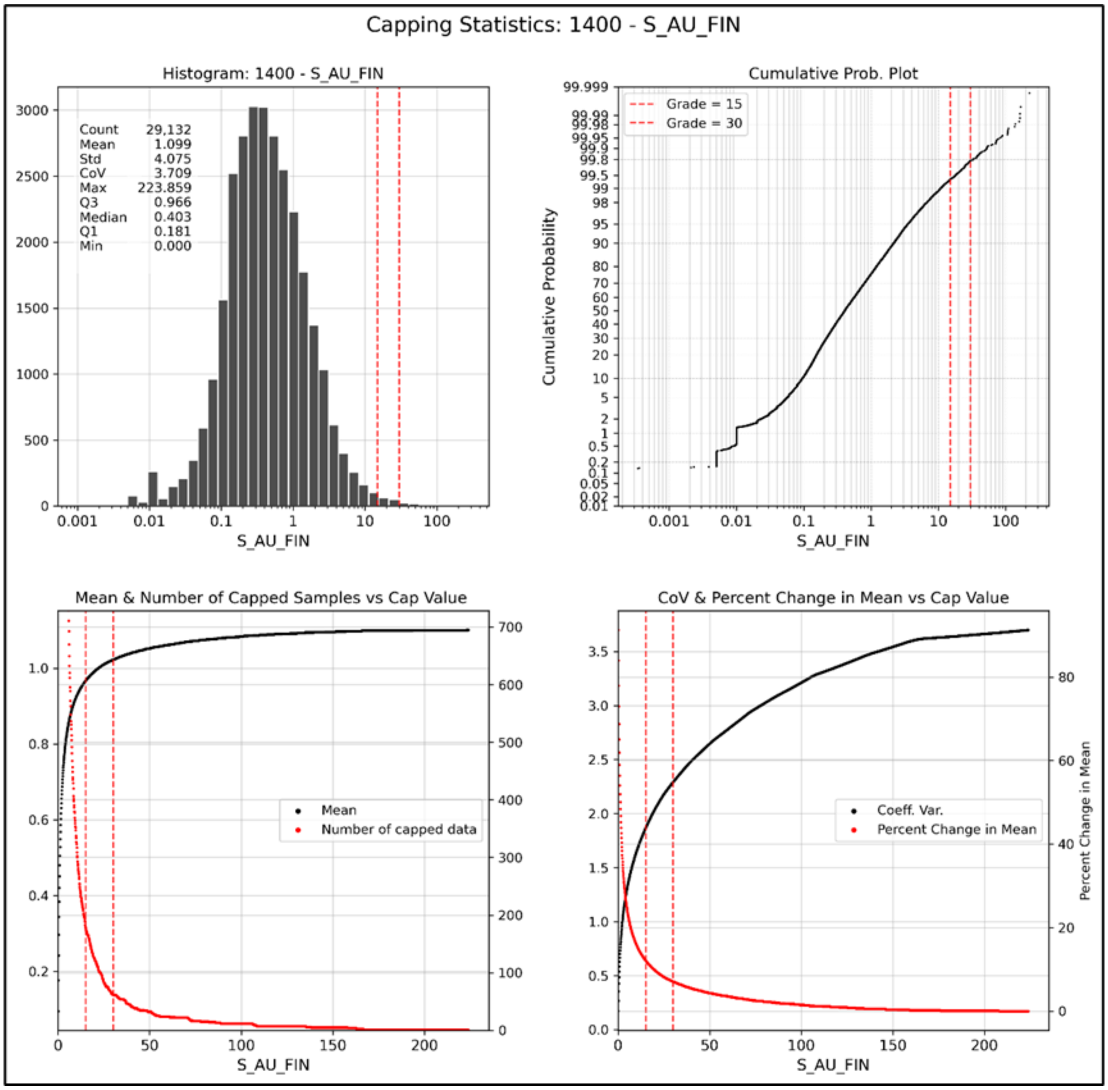


Figure 14-22 Example of capping plots shown for Central Sandstone Unit (Domain 1400) within the Esaase Deposit

Table 14-20 Summary of Uncapped and Capped composites by deposit and domain code

Deposit	Code	Count	Length	Uncapped Mean	Uncapped Std	Uncapped CoV	Uncapped Max	Capped Mean	Capped Std	Capped CoV	Capped Max	% Diff Mean	% Diff CoV
Esaase	1100	557	552	0.59	1.46	2.46	23.50	0.52	0.87	1.67	5.00	-12%	-32%
	1200	4,877	4,851	0.81	2.51	3.11	74.54	0.70	1.27	1.82	9.00	-14%	-41%
	1300	15,719	15,683	0.92	2.92	3.15	149.63	0.88	2.05	2.33	25.00	-5%	-26%
	1400	29,132	29,066	1.10	4.07	3.71	223.86	1.02	2.35	2.30	30.00	-7%	-38%
	1500	4,507	4,489	0.80	3.05	3.84	164.79	0.74	1.52	2.06	15.00	-7%	-46%
	2100	805	800	0.82	3.27	3.97	78.00	0.64	1.11	1.74	6.00	-22%	-56%
	2200	696	700	0.67	1.67	2.49	31.91	0.62	1.11	1.77	9.00	-7%	-29%
	2300	130	129	1.01	1.96	1.95	15.01	1.01	1.96	1.95	15.01	0%	0%
	2400	331	329	1.60	8.46	5.29	121.91	1.14	3.56	3.13	30.00	-29%	-41%
	2500	549	546	0.57	1.73	3.01	28.32	0.55	1.40	2.55	15.00	-4%	-15%
	9000	197,025	196,902	0.08	0.66	7.82	91.07	0.08	0.37	4.75	10.00	-7%	-39%
	Total	**254,328**	**254,045**	**0.29**	**1.83**	**6.36**	**223.86**	**0.27**	**1.11**	**4.16**	**30.00**	**-7%**	**-35%**
Abore	100	356	723	0.47	1.19	2.51	17.15	0.42	0.65	1.56	5.00	-11%	-45%
	200	234	467	0.80	2.83	3.54	34.70	0.60	0.91	1.52	7.00	-24%	-68%
	300	663	1,308	1.02	3.10	3.04	43.99	0.91	2.07	2.28	15.00	-11%	-33%
	400	28	54	0.57	0.42	0.74	1.63	0.51	0.40	0.78	1.63	-9%	-5%
	500	9,515	19,003	1.18	3.48	2.94	115.32	1.12	2.49	2.22	30.00	-5%	-28%
	600	70	135	1.25	2.24	1.79	15.14	1.25	2.24	1.79	15.14	0%	0%
	700	114	208	0.68	0.66	0.96	3.42	0.68	0.66	0.96	3.42	0%	0%
	800	829	1,624	0.73	1.32	1.81	19.74	0.70	1.06	1.51	10.00	-3%	-19%
	900	21,353	42,589	0.05	0.31	6.64	30.10	0.04	0.16	3.62	5.00	-7%	-49%
	Total	**33,162**	**66,110**	**0.42**	**1.33**	**5.29**	**115.32**	**0.40**	**0.90**	**3.09**	**30.00**	**-6%**	**-32%**
Miradani N.	10	92	89	0.8	1.28	1.59	9.19	0.8	1.28	1.59	9.19	0%	0%
	11_2	204	202	1.18	1.9	1.61	14.57	1.05	1.3	1.36	7.00	-11%	-32%
	11_3	33	30	0.48	0.36	0.75	1.17	0.48	0.36	0.75	1.17	0%	0%
	11_4	6	6	0.92	0.95	1.03	2.78	0.92	0.95	1.03	2.78	0%	0%
	20	1,014	986	1.39	2.97	2.14	68	1.33	2.12	1.59	15.00	-4%	-29%
	21	2,093	2,060	1.79	9.35	5.22	305.12	1.42	2.6	1.82	20.00	-21%	-72%
	30	904	881	1.42	5.21	3.66	113	1.2	2.22	1.86	16.00	-15%	-57%
	31	100	95	1.82	3.76	2.07	29.85	1.58	2.48	1.57	11.00	-13%	-34%
	32	275	259	1.27	2.76	2.17	22.14	1.25	2.62	2.1	17.00	-2%	-5%
	1	18,140	18,176	0.07	0.51	6.99	33.67	0.06	0.24	3.81	3.50	-14%	-53%
	Total	**22,861**	**22,784**	**0.38**	**1.67**	**6.32**	**62.7**	**0.32**	**0.67**	**3.39**	**6.26**	**-16%**	**-60%**
Midras South	101	425	421	1.22	3.38	2.77	43.57	1.10	2.41	2.20	15.00	-10%	-21%
	102	82	83	0.75	0.91	1.21	3.65	0.75	0.91	1.21	3.65	0%	0%
	251	27	25	1.02	1.20	1.18	4.86	1.02	1.20	1.18	4.86	0%	0%
	252	29	31	0.50	0.51	1.03	2.30	0.50	0.51	1.03	2.30	0%	0%

				Uncapped				Capped				% Diff	
Deposit	**Code**	**Count**	**Length**	**Mean**	**Std**	**CoV**	**Max**	**Mean**	**Std**	**CoV**	**Max**	**Mean**	**CoV**
	253	44	45	0.59	0.62	1.05	2.55	0.59	0.62	1.05	2.55	0%	0%
	301	648	645	1.77	5.26	2.96	72.46	1.56	3.41	2.18	25.00	-12%	-26%
	302	599	602	0.95	1.44	1.52	15.62	0.91	1.18	1.30	8.00	-4%	-15%
	303	110	110	0.59	0.64	1.10	3.94	0.56	0.55	0.98	2.50	-4%	-11%
	401	831	820	1.28	5.07	3.97	90.39	1.03	2.21	2.14	20.00	-19%	-46%
	402	68	66	1.45	3.21	2.22	19.60	1.45	3.21	2.22	19.60	0%	0%
	501	127	129	1.39	2.99	2.15	30.50	1.23	1.68	1.37	10.00	-12%	-36%
	502	11	11	0.36	0.25	0.71	0.94	0.36	0.25	0.71	0.94	0%	0%
	900	16,628	16,616	0.05	0.26	5.51	25.50	0.04	0.12	2.83	2.00	-7%	-49%
	Total	**19,629**	**19,603**	**0.23**	**1.64**	**7.05**	**90.39**	**0.21**	**1.00**	**4.81**	**25.00**	**-11%**	**-32%**
Adubiaso	1000	5,592	5,571	1.75	6.96	3.97	213.70	1.44	3.24	2.26	22.00	-18%	-53%
	2000	1,325	1,323	0.67	3.69	5.48	84.90	0.47	1.12	2.39	8.00	-31%	-70%
	3000	3,724	3,711	0.58	3.67	6.28	107.50	0.26	0.57	2.16	2.50	-55%	-85%
	9000	30,622	30,596	0.06	0.69	11.56	77.20	0.05	0.17	3.69	2.50	-24%	-76%
	Total	**41,263**	**41,201**	**0.36**	**2.99**	**8.38**	**213.70**	**0.27**	**1.32**	**4.93**	**22.00**	**-25%**	**-56%**

In Esaase, capping was performed for each estimation domain in the main zone (1000 Series), separately, while the small, discontinuous mineralization (2000 Series) used the same capping values as their counterparts in the main mineralization.

SRK further limits the influence of high-grade outliers by limiting their radius of influence to avoid smearing of the high grades. As required, these additional high-grade restriction parameters are discussed further in Section 14.2.7.

14.2.5 Variogram Analysis

Leapfrog Edge was used to calculate and model gold variograms for the most domains. For Miradani North, SRK used Datamine's Supervisor software for variogram modeling. For each zone, SRK used a traditional semivariogram for the three orientations and a downhole variogram to calculate the nugget effect. Figure 14-23 and Figure 14-24 shows an example variogram model for Esaase's Cobra and Central Sandstone domains, respectively.

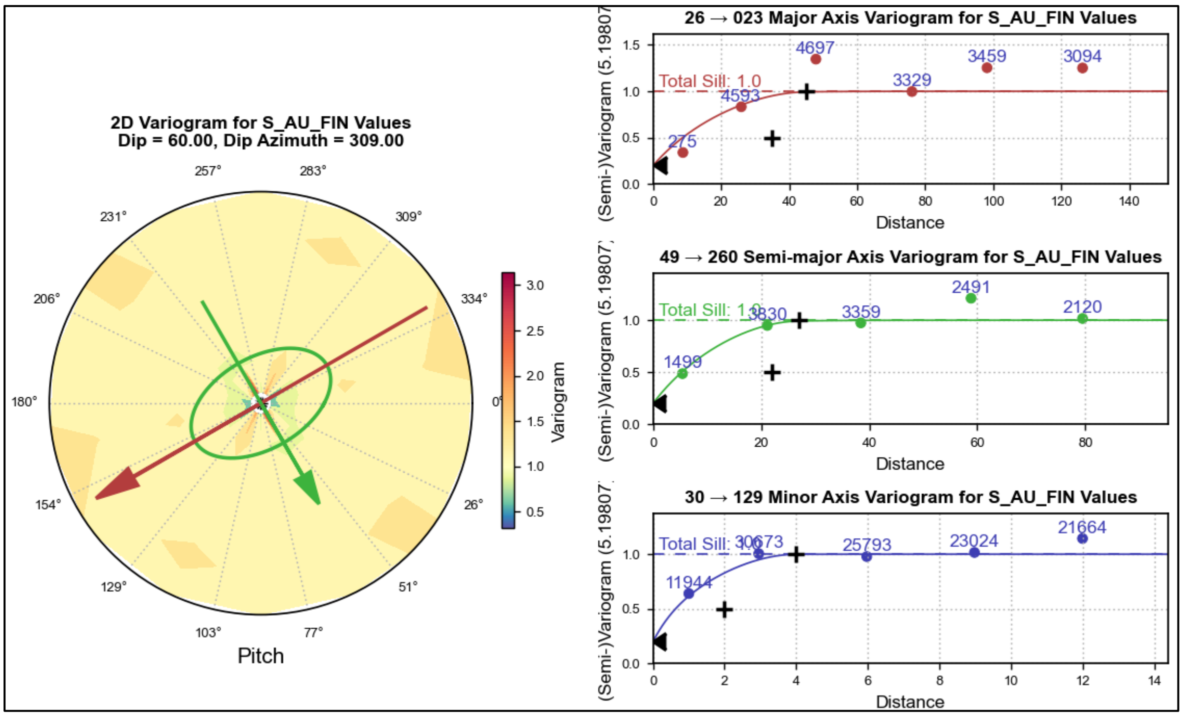


Figure 14-23 Variogram model for Cobra Unit (Domain 1300) in Esaase Deposit

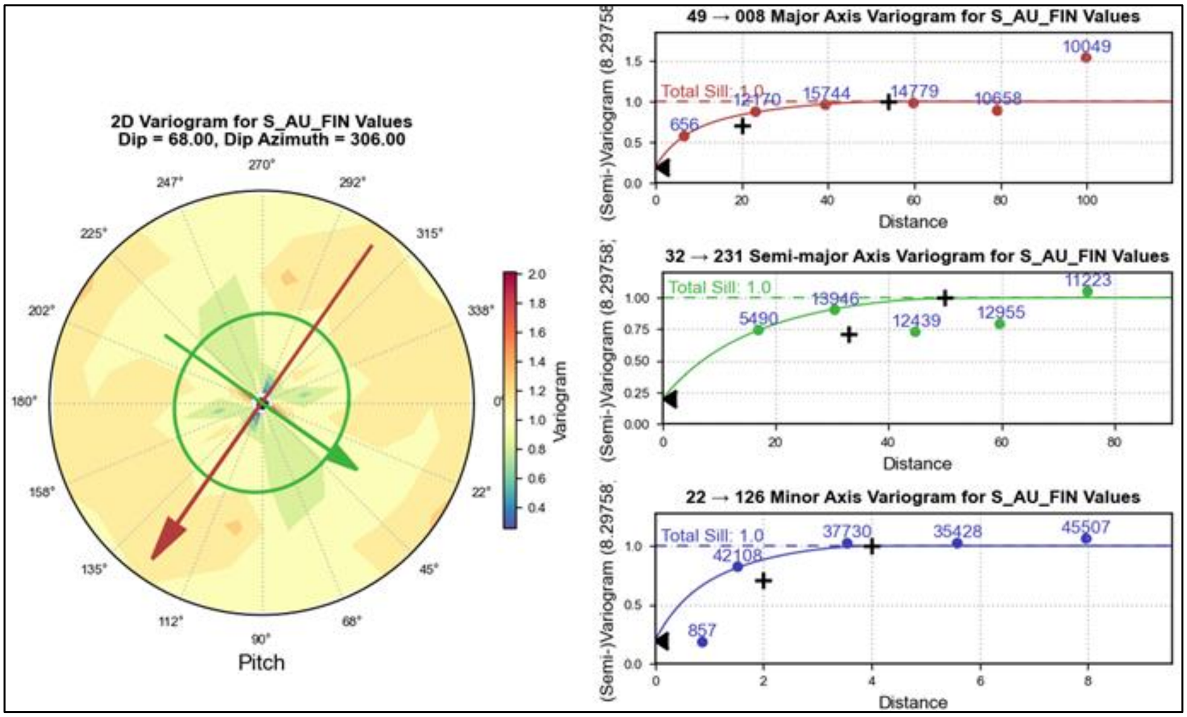


Figure 14-24 Variogram model for Central Sandstone Unit (Domain 1400) in Esaase Deposit

For Abore, the main granite unit provided the most robust variogram model and forms the basis for the variogram used for all mineralized domains. To ensure this variogram model reasonably represents other domains, this gold variogram model was checked against the experimental variograms of other domains with sufficient data, including the Eastern Sandstone and Western Sandstone 1.

For Miradani North, Zones 21 and 30 each yielded stable variograms, which were used for estimation. Zones,10, 11, 20, 31 and 32, however; yielded unstable variogram models due to limited data or variable spacing. These five zones inherited the variogram parameters from Zone 21, although they retained their own separate orientations.

For the Midras South deposit, SRK ran sensitivities in variogram calculation by considering the most informed domains and various groupings of domains based on similar orientation and proximity. Finally, SRK chose to consider all composites inside the mineralized domains to determine a common variogram model.

For Adubiaso, experimental variograms were modeled for each domain (Main, North, Sill). In Main and North domains, the variogram models represent and align with the gently NE dipping veins within the mineralized envelope while the sill domain is represented by steeply dipping model and ellipsoid that is aligned with the main shear zone.

Table 14-21 summarizes the variogram models used for grade estimation.

Table 14-21 Summary of variogram models

Deposit	Domains	Orientation*			Nugget	Structure					
		Dip	Azm	Pitch	Effect	No.	CC	Type**	Major	Semi	Minor
Esaase	1100, 2100	62	314	149	0.20	1	0.20	Exp	50	35	2
						2	0.60	Sph	57	50	4
	1200, 2200	62	314	149	0.20	1	0.20	Exp	50	35	2
						2	0.60	Sph	57	50	4
	1300, 2300	60	309	150	0.20	1	0.30	Exp	35	22	2
						2	0.50	Sph	45	27	4
	1400, 2400	68	306	125	0.20	1	0.51	Exp	20	33	2
						2	0.29	Sph	54	50	4
	1500, 2500	67	308	135	0.20	1	0.49	Exp	25	35	3
						2	0.31	Sph	30	44	4
	9000	49	318	12	0.20	1	0.50	Exp	22	22	3
						2	0.30	Sph	38	38	4
Abore	All	75	302	30	0.15	1	0.45	Exp	20	30	12
						2	0.40	Exp	45	40	15
Miradani N.	10, 11	-170	76	135	0.20	1	0.4	Exp	10	10	2
						2	0.15	Sph	30	20	2
						3	0.25	Sph	80	45	5
	20	120	80	-180	0.20	1	0.4	Exp	10	10	2
						2	0.15	Sph	30	20	2
						3	0.25	Sph	80	45	5
	30	-5	-70	180	0.20	1	0.5	Exp	45	40	2
						2	0.3	Sph	80	45	5
	31, 32	11	-61	-122	0.20	1	0.4	Exp	10	10	2
						2	0.15	Sph	30	20	2
						3	0.25	Sph	80	45	5
Midras South	All	75	302	30	0.15	1	0.55	Exp	70	85	6
						2	0.30	Sph	85	90	15
Adubiaso	Main	46	128	110	0.25	1	0.35	Exp	23	18	1.5
						2	0.40	Sph	48	26	2.5
	North	55	137	90	0.15	1	0.60	Exp	26	45	2.0
						2	0.25	Sph	30	50	3.0
	Sill	84	310	64	0.20	1	0.80	Sph	30	53	5.0

** Orientation angle specifications follow Leapfrog convention, except for Miradani North, which follows Minesight angle conventions*

*** Variogram structure types are Exponential (Exp) or Spherical (Sph)*

14.2.6 Block Model Definitions

Table 14-22 summarizes the block model definition used for five deposits. An unrotated, percent block model was generated in HxGN MineSight (version 16.0.5) for Miradani North; an unrotated, regularized block model was generated in Leapfrog Edge for the other four deposits. The chosen block sizes are consistent with the other assets of Galiano for which SRK has developed the mineral resource estimation models. The block model was not sub-blocked and grades are interpolated into the parent cells. Each block is assigned a lithology code, weathering code and a resource domain code based on block centroid for Esaase, Abore and Midras South, and on a percent model basis for Miradani North.

Table 14-22 Block model definition

Deposit	Description	X	Y	Z
Esaase	Minimum Corner	620,050	723,300	-230
	No. Blocks	496	716	130
	Block size (m)	5	5	6
Abore	Minimum Corner	613,420	712,460	320
	No. Blocks	407	552	70
	Block size (m)	5	5	6
Miradani North	Minimum Corner*	610,400	691,250	-350
	No. Blocks	260	250	92
	Block size (m)	5	5	6
Midras South	Minimum Corner	610,500	695,600	225
	No. Blocks	200	300	51
	Block size (m)	5	5	6
Adubiaso	Minimum Corner	610,550	703,700	-150
	No. Blocks	300	360	56
	Block size (m)	5	5	6

* *Origin in MineSight refers to the minimum X, minimum Y and maximum Z coordinates in the block model.*

14.2.7 Estimation approach and parameters

SRK estimated gold grades into a 3D block model using OK with up to three estimation passes, with progressively relaxed search ellipsoids and data requirements for the main mineralization domains. Smaller or discontinuous domains, such as Domain 2000 series in Esaase and unmineralized domains were estimated using a single pass. The sill domain, that is mostly unmineralized, in Adubiaso was estimated using a hybrid approach where an Indicator Kriging approach used to estimate probabilities of belonging to a later mineralization event that represents the gently NE dipping veins and two OK approaches utilized to estimate a high-grade domain, or gold grades for later veins and a low grade domain, or gold grades for unmineralized sill. These two OK estimates were then averaged weighted by the IK probabilities.

Table 14-23 summarizes the data requirements for gold grade estimation. Only the exploration borehole data were used in estimation. All passes use an ellipsoidal search. With the exception of Miradani North and Adubiaso Main and North, all other deposits are estimated using dynamic anisotropy to conform to the varying orientation of the modelled zones. In all cases, grades were estimated using a hard boundary approach. Furthermore, SRK chose to limit the influence of high-grade composites in later passes for some mineralized domains and/or in unmineralized domains, as warranted.

In all deposits, SRK performed estimation sensitivities on gold estimates to test the impact of changes in various parameters and assumptions including data requirement, boundary condition, high-grade outlier treatment. The final sets of parameters, provided in Table 14-23, were chosen based on various validation methods as explained in the following section.

Table 14-23 Summary of estimation parameters

Deposit	Domain	Pass	Data Specifications			Search Ellipse	HG Limited Radii	
			Min	Max	Max/Hole		Radii	Grade (g/t)
Esaase	1000	1	13	30	6	1x Varg		
		2	7	30	6	2x Varg	10%	Varies by domain [1]
		3	4	30	0	3x Varg	5%	Varies by domain [1]
	2000	1	2	30	7	2x Varg	50%	Varies by domain [2]
	9000	1	3	30	6	20x20x10	50%	1
Abore		1	7	12	3	1x Varg		
	Mineralized	2	4	12	3	2x Varg		
		3	2	15	-	3x Varg		
	Unmineralized	1	3	30	3	20x20x10	50%	2
Miradani North	All	1	13	25	6	1x Varg		
		2	7	25	6	2x Varg		
		3	4	30	10	3x Varg		
Midras South	All	1	13	25	6	1x Varg	25% (Dom 401)	15 (Dom 401)
		2	7	25	6	2x Varg	12.5% (Dom 401)	15 (Dom 401)
		3	4	25	-	3x Varg	6% (Dom 401)	15 (Dom 401)
Adubiaso	Main, North, Sill	1	13	18	6	1x Varg	70% (Main, North)	10, 5 (Main, North)
		2	7	18	6	2x Varg	35% (Main, North)	10, 5 (Main, North)
		3	4	24	-	3x Varg	18% (Main, North)	10, 5 (Main, North)
	Unmineralized	1	3	30	6	20x20x20		

[1] 2.5 g/t for Dom 1100, 15 g/t for Dom 1400, 7 g/t for Dom 1500; 8 g/t in Pass 3 only for Dom 1300

[2] 2.5 g/t for Dom 2100, 3 g/t for Dom 2200, 7 g/t for Dom 2300 and Dom 2500

14.2.8 Model Validation

SRK validated the block model using a combination of approaches: visual comparison of block estimates and informing composites, statistical comparisons between composites and block model distributions and statistical comparisons between OK estimates and alternate estimators at zero cut-off.

Block estimates using Inverse Distance to a Power of 3 (ID3) and Nearest Neighbors (NN) were generated and compared to the declustered composites and the OK estimate at zero cut-off grade for each zone. For Esaase, SRK observed differences in average grade within 2% for ID3 and declustered composites while difference with NN is around 4% in overall mineralization. For Abore, differences between ID3 and OK for the main domains were within 2% and within 10% of the NN estimate. Similar differences were noted for Miradani North. For Midras South, differences in the main zones were within 6% against an ID3 estimate and within 4% of declustered composites. For Adubiaso, the OK, NN and ID3 estimates virtually yield the same results for the Main Zone while the difference is within 3% and 1% with NN and ID3 models in North Zone, respectively.

Directional grade trends were reviewed through swath plots along and across the strike of the mineralization and in vertical direction and comparing up to four grade profiles: (1) Ordinary Kriged block model, (2) ID3 model, (3) Nearest Neighbors estimate and (4) declustered composite data.

Results generally showed good agreement between the ordinary kriged models and the composite data. Figure 14-25 shows the along-strike swath plot for the Esaase deposit.

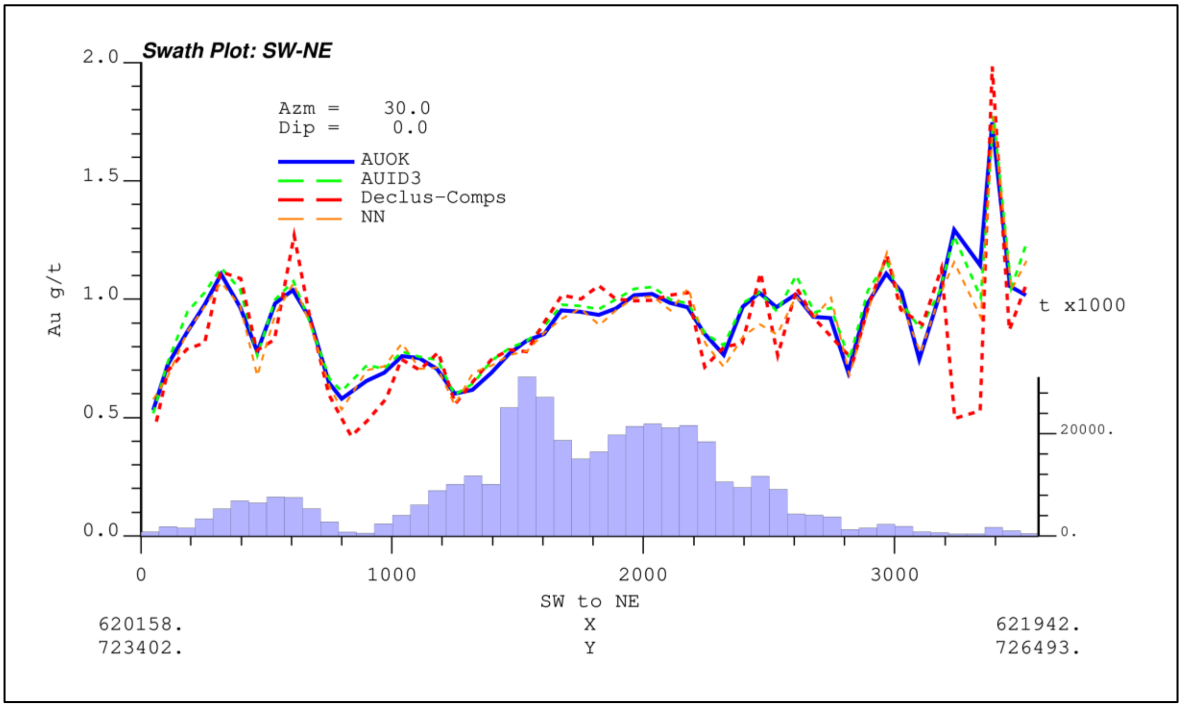


Figure 14-25 Swath plot shown along strike for Esaase Deposit

SRK also compared the OK block model distribution with the Nearest-Neighbor declustered, change-of-support corrected distribution of the informing composites for the largest domains. Declustering mitigates the influence of preferential sampling of borehole data; this often results in a distribution of composites whose mean statistic is often comparable to that of the estimated model. Further, a change-of-support correction is applied to account for the volume difference between the composite scale and the final block volume scale. A quantile-quantile plot and a grade-tonnage curve were plotted to compare the declustered, change-of-support corrected distribution to the estimated block model grades. In general, the Ordinary Kriged estimate corresponds well to the declustered, change of-support corrected distributions, especially for the grade intervals used for Mineral Resource Estimate reporting (see Figure 14-26 and Figure 14-27 for the comparison of the Cobra and Central Sandstone units in the Esaase deposit).

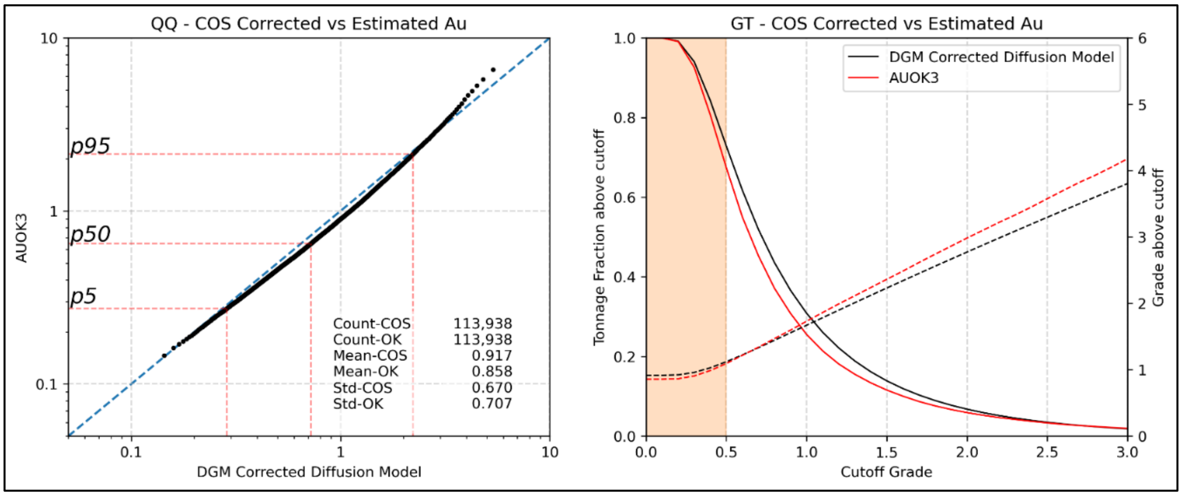


Figure 14-26 Change of support check for Cobra Unit (Domain 1300) in Esaase

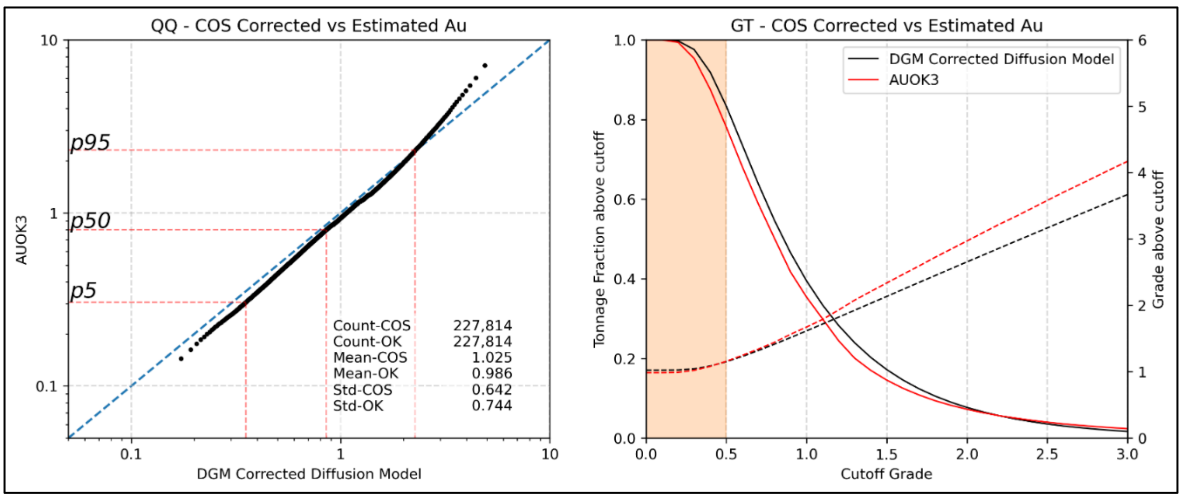


Figure 14-27 Change of support check for Central Sandstone Unit (Domain 1400) in Esaase

14.2.9 Resource Classification

The block classification strategy considers drillhole spacing, geologic confidence and continuity of category. The final classification was a two-step process: (1) an initial drillhole spacing criteria was applied and (2) classification smoothing was performed by wireframing contiguous regions with consideration for geologic continuity and data density. The initial criteria and summary statistics on the classification are summarized below:

- **Measured**: There are no Measured blocks
- **Indicated:** Blocks with a drillhole spacing less than 40 m

– For Esaase, this corresponds to an average drillhole spacing of 30 m and with a mean average distance of informing composites for this category is within 30 m. These blocks are estimated mainly in Pass 1 (Figure 14-28, Figure 14-29).

- For Abore, this corresponds to an average drillhole spacing of 40 m and with a mean average distance of informing composities for this category within 28 m. These blocks are estimated mainly in Pass 1.
- For Miradani North, this corresponds to an average distance of 32 m to three holes and a mean average distance of 33 m to the informing composites. Blocks within the Indicated category are estimated within Passes 1 and 2.
- There are no Indicated blocks in Midras South.
- For Adubiaso, this corresponds to an average drillhole spacing of 25 m and with a mean average distance of informing composites for this category is within 25 m. These blocks are estimated mainly in Pass 1 and Pass 2.

- **Inferred:** All other blocks in the mineralized domains with a drillhole spacing less than 80 m
  - For Esaase, this corresponds to an average drillhole spacing of 50 m and with a mean average distance of informing composites for this category is within 40 m.
  - For Miradani, this corresponds to an average distance of 53 m to three holes and a mean average distance of 48 m to the informing composites. Blocks within the Inferred category are estimated within Passes 2 and 3.
  - For Adubiaso, this corresponds to an average drillhole spacing of 45 m and with a mean average distance of informing composites for this category is within 40 m.

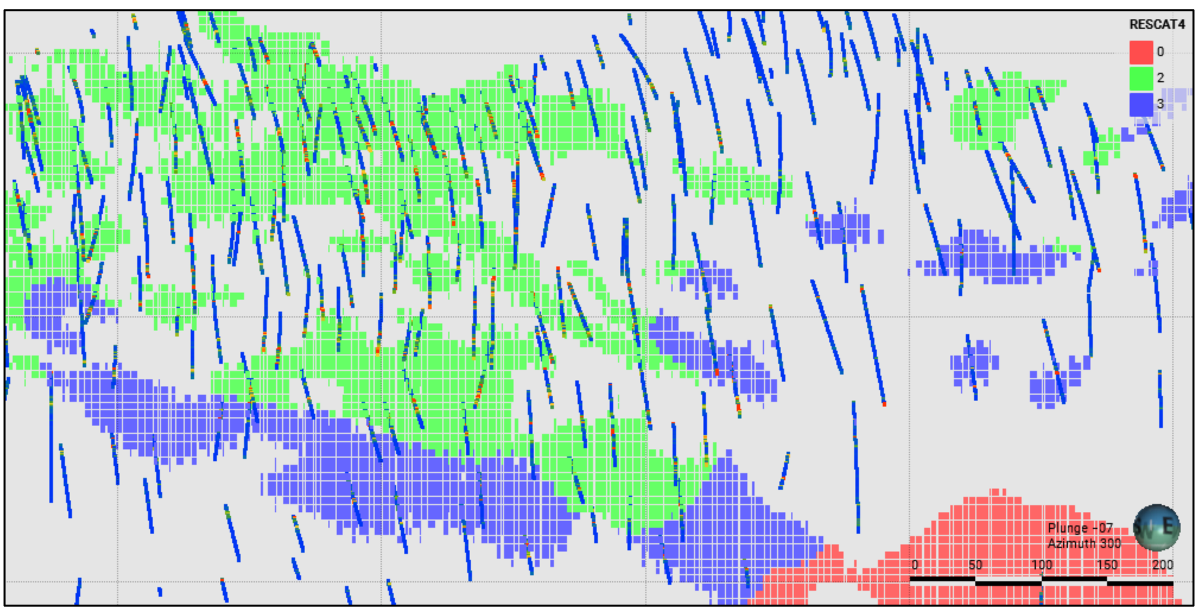


Figure 14-28 Long section of classified resources in Esaase Deposit

Notes: Drillhole traces are shown as lines; Green blocks represent Indicated resources; Purple blocks represent Inferred Resources; Red blocks represent unclassified material.

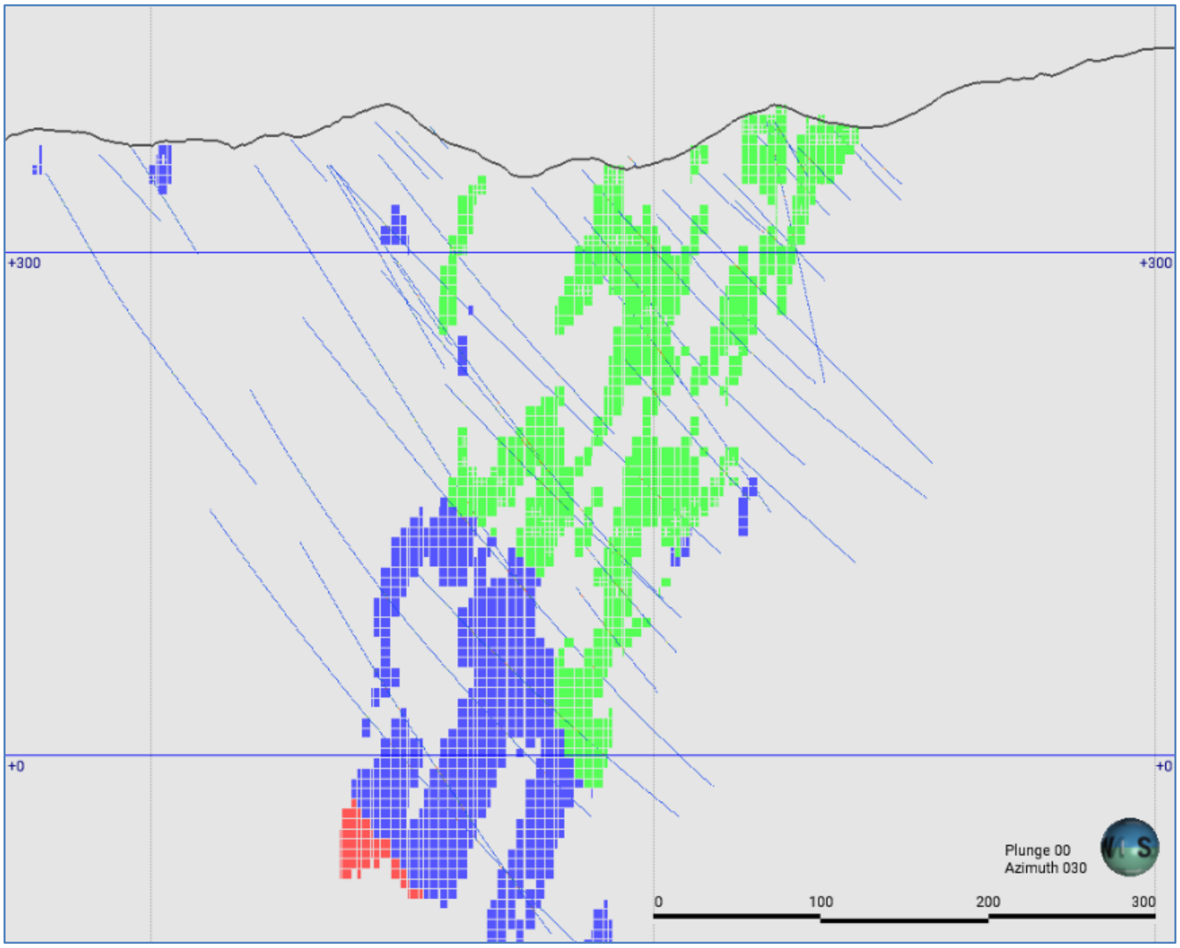


Figure 14-29 Cross-section of classified resources in Esaase Deposit

Notes: Drillhole traces are shown as lines (within 25 m in/out the section); Green blocks represent Indicated resources; Purple blocks represent Inferred Resources; Red blocks represent unclassified material.

14.2.10 Reasonable Prospects for Eventual Economic Extraction

CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014) define a Mineral Resource as:

"[A] concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling."

The "reasonable prospects for eventual economic extraction" requirement generally implies that quantity and grade estimates meet certain economic thresholds and that mineral resources are reported at an appropriate cut-off grade that takes into account extraction scenarios and processing recovery. SRK considers that Esaase, Abore, Miradani North, Midras South and Adubiaso deposits are primarily amenable to open pit extraction. To assist with determining which portions of the gold deposits show "reasonable prospect for eventual economic extraction" from an open pit and to assist with selecting reporting assumptions, SRK mining engineers developed a conceptual open pit shell using corporately approved mining, processing and G&A costs. Table 14-24 summarizes the pit optimization parameters used for the five deposits.

Table 14-24 Pit optimization parameters

Parameter	Unit	Esaase	Abore	Miradani North	Midras South	Adubiaso
Gold Price	US$ / ounce	1,800	1,800	1,800	1,800	1,800
Average Mining Cost	US$ / tonne	2.03	1.99	1.93	1.77	1.60
Mining Cost Incremental	US$ / vertical 6 m	0.01	0.01	0.01	0.01	0.01
Mill Feed Transport	US$ / tonne	6.15	4.08	3.71	3.71	1.85
Average Process Cost (Varies by Material Type)	US$ / tonne	14.29	13.85	13.58	12.98	13.98
Gold Recovery	%	Varies	94%	94%	94%	94%
General and Administration	US$ / tonne	6.69	6.19	6.19	6.19	6.19

For Esaase, the metallurgical gold recovery of oxides and other materials are calculated as a function of the gold grades with the formulae below:

$$Oxide = \frac{feed\ grade\ - 0.1}{feed\ grade}$$

$$USS = 8.26 * ln\ (feed\ grade) + 73.86$$

$$Cobra = 2.70 * ln\ feed\ grade) + 71.14$$

$$CSS = 6.98 * ln\ (feed\ grade) + 74.38$$

After review of optimization results and through discussions with Galiano, SRK considers that it is reasonable to report as open pit Mineral Resource those classified blocks located within the conceptual pit shell above a cut-off grade of:

- Esaase: 0.5 g/t gold for oxides and 0.6 g/t gold for the other weathering categories including transition and fresh materials (see Figure 14-30)
- Abore, Miradani North, Midras South and Adubiaso: 0.45 g/t gold for all material types

No underground mineral resource is reported.

The Mineral Resource statement for these five deposits is shown in Table 14-1 and again in Section 14.4.

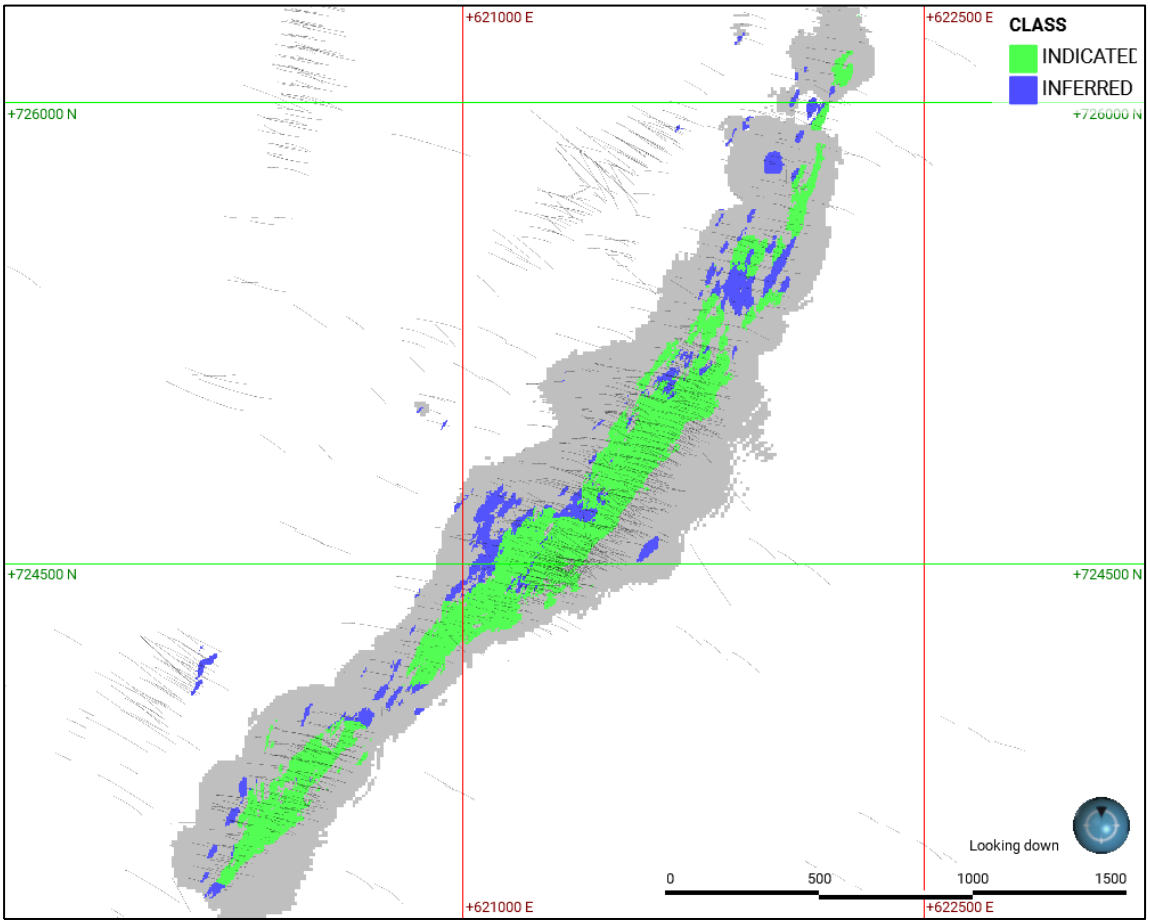


Figure 14-30 Plan view of Esaase Deposit showing estimated blocks above 0.5 g/t gold relative to the conceptual pit (gray) and drillhole traces

14.2.11 Grade Sensitivity Analysis

The Mineral Resources of the Esaase, Abore, Miradani North, Midras South and Adubiaso deposits are sensitive to the selection of the reporting cut-off grade. To illustrate this sensitivity, block model quantities and grade estimates at various cut-off grades are presented in Table 14-25 to Table 14-29 for Esaase, Abore, Miradani North, Midras South and Adubiaso deposits, respectively. The corresponding grade tonnage curves are presented in Figure 14-31 to Figure 14-35.

Table 14-25 Block model quantity within US$1,800/oz gold resource pit and grade estimates* at various cut-off grades, Esaase Deposit, AGM, Ghana

COG	Indicated						Inferred					
	Oxide			Trans + Fresh			Oxide			Trans + Fresh		
	Tonnage (kt)	Grade (g/t Au)	Metal (koz Au)	Tonnage (kt)	Grade (g/t Au)	Metal (koz Au)	Tonnage(kt)	Grade (g/t Au)	Metal (koz Au)	Tonnage (kt)	Grade (g/t Au)	Metal (koz Au)
0.10	7,821	0.75	189	41,493	0.96	1,287	3,037	0.71	69	11,535	0.93	346
0.20	7,690	0.76	188	41,277	0.97	1,286	2,897	0.74	68	11,450	0.94	345
0.30	6,947	0.82	182	39,244	1.01	1,268	2,516	0.81	65	10,746	0.98	340
0.40	5,860	0.90	170	35,179	1.08	1,222	2,051	0.91	60	9,389	1.07	324
0.45	5,296	0.95	162	32,842	1.13	1,191	1,824	0.97	57	8,664	1.13	314
0.50	4,731	1.01	153	30,501	1.18	1,155	1,591	1.05	54	7,917	1.19	303
0.60	3,753	1.13	136	25,903	1.29	1,074	1,245	1.18	47	6,626	1.31	280
0.70	3,013	1.25	121	21,746	1.41	987	995	1.32	42	5,663	1.43	260
0.80	2,414	1.37	106	18,134	1.54	900	803	1.46	38	4,821	1.55	240
0.90	1,981	1.48	95	15,152	1.68	819	654	1.60	34	4,115	1.67	221
1.00	1,638	1.60	84	12,743	1.82	745	543	1.73	30	3,532	1.79	203
1.10	1,359	1.71	75	10,804	1.96	680	454	1.86	27	3,091	1.89	188
1.20	1,129	1.82	66	9,251	2.09	622	383	1.99	25	2,646	2.02	171
1.30	950	1.93	59	7,987	2.23	572	337	2.09	23	2,264	2.15	156
1.40	791	2.05	52	6,924	2.36	526	295	2.20	21	1,985	2.26	144
1.50	667	2.16	46	6,036	2.50	484	261	2.30	19	1,727	2.38	132

Notes: The reader is cautioned that the figures in this table should not be misconstrued with a Mineral Resource Statement. The figures are only presented to show the sensitivity of the block model estimates to the selection of a cut-off grade. All figures have been rounded to reflect the relative accuracy of the estimates.

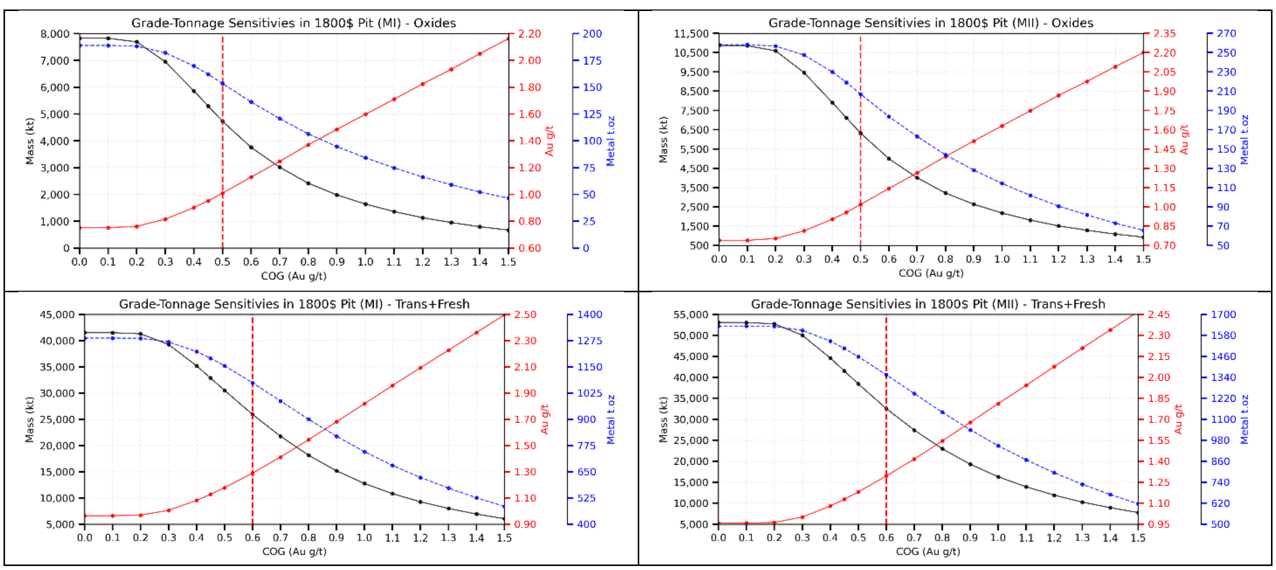


Figure 14-31 Grade-tonnage curves for Esaase Deposit – Oxide (top), Transitional and Fresh Rock (bottom) material and Indicated (left) and Inferred (right) categories

Table 14-26 Block model quantity within US$1,800/oz gold resource pit and grade estimates* at various cut-off grades, Abore Deposit, AGM, Ghana

Cut off Grade (g/t Au)	Indicated			Inferred		
	Tonnage (kt)	Grade (g/t Au)	Metal (koz Au)	Tonnage (kt)	Grade (g/t Au)	Metal (koz Au)
0.10	17,452	0.94	528	5,517	0.85	151
0.20	17,442	0.94	528	5,504	0.86	151
0.30	17,205	0.95	527	5,404	0.87	151
0.40	16,002	1.00	517	4,706	0.96	145
0.45	13,892	1.10	493	3,919	1.08	136
0.50	11,723	1.22	461	3,323	1.19	128
0.60	9,842	1.35	428	2,822	1.31	119
0.70	8,274	1.49	396	2,380	1.43	109
0.80	6,964	1.63	364	1,968	1.57	100
0.90	5,868	1.77	334	1,598	1.74	89
1.00	5,007	1.91	308	1,305	1.92	81
1.10	4,292	2.06	284	1,106	2.08	74
1.20	3,697	2.20	262	968	2.21	69
1.30	3,214	2.35	242	839	2.36	64
1.40	2,837	2.48	226	747	2.48	60
1.50	2,509	2.61	211	659	2.62	55

Notes: The reader is cautioned that the figures in this table should not be misconstrued with a Mineral Resource Statement. The figures are only presented to show the sensitivity of the block model estimates to the selection of a cut-off grade. All figures have been rounded to reflect the relative accuracy of the estimates.

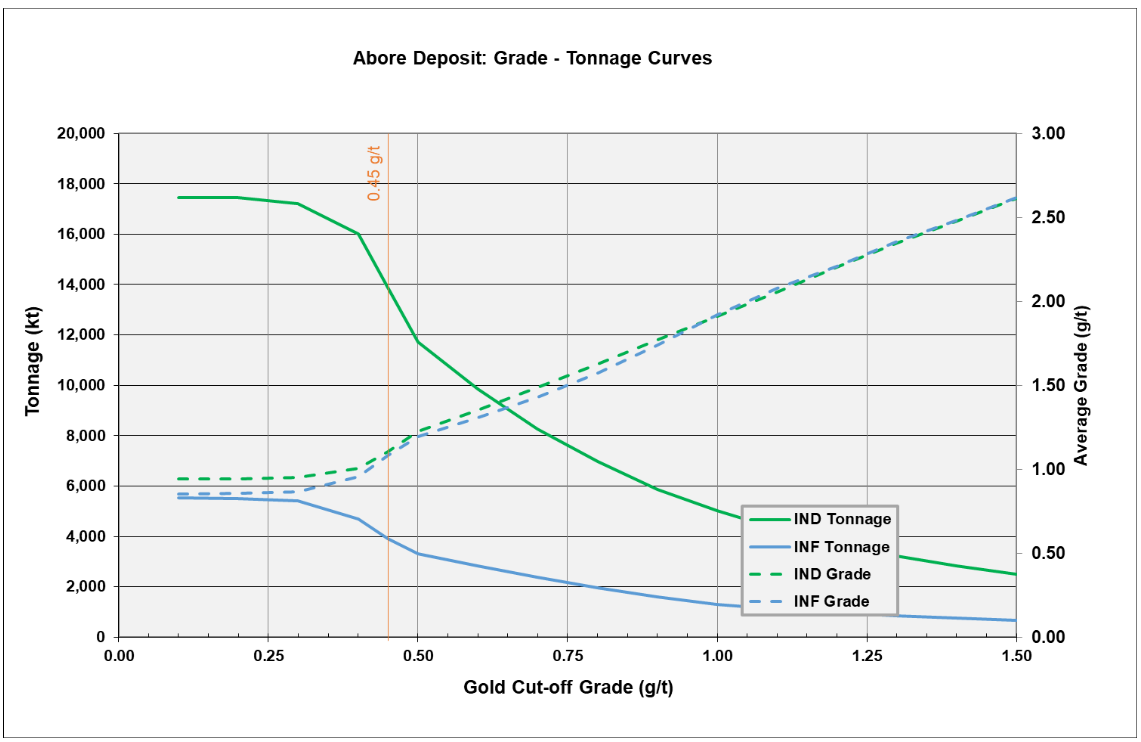


Figure 14-32 Grade-tonnage curves for Abore Deposit

Table 14-27 Block model quantity within US$1,800/oz gold resource pit and grade estimates* at various cut-off grades, Miradani North Deposit, AGM, Ghana

Cut off Grade (g/t Au)	Indicated Tonnage (kt)	Indicated Grade (g/t Au)	Indicated Metal (koz Au)	Inferred Tonnage (kt)	Inferred Grade (g/t Au)	Inferred Metal (koz Au)
0.10	9,176	1.22	361	3,773	1.05	127
0.20	8,157	1.36	357	3,242	1.20	125
0.30	8,040	1.38	355	3,159	1.22	124
0.40	7,965	1.38	353	3,001	1.27	122
0.45	7,876	1.39	351	2,924	1.30	122
0.50	7,742	1.41	351	2,850	1.31	120
0.60	7,414	1.45	345	2,681	1.36	117
0.70	6,959	1.50	336	2,481	1.42	113
0.80	6,418	1.56	322	2,246	1.49	107
0.90	5,829	1.63	305	2,014	1.57	102
1.00	5,260	1.71	289	1,805	1.64	95
1.10	4,675	1.79	269	1,597	1.71	88
1.20	4,136	1.88	250	1,401	1.79	81
1.30	3,601	1.97	228	1,215	1.88	73
1.40	3,092	2.07	206	1,040	1.96	66
1.50	2,671	2.17	186	887	2.05	58

Notes: The reader is cautioned that the figures in this table should not be misconstrued with a Mineral Resource Statement. The figures are only presented to show the sensitivity of the block model estimates to the selection of a cut-off grade. All figures have been rounded to reflect the relative accuracy of the estimates.

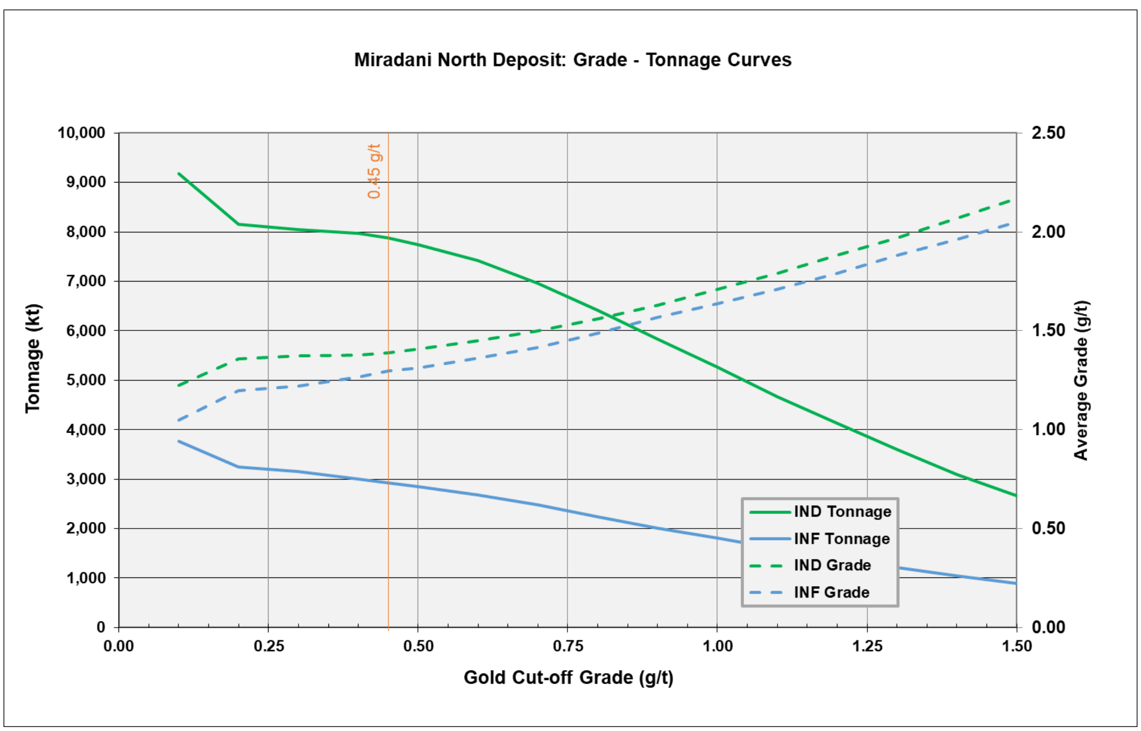


Figure 14-33 Grade-tonnage curves for Miradani North Deposit

Table 14-28 Block model quantity within US$1,800/oz gold resource pit and grade estimates* at various cut-off grades, Midras South Deposit, AGM, Ghana

Cut off Grade (g/t Au)	Inferred		
	Tonnage (kt)	Grade (g/t Au)	Metal (koz Au)
0.10	6,200	1.21	241
0.20	6,197	1.21	241
0.30	6,107	1.22	240
0.40	5,690	1.28	235
0.45	5,439	1.32	231
0.50	5,172	1.37	227
0.60	4,664	1.46	218
0.70	4,109	1.57	207
0.80	3,621	1.68	195
0.90	3,193	1.79	183
1.00	2,787	1.91	171
1.10	2,441	2.03	159
1.20	2,122	2.16	148
1.30	1,876	2.28	138
1.40	1,649	2.41	128
1.50	1,462	2.54	119

Notes: The reader is cautioned that the figures in this table should not be misconstrued with a Mineral Resource Statement. The figures are only presented to show the sensitivity of the block model estimates to the selection of a cut-off grade. All figures have been rounded to reflect the relative accuracy of the estimates.

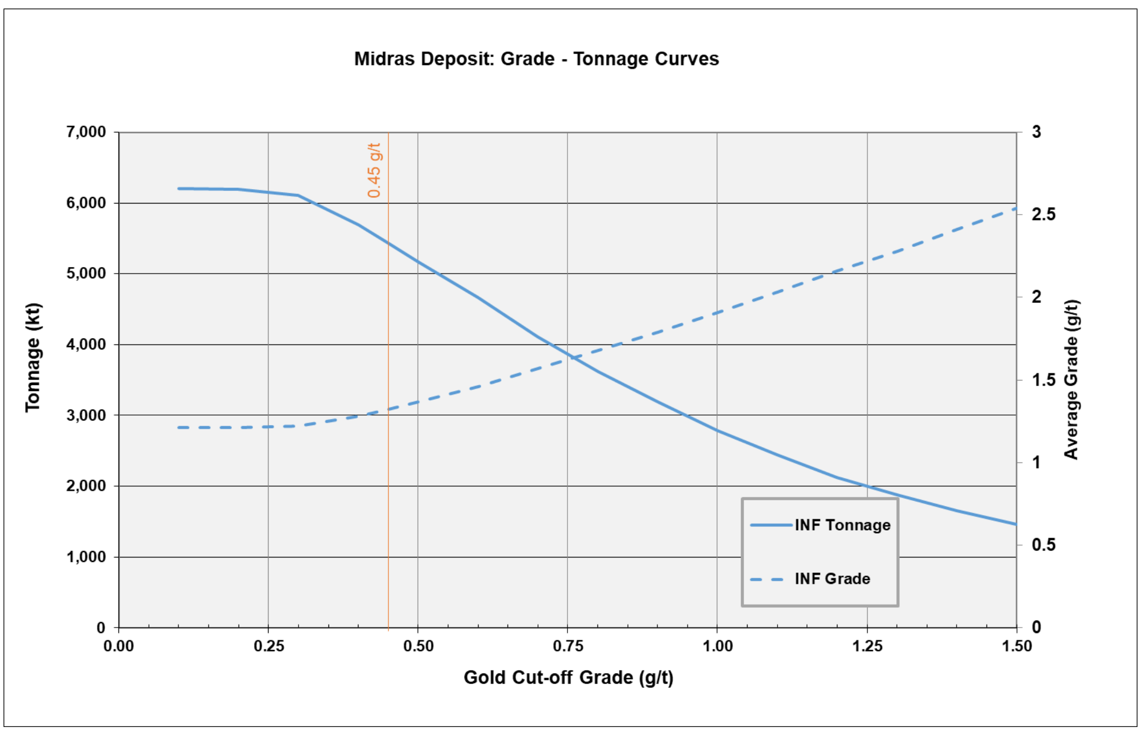


Figure 14-34 Grade-tonnage curves for Midras South Deposit

Table 14-29 Block model quantity within US$1,800/oz gold resource pit and grade estimates* at various cut-off grades, Adubiaso Deposit, AGM, Ghana

Cut off Grade (g/t Au)	Indicated			Inferred		
	Tonnage (kt)	Grade (g/t Au)	Metal (koz Au)	Tonnage (kt)	Grade (g/t Au)	Metal (koz Au)
0.10	4,081	1.19	157	137	0.85	4
0.20	3,810	1.27	155	130	0.89	4
0.30	3,512	1.35	153	122	0.94	4
0.40	3,248	1.44	150	111	0.99	4
0.45	3,130	1.47	148	101	1.05	3
0.50	2,994	1.52	146	92	1.10	3
0.60	2,732	1.61	142	71	1.28	3
0.70	2,466	1.72	136	62	1.37	3
0.80	2,204	1.83	130	56	1.43	3
0.90	1,989	1.94	124	50	1.50	2
1.00	1,799	2.04	118	47	1.53	2
1.10	1,624	2.15	112	39	1.64	2
1.20	1,468	2.26	106	27	1.84	2
1.30	1,334	2.36	101	21	2.01	1
1.40	1,199	2.47	95	20	2.05	1
1.50	1,095	2.57	90	19	2.08	1

Notes: The reader is cautioned that the figures in this table should not be misconstrued with a Mineral Resource Statement. The figures are only presented to show the sensitivity of the block model estimates to the selection of a cut-off grade. All figures have been rounded to reflect the relative accuracy of the estimates.

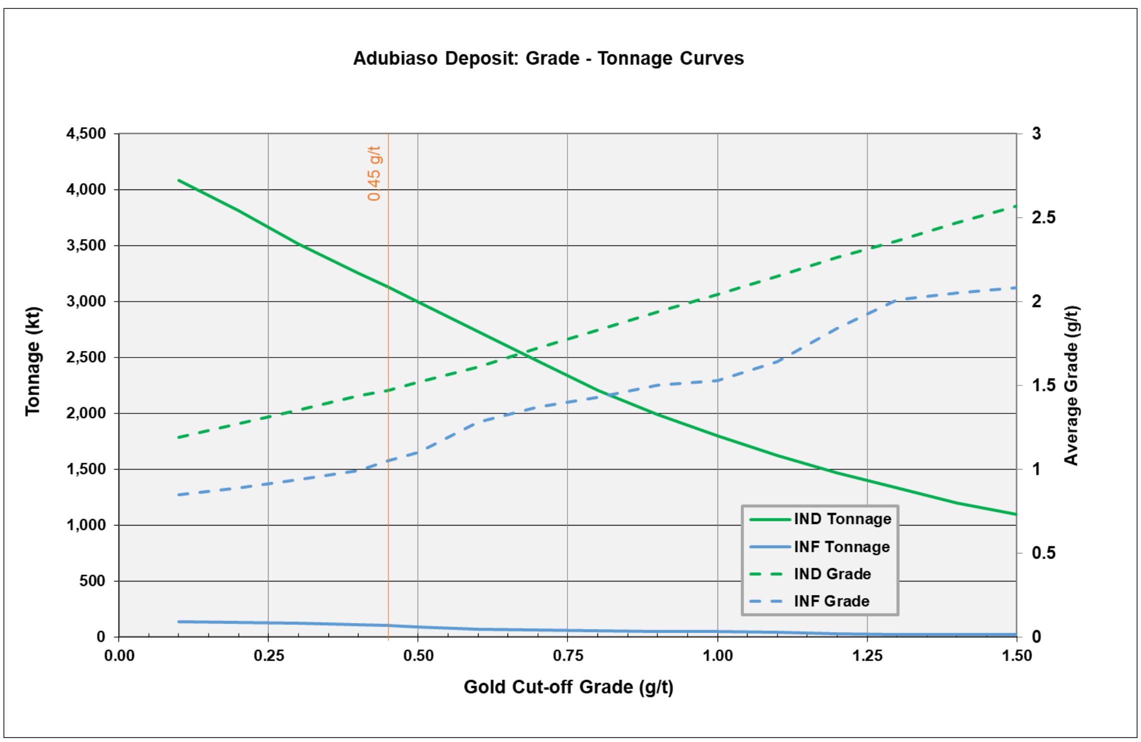


Figure 14-35 Grade-tonnage curves for Adubiaso Deposit

14.3 Akwasiso, Dynamite Hill and Asuadai

The following subsections detail the data preparation, modeling, analyses and assumptions made by Galiano and Gold Fields to support the construction of the mineral resource model for Akwasiso, Dynamite Hill and Asuadai. These descriptions are excerpts taken from public and internal reports (Miller, et al., 2022). Subsection 14.3.10 describes the methodology and findings from SRK's audit of the mineral resource models.

14.3.1 Drillhole Database

The drillhole databases that support the Mineral Resources for Akwasiso, Dynamite Hill and Asuadai are summarized in Table 14-30. There has been no new information collected in 2022.

The effective dates for the database are:

- Akwasiso: 2 February 2021 (exploration holes); 5 December 2020 (grade control holes)
- Dynamite Hill: 13 October 2021
- Asuadai: prior to April 2014

There has been no mining activity or drilling by Galiano in 2022. Artisanal mining is prevalent in the area, particularly in and near Asuadai.

Table 14-30 Summary of drillhole database

Deposit	Data	Exploration				Grade Control	
		DDH	RCD	RC	Total	RC	Total
Akwasiso	Collar	60	47	332	**439**	3,320	3,320
	Length (m)	1,293	10,542	24,397	**36,232**	48,431	48,431
Dynamite Hill	Collar	12	18	140	**170**	872	872
	Length	2,502	4,492	17,698	**24,692**	28,667	28,667
Asuadai	Collar	59		77	**136**		
	Length	7,700		5,341	**13,041**		

In all cases, the mineral resource block models are estimated using DD, RCD and RC exploration holes. In Akwasiso, grade control RC holes are also available and were used for estimation.

SRK reviewed the drillhole databases, along with the data validation and data treatment decisions made by Galiano and Gold Fields personnel and finds that the drillhole database is of sufficient quality to support a Mineral Resource estimate.

14.3.2 Geology and Mineralization Model

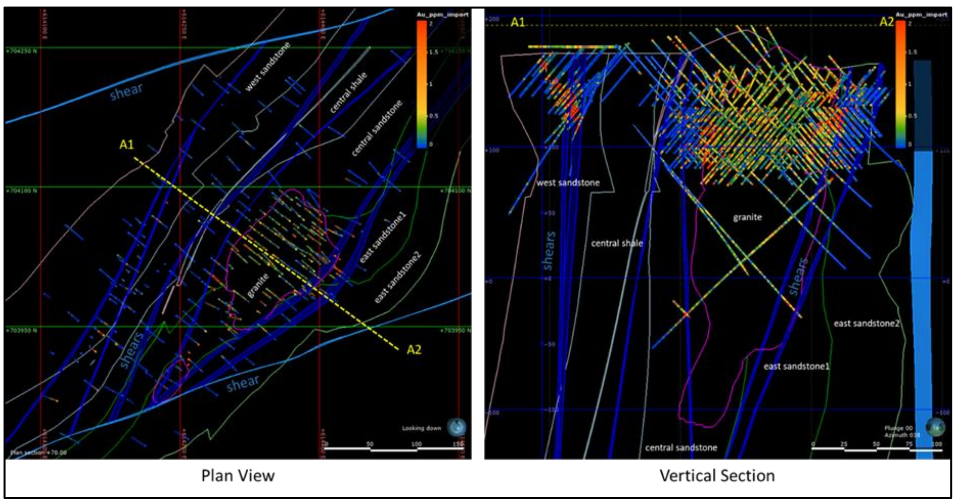
14.3.2.1 Akwasiso

The geological model for Akwasiso was interpreted and modelled by the AGM exploration team based on the exploration drilling and was constructed using Leapfrog software. It includes:

1. Lithology model
2. Oxidation model
3. Shear model for Akwasiso
4. Mineralization model

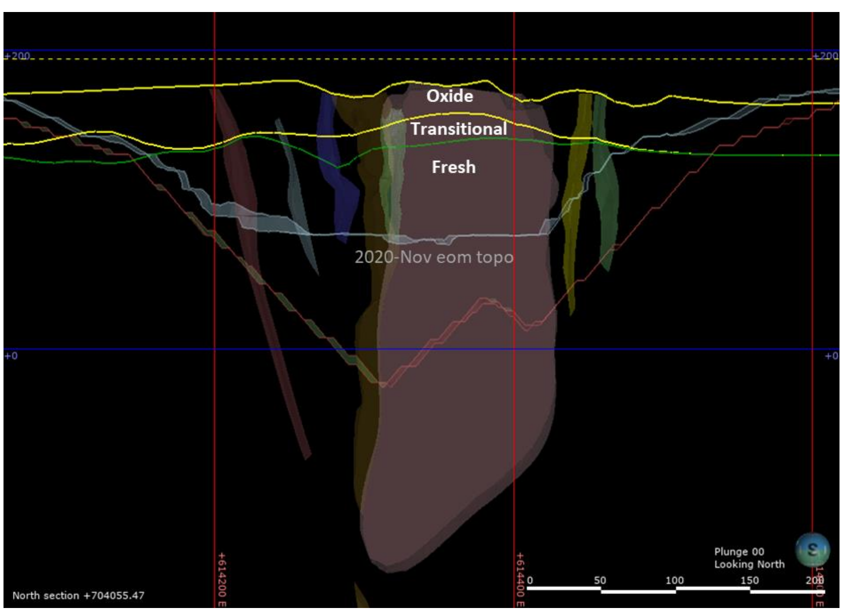
Lithology, Oxidation and Shear/Fault Model

The various lithologies were interpreted directly from drillhole logging. A series of shear surfaces and two bounding shears were modelled and used as guides or constraints in modelling of the mineralization. Simple weathering surfaces were constructed from the exploration drillhole logging for the bases of complete oxidation and the top of fresh rock. The two surfaces divided weathering into three oxidation volumes: Oxide (strongly to moderately oxidized), Transitional (weakly oxidized) and Fresh (fresh rock) material types. The oxidation model represents different levels of weathering for material type categorization and density modelling purposes. Lithology, shears and weathering models are shown in Figure 14-36 and Figure 14-37 and are summarized in Table 14-31.



(Source: Galiano, 2022)

Figure 14-36 Plan (left) and sectional (right) view of Akwasiso lithology, shear and oxidation model



(Source: Galiano, 2022)

Figure 14-37 Sectional view of Akwasiso Oxidation Model

Table 14-31 List of Akwasiso geological models and codes

Model Type	Model Name	Code	Original File Name	Effective Date
Lithology	Central Sandstone	22	Litho_Model_2020 - Central_SS1.dxf	2020-09-25
Lithology	Central Shale 3	31	Litho_Model_2020 - Central_Shale3.dxf	2020-09-25
Lithology	Eastern Sandstone 1	23	Litho_Model_2020 - Eastern_SS1.dxf	2020-09-25
Lithology	Eastern Sandstone 2	24	Litho_Model_2020 - East_SS2.dxf	2020-09-25
Lithology	Granite	11	Litho_Model_2020 - Granite.dxf	2020-09-25
Lithology	Skinny Granite	12	Litho_Model_2020 - Skinny_Granite.dxf	2020-09-25
Lithology	Western Sandstone	21	Litho_Model_2020 - Western_SS1.dxf	2020-09-25
Lithology	Background Sediments	90	materials outside litho model and under topo	2020-09-25
Oxidation	Fresh	4	FRESHtr.dm	2020-02-24
Oxidation	Transitional	3	TRANStr.dm	2020-02-24
Oxidation	Oxide	2	OXtr.dm	2020-02-24
Mineralization	West Domain 1	310	SIM_DOMs02_wss01.00t	2020-12-12
Mineralization	West Domain 2	320	SIM_DOMs02_wss02.00t	2020-12-12
Mineralization	West Domain 3	330	SIM_DOMs02_wss03a.00t	2020-12-12
Mineralization	West Domain 4	340	SIM_DOMs02_wss03b.00t	2020-12-12
Mineralization	West Domain 5	350	SIM_DOMs02_wss04.00t	2020-12-12
Mineralization	Granite Domain	100	SIM_DOMs_Sim_GR.00t	2020-12-15
Mineralization	Central Domain 1	210	SIM_DOMs_Sim_Sed01.00t	2020-12-15
Mineralization	Central Domain 2	220	SIM_DOMs_Sim_Sed02.00t	2020-12-15
Mineralization	Background Seds Domain	900	SIM_DOMs_Sim_WST.00t	2020-12-15
Mineralization	East Domain 1	410	SIM_DOMs02_ess01.00t	2020-12-12
Mineralization	East Domain 2	420	SIM_DOMs02_ess02.00t	2020-12-12

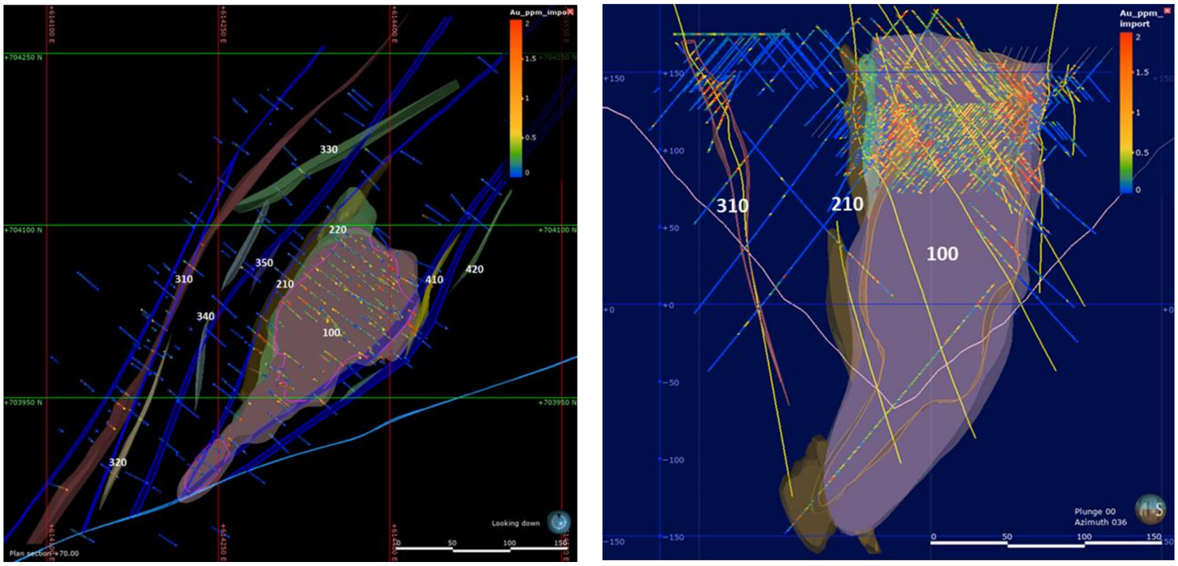
Mineralization Model

Movement indicators within the shear fabric indicate that the last deformational event is likely transpressional, with a sinistral sense of movement. This deformational event is believed to produce the structural fabric and pathways for Au mineralization, with the best mineralization occurring in the strain shadow zones of the “pluglike” granite body (B&S Geological, 2019).

Mineralization is associated with increased carbonate quartz veining, quartz flooding in the felsic porphyry, arsenopyrite, sericite and chlorite alteration. Higher grade intersections occur at the margins of the sandstone with the granite. The other mineralized envelope is a stockwork of extension veins along a shear zone to the west occurring in a sandstone formation.

The 3D model of mineralization is based on a geological framework of logged and modelled geology, constraining shear and drillhole assays at a nominal 0.2~0.3 g/t threshold. The interpretation was conducted in both 2D and 3D, and the selection of drillhole intercepts may occasionally include materials lower than target grade threshold to honour the geological trend and maintain the continuity of the 3D shapes. GC drillholes were considered but the exploration drillhole took precedence when in conflict. Structural trends were used in 3D solid generation process in Leapfrog. The mineralization model comprises eleven individual domain wireframes, three of which, 100, 210 and 310, are the most significant in size and grade. The mineral domains are shown in Figure 14-38.

All lithology, oxidation and mineralization models are summarized in Table 14-31.



(Source: Galiano Gold, 2022)

Figure 14-38 Plan (left) and sectional (right) view of Akwasiso mineralization model

14.3.2.2 Dynamite Hill

The geological model was interpreted and modelled by the AGM exploration team with incorporation of 2017-2019 grade control drilling and new 2021 exploration drilling. The geological model was constructed using Leapfrog Geo software and includes:

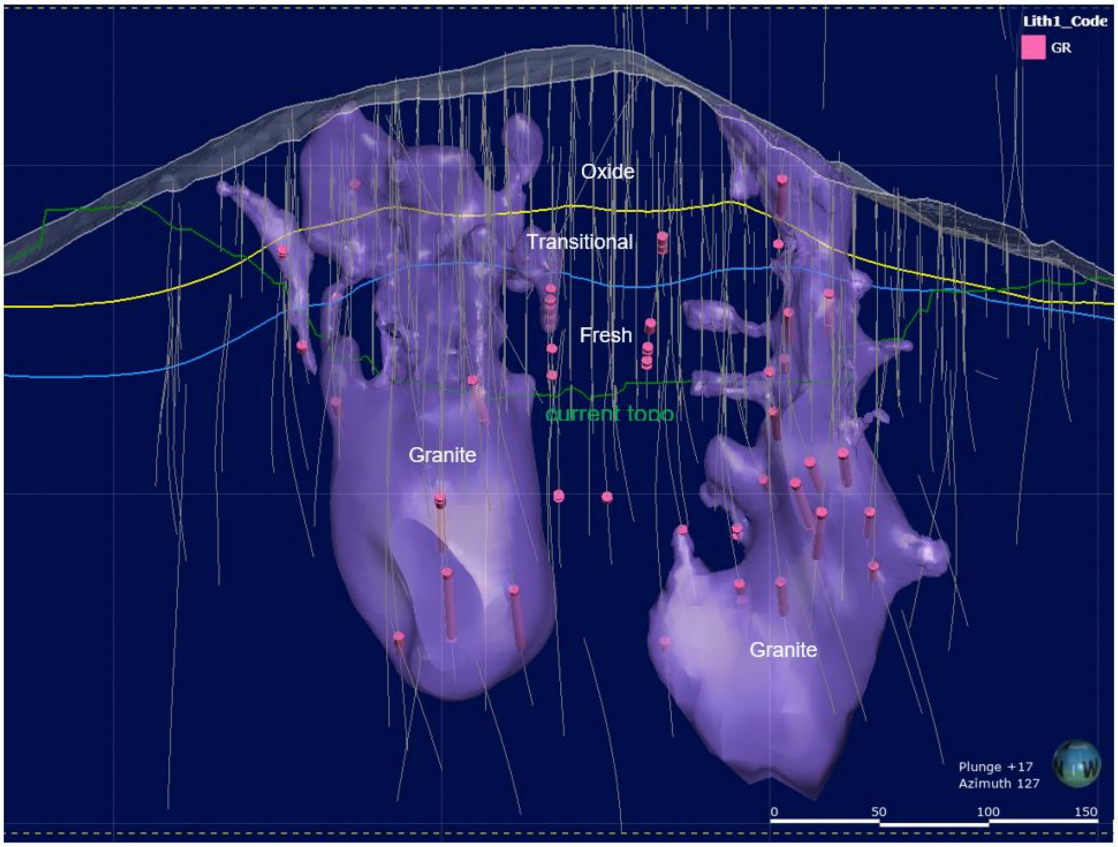
1. Lithology model (LITHO)
2. Oxidation model (OX)
3. Mineralization model (DOMAIN)

Lithology and Oxidation Models

The Dynamite Hill area is underlain by fine to medium-grained greywackes (intermittent strong alterations) intercalated with argillites (phyllites), and intrusions of altered felsic rock (feldspar quartz porphyry/granitoid), quartz veins and stockworks. Mineralization is hosted within veins and disseminations in and around a granitic intrusive located on the Nkran shear trend.

The lithology is generalized into a granite and a sedimentary rock model. The sedimentary rock model is treated as background rock mass.

The oxidation model represents different levels of weathering and is used for material-type categorization and density modelling purposes. Simple weathering surfaces are constructed for the base of complete oxidation (BOCO) and the top of fresh rock (TOFR). The two surfaces divided weathering into Oxide (strongly to moderately oxidized), Transitional (weakly oxidized) and Fresh (fresh rock) material types. Oxidation boundaries are based on drill core logging; Away from the drilling the thickness of weathering was maintained parallel to topography. The lithology and oxidation models are shown in Figure 14-39.



(Source: Galiano, 2022)

Figure 14-39 Dynamite Hill lithology and oxidation model (inclined long section view of granite model)

Mineralization Model

Gold mineralization is mostly associated with quartz stockwork hosted within the northwest steeply dipping orebody of strongly altered (chloritic, sericitic and silicified) wackes and at the contact between felsic intrusive (granite) and foliated meta-sedimentary rocks.

Modelled 3D granite, logged drillhole lithology, grade control and exploration assays are used to guide the interpretation of three gold mineralization zones at approximate 0.2~0.3 g/t.

The main zone is a single solid body hosted within and around the granite intrusive and contains most of the gold in the Dynamite Hill deposit. Two smaller zones are in the hanging wall above the main zone and all of them are sub-parallel to the main regional northeast trending northwest steeply dipping structure. The gold mineralized zones are shown in Figure 14-40 and Figure 14-41.

All lithology, oxidation and mineralization models are summarized in Table 14-32.

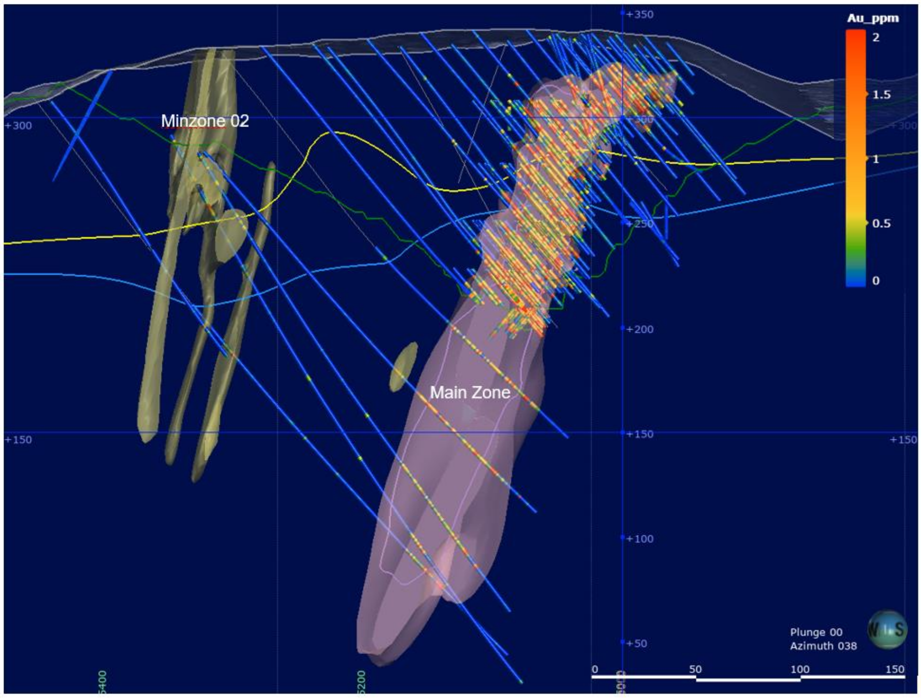


Figure 14-40 Sectional view of Dynamite Hill mineralization model

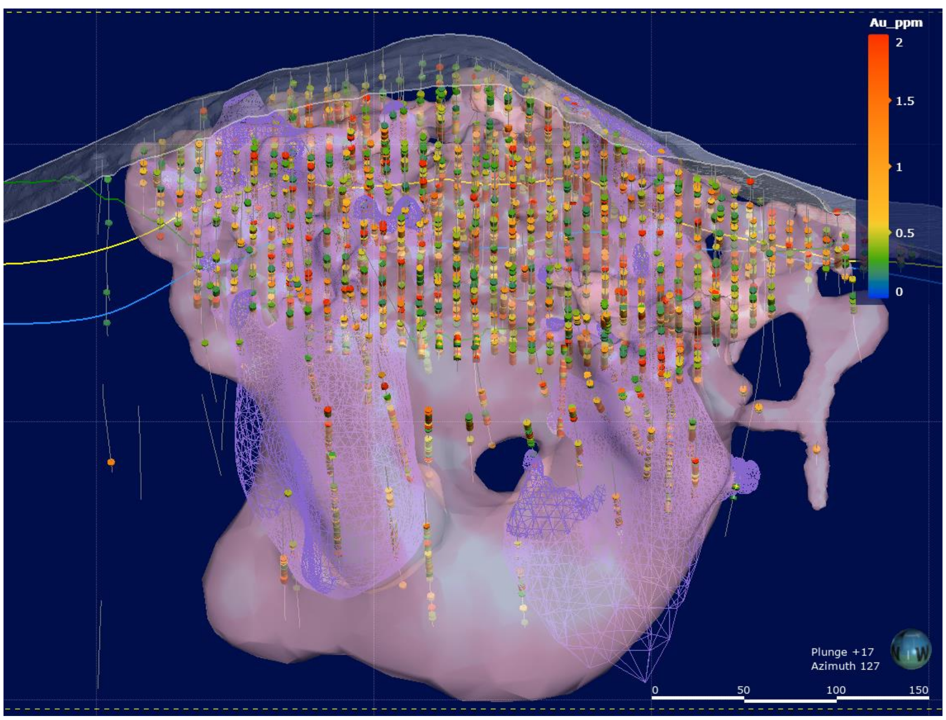


Figure 14-41 Long section view of Dynamite Hill main mineralization model

Note: Main Zone shown as solid in light red colour

Table 14-32 List of Dynamite Hill geological models and codes

Model Type	Model Name	Code	Original File Name	Effective Date
Mineralization	Main Zone	10	Minzone_1_v041121.00t	2021-11-04
Mineralization	Minzone01	11	Minzone_2_v041121.00t	2021-11-04
Mineralization	Minzone02	12	Minzone_3_v041121.00t	2021-11-04
Mineralization	Background Zone	9	BackgroundZone.00t	2021-11-04
Lithology	Granite	1	gran1_v281021.00t	2021-10-28
Lithology	Granite	1	gran2_v281021.00t	2021-10-28
Lithology	Granite	1	gran3_v281021.00t	2021-10-28
Lithology	Sediments	0	BackgroundZone.00t	2021-11-04
Oxidation	Oxide	1	OX Contacts_v041121.00t (ox-tr contact)	2021-11-04
Oxidation	Transitional	2	OX Contacts_v041121.00t (ox-tr contact)	2021-11-04
Oxidation	Fresh	3	FR Contacts_v041121.00t (tr-fr contact)	2021-11-04

14.3.2.3 Asuadai

Mineralization is hosted within an east-northeast trending shear zone which cuts through sediment packages and is also found parallel to bedding within wacke/sandstones on the southeast footwall side and wacke/siltstones on the northeast hanging wall side. Diorite dykes have intruded along the central lithological contact of the shear. Sub-parallel to this central contact are hanging wall and footwall extents of the shear zone.

A series of repeating north-south trending structures cross the shear zone, offsetting the main lithological contact and the hanging wall shear contact. Each of the diorite bodies appears to be bracketed by a pair of these north-south structures. These structures are not evident on the magnetic images due to their orientation and the low magnetic contrast in the host lithologies (Figure 14-42).

The geological model builds on the observations and concepts modelled by HMM Consultancy in 2014. The geological model was constructed using Leapfrog Geo and was built in four parts:

1. Lithology model (GROCK)
2. Structural model (Interpreted structural planes)
3. Mineralization model (MDOM)
4. Material Type model (MROCK)

Lithology, Structure and Material Type Models

The lithology, structure and material type models were initially interpreted from the diamond drillholes. These models, along with the mineralization model, were updated to account for the mineralization intersected in the RC drillholes. The lithology and structural models are shown fin Figure 14-42.

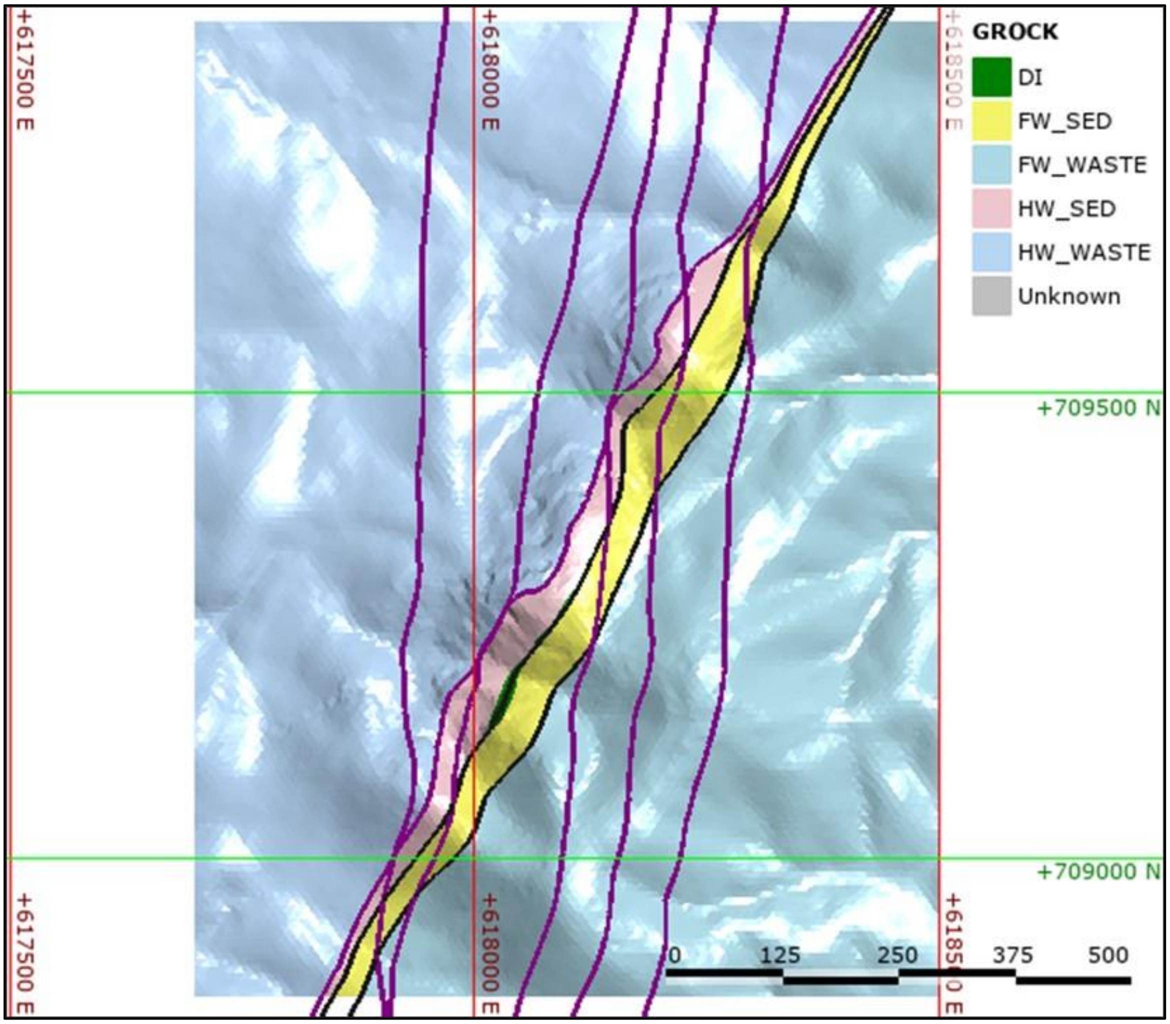


Figure 14-42 Asuadai lithological and structural models

The material type represents different levels of weathering for material movement purposes. A simple weathering model was constructed from the diamond drillhole logged for the base of complete oxidation (BOCO) and the top of fresh rock (TOFR). The model divided weathering into Oxide (strongly to moderately oxidized), Transitional (weakly oxidized) and Fresh (fresh rock) material types. Away from the drilling the thickness of weathering was maintained parallel to topography (Figure 14-43). The weathering model was deemed to be suitable for assessing simple mineral process flow sheets but may not be sufficiently detailed for complicated processing assessments.

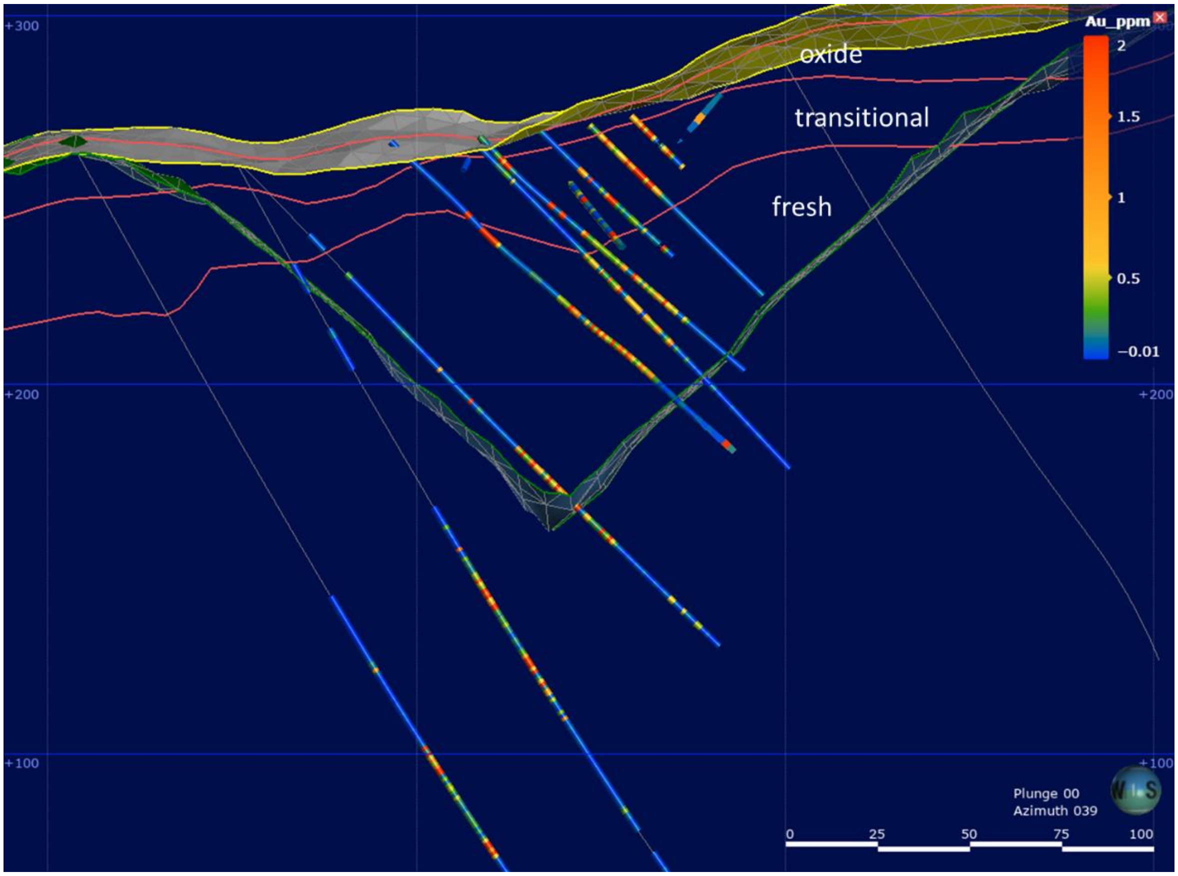


Figure 14-43 Asuadai material type models

Mineralization Model

HMM Consultancy observed two generations of mineralization in 2014 (Dusci & Davies, 2014), an earlier, steep, ductile-type mineralization, parallel to bedding and foliation and a later set of shallow dipping quartz veins. They considered that the shallow set of veins represented the dominant mineralization and were best developed within the diorite bodies. They also noted an increase in sheer intensity and mineralization in the sediments adjacent to the diorite contact. This observation is consistent with AGM's Dynamite Hill deposit where increased intensity of shearing adjacent to the granite contacts is observed in the pit. They interpreted a moderate plunge to the mineralization towards the southwest at the intersection between the northeast–southwest main shear and the north-south crosscutting structures. This is different to other deposits in the area which dominantly show a northerly plunge to mineralization.

To guide the mineralization modelling, a preliminary analysis was undertaken on the raw grades within the modelled lithologies and material types. This confirmed that the diorite (DI) hosts the higher-grade material and that there is only a small difference between the sediment units (FW_SED, HW_SED) within the main shear. The oxide appeared to be slightly higher-grade than the transitional and fresh material (Figure 14-44).

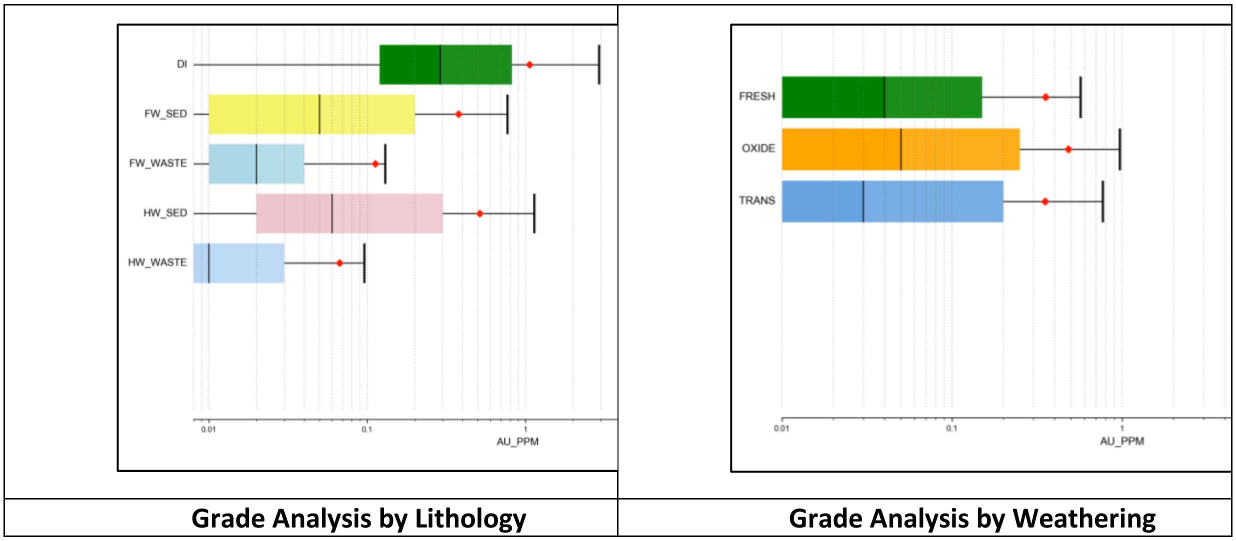


Figure 14-44 Asuadai preliminary grade analysis

For the mineralization model, the main shear was split into fault blocks along strike between the north-south structures (FB1 to FB6) and a wireframe was constructed adjacent to the diorite contact capturing the higher shear intensity mineralization in the sediments close to the diorite contact (DIshear) (Figure 14-45).

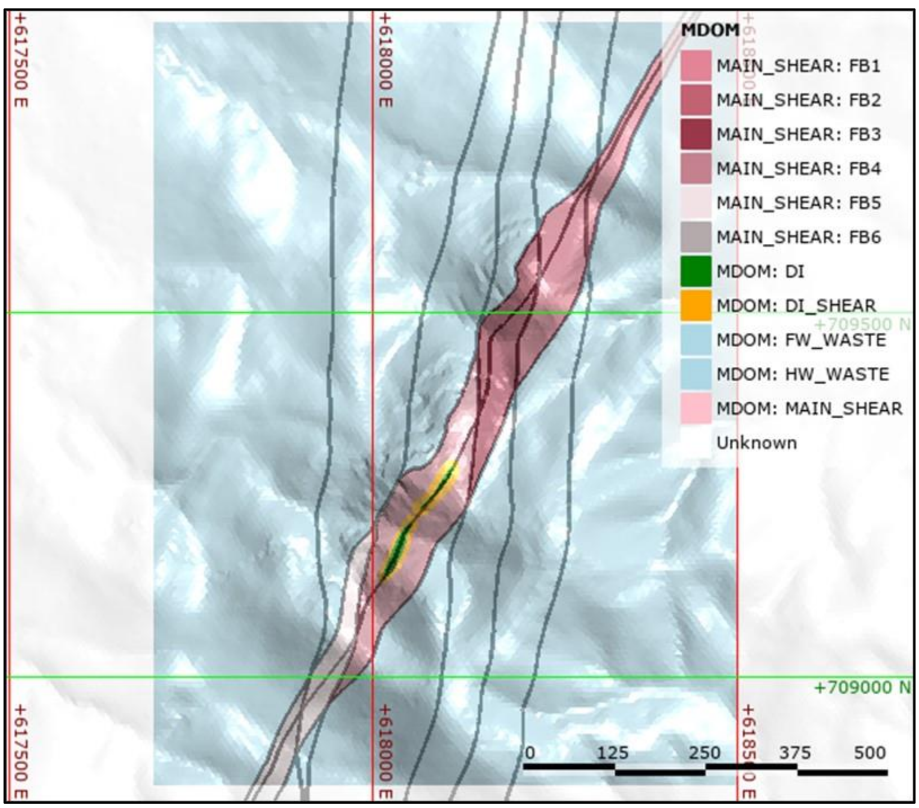


Figure 14-45 Asuadai mineralization model

A secondary grade analysis was undertaken to assess the impact of the mineralization domains. This showed a clear variation in grade between the different fault blocks within the main shear and confirmed the higher-grade mineralization in the sediments adjacent to the diorite contact (Figure 14-46).

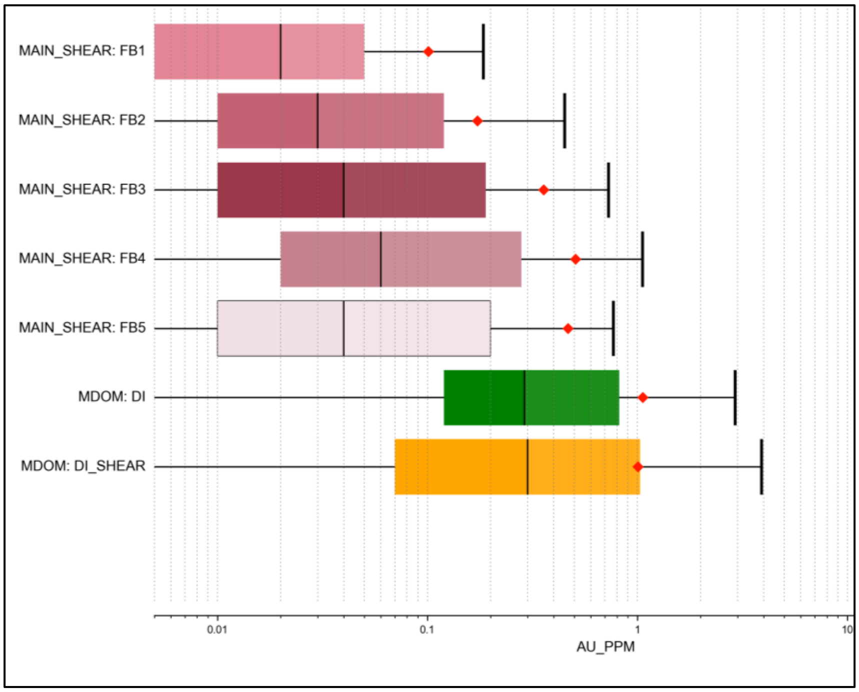


Figure 14-46 Asuadai secondary grade analysis

Many of the geological concepts observed and modelled by HMM Consultancy in 2014 were supported by the relogging exercise and were incorporated into the updated model. The geological models are therefore similar. In the current model, the diorites were modelled as two discreet bodies as opposed to a continuous dyke as was modelled in 2014. The relogging program did not support the 2014 modelled phyllite/shale units and these were updated as structural contacts rather than lithological units. The footwall contact to the main shear has been introduced. The new material type model is smoother and slightly deeper for the oxides compared to 2014.

All domains are summarized in Table 14-33.

Table 14-33 Asuadai mineralized domains

Leapfrog Output file	Datamine Wireframe File	Datamine Mode
Topographic model		
TOPO	TOPO	1
Lithological model		
GROCK - DI	LITH	10
GROCK - HW_SED	LITH	22
GROCK - FW_SED	LITH	21
GROCK - HW_WASTE	LITH	32
GROCK - FW_WASTE	LITH	31
Structural model		
NS12	STRUC	1
NS23	STRUC	2
NS34	STRUC	3
NS45	STRUC	4
NS56	STRUC	5
STRUCTURE_FW	STRUC	6
STRUCTURE_HW	STRUC	7
MAIN_SED_CONTACT	STRUC	8
Material type model		
MROCK - OXIDE	MROCK	2
MROCK - TRANS	MROCK	3
MROCK - FRESH	MROCK	4
Mineralization model		
MDOM - MDOM_DI	DOMAIN	100
MDOM - MDOM_DI_SHEAR	DOMAIN	200
MDOM - MAIN_SHEAR_FB1	DOMAIN	301
MDOM - MAIN_SHEAR_FB2	DOMAIN	302
MDOM - MAIN_SHEAR_FB3	DOMAIN	303
MDOM - MAIN_SHEAR_FB4	DOMAIN	304
MDOM - MAIN_SHEAR_FB5	DOMAIN	305
MDOM - MAIN_SHEAR_FB6	DOMAIN	306
MDOM - MDOM_FW_WASTE	DOMAIN	901
MDOM - MDOM_HW_WASTE	DOMAIN	902
Ancillary wireframes		
Main_Shear_0.3g_Ind - Min	SUBDOM	10
DH_ALL - DH_10m	DHSPACE	10
DH_ALL - DH_20m	DHSPACE	20
DH_ALL - DH_40m	DHSPACE	40

14.3.3 Bulk Density

Average bulk density was assigned to the block model based on a combination of lithology and oxidation (Table 14-34). For Akwasiso, density values were calculated from a small density data set of 48 measurements, only 12 of which are in oxide/transitional zones. For Dynamite Hill, 66 total measurements of drill cores formed the basis of average density calculations representing the various lithology and oxidation types. For Asuadai, the results of 109 density determination from drill core were supplied with the drilling data. The density values for Asuadai have changed slightly from those used in 2014 and were rounded to reflect an appropriate level of precision.

Table 14-34 Dry bulk density values assigned to block model

Deposit	Weathering Domains	Mean
Akwasiso	Oxide	1.70
	Transition	2.30
	Fresh - Granite	2.70
	Fresh - Sediments	2.70
Dynamite Hill	Oxide	1.79
	Transition	1.98
	Fresh - Granite	2.70
	Fresh - Sediments	2.77
Asuadai	Oxide	1.90
	Transition	2.30
	Fresh - Diorite	2.70
	Fresh - Sediments	2.60

14.3.4 Assays, Compositing and Capping

Drillhole samples are coded by lithology, oxidation and mineralization models for statistical analysis. Exploratory data analysis was carried out for both individual and combined geological features.

For both Akwasiso and Dynamite Hill, the mineralization model provides the best domain to distinguish different grade populations of the deposit (Figure 14-47 and Figure 14-48).

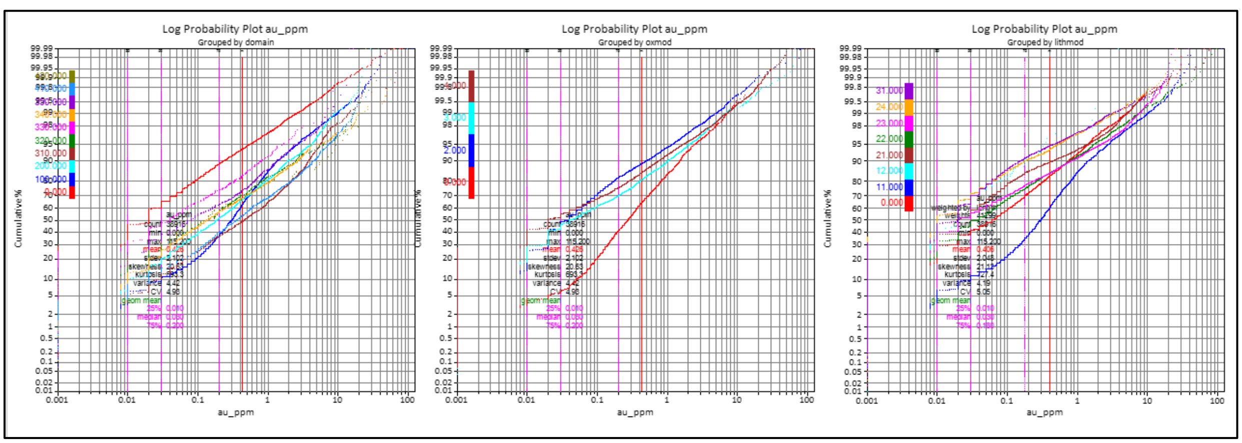


Figure 14-47 Log probability plot of Akwasiso exploration drillhole assays - Au grade by mineralization, oxidation and lithology

*Note: *Code 0 in Domain plot represent samples outside the mineralization domains (Domain 900)*

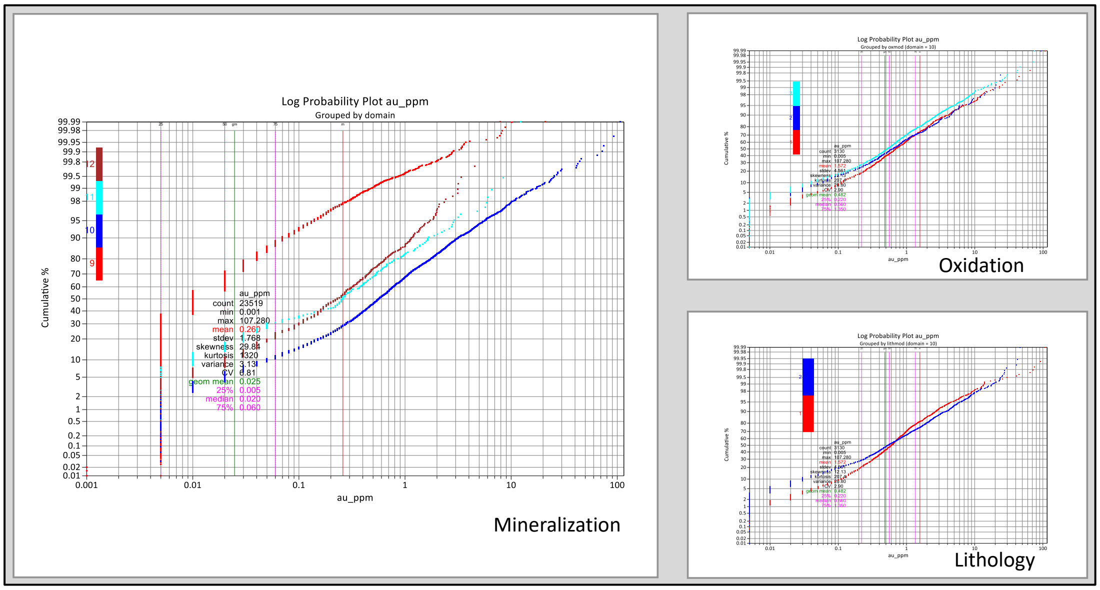


Figure 14-48 Log probability plot of Dynamite Hill exploration drillhole assays - Au grade by mineralization, oxidation and lithology

*Note: *in lithmod figure, code 1 is granite and code 2 is sediments*

For Asuadai, statistical analysis was carried out using Snowden Supervisor version 8.8. The domains are a combination of lithology, material type and fault blocks. In the main shear sediments, transitional and fresh material was found to have a similar grade distribution while there is a bias towards the oxide material (Figure 14-49). Oxide material is therefore being domained separately in the main shear sediments except for Fault Block 1, which only contains a small number of drillholes. The diorite and the contact shear sediments do not show a bias to the oxide material and therefore all material types are grouped together for estimation. Summaries of the domain codes used to distinguish the data during geostatistical analysis and estimation are shown in Table 14-35.

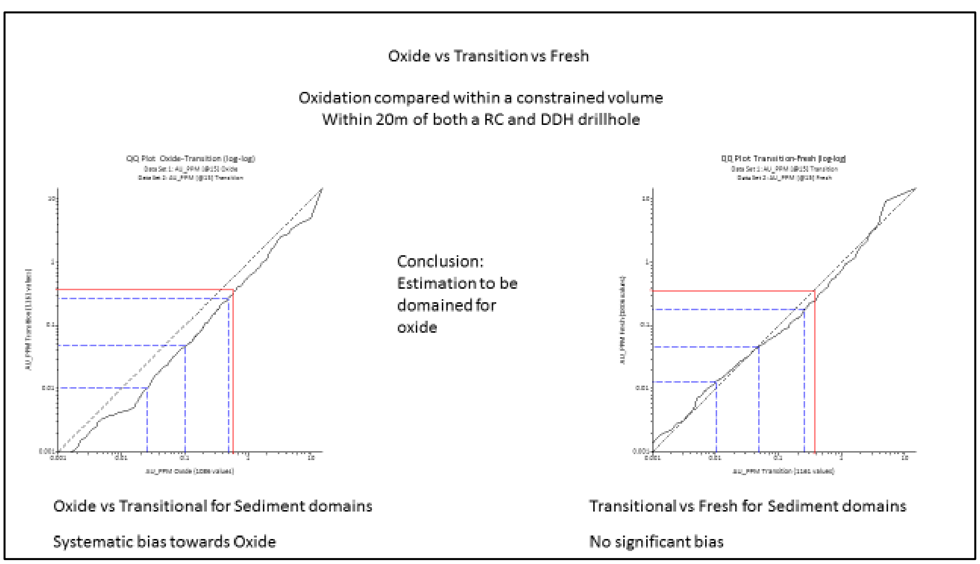


Figure 14-49 Asuadai material type analysis

Table 14-35 Asuadai estimation domains

ESTIMATION DOMAIN	GROCK	MROCK	MDOM DOMAIN	FAULT BLOCK	DESCRIPTION
D1000	10	2-4	100	-	Diorite intrusive Oxide, transition and fresh
D2000	21-22	2-4	200	-	Contact Shear sediments Oxide, transition and fresh
D3220	21-22	2	302	2	Fault block 2 Main Shear sediments Oxide
D3240	21-22	3-4	302	2	Fault block 2 Main Shear sediments Transition and fresh
D3320	21-22	2	303	3	Fault block 3 Main Shear sediments Oxide
D3340	21-22	3-4	303	3	Fault block 3 Main Shear sediments Transition and fresh
D3420	21-22	2	304	4	Fault block 4 Main Shear sediments Oxide
D3440	21-22	3-4	304	4	Fault block 4 Main Shear sediments Transition and fresh
D3520	21-22	2	305	5	Fault block 5 Main Shear sediments Oxide
D3540	21-22	3-4	305	5	Fault block 5 Main Shear sediments Transition and fresh
D3100	21-22	2-4	301	1	Fault block 1 Main Shear sediments Oxide, transition and fresh

14.3.4.1 Gold Grade Capping/Outlier Restrictions

Anomalous high grade Au assays are present in the drillhole samples. At Akwasiso, the maximum assay grade is 115.2 g/t Au in exploration drillholes, while at Dynamite Hill, the maximum assay grade is 107.28 g/t Au in exploration drillholes and 632 g/t Au in grade control drillholes.

At Akwasiso, high grade samples were treated in two steps. The first step was to top-cut all assays at 25 g/t Au before compositing. The second step was to apply additional capping on composite grades at varied thresholds by mineralization domain in the estimation process. It was deemed necessary to top-cut the raw assays before compositing due to some high-grade samples of longer than average length.

At Dynamite Hill and Asuadai, top cutting is performed on assays, prior to compositing.

For Akwasiso and Dynamite Hill, top-cut threshold grades are assessed by mineralization domains, with histogram and log probability graphs of the drillhole assays, with consideration of effect on mean-variance, reasonable metal loss and the general grade behaviour at the nearby mined deposits. The comparison of sample statistics before and after top-cutting is presented in Table 14-36 for exploration assays and Table 14-37 for GC assays for Akwasiso; similarly, Table 14-38 and Table 14-39 summarize exploration and GC assays for Dynamite Hill, respectively.

For Asuadai, the top cutting threshold is selected by reviewing the anamorphosis model and selecting an upper limit that results in a good fit of the anamorphosis model through the whole grade range. The selected top cap thresholds and influence of the top cap on the calculation of the global mean for each domain can be seen in Table 14-40.

Declustering was also assessed at Asuadai. The drilling shows a spatial bias, with additional drilling being carried out in higher grade areas and a higher density of drilling close to surface than at depth. To account for this in the global data analysis a moving window declustering algorithm was applied. The moving window size was selected at 70 x 70 x 20 m, which roughly equates to the broader, regular drill spacing in the project. The influence of the declustering algorithm on the calculation of the global mean for each domain can be seen in Table 14-40.

Table 14-36 Akwasiso summary statistics of mineralization domain raw and 25 g/t Au top-cut assays of exploration drillholes

Domain	Count	AU_PPM			AUCUT25			AUCUT25		
		Mean	CV	Max	Top-cut (g/t) Au	# Cut	Mean	CV	Max	Metal loss
100	10,283	0.86	3.1	115.2	25	16	0.83	2.53	25	-3%
210	1,536	1.49	3.63	93.08	25	14	1.28	2.72	25	-14%
220	620	0.2	3.55	11.3	25	0	0.2	3.55	11.3	0%
310	1340	1.72	2.45	75.45	25	4	1.6	1.71	25	-7%
320	119	2.43	2.15	37.76	25	1	2.32	1.98	25	-4%
330	89	0.6	1.51	4.39	25	0	0.6	1.51	4.39	0%
340	169	0.48	3.63	17	25	0	0.48	3.63	17	0%
350	261	0.68	3.8	38.31	25	1	0.63	3.13	25	-6%
410	80	2.33	2.07	24.88	25	0	2.33	2.07	24.88	0%
420	191	0.83	2.24	14.64	25	0	0.83	2.24	14.64	0%
900	23152	0.09	11.45	82.2	25	5	0.08	7.87	25	-7%

Note: AU_PPM – raw assays; AUCUT25 – top-cut assays

Table 14-37 Akwasiso summary statistics of mineralization domain raw and 25 g/t Au top-cut assays of grade control drillholes

Domain	Count	AU_PPM				# Cut	AUCUT25			
		Mean	CV	Max	Top-cut (g/t) Au		Mean	CV	Max	Metal loss
100	18,785	0.97	2.95	183.2	25	28	0.94	2.37	25	-2%
210	2,479	0.88	3.99	136	25	3	0.83	2.65	25	-6%
220	1225	0.39	3.02	18.48	25	0	0.39	3.02	18.48	0%
310	2521	1.45	1.97	68.4	25	4	1.42	1.7	25	-2%
320	609	1.67	2.61	37.76	25	3	1.63	2.51	25	-2%
330	0	0	-	-	25	0	0	-	-	-
340	317	0.3	3.93	17.44	25	0	0.3	3.93	17.44	0%
350	294	0.41	3.09	15.96	25	0	0.41	3.09	15.96	0%
410	287	1.62	2.71	59.72	25	1	1.5	2.04	25	-7%
420	303	0.84	3.15	38.84	25	1	0.8	2.58	25	-5%
900	19995	0.19	11.36	204.8	25	8	0.17	6.14	25	-10%

Note: AU_PPM – raw assays; AUCUT25 – top-cut assays

Table 14-38 Summary statistics of Dynamite Hill mineralization domain raw and top-cut assays of exploration drillholes

Domain	Count	Sample Assays AU Grade (g/t)				# Cut	Top-cut Assays AUCUT (g/t)			
		Mean	CV	Max	Top-cut (g/t) Au		Mean	CV	Max	Metal loss
9	19,821	0.04	6.13	21.04	3	18	0.04	3.71	3	7%
10	3,130	1.57	2.9	107.28	30	10	1.47	2.13	30	7%
11	185	0.74	2.04	12.37	4	7	0.62	1.54	4	16%
12	383	0.46	1.54	7.89	3	6	0.44	1.32	3	4%

Table 14-39 Summary statistics of Dynamite Hill mineralization domain raw and top-cut assays of grade control drillholes

		Sample Assays AU Grade (g/t)					Top-cut Assays AUCUT (g/t)			
Domain	Count	Mean	CV	Max	Top-cut (g/t) Au	# Cut	Mea n	CV	Max	Metal loss
9	10,293	0.07	3.98	11.08	3	14	0.07	3.16	3	4%
10	8,368	1.72	4.79	632	30	17	1.57	1.86	30	8%
11	94	0.67	1.69	9.4	4	2	0.61	1.24	4	9%
12	0	-	-	-	-	-	-	-	-	-

Table 14-40 Asuadai domain statistics and top caps

ESTIMATION DOMAIN	RAW DATA					TOPCAP DATA				DE-CLUSTER	
	Count	Minimum	Maximum	Mean	Variance	Topcap	Number	Mean	Variance	Mean	Variance
D1000	658	0	53.82	1.05	10.83	20.00	3	0.95	4.52	0.93	3.85
D2000	763	0	28.15	1.00	4.94	20.00	3	0.98	4.3	1.00	5.17
D3220	275	0	4.13	0.18	0.17	2.00	3	0.17	0.12	0.14	0.11
D3240	1306	0	9.12	0.17	0.29	2.00	17	0.15	0.1	0.16	0.13
D3320	405	0	12.2	0.32	0.89	N/A	0	0.32	0.89	0.28	0.69
D3340	1200	0	15.33	0.35	1.42	N/A	0	0.35	1.42	0.32	1.3
D3420	792	0	95.00	0.87	17.19	20.00	3	0.73	3.37	0.55	3.22
D3440	2716	0	34.00	0.35	1.54	20.00	1	0.35	1.27	0.32	1.31
D3520	126	0	13.10	0.48	2.32	2.00	4	0.31	0.24	0.36	0.28
D3540	516	0	24.59	0.45	2.79	8.00	4	0.41	1.55	0.45	2.06
D3100	109	0	5.00	0.10	0.23	2.00	1	0.07	0.04	0.07	0.06

14.3.4.2 Compositing

The dominant sample length is 1.0 m for exploration drillhole samples and 1.5 m for GC hole samples. There is no obvious trend of grade distribution by the length of the samples.

The exploration and GC drillhole samples are composited from collar to toe at 1.5 m equal length intervals for uniform support. Residual of less than half of the composite length are added to the last full composite. Drillhole traces without sample or missing assays are ignored. The composites are coded by the mineralization domain wireframes (majority rule). Assays are top cut prior to compositing. Composite grade was calculated from top-cut assays. In Akwasiso, composites were further capped by the varied thresholds by mineralization domain (Table 14-41). Composite capping thresholds were evaluated using the same log-probability plot-based method as used for assays capping.

Table 14-41 Akwasiso composite Au statistics of exploration and GC drillholes

Domain	AUCAP EXP 1.5 m Composite			Max	AUCAP GC 1.5 m Composite			Max
	Count	Mean	CV		Count	Mean	CV	
100	7,024	0.81	2.03	25	18,785	0.94	2.37	25
210	1,054	1.25	2.24	25	2,479	0.83	2.65	25
220	434	0.23	2.86	6.42	1,225	0.38	2.71	10
310	909	1.56	1.4	16.82	2,495	1.55	1.61	25
320	82	2.16	1.64	16.71	542	2.18	2.11	25
330	60	0.58	1.34	3.34	0	0	-	-
340	152	0.41	2.61	6.5	317	0.28	3.17	10
350	220	0.54	2.21	10	294	0.39	2.68	10
410	55	1.97	1.82	15	287	1.44	1.88	15
420	141	0.73	1.92	9.76	303	0.75	2.14	10
900	17,836	0.08	6.26	21.67	20,088	0.14	6.45	25

Note: (the “majority” rule of composite domain coding may result in the mean of small zones not consistent with raw assays)

14.3.4.3 Boundary Analysis

In Akwasiso and Dynamite Hill, the boundary condition between the mineralization domains and between oxidation domains was assessed through visual inspections and contact graph analysis. The grades show sharp contact between the mineralization domain and the non-mineralized background. In Akwasiso, some mineralization domains that share common boundary, for example 100 – 210, showed smoother transition of the grade profile within limited distance across the contact, while others showed abrupt change. The grades did not show distinct change across the oxidation boundaries.

14.3.5 Variogram Analysis

In Akwasiso, variography was modelled for the main mineralization domains with sufficient samples, including Domain 100, 210 and 310. Correlograms were calculated and modelled with a two-structure exponential/spherical model in Vulcan software. The 1.5 composites of combined exploration and GC drillholes were used for variogram modelling. Robust variogram (correlogram) models were obtained for respective domains that matches well with the observed geology and trends of mineralization (Figure 14-50). The variogram parameters obtained from the three domains were used for other smaller domains with rotation angles adjusted to fit the respective domain (Table 14-42).

Table 14-42 Akwasiso domains 100, 210, 310 composite Au variogram (correlogram) parameters

Domain	Type	Sill	Rotation Angles (Vulcan)			Ranges (m)		
			Azimuth	Plunge	Dip	Major	Semi	Minor
100	Nugget	0.4	-	-	-	-	-	-
	Exponential	0.576	169.107	48.59	41	12	15	8
	Spherical	0.024	169.107	48.59	41	81	65	15
210*	Nugget	0.4	-	-	-	-	-	-
	Exponential	0.282	30	0	-60	10.277	21.473	5
	Spherical	0.318	30	0	-60	25	10.658	5
310**	Nugget	0.3	-	-	-	-	-	-
	Exponential	0.491	30	0	-75	10	22	3
	Spherical	0.209	30	0	-75	32	4	3

*Note: * used for domain 220; ** used for 320, 330, 340, 350, 410, 420 (rotation angles adjusted to fit)*

In Dynamite Hill, closely spaced GC drillholes depict well the characteristics of short-range continuity of gold grade therefore GC data is merged with exploration composites for variography analysis. As smaller domains (11, 12) do not contain sufficient samples for reliable variography, only the main mineralized domain (10) is modelled.

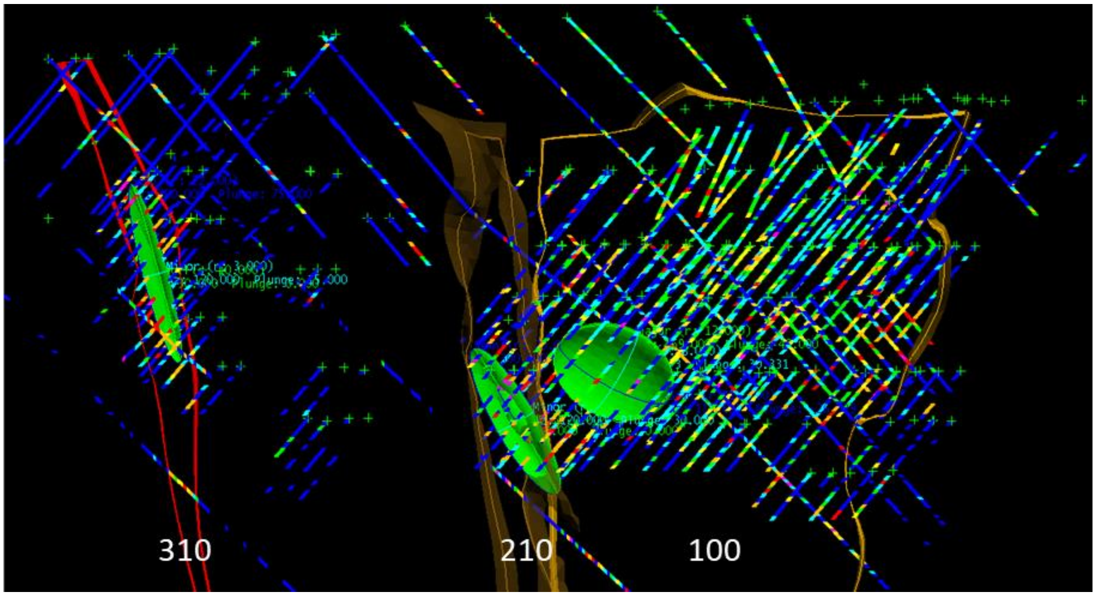


Figure 14-50 3D visualization of variogram ellipses for Akwasiso domains 100, 210, 310

The variogram is modelled in Gaussian space with the normal scores transformed from the sample grades in real space. Correlograms are calculated and modelled with a two-structure exponential model using SAGE™ 2000 software. A robust variogram (correlogram) model is obtained for Domain 10 that matches well with the observed geology and trends of mineralization (Table 14-43).

Table 14-43 Dynamite Hill Domain 10 composite Au normal score variogram (correlogram) parameters

Domain	Type	Sill	Rotation Angles (Vulcan)			Ranges (m)		
			Azimuth	Plunge	Dip	Major	Semi	Minor
	Nugget	0.222	-	-	-	-	-	-
100	Exponential	0.598	18	-4	64	18.4	12.1	6.9
	Spherical	0.18	27	-4	-21	81.8	17	40.2

In Asuadai, the domains were grouped for variography based on the geometry of the mineralization. The diorite and the contact shear mineralization have a steep southerly plunge and the variogram (V101) was orientated to reflect this. The mineralization in the main shear sediment domains is parallel to the shear and V301 is orientated to reflect this. The variograms are modelled on experimental gaussian variograms which are moderately to poorly structured. To reflect the uncertainty in the variogram structure, a second set of alternate variogram models were developed (V102 and V302) and in each of these models a short-range structure was introduced with a local rotation to align the variogram structure to the flat lying vein geometry reported from the drill core. Variogram parameters are summarized in Table 14-44 and modelled variograms are shown in Figure 14-51.

Table 14-44 Asuadai variogram parameters

Variogram	Structure	Sill	Range U	Range V	Range W	Rotation
	S1 Nugget	0.20				
V101	S2	0.35	14	6	2	-150,65,51
	S3	0.45	80	10	10	-150,65,51
	S1 Nugget	0.20				
V102	S2	0.45	10	10	2	180,5,0
	S3	0.1	14	12	8	-150,65,51
	S4	0.25	80	20	10	-150,65,51
V301	S1 Nugget	0.20				
	S2	0.35	30	20	10	-115,0,70
	S3	0.45	150	40	30	-115,0,70
V302	S1 Nugget	0.2				
	S2	0.35	10	10	20	180,5,0

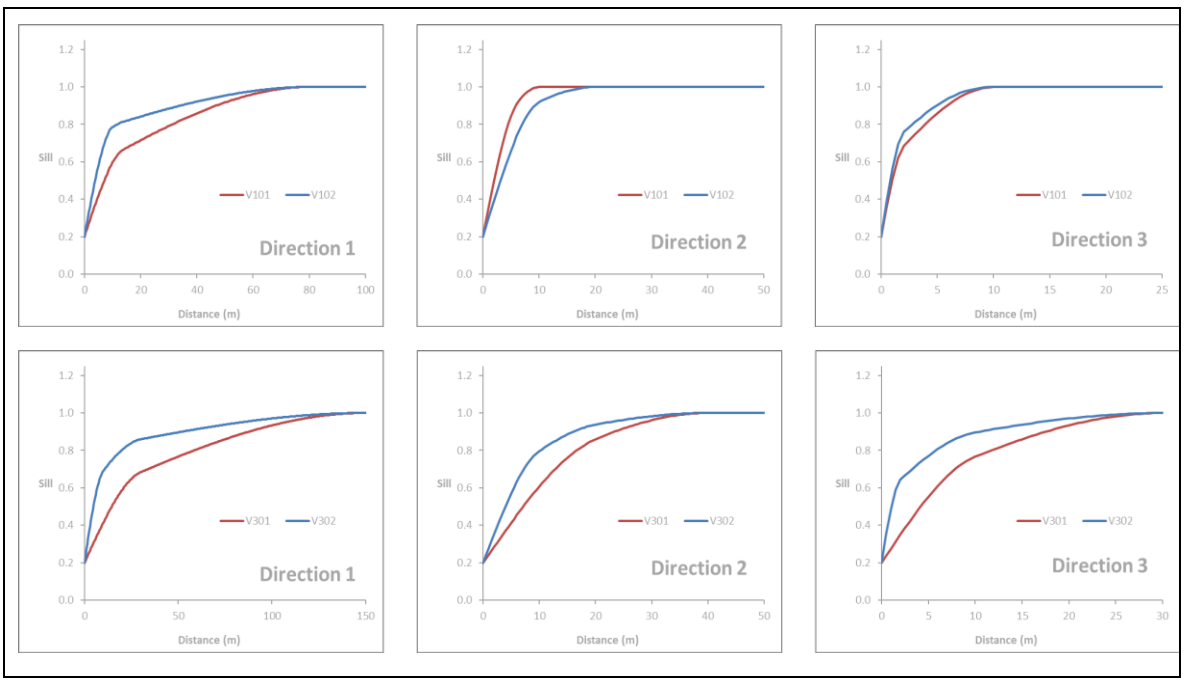


Figure 14-51 Asuadai relative variogram models

14.3.6 Block Model

Table 14-45 summarizes the block model definition for the three deposits. The model covers the full extent of geology and mineralization models and provides adequate extent to allow pit optimization process. Both Akwasiso and Dynamite Hill block models were developed using Maptek's Vulcan software, while Asuadai was constructed using Datamine's Studio software.

At Akwasiso, the 6 m vertical block size corresponds to the mining bench height.

Table 14-45 Block model definition

Deposit	Description	X	Y	Z
Akwasiso	Minimum Corner	613,820	703,700	-146
	No. Blocks	168	144	58
	Block Size	5	5	6
Dynamite Hill (Estimation Model)	Minimum Corner	616,020	706,520	17
	No. Blocks	182	182	121
	Block Size	5	5	3
Dynamite Hill (Simulation Model)	Minimum Corner	616,310	706,760	17
	No. Blocks	305	350	218
	Block Size	1	1	1.5
Asuadai	Minimum Corner	617,800	708,950	-50
	No. Blocks	120	170	135
	Block Size	5	5	3

14.3.7 Estimation Approach and Parameters

14.3.7.1 Akwasiso

OK was used for grade estimation. An independent GC model of the same block size was first created using GC data only as reference model in the mined-out area. To ensure that the resource model will reproduce the grade distribution of the reference model, multiple scenarios of estimation parameters were tested to run estimation with exploration data only (EXP Model). The parameters that produced the closest tonnage-grade curve to GC model were selected. The GC composites were then merged with the exploration composites for the final resource estimation (MRE Model) using the selected parameters. The estimation plan is presented in Table 14-46 and illustrated in Figure 14-52. The vein lode type domains used dynamic anisotropic search orientations generated from digitized vein trend surfaces.

Table 14-46 Akwasiso grade estimation parameters

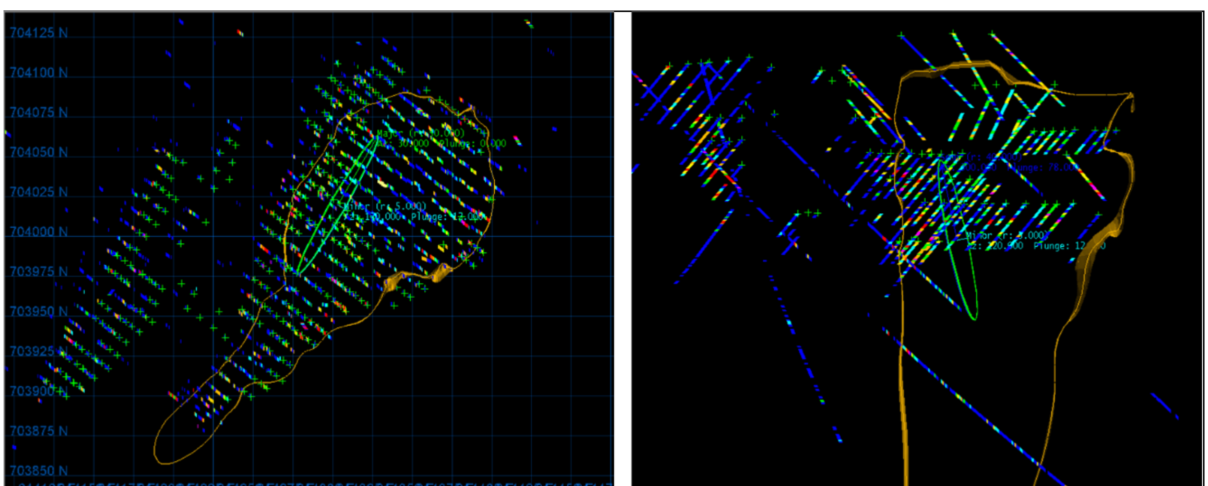
		# Composites				Drillholes			Search Radius (m)		
Model	Est. Pass	Min	Max	Max/Hole	Max per Oct	Min	Max	Type	Maj	Semi	Min
GC Model	GC pass	6	30	5	-	2	8	gc only	15	15	7.5
EXP Model (exploration comps only)	1 (exp)	4	14	4	6	1	5	exp only	50	40	5
	2 (exp)	4	10	4	5	1	4	exp only	75	75	10
MRE Model (exploration + GC comps)	1	4	20	4	6	2	8	exp + gc	12	12	5
	2	4	14	4	6	1	5	exp + gc	50	40	5
	3	4	10	4	5	1	4	exp + gc	75	75	10

** GC Model used dynamic anisotropic search*

			Search Ellipsoid (Vulcan)		
Domain	Boundary	Estimation Method	Bearing (Z)	Plunge (Y)	Dip (X)
100	Firm (210) *	OK	30	0	-78
210	Firm (100) *	OK	30	0	-78
220	Hard	OK	30	0	-78
310	Hard	OK	Dynamic Anisotropy		
320	Hard	OK	Dynamic Anisotropy		
330	Hard	OK	Dynamic Anisotropy		
340	Hard	OK	Dynamic Anisotropy		
350	Hard	OK	Dynamic Anisotropy		
410	Hard	OK	Dynamic Anisotropy		
420	Hard	OK	Dynamic Anisotropy		
900	Hard	ID2	30	0	-78

** Firm boundary allows sharing comps to max of 15m distance*

*** GC model allows sharing 100, 210, 220 comps to max of 15m distance*



Plan view of Domain 100 Search ellipsoid | Sectional view of Domain 100 Search ellipsoid

Figure 14-52 Illustration of Akwasiso search ellipsoid (Domain 100 example)

14.3.7.2 Dynamite Hill

Grade estimation for Dynamite Hill used a combination of localized selective mining unit (LSMU) and Inverse Distance methods. The main domain (10) used LSMU and all other domains used Inverse Distance to power 3 (ID3). Only exploration drillhole composites were used.

LSMU Estimation of Domain 10

The grade estimation for Domain 10 is a localized, recoverable resource model with grades estimated at a SMU scale of 5 x 5 x 6 m. The local metal distribution for the recoverable resource was estimated using conditional simulation. The basic workflow used for LSMU model is as follows:

1. Point scale conditional simulation at 1 x 1 x 1.5 m scale (Sequential Gaussian Simulation)
2. Re-block each realization to selective mining unit (SMU) scale (5 x 5 x 3 m)
3. Divide the domain into panels (25 x 25 x 15 m)
4. Calculate the local metal distribution within each panel from SMUs for all realizations at a sequence of cut-off grades
5. Index the SMU blocks by e-type estimates within each panel to represent a local grade distribution
6. Assign grades from the local distribution in increasing sequence to SMUs ranked by the indexed values (e-type estimates)

The localization is the same approach used for localized uniform conditioning (LUC), which estimates localized SMU grades conforming to the proper grade–tonnage curves as well as maintaining the relative spatial grade distribution pattern indicated by the e-type estimates. The applied estimation differs from LUC by obtaining the local distribution through conditional simulation rather than UC. This maintains the advantages of having a probabilistic conditional simulation model (multiple realization models) while providing a deterministic summary model (one grade per block) to be used for the reporting and optimisation processes.

A total of 50 simulation realizations and the e-type were produced at 1 x 1 x 1.5 m point scale support and then each realization and e-type are regularized to 5 x 5 x 3 m SMU block size. The SGS search parameters are shown in Table 14-47. The SMU blocks are coded with the panel ID (each 25 x 25 x 15 m panel was assigned a unique ID code) before being exported to csv block model file for post-processing.

The indexing and localization of block grades are completed in Microsoft™ Excel, PowerQuery and processed with DAX language. The localized block model file was then re-imported to Vulcan as the final grade model for Domain 10.

Inverse Distance Estimation (all other Domains)

The ID3 was used for grade estimation for Domains 11, 12 and 9. SGS and ID3 estimation parameters are summarized in Table 14-47.

Table 14-47 Dynamite Hill Sequential Gaussian Simulation and Inverse Distance (ID3) Estimation Parameters

			# of Composite			# of Drillhole		Octant	Search Ellipsoid					
									Radius (m)			Orientation (Vulcan)		
Modeling Method	Domain	Est. Pass	min	max	max/hole	min	max	max/oct	major	semi	minor	bearing	plunge	dip
SGS	10	one pass	4	15	4	-	-	6	80	80	15	35	0	65
ID3	10 (for ranking)	ID3 / P1	4	12	3	2	5	4	40	30	5	35	0	65
		ID3 / P2	4	12	3	2	5	4	80	60	10	35	0	65
		ID3 / P3	2	8	3	1	3	3	160	120	40	35	0	65
	11	ID3 / P1	4	6	2	2	4	2	40	30	3	35	0	65
		ID3 / P2	2	5	2	1	3	2	80	60	10	35	0	65
	12	ID3 / P1	4	6	2	2	4	2	40	30	3	35	0	78
		ID3 / P2	2	5	2	1	3	2	80	60	10	35	0	78
	9	ID3 / P1	2	6	2	1	3	2	40	30	3	35	0	65

14.3.7.3 Asuadai

The grade model for Asuadai was estimated at a SMU scale of 5 x 5 x 3 m LSMU (see description above for Dynamite Hill), with a panel size of 50 x 50 x 24 m.

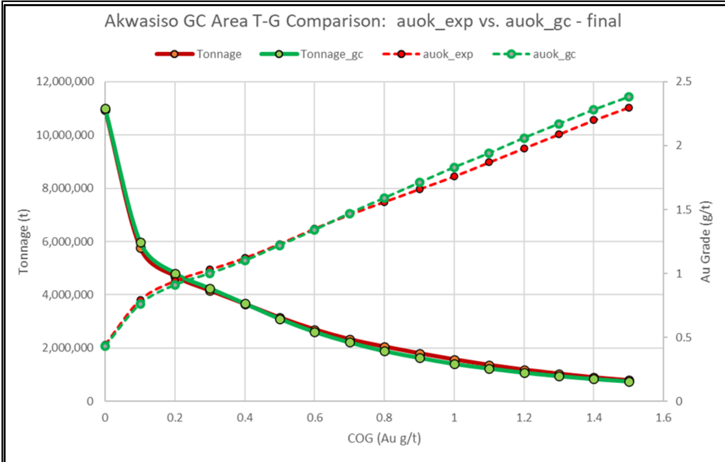
The conditional simulation uses point scale sequential gaussian simulation (SGS) using a fine grid of points (1 m x 1 m x 1 m) which is close to the composite length. The search neighbourhood is set at 200 x 100 x 100 m and is aligned to the along strike and downdip orientation of the shear zone. A minimum of 6 samples with a maximum of 20 samples is set for selection with the search and a restriction of 5 samples per hole is used. As well as the samples, up to 20 previously simulated nodes are selected.

Simulation realizations are run in batches of 10 and each realization within a batch uses the same path. Thirty realizations are run with the initial variogram for the domain and then another thirty realizations are run with the alternate variogram giving a total of 60 simulation realizations.

14.3.8 Model Validation

14.3.8.1 Benchmarking with Grade Control and Independent Models

The Akwasiso resource model was calibrated to a reference model (GC Model) in the mined-out area. The tonnage-grade comparison of the exploration model (EXP Model) and GC Model is presented in Figure 14-53. The resource model was also validated through cross-checking with an independent conditional simulation model produced by Gold Fields in September 2020. The two models compared well in the common volume between the as-mined topo surface and $1600 resource pit shell (Table 14-48).



Cutoff	auok_ exp	Tonnage_ exp	auok_ gc	Tonnage_ gc	diff%_ grade	diff%_ tonnage
0	0.44	10,947,650	0.43	10,995,560	2%	0%
0.1	0.79	5,772,354	0.76	5,985,642	4%	-4%
0.2	0.94	4,697,875	0.91	4,811,360	3%	-2%
0.3	1.03	4,153,871	1.00	4,238,838	3%	-2%
0.4	1.12	3,651,141	1.1	3,668,888	2%	0%
0.5	1.23	3,138,136	1.22	3,094,157	1%	1%
0.6	1.35	2,690,475	1.34	2,600,933	1%	3%
0.7	1.46	2,321,950	1.47	2,209,903	-1%	5%
0.8	1.56	2,043,504	1.59	1,882,262	-2%	9%
0.9	1.66	1,791,830	1.71	1,630,886	-3%	10%
1	1.76	1,560,067	1.83	1,401,108	-4%	11%
1.1	1.87	1,353,709	1.94	1,227,067	-4%	10%
1.2	1.98	1,176,570	2.06	1,069,978	-4%	10%
1.3	2.09	1,024,936	2.17	939,588	-4%	9%
1.4	2.2	888,663	2.28	831,955	-4%	7%
1.5	2.3	779,163	2.38	741,767	-3%	5%

Note:
1. *Comparison within the volume between pre-mining topo and September 2020 eom topo*
2. *Compared only blocks with GC estimate(15m search)*

Figure 14-53 Akwasiso tonnage-grade comparison of EXP Model and GC Model in mined-out area

Table 14-48 Comparison of Akwasiso resource model with simulation model (between 30 June 2021 topography and $1600 resource pit shell)

COG = 0.5	Indicated			Inferred		
	Tonnes	Au (g/t)	Ounces	Tonnes	Au (g/t)	Ounces
MRE Model	**2,249,113**	**1.33**	**95,956**	**170,842**	**1.44**	**7,931**
ConSim Model	1,997,748	1.50	96,472	297,061	1.56	14,928
COG = 0.8	Indicated			Inferred		
	Tonnes	Au (g/t)	Ounces	Tonnes	Au (g/t)	Ounces
MRE Model	**1,491,154**	**1.68**	**80,446**	**127,607**	**1.72**	**7,044**
ConSim Model	1,504,739	1.78	86,210	239,719	1.78	13,726

(ConSim Model: "ak_2008b_eng.dm" created by Gold Fields, September 2020)*

The Dynamite Hill resource model was compared to the grade control model within the mined-out pit at key cut-off grades. A separate simulation model was also produced with GC samples following similar process as the LSMU model, as an additional check of the resource model within the mined-out pit. These reconciliation results are summarized in Table 14-49.

Table 14-49 Dynamite Hill resource model reconciliation summary within mined-out pit

COG = 0	Measured + Indicated			Inferred			Total		
	Tonnes	Au (g/t)	Gold (Oz)	Tonnes	Au (g/t)	Gold (Oz)	Tonnes	Au (g/t)	Gold (Oz)
2021 Resource Model	2,058,564	1.48	98,019	10,814,661	0.06	19,471	12,873,225	0.28	117,490
GC Model	1,951,983	1.58	99,436	0	0.00	0	1,951,983	1.58	99,436
GC Sim Model	2,051,851	1.56	102,911	10,755,382	0.05	16,944	12,807,233	0.29	119,855
COG = 0.5	**Measured + Indicated**			**Inferred**			**Total**		
	Tonnes	**Au (g/t)**	**Gold (Oz)**	**Tonnes**	**Au (g/t)**	**Gold (Oz)**	**Tonnes**	**Au (g/t)**	**Gold (Oz)**
2021 Resource Model	1,757,790	1.68	94,661	157,176	1.00	5,038	1,914,966	1.62	99,699
GC Model	1,800,110	1.69	97,982	0	0.00	0	1,800,110	1.69	97,982
GC Sim Model	1,683,437	1.84	99,317	123,340	1.04	4,124	1,806,777	1.78	103,441
COG = 0.8	**Measured + Indicated**			**Inferred**			**Total**		
	Tonnes	**Au (g/t)**	**Gold (Oz)**	**Tonnes**	**Au (g/t)**	**Gold (Oz)**	**Tonnes**	**Au (g/t)**	**Gold (Oz)**
2021 Resource Model	1,395,255	1.94	87,070	79,641	1.38	3,521	1,474,896	1.91	90,591
GC Model	1,533,186	1.87	92,326	0	0.00	0	1,533,186	1.87	92,326
GC Sim Model	1,340,241	2.14	92,169	62,682	1.44	2,900	1,402,923	2.11	95,069

14.3.8.2 Simulation Checks for Dynamite Hill and Asuadai for LSMU

The simulation was validated at point scale. In Dynamite Hill, accuracy plots and a check on mean and coefficient of variation (CV) statistics was performed (Figure 14-54 and Figure 14-55).

A similar check on summary statistics was also performed for Asuadai (Figure 14-56). Histogram and variogram reproduction checks were also performed.

The visual inspection of select realizations in 2D and 3D also show reasonable reproduction of the orientation and ranges of input variogram (Figure 14-56).

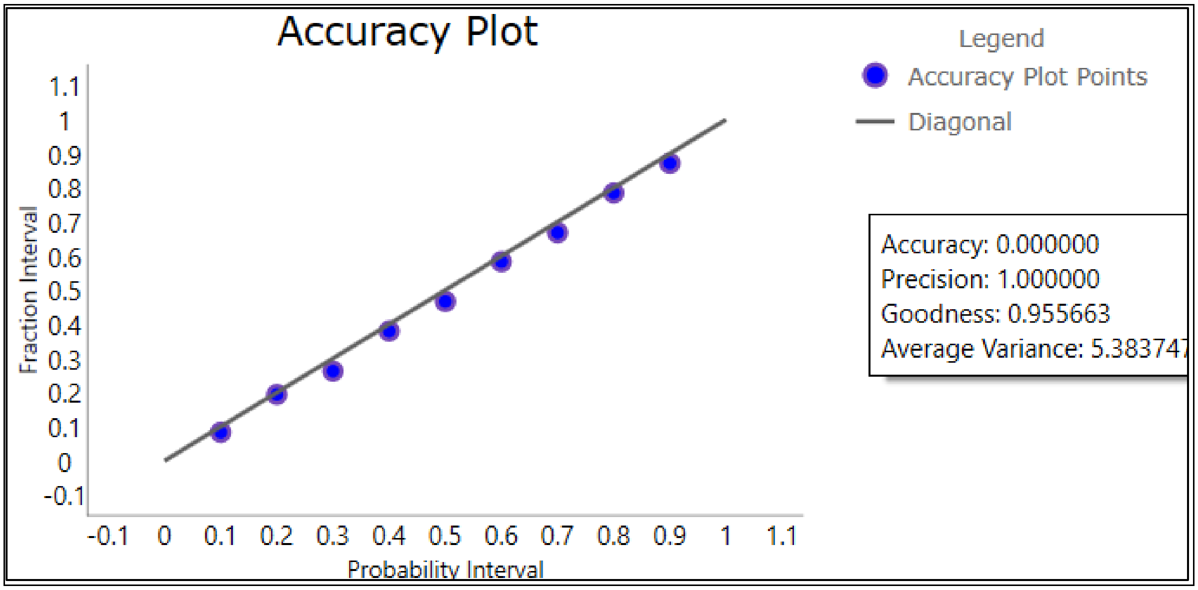


Figure 14-54 Dynamite Hill accuracy plot of 50 SGS realizations

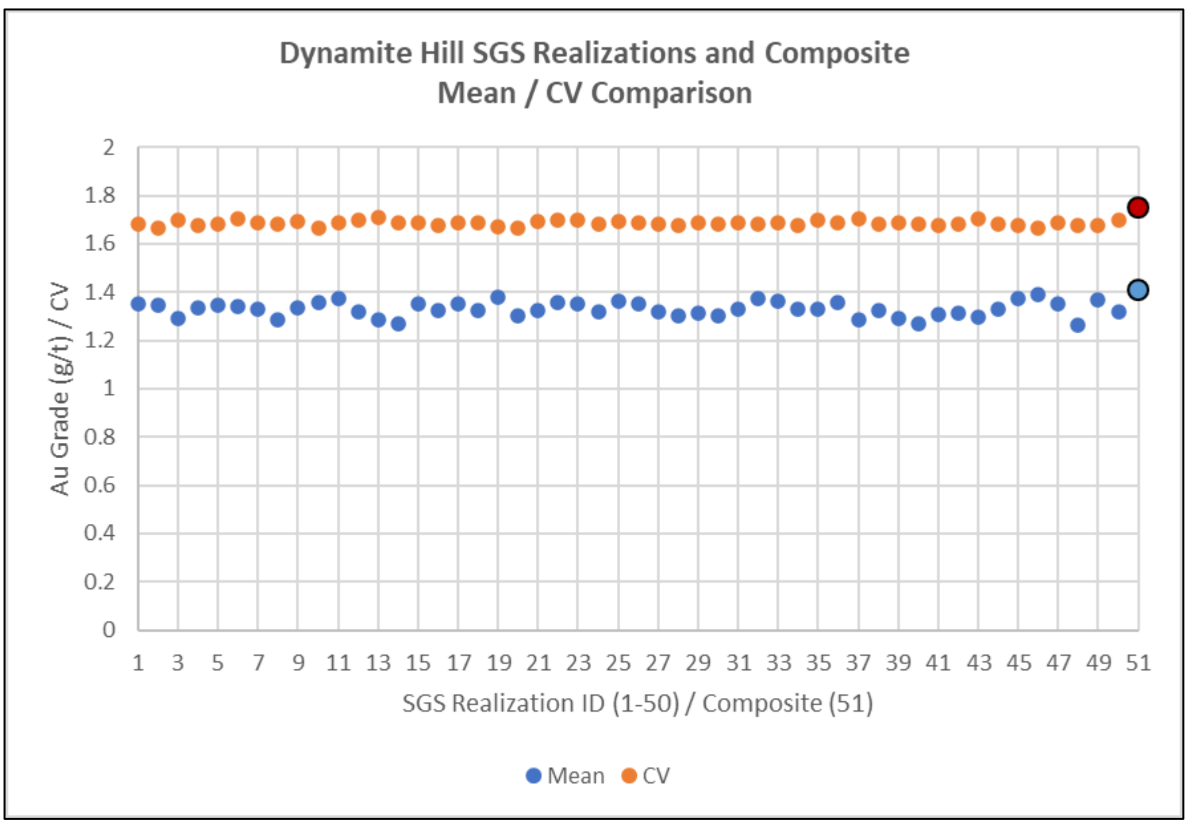


Figure 14-55 Dynamite Hill statistical comparison of SGS realizations and input composites

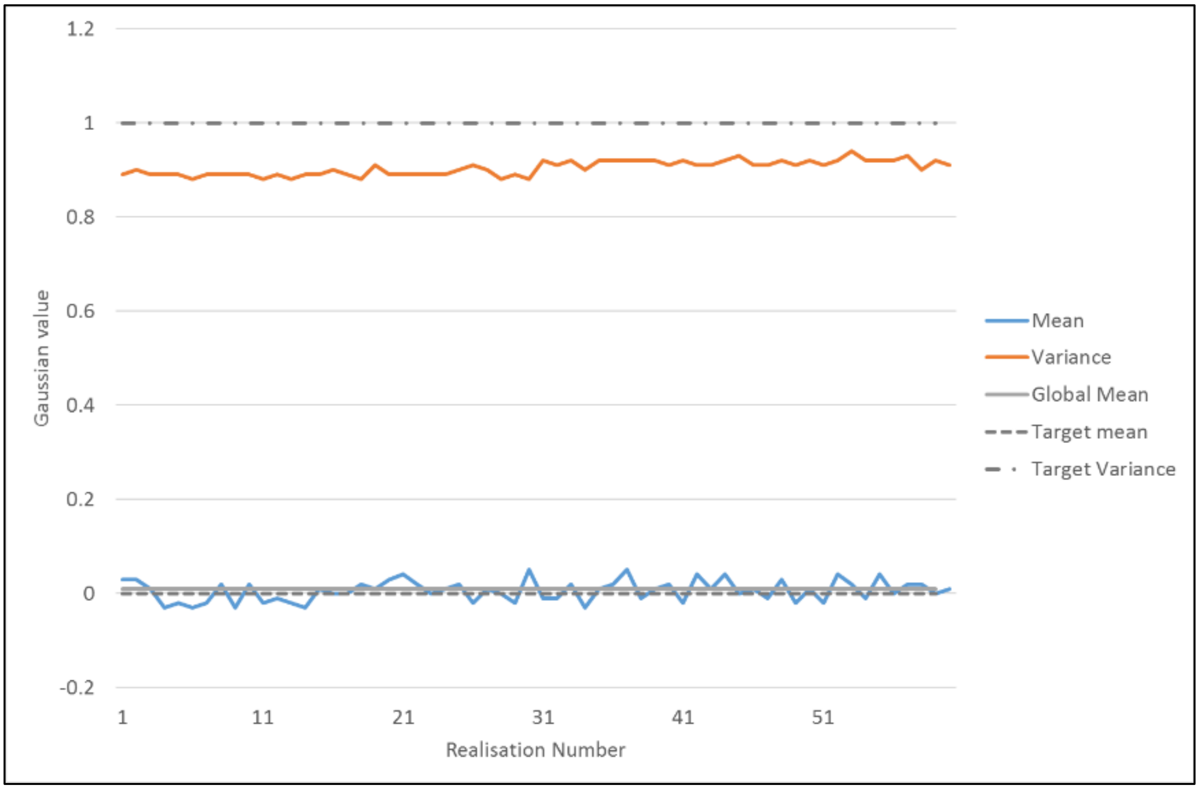


Figure 14-56 Asuadai validation of simulated gaussian values

14.3.8.3 Swath Plots and Global Statistical Comparisons

Swath plots were created by comparing the model block grades and input in spatial increments in northing, easting, and elevation slices throughout the deposit as shown in Figure 14-57 and Figure 14-58 for Akwasiso and Dynamite Hill, respectively. The plots show that block grades are smoother and follow the trend of input composite grades, which is the expected result of estimation, with block grades showing lower overall variance.

Figure 14-57 also shows the statistical comparison of the model and input data for Akwasiso; the global mean of the model Au grade also compared well with composite Au grade.

For Dynamite Hill, Table 14-50 shows the global mean comparison between the block model for Indicated Blocks and the exploration composites.

Table 14-50 Global stats (at 0 g/t cut-off grade) comparison between indicated blocks and exploration drillhole composites

Domain	Block Model (Class 2)					Composite_1.5m AUCUT				
	Count	Mean	CV	Min	Max	Count	Mean	CV	Min	Max
9	-	-	-	-	-	14,399	0.04	3.39	0.001	8.05
10	24,155	1.35	0.81	0.05	9.77	2,105	1.46	1.74	0.005	28.53
11	1,124	0.67	0.92	0.01	3.25	123	0.6	1.22	0.005	3.34
12	2,224	0.44	0.78	0.005	1.97	258	0.44	1.08	0.005	2.3

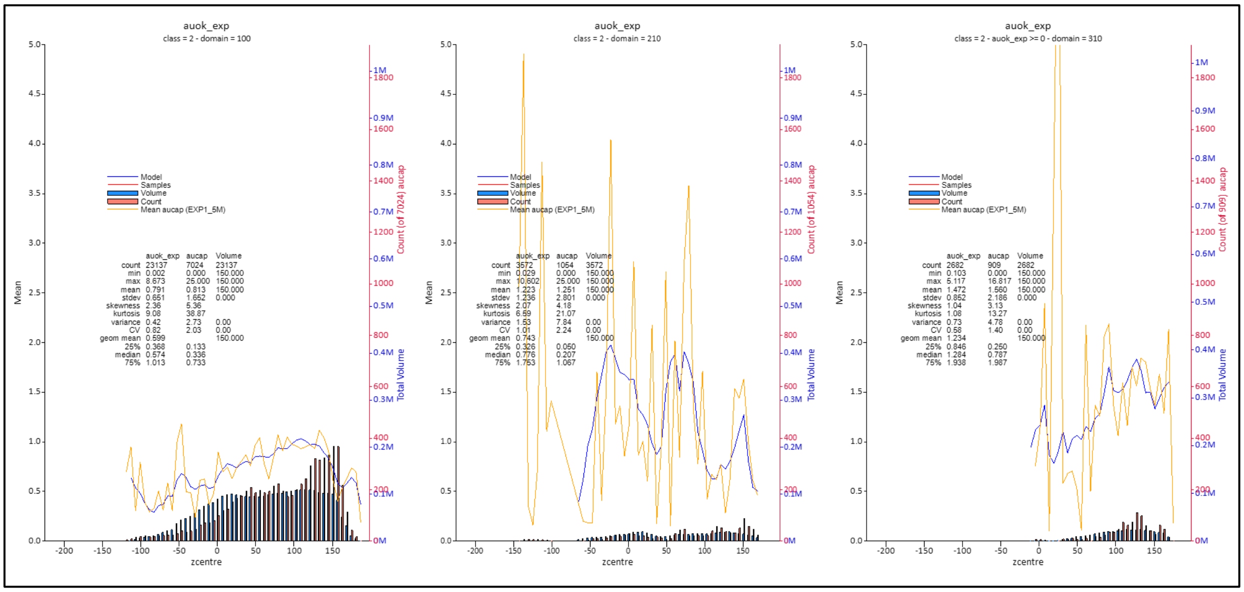


Figure 14-57 Akwasiso swath plot by northing for block and composite Au (g/t) of main domains

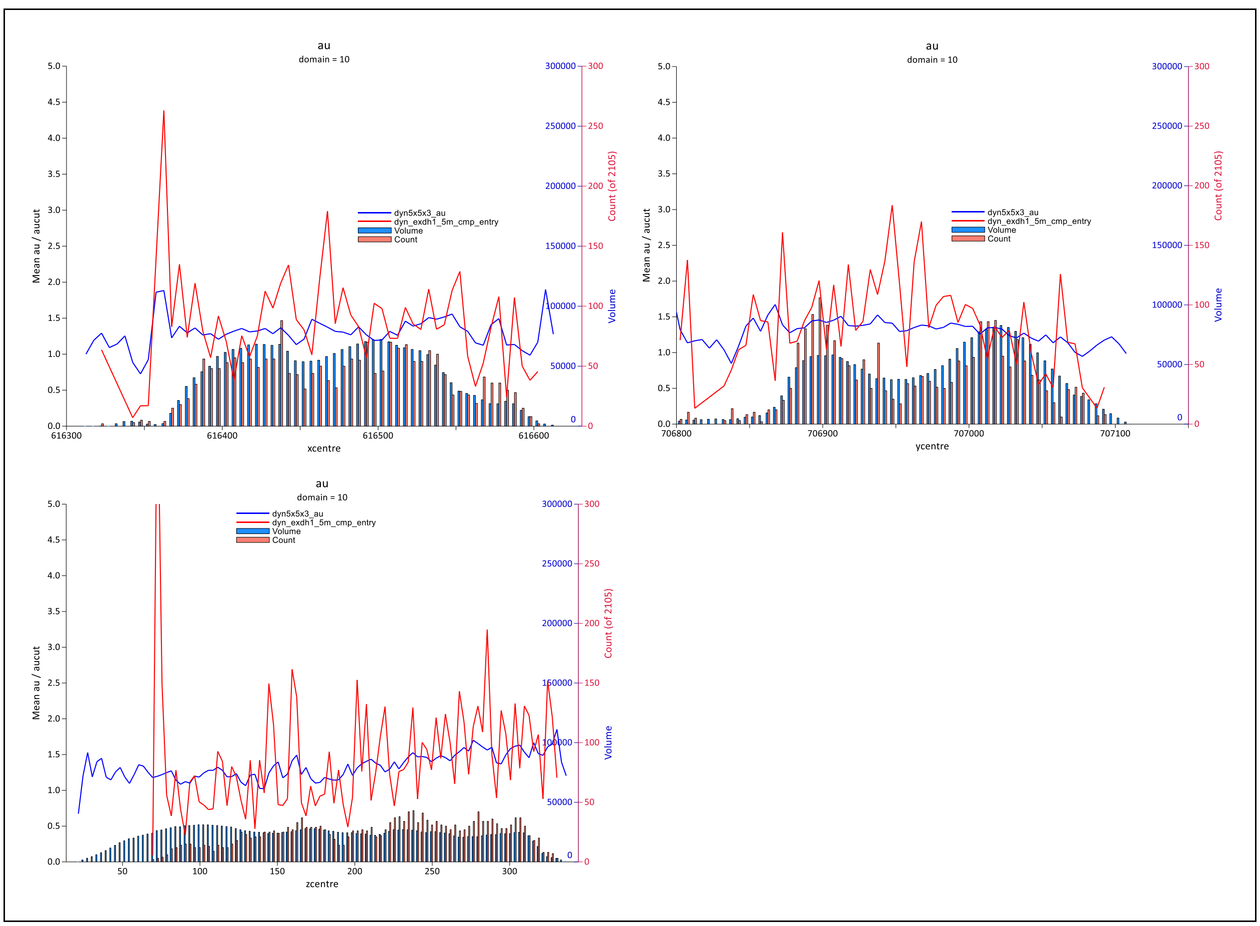
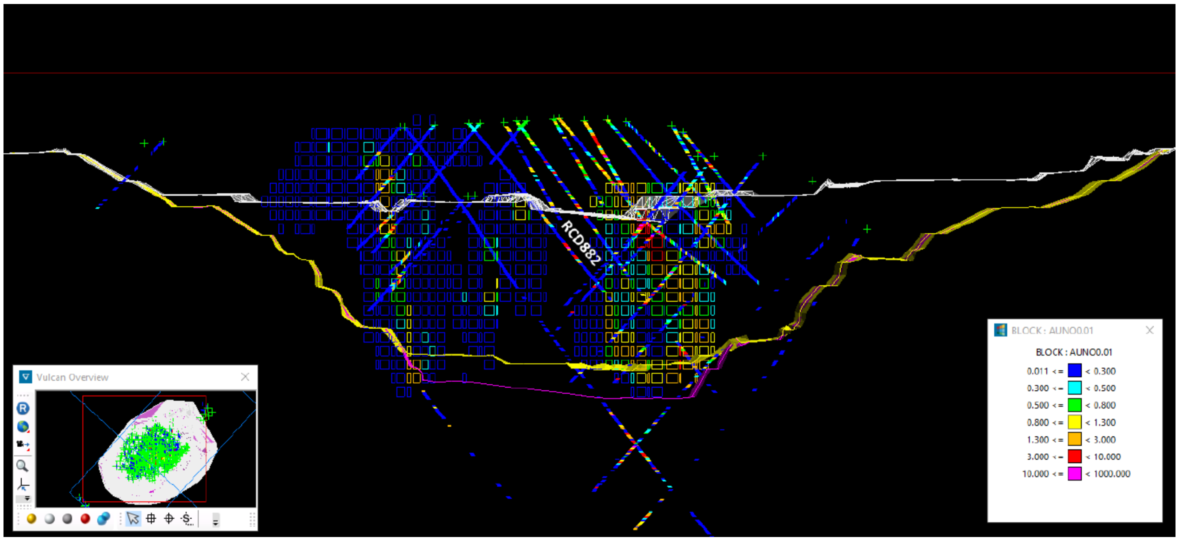


Figure 14-58 Dynamite Hill swath plot by easting, northing and elevation for block and composite Au g/t of Domain 10

14.3.8.4 Visual Inspection

The block model was visually reviewed in 2D in sections and level plans, and in 3D to ensure the block estimates are supported by the surrounding composites. In general, the estimates compare well with the input data (Figure 14-59, Figure 14-60).



(Source: Galiano, 2021)

Figure 14-59 Akwasiso estimated gold grades and GC data

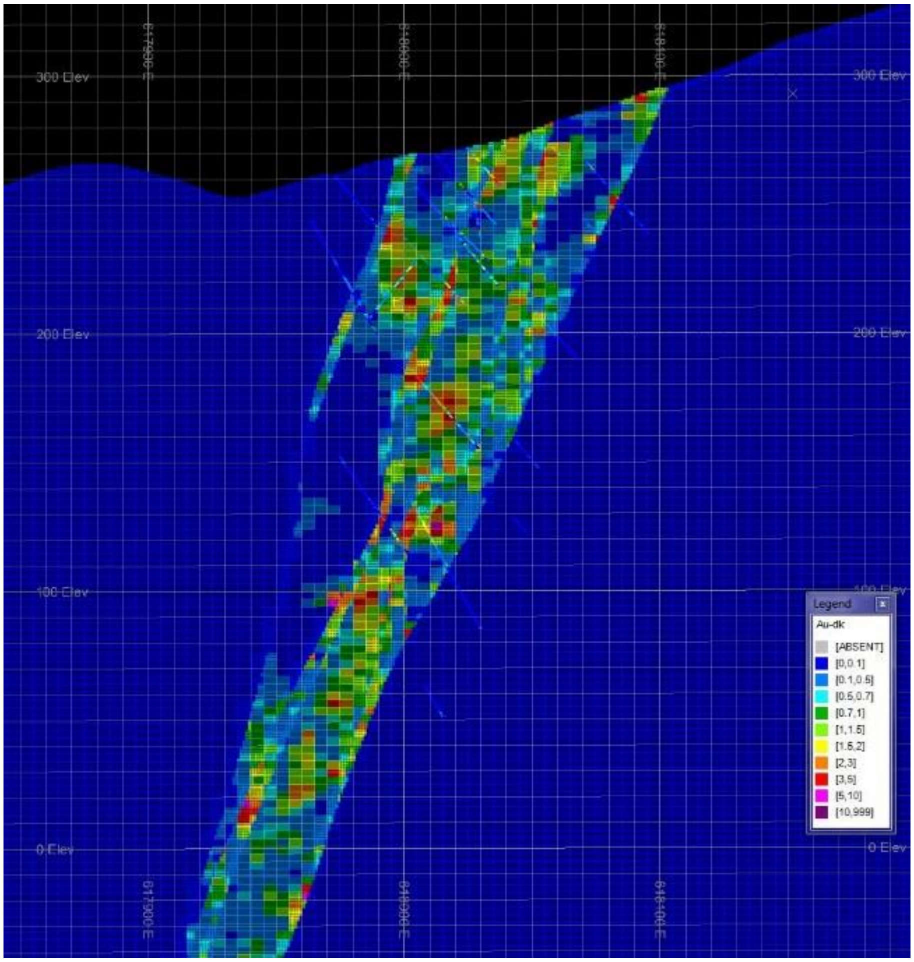


Figure 14-60 Asuadai LSMU model with informing holes illustrated

14.3.9 Resource Classification

Akwasiso and Dynamite Hill share common geological features as other well studied deposits on the Nkran structural trend. The control of mineralization is well understood from the previous modelling and mining.

Drill spacing is the primary factor to define resource classification and only Indicated and Inferred resources are defined at Akwasiso, Dynamite Hill and Asuadai. The spacing criteria to separate the resource classes are generally based on the variogram ranges and mining experience at the adjacent Nkran deposit. The classification criteria for all three deposits are consistent with those in Section 14.2.9:

- Measured: There are no Measured blocks
- Indicated: Blocks with a drill hole spacing less than 40 m, or in Dynamite Hill domains 9, 11 and 12 require a drillhole spacing of 35 m or less
- Inferred: All other blocks in the mineralized domains with a drill hole spacing less than 80 m or will a drillhole within 40 m distance

Drilling coverage at Akwasiso is relatively high. Approximately 50% of the Indicated material is within 20 m drillhole spacing and over 75% within 30 m spacing; while approximately 90% of Inferred material is within 40 to 60 m spacing.

Figure 14-61, Figure 14-62 and Figure 14-63 show plan views of the classified blocks reported above 0.45 g/t gold within an optimized shell (see Section 14.3.11 for details on optimization parameters) for Akwasiso, Dynamite Hill and Asuadai, respectively.

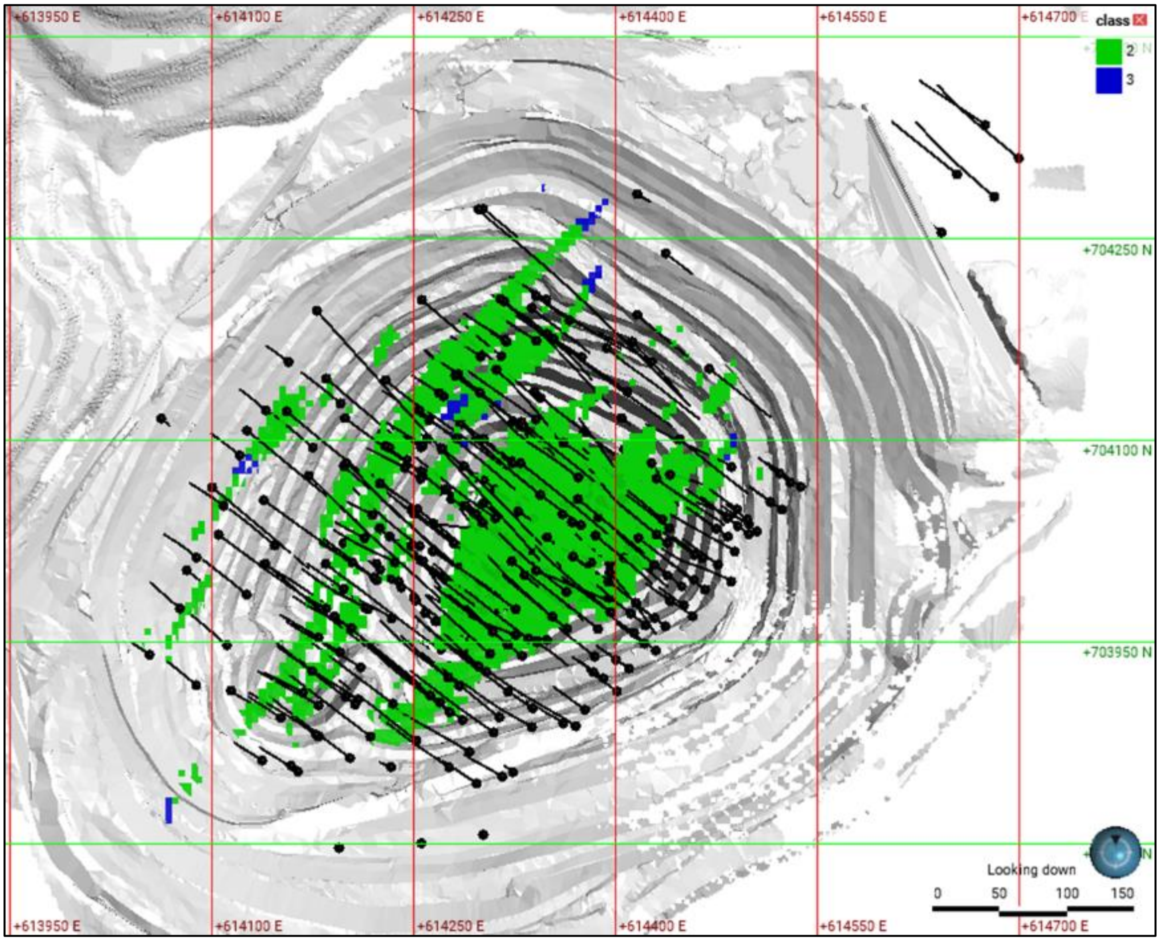


Figure 14-61 Plan view of classified blocks above 0.45 g/t Au inside of resource pit for Akwasiso

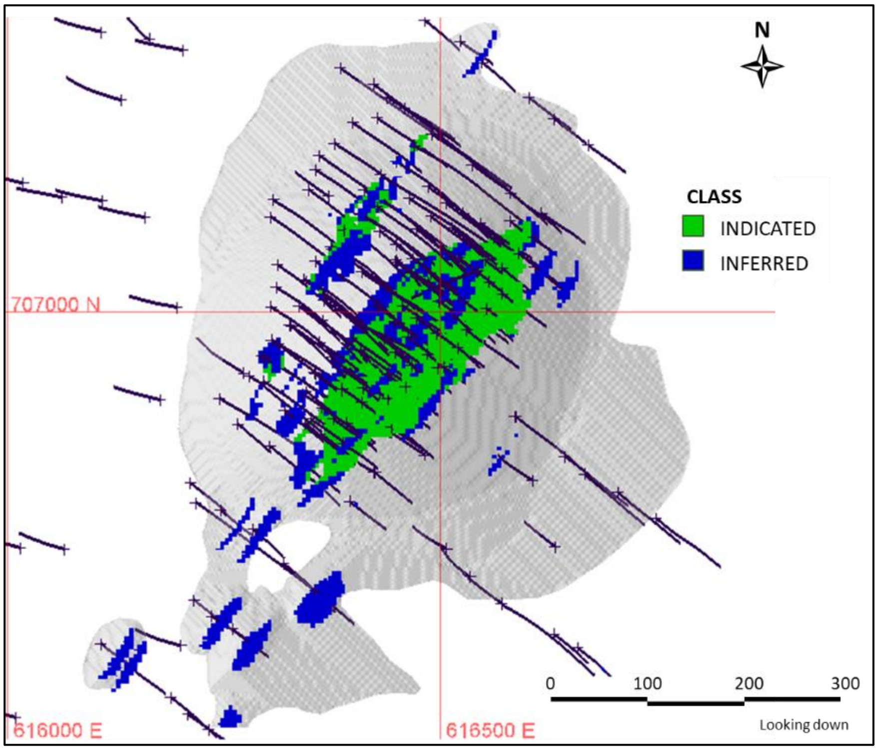


Figure 14-62 Plan view of classified blocks above 0.45 g/t Au inside of resource pit for Dynamite Hill

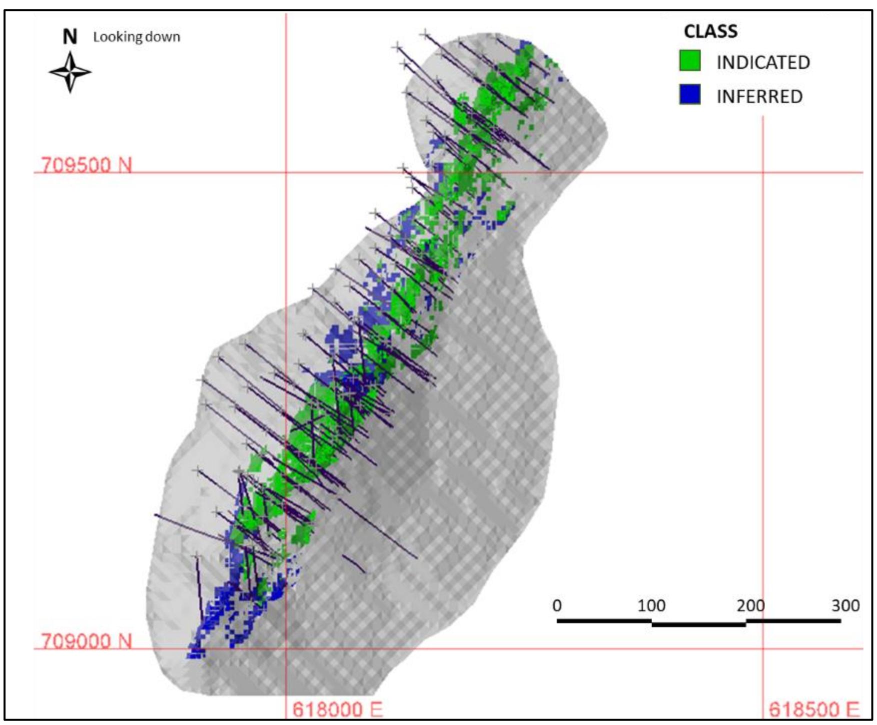


Figure 14-63 Plan view of classified blocks above 0.45 g/t Au inside of resource pit for Asuadai

14.3.10 SRK Audit Findings and Comments

14.3.10.1 Methodology

For Akwasiso, Dynamite Hill and Asuadai, SRK audited the following steps in the mineral resource estimation methodology:

- Resource database, including lithology logging, assays and bulk density data
- Domaining interpretation, methodology and outcomes
- Data processing including compositing and capping
- Estimation methodology, including variogram review
- Mineral resource classification
- Reporting assumptions, pit corresponding to the 2021 block model
- Mineral resource tabulation

14.3.10.2 Geology Review Findings

In general, SRK observed that the geological, oxidation and gold mineralization models are generally acceptable. The following minor issues were observed and shared for future model improvements:

- Akwasiso:
  - Sedimentary domains here produced from a considerable amount of simplification through grouping. In some instances, lithological information that may be linked to the control on mineralized shear zones (competency contrast) may be lost.
  - The lithological model reviewed, Litho_Model_2020, is split into two fault blocks by an interpreted low angle fault. It is not clear what data was used to support and interpret the fault.
  - The final oxidation surfaces were constructed from a modified and grouped oxidation column that show some differences from the original logging. It is not clear if these changes were made from relogging or re-interpretations using drill core photos.
  - The mineralization domains appear overall reasonable. However, SRK noted instances where high grade intercepts were excluded and instances where waste was included to allow for continuity of domains. Also, no domain for the <0.5g/t could be found for the granite.
- Dynamite Hill:
  - The final oxidation surfaces were constructed from a modified and grouped oxidation column that show some differences from the original logging. It is not clear if these changes were made from relogging or re-interpretations using drill core photos.
  - No attempt was made to distinguish and model the phyllite and sandstones in the sedimentary rocks event though some of the mineralized domains occur in the sedimentary rocks.
  - SRK noted examples of granite intercepts that were not modelled. It is not clear why these intercepts were not modelled as they clearly form part of the same intrusion, are continuous over several drillholes and are associated with the mineralization.
  - The mineralization domains look reasonable overall. SRK did note instances of thin Au intercepts bordering the granite that was excluded from the mineralization domain.
  - No attempt was made to identify and model high grade domains in the granite.

- Asuadai:
  - Interpretation and modelling are overall reasonable. However, several decisions affecting the modelling process were described in provided reports, but the data that support those decisions was not available for review.
  - Only DDH was used for modelling and the mineralization model was updated to account for mineralization in RC drillholes. SRK found poor agreement in the mineralization between DDH and RC logging, and as inferred from Au assays for RC drillholes.
  - High-grade areas in the hanging wall with variable width show some continuity along strike and are associated in some cases with intrusive lithologies in RC drillholes which were diluted in the lower grade domains corresponding to sheared sediments.
  - Diorite and Sheared Diorite high-grade mineralized domains are over-extended at depth and the width in comparison with correlation distance observed for indicator correlograms.
  - Low agreement between modelled codes and logged codes was observed. Relogged codes may improve consistency.

14.3.10.3 Resource Estimation Review Findings

SRK reviewed the estimated grade model given the informing data, with consideration for model decisions and estimation approach selected by Galiano or Gold Fields staff.

The following observations were shared with Galiano:

- Akwasiso:
  - Grade estimation methodology is reasonable and appropriate given the data available.
  - Within an optimized pit, the estimated grades are consistent with the informing composites. This was confirmed within the previous resource reporting pit based on US$1,600/oz gold price and again with the optimized pit developed for this Mineral Resource statement (see Sections 14.3.11 and 14.4).
  - Minor comments and recommendations for future updates were shared with Galiano. These should help to improve the Mineral Resource estimate but are not anticipated to have a significant impact on the quantum of Mineral Resources for the AGM:
    - Capping thresholds were reviewed and final cap values selected are reasonable. A dual capping strategy can likely be simplified to cap only on composites.
    - Variogram models are very short ranged, with 70-95% of the variability occurring within the first 15 to 20 m.
    - Estimation parameters used both exploration and grade control data. Given the very restrictive search pass for Pass 1, it is likely that GC data only impacted Pass 1 estimates; however, there is no guarantee that GC data are not used in Passes 2 and 3 except by limiting the maximum number of composites. SRK suggests avoiding this risk by using only exploration data in Passes 2 and 3.
    - Revisit orientation of variogram and search for Domains 100 and 210.
    - Model validations by AGM are reasonable; however, a change of support check performed by SRK suggests Domains 100 and 210 are smoother than appropriate.

- Dynamite Hill:
  - The grade estimation methodology employed is unconventional and as such, is not considered to be industry standard practice. Validations of the simulations appear reasonable with attempts to reconcile against a grade control model. SRK performed a parallel estimate using a conventional estimation approach for Domain 10; this yielded a metal content within 10% of the mineral resource model. This difference is not considered to be material to the overall Mineral Resources of the AGM.
  - In general, the modeling methodology is considered to be overly complicated and unnecessary for Dynamite Hill. Minor comments and recommendations for future resource updates of Dynamite Hill include:
    - Normal score variograms should be based on variograms, not correlograms; variogram calculation parameters should be reviewed to refine directional calculations.
    - If LSMU approach is considered for future update, then conventional estimation using OK, inverse distance methods, etc. should all be tested to ensure results of LSMU are reasonable. Note that in areas of tighter-spaced drilling and well controlled volumes, most methodologies should yield similar outcomes.
    - Within an optimized pit, the reported blocks are generally well informed by exploration drillholes; SRK reviewed and visually verified that estimated grades are consistent with the informing composites. This review was performed within the previous resource reporting pit based on US$1,600/oz gold price and again with the optimized pit using an US$1,800/oz gold price developed for this Mineral Resource statement (see Table 14-1 and Section 14.4).
- Asuadai:
  - Similar to Dynamite Hill, the LSMU grade estimation methodology used at Asuadai is unconventional and as such, is not industry standard practice. Validations done by Galiano of the simulations appear to show poor reproduction of the short scale variogram structure and a reduced variance. SRK generated an ID3 estimate and found that the difference insitu metal content for the three largest mineralized domains is within 11% of the mineral resource model. This difference is not considered to be material to the overall Mineral Resources of the AGM.
  - Overall capping values are acceptable. The restriction of the influence of anomalous high grades, especially in areas with sparse drillholes is recommended.
  - Resource classification is reasonable. SRK checked nominal drillhole spacing and more than 90% are within the target range.
  - As with Akwasiso and Dynamite Hill, SRK reviewed the mineral resource blocks within the optimized pits based on both a US$1,600/oz and US$1,800/oz gold price. The blocks within these optimized pits were considered to be adequately supported by drillhole data and visually consistent with nearby informing composites.
  - High grade block estimates at depth (i.e., below optimized pits) are observed in areas with no drillholes to support them. Considering the trend towards lower grades observed for the diorite unit in elevation, future model updates should restrict the influence of high grade composites.

14.3.10.4 Comments

The mineral resource models for Akwasiso, Dynamite Hill and Asuadai are considered reasonable given the available data and interpretation, within the optimized pits considered for mineral resource reporting. SRK noted some concerns related to grade smearing for Asuadai but this falls below the optimized pit and is excluded from the reported Mineral Resources for Asuadai. Methodological concerns were mitigated via a parallel estimation performed by SRK to assess the potential impact of a more conventional approach. In both Dynamite Hill and Asuadai, the impact on tested domains was within approximately 10% of metal content. This is not considered material to the Mineral Resources of the AGM as summarized in Table 14-1.

14.3.11 Reasonable Prospects for Eventual Economic Extraction

The mineralization at Akwasiso, Dynamite Hill and Asuadai are assumed to be amenable to open pit mining, and milling and recovery through CIL gold processing. The reasonable prospects for eventual economic extraction of the Mineral Resources were tested by constraining the Mineral Resources within a conceptual pit shell optimized in NPV Scheduler™ software at US$1800/oz gold price with all the materials of Indicated and Inferred classes and with a reporting cut-off grade of 0.45 g/t Au. The assumptions used in preparing the conceptual pit, include mining and processing costs, metallurgical recovery, metal price and general and administrative costs, are listed in Table 14-51.

Table 14-51 Conceptual constraining pit parameters

Parameter	Unit	Akwasiso	Dynamite Hill	Asuadai
Gold Price	US$ / ounce		1,800	
Mining Cost	US$ / tonne	1.004 - 1.571	1.025 - 1.647	1.025 – 1.647
Mining Cost Incremental	US$ / vertical 6 m	0.0043 – 0.0146	0.0087 – 0.0353	0.0087 – 0.0353
Mill Feed Transport	US$ / tonne	2.14	2.35	3.7
Process Cost	US$ / tonne		8.79 – 11.32	
Gold Recovery	%	94%	94%	94%
General and Administration	US$ / tonne		6.55	

After review of optimization results, and through discussions with Galiano, SRK considers that it is reasonable to report as open pit Mineral Resource those classified blocks located within the conceptual pit shell above a cut-off grade of 0.45 g/t gold for Akwasiso, Dynamite Hill and Asuadai.

No underground mineral resource is reported.

The Mineral Resource Statement for these three deposits is shown in Table 14-51 and again in Section 14.4.

14.4 Mineral Resource Statement

Mineral Resources were estimated in conformity with the widely accepted CIM *Estimation of Mineral Resource and Mineral Reserve Best Practices Guidelines* (November 2019). The Mineral Resources may be affected by further infill and exploration drilling that may result in increases or decreases in subsequent Mineral Resource estimates. The Mineral Resources may also be affected by subsequent assessments of mining, environmental, processing, permitting, taxation, socio-economic and other factors.

The Mineral Resource Statement for the AGM presented in Table 14-52 was prepared by Mr. Malcolm Titley, MAIG , Dr. Oy Leuangthong, PEng and Mr. Glen Cole, PGeo. Mr. Titley, Dr. Leuangthong and Mr. Cole are independent QPs as this term is defined in National Instrument 43-101.

The effective date of the Mineral Resource Statement is 31 December 2022.

The QPs are 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.

Table 14-52 Mineral Resource Statement* for AGM, Ghana, as at 31 December 2022

Category	Deposit	Tonnage (Mt)	Grade (g/t Au)	Contained Metal (koz Au)
Measured	Nkran			
	Esaase			
	Abore			
	Miradani North			
	Adubiaso			
	Midras South			
	Akwasiso			
	Asuadai			
	Dynamite Hill			
	Stockpiles	7.4	0.67	158
	Total Measured	**7.4**	**0.67**	**158**
Indicated	Nkran	15.3	1.89	931
	Esaase	30.6	1.25	1,227
	Abore	12.8	1.16	477
	Miradani North	7.9	1.39	352
	Adubiaso	3.1	1.47	148
	Midras South			
	Akwasiso	1.4	1.16	52
	Asuadai	1.6	1.23	64
	Dynamite Hill	2.2	1.34	95
	Stockpiles			
	Total Indicated	**75.0**	**1.39**	**3,346**
Measured + Indicated	Nkran	15.3	1.89	931
	Esaase	30.6	1.25	1,227
	Abore	12.8	1.16	477
	Miradani North	7.9	1.39	352
	Adubiaso	3.1	1.47	148
	Midras South			
	Akwasiso	1.6	1.20	60
	Asuadai	1.6	1.23	64
	Dynamite Hill	2.2	1.34	95
	Stockpiles	7.4	0.67	158
	Total Mea + Ind	**82.3**	**1.32**	**3,504**
Inferred	Nkran	3.6	1.83	209
	Esaase	8.2	1.26	334
	Abore	3.6	1.14	131
	Miradani North	2.9	1.30	122
	Adubiaso	0.1	1.05	3
	Midras South	5.4	1.32	232
	Akwasiso	0.2	1.28	9
	Asuadai	0.1	1.29	4
	Dynamite Hill	1.0	1.24	40
	Stockpiles			
	Total Inferred	**25.1**	**1.34**	**1,084**

** Mr. Malcolm Titley of CSA Global UK is the Qualified Person responsible for the Nkran Mineral Resource statement. Dr. Oy Leuangthong, PEng and Mr. Glen Cole, PGeo of SRK Consulting (Canada) Inc. are Qualified Persons responsible for Mineral Resource statements for Esaase, Abore, Miradani North, Adubiaso, Midras South, Akwasiso, Asuadai and Dynamite Hill.*

Mineral resources are not mineral reserves and have not demonstrated economic viability. All figures have been rounded to reflect relative accuracy of the estimates. Due to rounding, some columns or rows may not compute exactly as shown.

Reported within an optimized pit shell assuming a price of US$1,800 / oz gold and using various cut-off grades: 0.40 g/t gold for Nkran; 0.50 g/t in Oxides and 0.60 g/t gold in Transition and Fresh for Esaase; and 0.45 g/t gold for all other deposits. Metallurgical recovery of 94% for all deposits, except in Esaase, where gold recoveries vary based on lithology.

All tonnages are reported as in situ dry tonnes.

Mineral Resources are inclusive of Mineral Reserves.

Galiano's share of the project on an equity basis is 45%. All quantities are reported on a 100% basis.

14.5 Reconciliation with Previous Mineral Resource Statement

Table 14-53 shows the reconciliation between the 28 February 2022 and the 31 December 2022 Mineral Resource statements.

Table 14-53 Comparison between February 2022 and December 2022 Mineral Resource statements

Classification	Quantity (Mt)	Grade (g/t Au)	Contained Au (koz)
February 2022			
Measured	23.6	1.06	808
Indicated	42.7	1.53	2,096
Measured + Indicated	**66.4**	**1.36**	**2,904**
Inferred	**6.4**	**1.49**	**309**
December 2022			
Measured	7.4	0.67	158
Indicated	75.0	1.39	3,346
Measured + Indicated	**82.3**	**1.32**	**3,504**
Inferred	**25.1**	**1.34**	**1,084**
December 2022/ February 2022			
Measured	-69%	-37%	-80%
Indicated	76%	-9%	60%
Measured + Indicated	**24%**	**-3%**	**21%**
Inferred	**293%**	**-10%**	**251%**

Notes:

1 *February 2022 Mineral Resource statement reported between 28 February 2022 depletion surface and a USD1,600/oz Au pit, reported at cut-off grade of 0.50 g/t gold for all material types.*

2 *December 2022 quantities reported between 31 December 2022 depleted surface and a USD1,800/oz Au pit, reported at variable cut-off grades of 0.40 g/t gold for Nkran, 0.50 g/t and 0.60 g/t gold for oxide and fresh in Esaase and 0.45 g/t gold for all other deposits.*

Measured resources reduced by 80% in metal content due to the downgrading of classified materials in Esaase and Abore, which in turn, contributed to a significant increase in Indicated resources at these two deposits. This downgrading was to ensure consistency in classification category between these two deposits and the other seven deposits in the region that comprise the AGM.

Since the February 2022 Mineral Resource statement, Galiano has undertaken an infill and exploration drill program at various deposits:

- Nkran: an additional 23 drillholes (10,292m) representing an increase of approximately 10 percent drilled length
- Esaase: an additional 89 drillholes (14,623 m) representing an increase of approximately 6% drilled length
- Abore: an additional 133 drillholes (19,876 m) representing an increase of approximately 6% drilled length
- Miradani North: an additional 12 drillholes (2,239 m) representing an increase of approximately 10% drilled length

In most cases, these drill programs targeted infilling to upgrade Inferred resources to Indicated resources. A secondary objective to the drill program was to confirm mineralization and/or grade continuity. In the cases of these deposits, the drill campaign was successful in upgrading Inferred resources to Indicated resources, and also adding more Inferred resources due to improved understanding of the mineralization and tightening the drill spacing supporting the mineral resource models.

There has been no active mining by Galiano since February 2022, but 2.1 million tonnes from the stockpile were processed, resulting in a reduction of 650,000 gold ounces from the stockpiles.

Overall, Measured and Indicated resources have increased by 16.1 Mt (24%) in tonnage and 609 koz (21%) in metal ounces, while Inferred resources have increased by 18.7 Mt (293%) in tonnage and 775 koz (251%) in contained metal. Various factors contribute to these noted gains:

- Infill drilling at Esaase, Abore, Miradani North and Nkran
- Increased gold price from US$1,600/oz to US$1,800/oz, resulting in slightly larger optimized pits and a general reduction in the cut-off grade at all deposits except Esaase
- Updates to mineralization understanding and modeling, which in some cases also led to increased continuity in these mineralized volumes
- Estimation methodology used to model Esaase and Abore is different from that used in February 2022. In particular, SRK noted that the use of dynamic anisotropy for grade estimation in Esaase led to increased grade continuity and this had a significant impact by increasing the optimized pit.
- Midras South is reported for the first time and accounts for 30% of the gain in Inferred resources

Overall, the combination of additional drilling, updated models and updated economics resulted in 21% more Measured and Indicated ounces, while Inferred ounces increased by 251%, with 30% coming from the maiden resource for Midras South.

14.6 Factors that May Affect the Mineral Resource Estimate

There are no known environmental, permitting, legal, title, taxation, socio-economic, marketing, and political or other relevant issues that may materially affect the Mineral Resource estimates. Other relevant factors that may materially affect the Mineral Resources, including mining, metallurgical recovery and infrastructure are reasonably well understood according to the assumptions presented in this report.

15 Mineral Reserve Estimate

15.1 Introduction

The AGM comprises nine mineral resource deposits and a processing plant with 5.8 Mtpa capacity. The mining operation, including the ore handling, is carried out using mine contractors. This study showed that six of the deposits are profitably mineable under current conditions and thus are the basis of mineral reserves. SRK conducted detailed mining studies, including pit optimization, production schedule and mine design, for these six deposits.

Figure 15-1 shows the location of the mineral resource deposits in relation to the mill and to each other. The deposits that are included in the Mineral Reserve statement are marked by numbers in red font.

The majority of the deposits that constitute the Mineral Resources at the AGM were subject to mining activities in the past. Inclusive of past production, Nkran is the largest and highest-grade resource at the AGM. Mining in Nkran pit was stopped in June 2020 due to some instability of the walls and also due to the mine nearing its then reserve limits. The main sources of ore in the past two years were Esaase and Akwasiso pits. Akwasiso pit reached its ultimate limit in July 2022 and will not be expanded unless further exploration shows resource potential. Some metallurgical recovery issues were observed at Esaase in 2022 and with further investigation, mining activity ceased there in May 2022. The mill continued processing stockpiled ore located near the mill as well as at Esaase. Additional deposits that have been evaluated as Mineral Reserves include previously mined Abore, Adubiaso, Dynamite Hill and Miradani North.

According to the updated Mineral Reserve statement, the two pits of Nkran and Esaase contain 58% of the total reserve in the ground.

The Midras deposit is classified as Inferred resource and as such is not part of the Mineral Reserve. The Asuadai deposit is small and its proximity to the village of Asuadai incurs additional costs that impair its economic viability; therefore, it is has not been considered a mineral reserve.

Artisanal mining activities are present in many of the resources except Nkran and Esaase. Previously mined areas are flooded, requiring dewatering.

The processing plant, a camp and air strip are located close to the Nkran pit.

Dr. Anoush Ebrahimi, QP of Sections 15 and 16, visited the AGM for four full days (6-11 August 2022). Figure 15-1 shows the routes taken in this site visit. SRK team visited the mineral resources, the mill, mineralogy lab, the core shack and the offices. Multiple meetings were held to review the operation and particularly to review the reconciliation reports.

Figure 15-1 Mineral resources at the AGM and the routes taken in QP site visit

Figure 15-2 shows the pictures taken during the site visit from the six deposits that are subject to mineral reserve estimation in this report.

Figure 15-2 AGM deposits that contain Mineral Reserves (August 2022)

15.2 Input Parameters

This section describes the input parameters used for pit optimization and mine design. The main inputs are gold price, resource models, geotechnical parameters, operating costs, mineral processing recoveries, and offsite costs and charges. The parameters have been reviewed and provided by QPs in each of their respective technical area.

The input parameters provided in this section include the parameters used for all six pits.

15.2.1 Gold Price and Off-site Costs

Commodity price is often the most important input in mine design. For the AGM, the gold price is set by corporate policies and was reviewed by SRK. The base case gold price used for the pit optimization was set to $1,500/oz ($48.23/g) for all deposits. There are no other sources of revenue in the resource models.

Off-site costs for the AGM include the Ghanian government royalty and refining and selling costs. The government royalty is set at 5% of the selling price or $75/oz for the base case. This equals $2.41/g of gold.

Based on the past sales records for the AGM, the total refining and selling costs is estimated at $4.47/oz.

15.2.2 Resource Models

Resource models were provided as both original format and .csv files. Details of each resource model can be found in Section 14. To include the related mining parameters and based on the original resource model a mining block model was prepared for each pit. The preparation included the following items:

- A Lidar survey was conducted in October 2022 that was used in the mining models. For Abore and Miradani North, where there was limited knowledge about the backfill below the water table, a bathometric survey was requested and used to update the mining models. For Miradani North pit, due to the historic mining activities that are now below water surface, a 45-degree cut (wedge) was considered to exclude the ore that was potentially mined.

- Based on the ore type, resource classification and the rock type, rock codes were added to the model. This included rock codes for material placed in mined out pits as backfill and on surface.
- The mining cost adjustment factors were calculated per bench and were added to the model
- Variable dilution factors were calculated and included in the mining model
- For the Esaase deposit, variable metallurgical recovery was calculated based on the rock types in the mining model

15.2.3 Operating Costs

The processing operating costs are based on the current mill operation. Based on this information, the processing operating costs are $8.81/t for oxide ore, $10.39/t for transition ore and $10.66/t for fresh ore.

The general and administration costs, including the cost of the Accra office, are calculated to be $6.69/t of ore for Esaase and $6.19/t of ore for the remaining pits.

The distance between open pits and the mill varies and therefore, the ore transportation cost varies for each pit. Approximate distances between Nkran, Esaase, Abore, Adubiaso, Miradani North and Dynamite Hill to the mill are 0.5 km, 31 km, 15 km, 3 km, 10 km and 8 km, respectively. The haulage road between Miradani North and the mill is not developed yet and the distance mentioned above is for the latest design. The ore transportation costs are $0.61/t, $6.15/t, $4.08/t, $1.85/t, $3.71/t and $2.94/t for Nkran, Esaase, Abore, Adubiaso, Miradani North and Dynamite Hill, respectively.

The mining operating costs are based on recent quotes received from two contractors. These costs are also comparable with recent AGM operating data. The average waste mining costs vary based on the pit, the rock type and the depth of the pit. The average mining costs for Nkran, Esaase, Miradani North, Abore, Dynamite Hill and Adubiaso are calculated to be $2.44/t, $1.98/t, $1.94/t, $2.00/t, $2.29/t and $2.06/t, respectively.

An incremental cost of $0.01/t is included for every 6 m bench from the pit rim for all types of materials.

15.2.4 Processing recoveries

Based on the degree of weathering, there are three types of ore in all deposits - Oxide ore, Transition ore and Fresh ore. For processing, all the ore types are mixed and processed together with the amount of oxide not exceeding 50% in the feed. Based on past actual processing plant performance, the processing recovery for the pit optimization is set to 94% for all deposits except for Esaase.

The mineralogy in Esaase deposit is complex and therefore the recovery model for this deposit is different than the rest of the deposits. The recovery for the oxide ore in Esaase deposit is calculated assuming a fixed tailing grade of 0.1 g/t. The transition and fresh ores in Esaase are grouped in five different ore types. For detail about the recovery model of the Esaase deposit please refer to Section 13. The processing recovery in Esaase transition/fresh varies between a low of 71.1% and a high of 80.6%. The average recovery in Esaase is 78.9%.

15.2.5 Constraints

Based on Ghanaian regulations and existing agreements, if an active pit gets closer than 500 m to adjacent buildings and properties, the mine must relocate and/or compensate property occupiers accordingly via a Resettlement Action Plan (RAP). In the process of the pit optimization, these costs were considered in the optimization models wherever applicable. The areas of the pits that trigger the RAP cost were identified for each pit. The value of impacted ore was compared to the potential RAP cost. As an example, Figure 15-3 shows how the RAP cost was modeled into the optimization process for the Miradani North deposit.

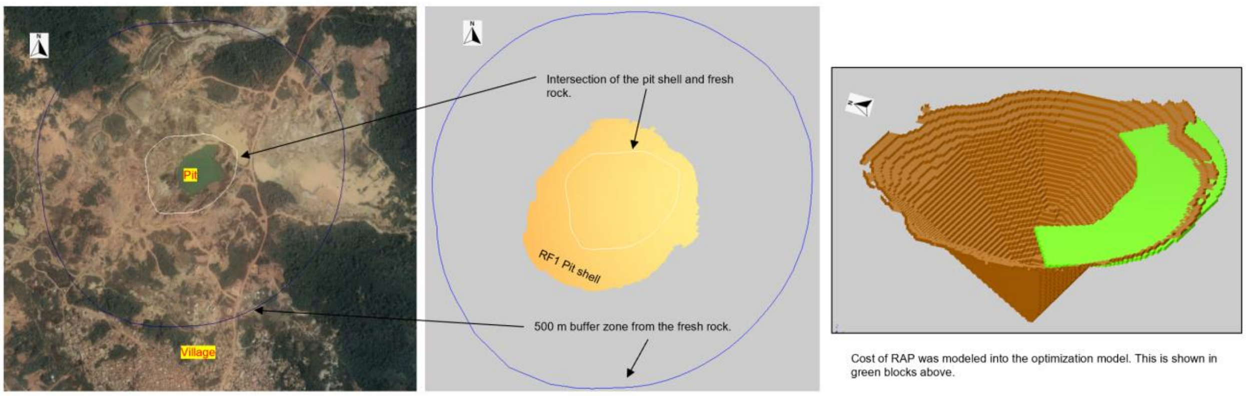


Figure 15-3 Modeling the RAP cost in pit optimization – Miradani North

For Miradani North, the RAP cost is included in the optimization and the final pit was selected accordingly considering the RAP costs.

A small part of Nkran pit will trigger RAP costs; however, the cost is very small and does not affect the final pit selection. The associated cost has been included in the financial model.

At Abore, the most northern pit will trigger small RAP costs. The value of this pit far exceeds that of the RAP costs and RAP costs were not considered material to optimization of the deposit, therefore the RAP cost was not included in the optimization however, it is considered in the final financial model.

For Esaase, a few small sections on the north side of the pit will be affected by RAP costs as shown in Figure 15-4. The areas that are circled in this figure were eliminated from the final pit design.

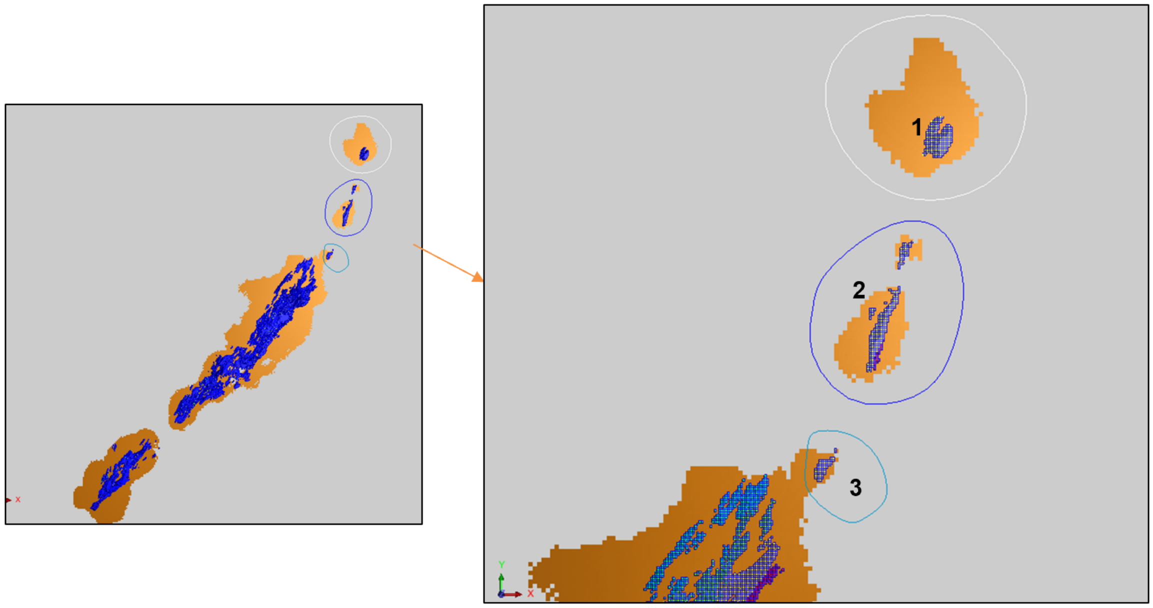


Figure 15-4 Eliminated areas of Esaase Pit due to RAP cost

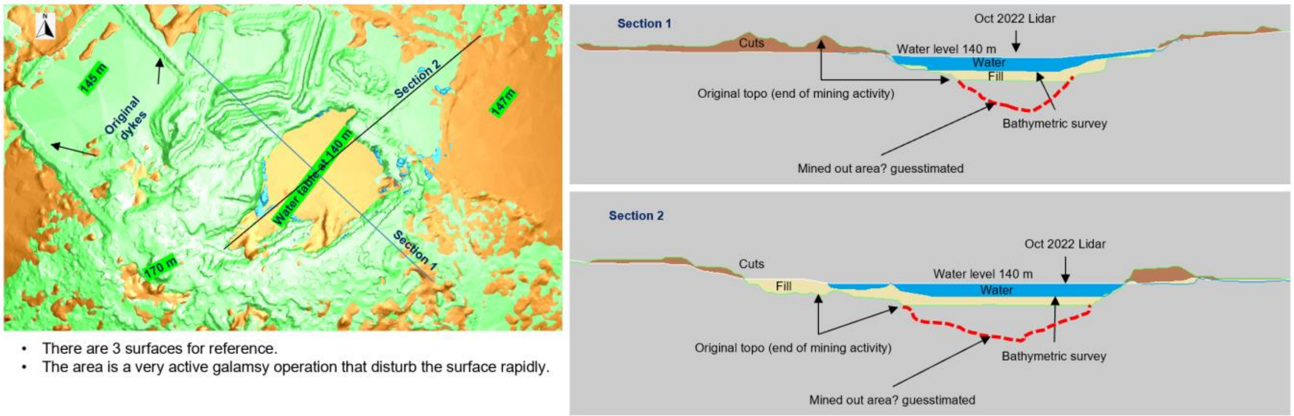
15.2.6 Topography

All the AGM deposits that are selected for Mineral Reserve estimation have had some past mining activities. SRK obtained updated Lidar topography (October 2022) for the deposits and used this in the evaluation. The topographies of the mined-out areas for different pits are available with the exception of the Miradani North pit. These old topographies were used to modify the optimization models.

Except for Nkran and Esaase, the rest of the deposits are subject to ongoing artisanal mining activities; therefore, the surface of the mining areas is changing continuously. The QP is of the opinion that the changes in the surface due to artisanal mining activity during this study is not significant and does not change the economics of the project.

All old pits are partially filled with water. SRK requested bathymetric surveys for the pits, which were used in mine planning.

For each pit, using the most updated topography (October 2022) in combination with the bathymetric survey and the topography of the mined-out area, the mining models were developed. Figure 15-5 shows the complex situation at the Miradani North deposit. Miradani North was mined in the past and the limited records of the past excavation were not reliable. Therefore, SRK's geologists used the new drilling data and current topographical information to develop a cone shaped surface (dotted red line in the figure below) that was used to cut-off part of the resource model. This is the maximum area that was mined-out in the past. This area then was replaced with the waste rock.



Note: due to lack of information from historical excavations a mined-out area is added below the existing topography.

Figure 15-5 Topography in Miradani North

15.2.7 Dilution and Ore Loss

SRK studied the amount of dilution for individual pits. Dilution varies based on the shape of the orebody and the grade distribution within. Using the methodology briefly explained below, variable dilution factors were calculated within the block models. The diluted grade estimated in this step then was used for mine design. Figure 15-6 explains the methodology to estimate the variable dilution.

Step 1

Cut-off grades and NSR values are calculated for each deposit.

Step 2

A grade shell for grades above cut-off grade is created.

Step 3

The number of neighboring blocks that are below cut-off grade is calculated.

Step 4

Dilution is assigned to each block: each side block 10% and each corner block 1.0%

Step 5

The grades of the diluting rocks are calculated assuming a blend of 50% from the below cut off grade resources and 50% waste rocks.

Step 6

Using diluting grades calculated in step 5 the grades are modified based on dilution calculated in 4.

Step 7

Density of diluted blocks are modified to account for the diluting materials. Density of waste materials inside the shell, created in step 5 is reduced to make the total in-pit mass balanced.

Figure 15-6 Steps of variable dilution estimation

As an example, Figure 15-7 shows plan views of the Nkran deposit at the 875 and 785 benches. As expected, isolated blocks incur more dilution compared with blocks that are either adjoining other ore blocks or are entirely inside the orebody. The dark blue blocks are the interior blocks with minimum to no dilution. Red blocks are the individual blocks that are subject to maximum amount of dilution.

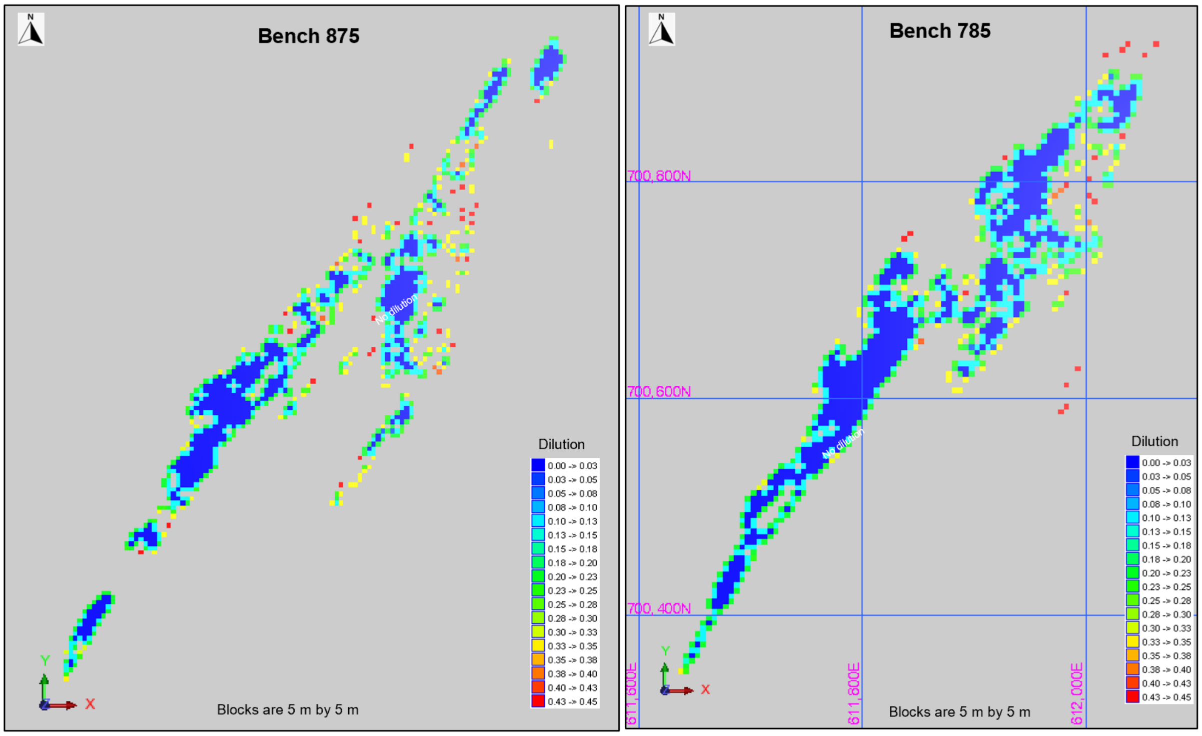


Figure 15-7 Dilution figures for two benches in Nkran deposit

The average mining dilution inside the pits is calculated from their bench values. Table 15-1 shows the average dilution for various pits at the AGM. Due to the complex shape of the orebodies and the irregular grade distribution at the AGM, particularly at Esaase and Adubiaso, the mining dilution is relatively high. The average dilution for the project is about 11.7%. Miradani North deposit has a consistent shape with relatively uniform grades; therefore, its dilution is the least at about 6%.

Table 15-1 Average dilution for different deposits at the AGM

Reserve Pits in AGM	Mining Dilution	Ore loss
	%	%
Nkran	11.90%	2.00%
Esaase	14.40%	2.00%
Miradani North	6.00%	2.00%
Abore	10.80%	2.00%
Dynamite Hill	11.60%	2.00%
Adubiaso	15.30%	2.00%
Stockpiles		2.00%
Total	11.70%	2.00%

Ore loss occurs due to operational inefficiencies and constraints. A 2% ore loss has been applied to all reserves after mining dilution. The existing stockpiles are also subject to 2% ore loss.

It is important to note that mining dilution parameters can change if the design parameters change. This includes any change in the price of metals, selling costs or recovery. Therefore, if a new set of input parameters is introduced for mine design, it is highly recommended to monitor and recalculate the variable dilution in the grade control process.

15.2.8 Geotechnical Parameters

SRK (South Africa) (Pty) Ltd. conducted an updated geotechnical assessment of the slope design work for the AGM. The SRK mining team used the initial slope designs suggested by the geotechnical team for both optimization and ultimate pit designs. The final pit then was evaluated for slope stability.

15.2.8.1 Nkran

Overall slope angles at Nkran pit vary based on the rock type and the direction of the pit walls. This can be seen in Figure 15-8. Overall slope angles vary from 21 degrees in oxide and highly weathered rocks to 47 degrees in fresh rock in the southeast wall. The overall slope angles took into consideration the haulage configuration for different versions of the design.

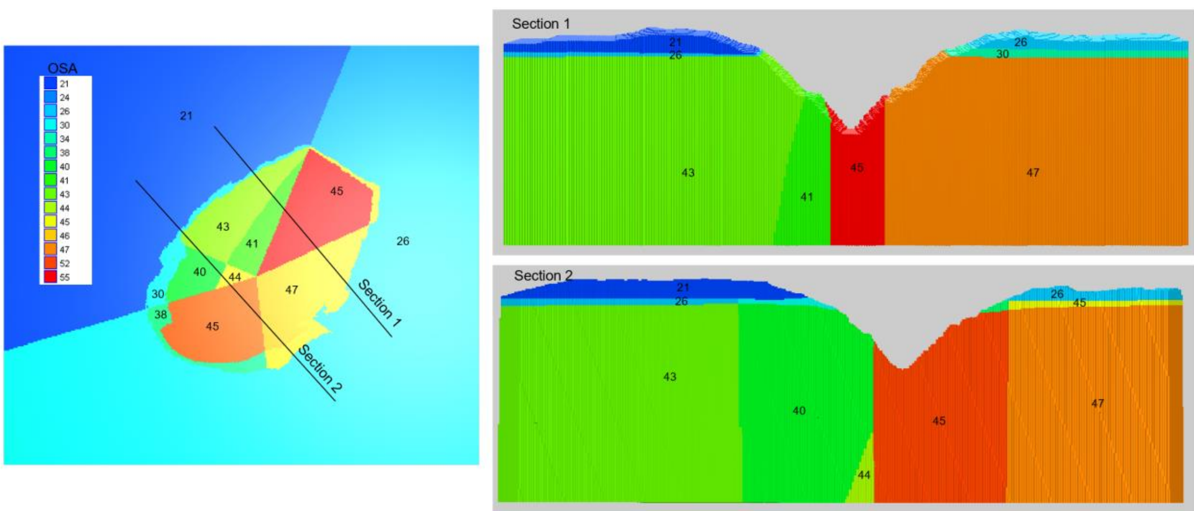


Figure 15-8 Overall slope angles for Nkran pit optimization

15.2.8.2 Esaase

Overall slope angles at Esaase pit vary mainly based on the rock type. This can be seen in Figure 15-9. Overall slope angles vary from 26 degrees in oxide and highly weathered rocks to 45 degrees in fresh rock in the southeast wall. The overall slope angles took into consideration the haulage configuration for different versions of the designs.

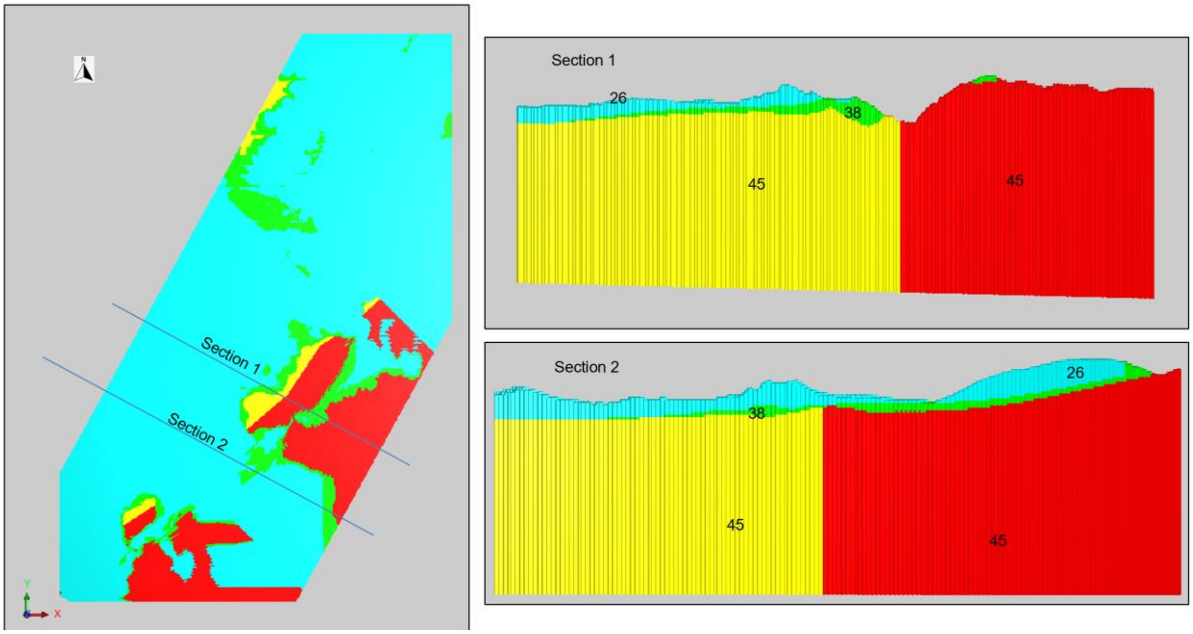


Figure 15-9 Overall slope angles for Esaase pit optimization

15.2.8.3 Dynamite Hill – Abore – Miradani North – Adubiaso

Overall slope angles at Dynamite Hill, Abore, Miradani North and Adubiaso vary mainly based on the rock types of Oxide, Transition and Fresh. Overall slope angles vary from 22 degrees in oxide and highly weathered rocks to 47 degrees in fresh rock. The overall slope angles took into consideration the haulage configurations.

Figure 15-10 to Figure 15-12 show the plan views and a few sections of the block models with overall slope angles color coded for Dynamite Hill, Abore and Miradani North deposits, respectively.

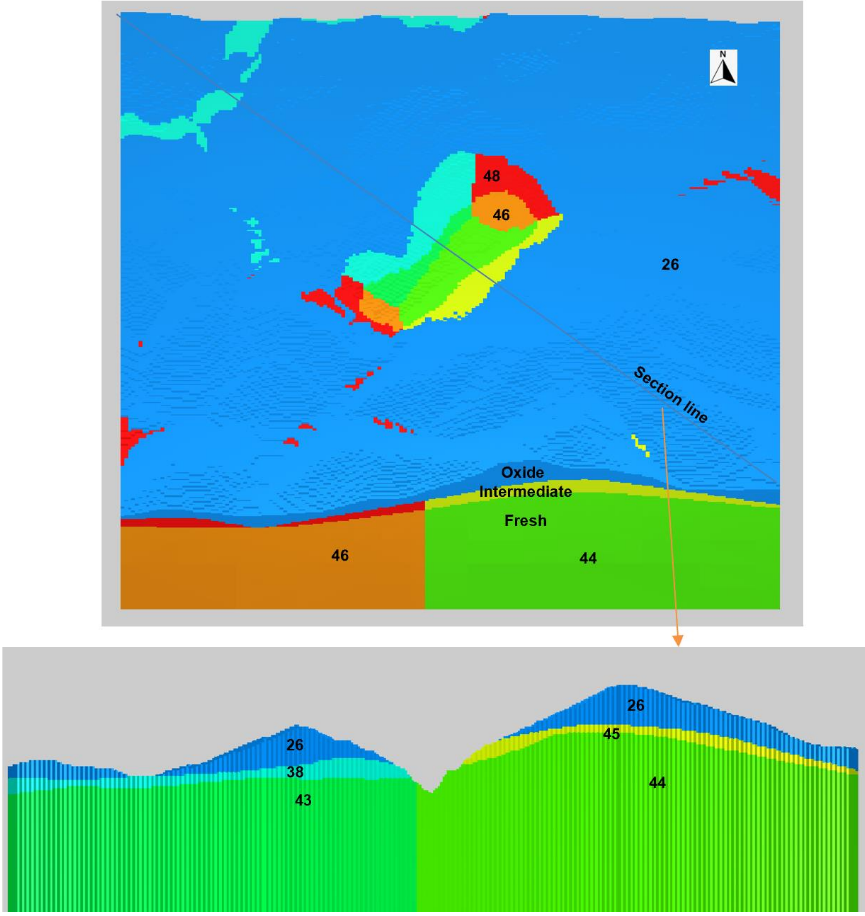


Figure 15-10 Overall slope angles for Dynamite Hill pit optimization

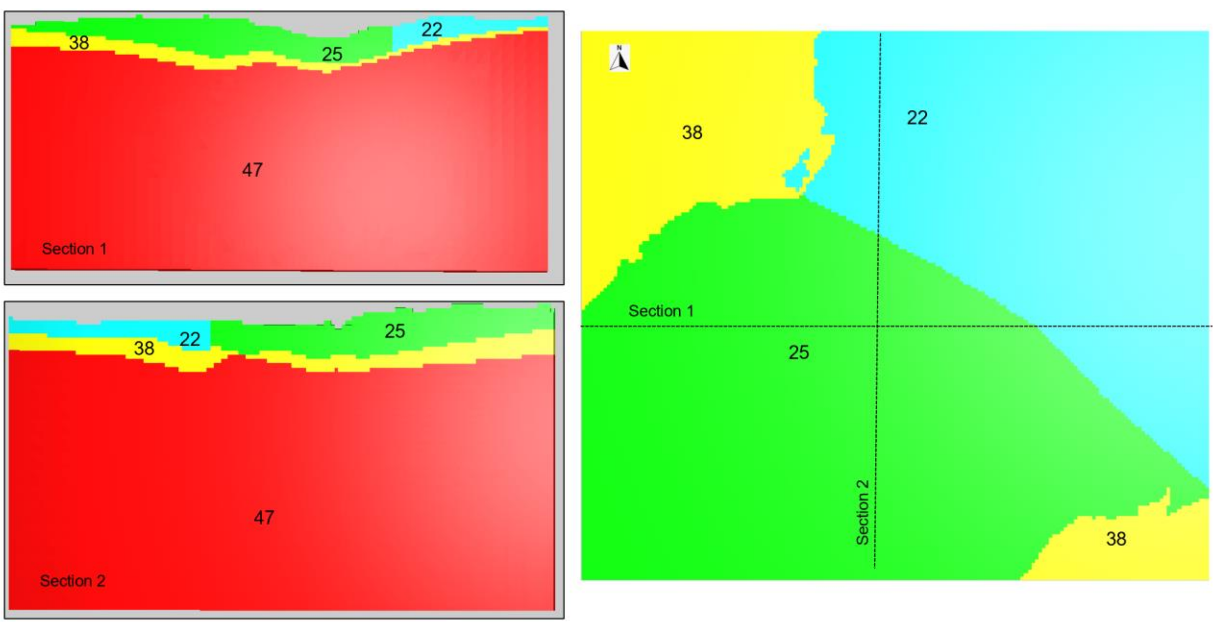


Figure 15-11 Overall slope angles for Abore pit optimization

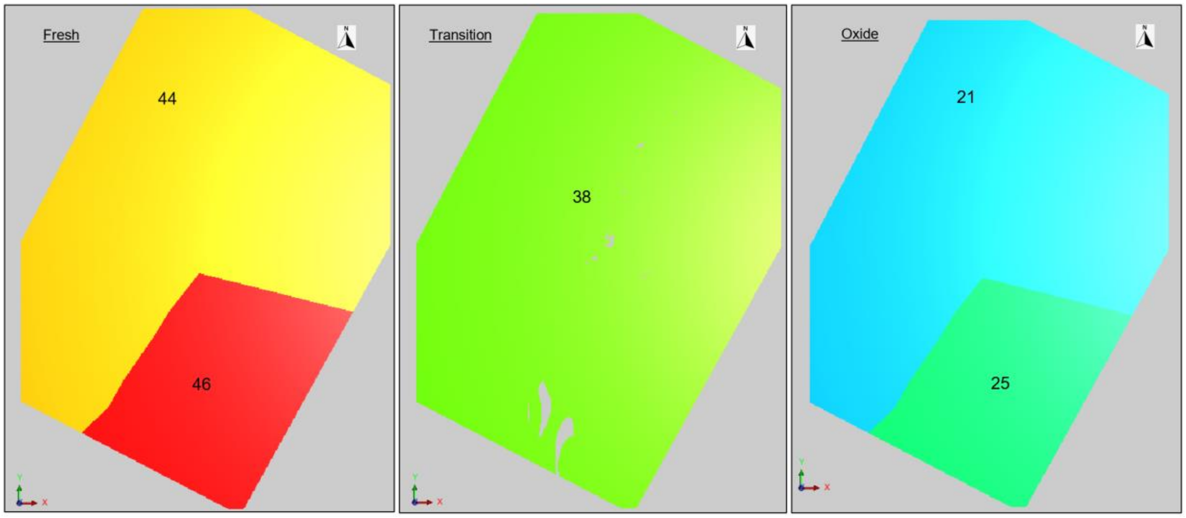


Figure 15-12 Overall slope angles for Miradani North pit optimization

15.3 Pit Optimization Results

Using the input parameters described above, SRK developed optimization models for each deposit. The pit optimization was carried out using Geovia Whittle software for Nkran, Esaase, Dynamite Hill, Abore and Miradani North. Datamine NPV Scheduler was used for the Adubiaso deposit. Using an incremental gold price of $30/oz, a series of pit optimizations were performed for each deposit, ranging from a minimum of $450/oz to $1,800/oz gold price, with $1,500/oz being the base case price used for the analysis. Table 15-2 summarizes the results of the pit optimization for the six deposits and for the selected pit shells.

Table 15-2 Summary of pit optimization results

Summary of Optimum pit shells	RF #	Ore Mined			Waste	Total Mined	Strip Ratio
		Tonnes	Au g/t	Gold Ounces	Tonnes	Tonnes	W:O
Nkran	1.00	10,076,350	1.912	619,415	125,492,778	135,569,128	12.45
Esaase	1.00	12,122,723	1.554	605,680	80,810,760	92,933,483	6.67
Miradani North	1.00	6,934,557	1.332	297,007	33,966,673	40,901,230	4.90
Abore	0.86	7,569,481	1.378	335,357	39,532,272	47,101,753	5.22
Dynamite Hill	1.00	1,084,582	1.381	48,156	10,162,478	11,247,060	9.37
Adubiaso	0.88	2,169,690	1.728	120,509	19,876,545	22,046,235	9.16
Total		39,957,383	1.577	2,026,126	309,841,506	349,798,889	7.75

Figure 15-3 shows the total amount of gold mined in each deposit for different sizes of optimized pits. Nkran and Esaase pits each mine more than 600 kozs of gold at revenue factor 1.0 (base case price). Dynamite Hill optimised pit shell, with about 44 kozs of gold mined in the final pit, is the smallest optimised pit shell among the six deposits at the AGM.

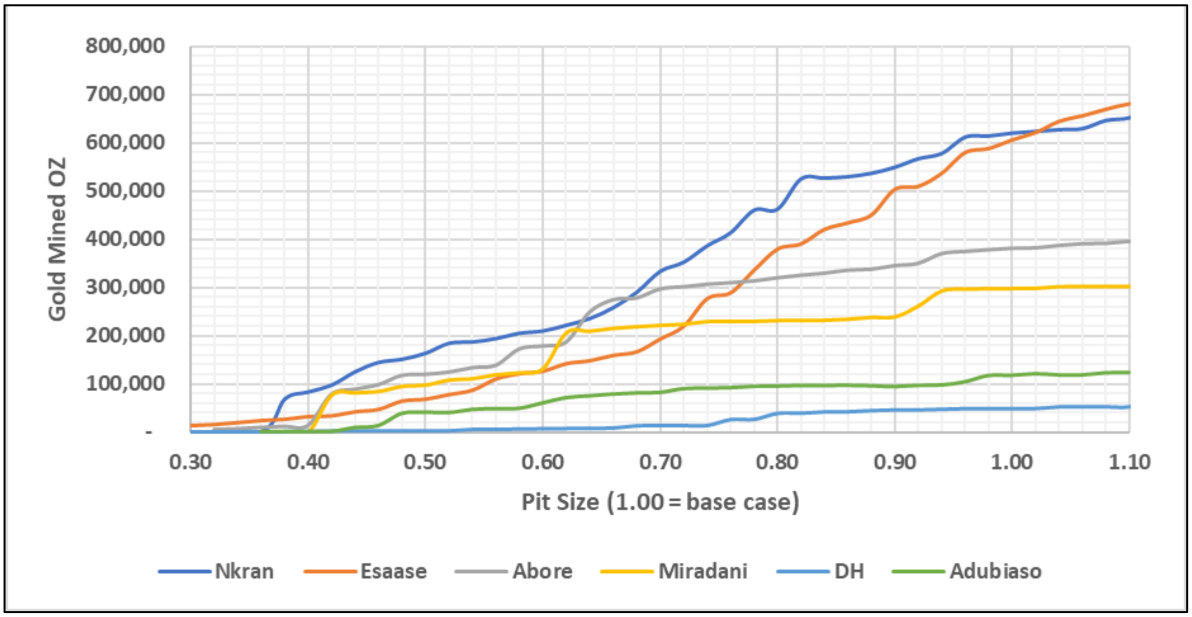


Figure 15-13 Gold mined for different pit sizes in different pits

Nkran provides the highest grade ore for the project; however, it requires a significant amount of pre-stripping. The optimised pit shell strip ratio for Nkran is about 12.45:1 waste/ore. Abore and Miradani North optimised pit shells have the lowest strip ratio, with ore being available in the first year of mining for both deposits.

Table 15-3 to Table 15-8 show the results of the pit optimization for each deposit.

Table 15-3 Pit optimization results for Nkran

Pit #	RF	Price	Ore mined @ base case price			Waste	SR	Total mined
		$/oz	Tonnes	g/t	Ozs	Tonnes	W:O	Tonnes
1	0.30	450	287	3.003	28	516	1.80	803
2	0.36	540	2,654	1.809	154	3,876	1.46	6,530
3	0.38	570	982,418	2.161	68,256	5,545,736	5.64	6,528,154
4	0.40	600	1,188,980	2.160	82,569	6,734,821	5.66	7,923,801
5	0.42	630	1,474,722	2.046	97,008	7,495,925	5.08	8,970,647
6	0.44	660	1,932,237	2.007	124,680	9,786,933	5.07	11,719,170
7	0.46	690	2,216,580	2.019	143,883	11,964,568	5.40	14,181,148
8	0.48	720	2,320,925	2.014	150,284	12,615,885	5.44	14,936,810
9	0.50	750	2,512,362	2.016	162,841	14,251,777	5.67	16,764,139
10	0.52	780	2,840,526	2.009	183,472	16,973,301	5.98	19,813,827
11	0.54	810	2,879,399	2.012	186,260	17,407,045	6.05	20,286,444
12	0.56	840	2,977,522	2.018	193,182	18,522,005	6.22	21,499,527
13	0.58	870	3,154,219	2.015	204,342	20,286,046	6.43	23,440,265
14	0.60	900	3,234,136	2.010	208,999	21,052,110	6.51	24,286,246
15	0.62	930	3,424,228	2.006	220,843	23,148,438	6.76	26,572,666
16	0.64	960	3,647,774	2.003	234,909	25,810,281	7.08	29,458,055
17	0.66	990	4,086,484	1.960	257,511	29,403,956	7.20	33,490,440
18	0.68	1,020	4,616,331	1.951	289,564	35,910,289	7.78	40,526,620
19	0.70	1,050	5,277,243	1.961	332,717	45,798,928	8.68	51,076,171
20	0.72	1,080	5,611,939	1.949	351,654	49,747,264	8.86	55,359,203
21	0.74	1,110	6,137,256	1.954	385,558	58,162,939	9.48	64,300,195
22	0.76	1,140	6,486,150	1.980	412,898	65,980,634	10.17	72,466,784
23	0.78	1,170	7,214,743	1.982	459,743	78,457,120	10.87	85,671,863
24	0.80	1,200	7,251,546	1.980	461,622	78,909,014	10.88	86,160,560
25	0.82	1,230	8,419,145	1.938	524,581	94,834,625	11.26	103,253,770
26	0.84	1,260	8,446,498	1.937	526,014	95,143,388	11.26	103,589,886
27	0.86	1,290	8,484,696	1.939	528,938	96,142,661	11.33	104,627,357
28	0.88	1,320	8,598,221	1.939	536,015	98,288,231	11.43	106,886,452
29	0.90	1,350	8,781,635	1.943	548,579	102,559,113	11.68	111,340,748
30	0.92	1,380	9,125,819	1.930	566,265	107,606,907	11.79	116,732,726
31	0.94	1,410	9,292,586	1.932	577,211	111,510,043	12.00	120,802,629
32	0.96	1,440	9,950,321	1.910	611,028	122,282,563	12.29	132,232,884
33	0.98	1,470	9,984,031	1.911	613,419	123,221,990	12.34	133,206,021
34	1.00	1,500	10,076,350	1.912	619,415	125,492,778	12.45	135,569,128

Table 15-4 Pit optimization results for Esaase

Pit #	RF	Price	Ore mined @ base case			Waste	SR	Total mined
		$/oz	Tonnes	g/t	Ozs	Tonnes	W:O	Tonnes
1	0.30	450	150,644	2.730	13,222	294,629	1.96	445,273
2	0.32	480	185,320	2.619	15,604	352,168	1.90	537,488
3	0.34	510	232,921	2.627	19,672	513,460	2.20	746,381
4	0.36	540	292,752	2.556	24,058	710,847	2.43	1,003,599
5	0.38	570	334,645	2.471	26,586	841,351	2.51	1,175,996
6	0.40	600	409,290	2.442	32,134	1,206,987	2.95	1,616,277
7	0.42	630	437,072	2.409	33,852	1,301,894	2.98	1,738,966
8	0.44	660	556,585	2.353	42,106	1,916,281	3.44	2,472,866
9	0.46	690	653,979	2.244	47,182	2,181,872	3.34	2,835,851
10	0.48	720	904,641	2.214	64,394	3,419,369	3.78	4,324,010
11	0.50	750	983,611	2.156	68,181	3,588,265	3.65	4,571,876
12	0.52	780	1,166,550	2.074	77,786	4,098,951	3.51	5,265,501
13	0.54	810	1,317,541	2.053	86,965	4,943,611	3.75	6,261,152
14	0.56	840	1,752,759	1.956	110,225	6,669,562	3.81	8,422,321
15	0.58	870	1,975,977	1.904	120,959	7,511,545	3.80	9,487,522
16	0.60	900	2,071,608	1.897	126,347	8,028,532	3.88	10,100,140
17	0.62	930	2,389,799	1.846	141,835	9,156,879	3.83	11,546,678
18	0.64	960	2,533,086	1.817	147,977	9,752,141	3.85	12,285,227
19	0.66	990	2,748,732	1.800	159,073	11,251,155	4.09	13,999,887
20	0.68	1,020	2,915,872	1.775	166,402	11,910,535	4.08	14,826,407
21	0.70	1,050	3,503,472	1.714	193,064	14,797,323	4.22	18,300,795
22	0.72	1,080	4,049,909	1.686	219,530	18,593,622	4.59	22,643,531
23	0.74	1,110	5,237,315	1.643	276,654	28,275,315	5.40	33,512,630
24	0.76	1,140	5,515,007	1.628	288,663	29,709,059	5.39	35,224,066
25	0.78	1,170	6,467,247	1.615	335,802	35,453,920	5.48	41,921,167
26	0.80	1,200	7,403,209	1.594	379,402	40,723,927	5.50	48,127,136
27	0.82	1,230	7,638,947	1.588	390,009	42,055,141	5.51	49,694,088
28	0.84	1,260	8,301,931	1.574	420,121	46,635,405	5.62	54,937,336
29	0.86	1,290	8,580,560	1.572	433,670	48,743,889	5.68	57,324,449
30	0.88	1,320	8,926,904	1.568	450,026	51,374,782	5.76	60,301,686
31	0.90	1,350	10,043,900	1.558	503,107	60,023,591	5.98	70,067,491
32	0.92	1,380	10,167,279	1.558	509,287	61,158,942	6.02	71,326,221
33	0.94	1,410	10,732,684	1.555	536,574	66,152,566	6.16	76,885,250
34	0.96	1,440	11,597,754	1.554	579,450	74,609,611	6.43	86,207,365
35	0.98	1,470	11,771,945	1.553	587,774	76,492,669	6.50	88,264,614
36	1.00	1,500	12,122,723	1.554	605,678	80,810,760	6.67	92,933,483

Table 15-5 Pit optimization results for Abore

Pit #	RF	Price	Ore mined @ base case			Waste	SR	Total mined
		$/oz	Tonnes	g/t	Ozs	Tonnes	W:O	Tonnes
2	0.32	480	47,172	2.828	4,289	366,712	7.77	413,884
3	0.34	510	81,356	2.315	6,055	464,210	5.71	545,566
4	0.36	540	131,181	2.128	8,975	644,529	4.91	775,710
5	0.38	570	176,695	1.953	11,095	727,636	4.12	904,331
6	0.40	600	210,740	1.900	12,873	845,620	4.01	1,056,360
7	0.42	630	1,427,537	1.688	77,473	6,804,335	4.77	8,231,872
8	0.44	660	1,628,482	1.685	88,221	7,813,309	4.80	9,441,791
9	0.46	690	1,813,908	1.674	97,625	8,693,255	4.79	10,507,163
10	0.48	720	2,220,552	1.638	116,941	10,191,420	4.59	12,411,972
11	0.50	750	2,266,292	1.636	119,204	10,445,749	4.61	12,712,041
12	0.52	780	2,372,748	1.624	123,888	10,882,975	4.59	13,255,723
13	0.54	810	2,578,472	1.604	132,971	11,863,930	4.60	14,442,402
14	0.56	840	2,706,558	1.584	137,836	12,139,441	4.49	14,845,999
15	0.58	870	3,552,467	1.504	171,778	15,122,630	4.26	18,675,097
16	0.60	900	3,702,740	1.495	177,973	15,805,043	4.27	19,507,783
17	0.62	930	3,897,430	1.485	186,078	16,738,699	4.29	20,636,129
18	0.64	960	5,327,133	1.450	248,343	25,566,179	4.80	30,893,312
19	0.66	990	5,921,551	1.440	274,150	29,838,840	5.04	35,760,391
20	0.68	1,020	6,010,841	1.437	277,704	30,378,750	5.05	36,389,591
21	0.70	1,050	6,468,880	1.425	296,370	33,356,544	5.16	39,825,424
22	0.72	1,080	6,576,121	1.424	301,072	34,203,641	5.20	40,779,762
23	0.74	1,110	6,725,750	1.416	306,193	34,793,226	5.17	41,518,976
24	0.76	1,140	6,809,844	1.413	309,364	35,347,493	5.19	42,157,337
25	0.78	1,170	6,908,193	1.410	313,166	36,006,045	5.21	42,914,238
26	0.80	1,200	7,095,007	1.401	319,582	37,001,606	5.22	44,096,613
27	0.82	1,230	7,261,613	1.392	324,985	37,785,324	5.20	45,046,937
28	0.84	1,260	7,378,058	1.388	329,247	38,544,714	5.22	45,922,772
29	0.86	1,290	7,569,481	1.378	335,356	39,532,272	5.22	47,101,753
30	0.88	1,320	7,638,908	1.374	337,449	39,834,253	5.21	47,473,161
31	0.90	1,350	7,860,816	1.365	344,978	41,403,607	5.27	49,264,423
32	0.92	1,380	8,003,234	1.359	349,684	42,455,365	5.30	50,458,599
33	0.94	1,410	8,594,713	1.339	370,001	47,169,095	5.49	55,763,808
34	0.96	1,440	8,740,334	1.332	374,303	47,956,368	5.49	56,696,702
35	0.98	1,470	8,857,187	1.327	377,883	48,702,588	5.50	57,559,775
36	1.00	1,500	8,947,150	1.324	380,858	49,332,272	5.51	58,279,422

Table 15-6 Pit optimization results for Miradani North

Pit #	RF	Price	Ore mined @ base case			Waste	SR	Total mined
		$/oz	Tonnes	g/t	Ozs	Tonne	W:O	Tonnes
1	0.38	570	198	1.886	12			198
2	0.40	600	1,281	1.942	80	11,244	8.78	12,525
3	0.42	630	1,486,304	1.611	76,986	5,576,625	3.75	7,062,929
4	0.44	660	1,576,339	1.606	81,392	5,767,892	3.66	7,344,231
5	0.46	690	1,641,783	1.599	84,422	5,909,643	3.60	7,551,426
6	0.48	720	1,892,253	1.557	94,716	6,375,853	3.37	8,268,106
7	0.50	750	1,960,178	1.548	97,565	6,557,239	3.35	8,517,417
8	0.52	780	2,198,814	1.526	107,878	7,100,492	3.23	9,299,306
9	0.54	810	2,260,634	1.520	110,489	7,284,486	3.22	9,545,120
10	0.56	840	2,479,713	1.491	118,887	7,763,355	3.13	10,243,068
11	0.58	870	2,573,991	1.484	122,797	8,007,973	3.11	10,581,964
12	0.60	900	2,801,889	1.459	131,413	8,700,612	3.11	11,502,501
13	0.62	930	4,620,489	1.386	205,859	15,314,216	3.31	19,934,705
14	0.64	960	4,695,518	1.383	208,780	15,534,222	3.31	20,229,740
15	0.66	990	4,841,765	1.380	214,871	16,177,036	3.34	21,018,801
16	0.68	1,020	4,926,476	1.377	218,117	16,545,145	3.36	21,471,621
17	0.70	1,050	4,997,675	1.375	220,892	16,803,798	3.36	21,801,473
18	0.72	1,080	5,059,592	1.372	223,167	17,082,127	3.38	22,141,719
19	0.74	1,110	5,210,704	1.366	228,830	17,775,175	3.41	22,985,879
20	0.76	1,140	5,218,558	1.366	229,176	17,834,830	3.42	23,053,388
21	0.78	1,170	5,221,451	1.366	229,258	17,839,365	3.42	23,060,816
22	0.80	1,200	5,263,968	1.363	230,764	18,014,891	3.42	23,278,859
23	0.82	1,230	5,273,025	1.363	231,157	18,102,940	3.43	23,375,965
24	0.84	1,260	5,282,588	1.363	231,517	18,144,850	3.43	23,427,438
25	0.86	1,290	5,340,911	1.360	233,581	18,539,354	3.47	23,880,265
26	0.88	1,320	5,451,799	1.354	237,435	19,239,754	3.53	24,691,553
27	0.90	1,350	5,479,869	1.353	238,369	19,340,281	3.53	24,820,150
28	0.92	1,380	6,085,672	1.334	260,951	23,895,522	3.93	29,981,194
29	0.94	1,410	6,829,102	1.331	292,264	32,466,507	4.75	39,295,609
30	0.96	1,440	6,905,353	1.332	295,783	33,613,247	4.87	40,518,600
31	0.98	1,470	6,931,661	1.332	296,854	33,937,090	4.90	40,868,751
32	1.00	1,500	6,934,557	1.332	296,989	33,966,673	4.90	40,901,230

Table 15-7 Pit optimization results for Dynamite Hill

Pit #	RF	Price	Ore mined @ base case			Waste	SR	Total mined
		$/oz Au	Tonnes	g/t Au	Ozs	Tonnes	W:O	Tonnes
1	0.30	450	5,258	2.59	438	11,616	2.21	16,874
2	0.32	480	6,470	2.50	520	15,338	2.37	21,808
3	0.34	510	13,698	2.12	935	30,869	2.25	44,567
4	0.36	540	16,578	2.01	1,072	32,927	1.99	49,505
5	0.38	570	19,011	1.98	1,206	39,031	2.05	58,042
6	0.40	600	26,504	1.80	1,531	46,200	1.74	72,704
7	0.42	630	48,127	1.62	2,501	86,323	1.79	134,450
8	0.44	660	53,649	1.60	2,750	96,563	1.80	150,212
9	0.46	690	54,625	1.59	2,795	99,141	1.81	153,766
10	0.48	720	56,169	1.58	2,854	101,343	1.80	157,512
11	0.50	750	57,341	1.58	2,908	104,403	1.82	161,744
12	0.52	780	59,341	1.58	3,010	114,205	1.92	173,546
13	0.54	810	116,749	1.55	5,817	441,762	3.78	558,511
14	0.56	840	120,025	1.54	5,953	451,962	3.77	571,987
15	0.58	870	134,924	1.51	6,549	508,675	3.77	643,599
16	0.60	900	151,452	1.48	7,200	568,048	3.75	719,500
17	0.62	930	159,245	1.48	7,566	620,090	3.89	779,335
18	0.64	960	169,868	1.48	8,054	693,541	4.08	863,409
19	0.66	990	181,038	1.48	8,607	793,824	4.38	974,862
20	0.68	1,020	289,802	1.43	13,350	1,577,558	5.44	1,867,360
21	0.70	1,050	293,802	1.43	13,496	1,598,718	5.44	1,892,520
22	0.72	1,080	300,246	1.43	13,763	1,641,327	5.47	1,941,573
23	0.74	1,110	302,246	1.42	13,826	1,646,195	5.45	1,948,441
24	0.76	1,140	582,046	1.38	25,821	4,364,288	7.50	4,946,334
25	0.78	1,170	589,117	1.38	26,134	4,431,358	7.52	5,020,475
26	0.80	1,200	863,761	1.39	38,484	7,361,816	8.52	8,225,577
27	0.82	1,230	871,299	1.39	38,820	7,440,236	8.54	8,311,535
28	0.84	1,260	937,565	1.38	41,592	8,158,861	8.70	9,096,426
29	0.86	1,290	939,034	1.38	41,657	8,177,518	8.71	9,116,552
30	0.88	1,320	995,309	1.38	44,122	8,884,943	8.93	9,880,252
31	0.90	1,350	1,020,706	1.39	45,411	9,300,484	9.11	10,321,190
32	0.92	1,380	1,021,962	1.38	45,434	9,302,126	9.10	10,324,088
33	0.94	1,410	1,049,549	1.38	46,661	9,678,961	9.22	10,728,510
34	0.96	1,440	1,082,680	1.38	48,064	10,158,975	9.38	11,241,655
35	0.98	1,470	1,083,738	1.38	48,076	10,161,676	9.38	11,245,414
36	1.00	1,500	1,084,582	1.38	48,114	10,162,478	9.37	11,247,060

Table 15-8 Pit optimization results for Adubiaso

Pit #	RF	Price	Ore mined @ base case			Waste	SR	Total mined
		$/oz Au	Tonnes	g/t Au	Ozs	Tonnes	W:O	Tonnes
1	0.36	540	1,995	3.06	196	11,790	5.91	13,785
2	0.38	570	2,280	2.92	214	14,325	6.28	16,605
3	0.40	600	3,135	2.39	241	17,850	5.69	20,985
4	0.42	630	4,845	2.36	367	17,850	3.68	22,695
5	0.44	660	112,755	2.36	8,540	1,562,190	13.85	1,674,945
6	0.46	690	175,755	2.25	12,713	2,253,675	12.82	2,429,430
7	0.48	720	537,345	2.21	38,258	5,125,485	9.54	5,662,830
8	0.50	750	573,555	2.21	40,683	5,289,540	9.22	5,863,095
9	0.52	780	597,210	2.09	40,093	5,522,700	9.25	6,119,910
10	0.54	810	706,800	2.05	46,472	6,028,575	8.53	6,735,375
11	0.56	840	746,250	2.01	48,242	6,192,570	8.30	6,938,820
12	0.58	870	761,715	2.00	48,896	6,300,945	8.27	7,062,660
13	0.60	900	947,370	1.98	60,180	7,533,300	7.95	8,480,670
14	0.62	930	1,125,855	1.97	71,323	9,431,430	8.38	10,557,285
15	0.64	960	1,205,850	1.94	75,268	9,943,260	8.25	11,149,110
16	0.66	990	1,269,465	1.93	78,848	10,523,895	8.29	11,793,360
17	0.68	1,020	1,316,115	1.92	81,250	10,810,275	8.21	12,126,390
18	0.70	1,050	1,347,060	1.90	82,156	11,208,165	8.32	12,555,225
19	0.72	1,080	1,482,120	1.89	90,213	12,597,645	8.50	14,079,765
20	0.74	1,110	1,509,390	1.88	91,279	12,792,885	8.48	14,302,275
21	0.76	1,140	1,531,740	1.87	92,182	12,892,230	8.42	14,423,970
22	0.78	1,170	1,583,550	1.86	94,945	13,223,880	8.35	14,807,430
23	0.80	1,200	1,600,365	1.86	95,593	13,443,420	8.40	15,043,785
24	0.82	1,230	1,624,725	1.85	96,826	13,546,440	8.34	15,171,165
25	0.84	1,260	1,645,590	1.83	96,898	13,678,335	8.31	15,323,925
26	0.86	1,290	1,660,650	1.82	97,118	13,775,295	8.30	15,435,945
27	0.88	1,320	1,677,960	1.78	96,127	13,936,365	8.31	15,614,325
28	0.90	1,350	1,701,270	1.73	94,492	14,299,560	8.41	16,000,830
29	0.92	1,380	1,755,645	1.72	97,010	14,820,045	8.44	16,575,690
30	0.94	1,410	1,789,680	1.70	97,886	15,116,010	8.45	16,905,690
31	0.96	1,440	1,925,115	1.69	104,492	16,894,965	8.78	18,820,080
32	0.98	1,470	2,169,690	1.69	117,722	19,876,545	9.16	22,046,235
33	1.00	1,500	2,199,915	1.67	118,166	20,142,300	9.16	22,342,215

15.4 Pit Size Selection and Analysis

The final pit size selection is a complex decision-making process that includes considerations of overall corporate strategy. At the centre of this analysis is the preliminary economic (pit value) analysis. The optimized pit shells produced in the previous section were used to conduct a series of preliminary economic analyses. The sensitivity of the overall pit values for different sizes of pits was analyzed.

A major factor in pit size selection is the commodity price used for the analysis. Note that $1,500/oz gold price was used in pit optimization and pit size evaluation, which is lower than the price used in the financial models. This inherently reduces the amount of the risk for the overall project.

To align the pit size selection with corporate policies, Galiano mining engineers and managers were involved in the process of the pit size selection.

The selected pits were also checked in 3D making sure that there were no issues with executing the mine plans, particularly in respect to the minimum mining width.

Figure 15-14 to Figure 15-19 show the discounted pit values for various deposits. For all cases presented in this study, the pit values do not change near the revenue factor 1.0 pit shell. That means that the economic advantage of choosing the largest viable pit (revenue factor 1) and slightly smaller pits is the same.

Nkran, Esaase and Dynamite pits are already mined significantly to a depth that any pit expansion must take in consideration the practicality of additional cuts in the existing walls. For these three pits, the revenue factor 1.0 pit shells were selected to allow enough room for an efficient mining operation. For Miradani North, revenue factor 1.0 was selected due to the fact that the pit shell size and value does not change much from revenue factor 0.82 to 1.0 and also due to the value of the input parameters used in optimization.

For Adubiaso and Abore the revenue factor 0.86 and 0.88 pit shells were used for the ultimate pit design due to negligible gains in pit value if larger pits are selected.

Considering the conditions explained in this study, the QP is confident that the pit shells selected here pose the lowest risks in the mine design.

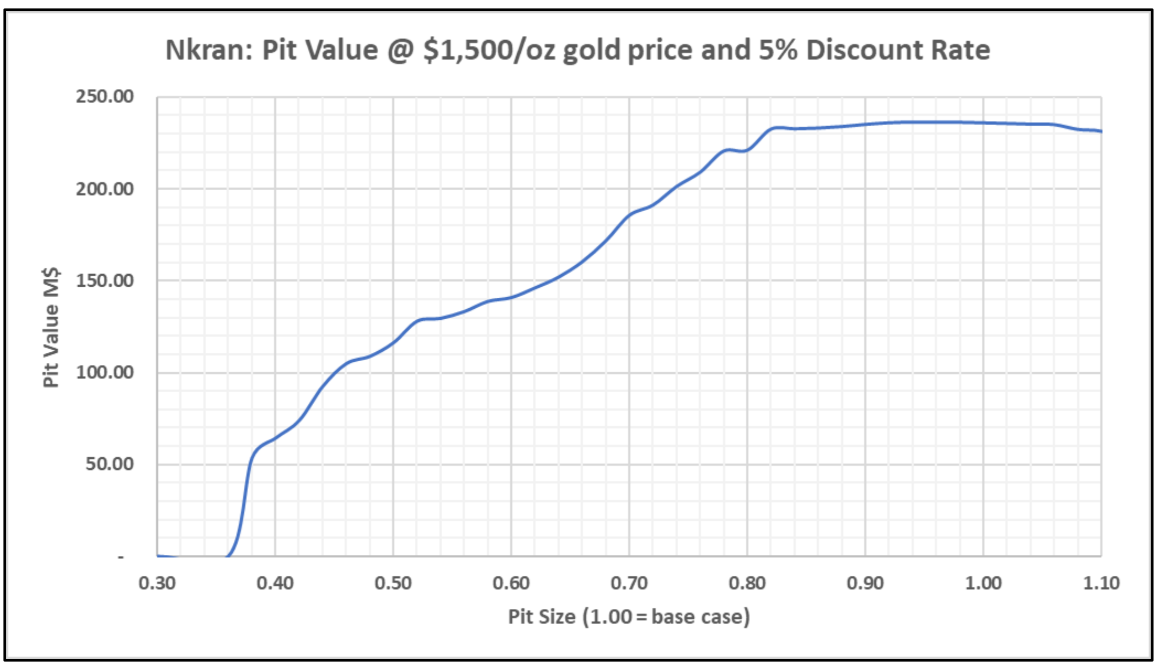


Figure 15-14 Nkran discounted pit value

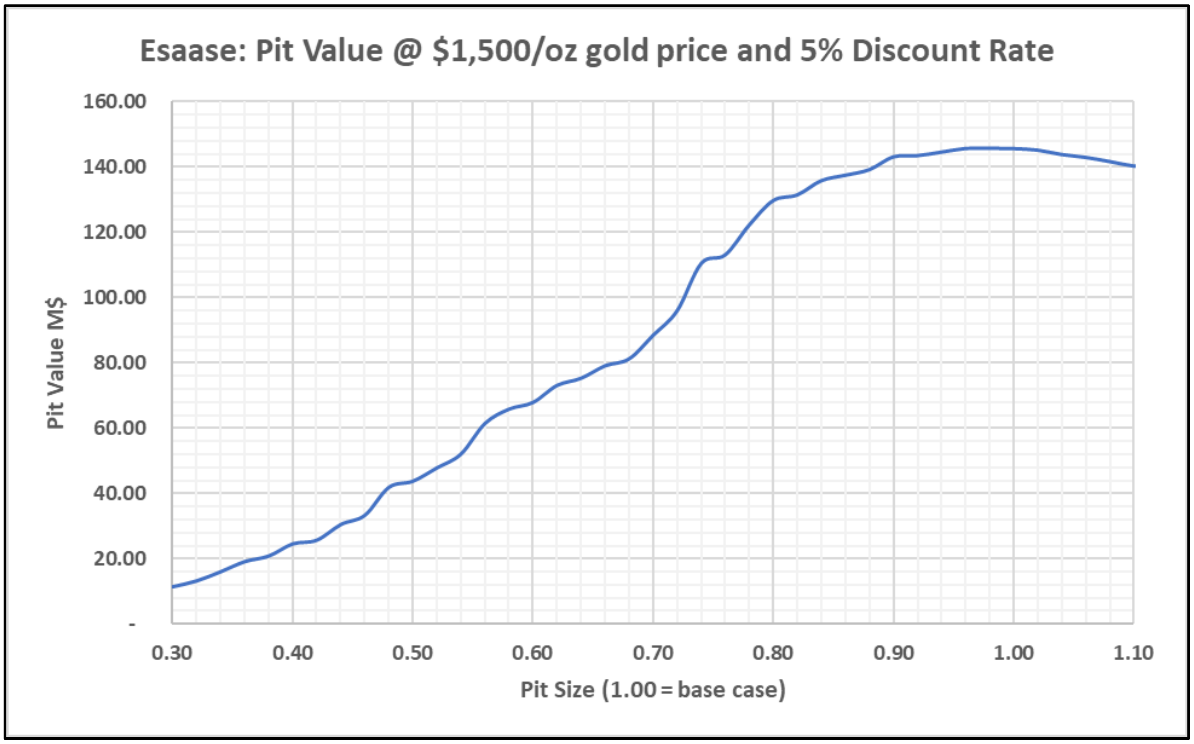


Figure 15-15 Esaase discounted pit value

Figure 15-16 Miradani North discounted pit value

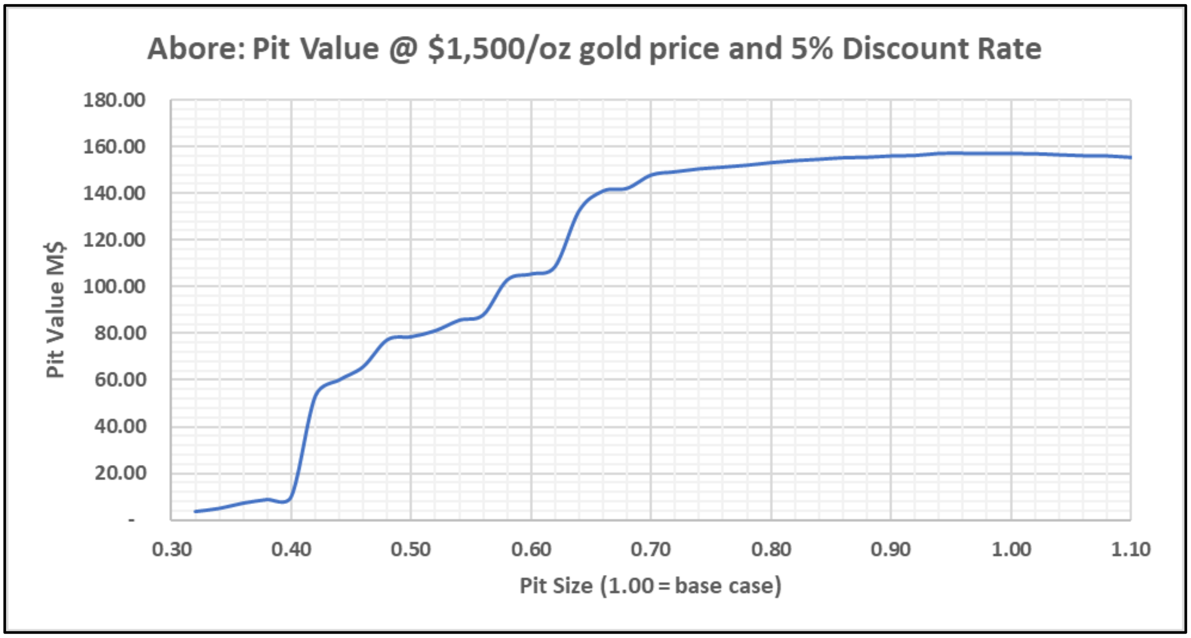


Figure 15-17 Abore discounted pit value

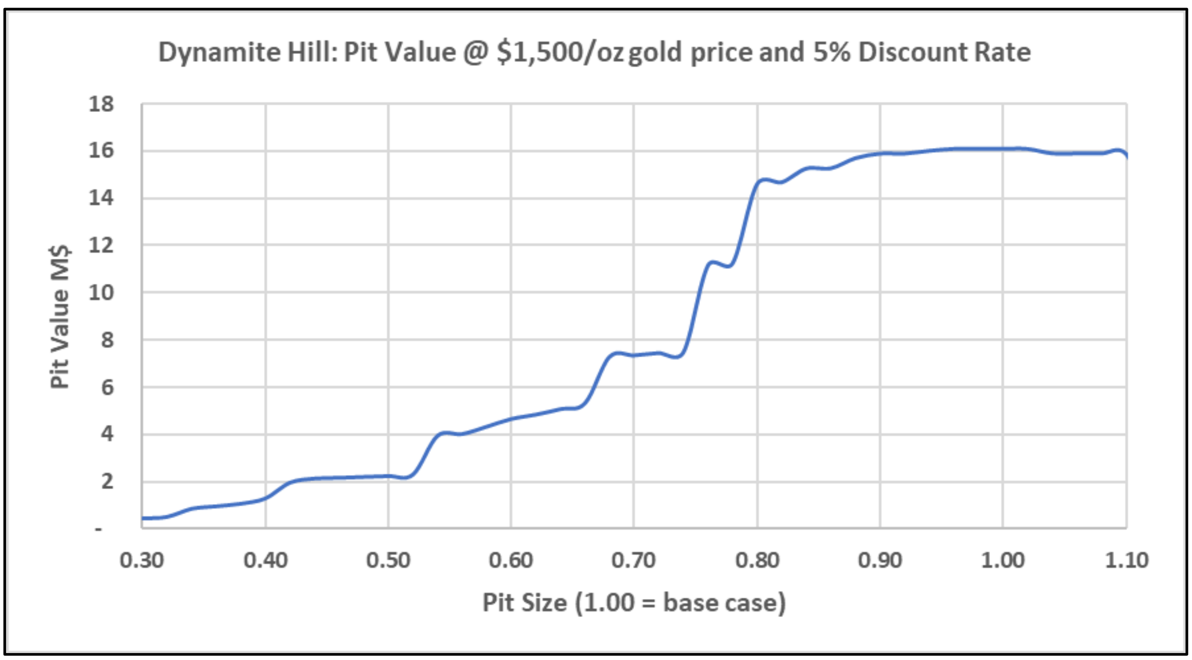


Figure 15-18 Dynamite Hill discounted pit value

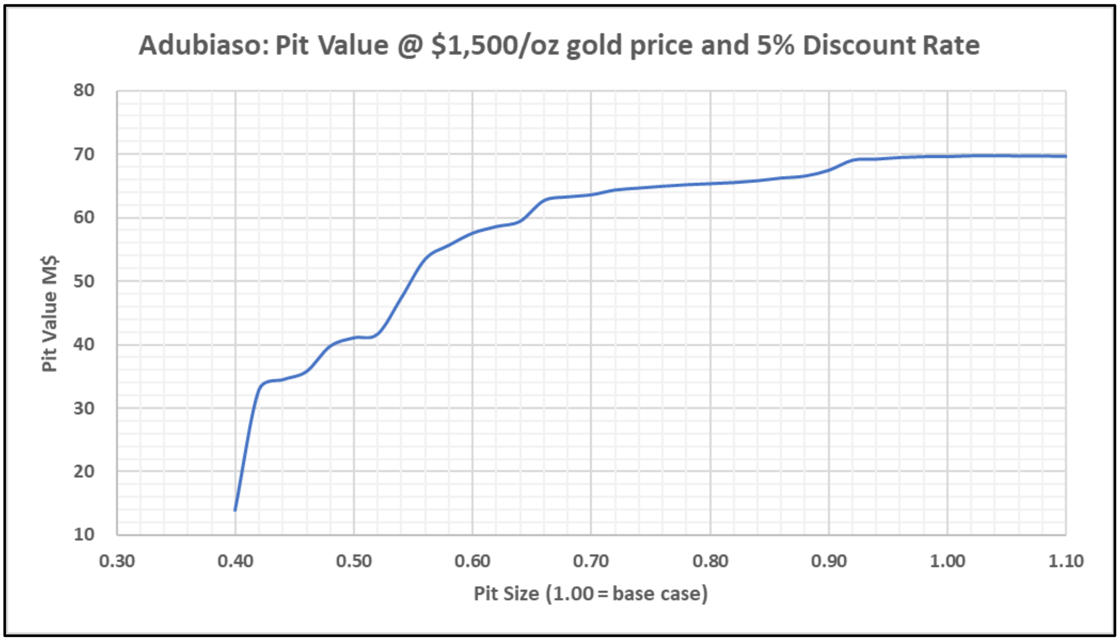


Figure 15-19 Adubiaso discounted pit value

Figure 15-20 shows the contribution of different deposits to the approximate undiscounted project value before capital costs and tax. Nkran, with 27% of the total project value, contributes the most followed by Miradani North with 23%. Esaase and Abore provide about 20% of the total project value. Dynamite Hill contributes the least to the project, generating about 1% of the total value.

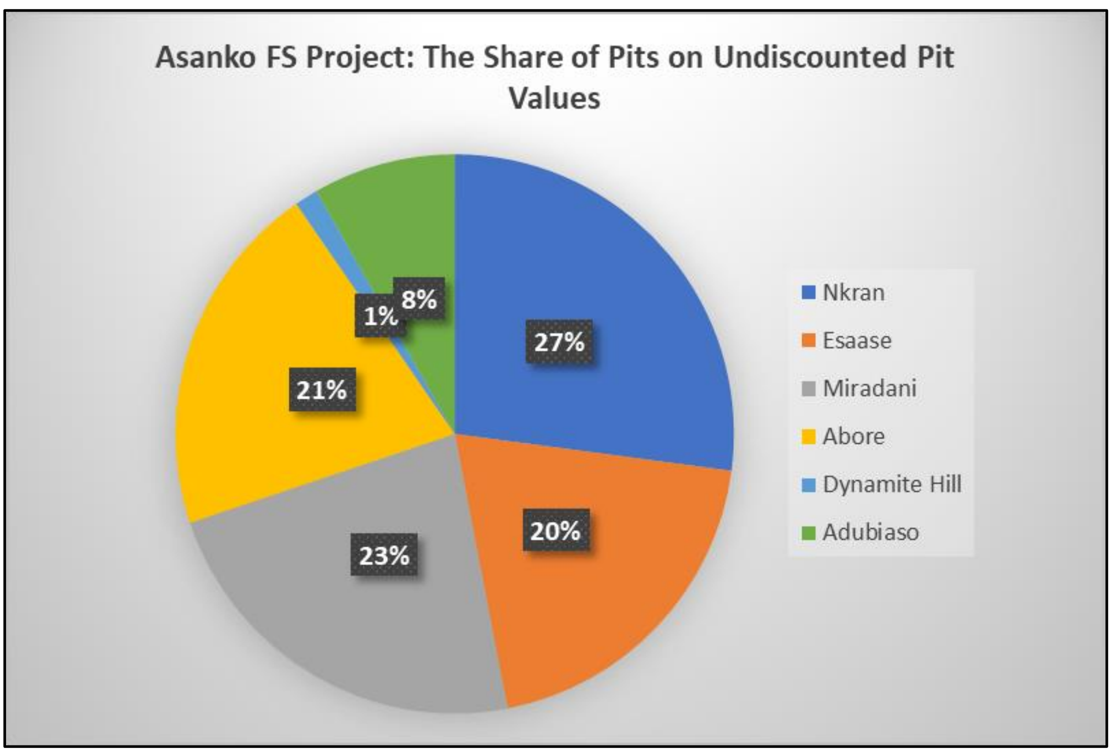


Figure 15-20 Approximate share of overall project value by deposit

15.5 Mineral Reserves Summary

The Mineral Reserve estimate for the AGM has been prepared as part of the 2022 Feasibility Study. This Mineral Reserve estimate has been prepared in accordance with the CIM Definition Standards adopted May 2014.

The Mineral Reserves were derived from the mineral resource block models and stockpiled mineral resources that are presented in Section 14. The Mineral Reserves respective of the six open pits are based on Indicated mineral resources that have been identified as being economically extractable and which incorporate mining losses and mining waste dilution. The Mineral Reserves include 41.72 Mt of mineable ore from six open pits and 7.20 Mt of existing stockpile material at an average grade of 1.43 g/t and 0.67 g/t, respectively. The Mineral Reserve includes variable mining dilution for each pit and it is calculated after 2% ore loss. The reference point for the Mineral Reserve estimate is the point where the ore is delivered to the processing plant.

A summary of the surface mineable Mineral Reserves by pit is shown in Table 15-9.

The QP, Dr. Anoush Ebrahimi, does not know of any legal, political, environmental, or other risks that could materially affect the potential development of the Mineral Reserves. Dr. Ebrahimi believes the risks regarding permitting and socio-economic factors are low.

15.6 Declaration

The Mineral Reserves QP's opinion contained herein and effective 31 December 2022, is based on information collected by SRK throughout the course of the FS, which in turn reflects various technical and economic conditions at the time of writing this report. Given the nature of the mining business, these conditions can change significantly over relatively short periods of time. Consequently, actual results may be significantly more or less favourable.

This technical report may include technical information that requires subsequent calculations to derive sub-totals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, the section QP does not consider them to be material.

Neither SRK nor the Mineral Reserves QP is an insider, associate or an affiliate of AGM or Galiano, and neither SRK nor the QP, nor any affiliate has acted as advisor to AGM or Galiano, or each of their respective subsidiaries or affiliates in connection with this project. The results of the technical work by SRK are not dependent on any prior agreements concerning the conclusions to be reached, nor are there any undisclosed understandings concerning any future business dealings.

Table 15-9 Summary of the Mineral Reserves for AGM, Ghana, as at 31 December 2022

Deposit	Proven			Probable			Total		
	Tonnes (Mt)	Au Grade (g/t)	Au Content (koz)	Tonnes (Mt)	Au Grade (g/t)	Au Content (koz)	Tonnes (Mt)	Au Grade (g/t)	Au Content (koz)
Nkran				9.9	1.82	582	**9.9**	**1.82**	**582**
Esaase				13.6	1.22	532	**13.6**	**1.22**	**533**
Miradani North				6.8	1.41	310	**6.8**	**1.41**	**310**
Abore				8.2	1.27	334	**8.2**	**1.27**	**334**
Dynamite Hill				1.1	1.31	45	**1.1**	**1.31**	**45**
Adubiaso				2.2	1.58	110	**2.2**	**1.58**	**110**
Stockpiles	7.2	0.67	155				**7.2**	**0.67**	**155**
Total Reserve	**7.2**	**0.67**	**155**	**41.7**	**1.43**	**1,913**	**48.9**	**1.31**	**2,068**

Notes:

- *The effective date of the Mineral Reserve is 31 December 2022.*
- *Mineral Reserves are reported assuming a gold price of US$1,500/oz Au.*
- *Mineral Reserves are defined within six different pit designs guided by pit shells derived from the optimization software, GEOVIA Whittle™ and Datamine Studio NPVS™.*
- *Cut-off grades vary based on the deposit. Nkran is close to the mill and contains only fresh ore. The Mineral Reserves are reported at 0.40 g/t Au cut-off for the fresh ore in Nkran. For Esaase, Mineral Reserves are reported at cut-offs of 0.55 g/t Au for the oxide ore and 0.70 g/t Au for the remaining ore types. For all other open pits, the Mineral Reserves are reported at 0.5 g/t Au cut-off for all ore types.*
- *Mining costs vary based on the pit, the rock type, and the depth of the pit. The average mining costs for Nkran, Esaase, Miradani North, Abore, Dynamite Hill and Adubiaso are $2.44/t, $1.98/t, $1.94/t, $2.00/t, $2.29/t and 2.06/t, respectively. There are additional expenditures for fixed contractor monthly fees, grade control, community fees, Owner's Mining G&A, and other small costs that vary with each deposit and are in addition to the costs stated above.*
- *Ore transportation cost varies for each pit based on the haul distance. It ranges between $0.61/t for Nkran and $6.15/t for Esaase.*
- *Processing cost is $8.81/t for oxide ore, $10.39/t for transition ore and $10.66/t for fresh ore.*
- *General and administration costs are $6.69/t for Esaase and $6.19/t for all other pits.*
- *Processing recovery is 94.0% for all ore types in all pits except for Esaase. Processing recovery varies based on the ore type and head grade in Esaase, where the average recovery for oxide, Upper Sandstone, Cobra and Central Sandstone ore types are 90.1%, 73.8%, 71.3% and 76.4%, respectively.*
- *Mining dilution varies between pits. The average mining dilution is calculated to be 11.9%, 14.4%, 6.0%, 10.8%, 11.6% and 15.3%, for Nkran, Esaase, Miradani North, Abore, Dynamite Hill and Adubiaso, respectively.*
- *A 2% ore loss has been applied to the total reserve in each pit and for the stockpiles.*
- *Figures are rounded to the appropriate level of precision for the reporting of Mineral Reserves. Due to rounding, some columns or rows may not compute as shown.*
- *The overall strip ratio (the amount of waste mined for each tonne of ore) for AGM is 7.21 (W:O). The strip ratio for Nkran, Esaase, Miradani North, Abore, Dynamite Hill and Adubiaso is 13.5, 4.5, 5.6, 4.8, 9.8 and 8.2 respectively.*
- *The Mineral Reserve is stated as diluted dry metric tonnes.*
- *The mine plan underpinning the Mineral Reserves has been prepared by SRK Consulting (Canada) Inc.*

16 Mining Methods

16.1 Introduction

There are several mineral deposits at the AGM that are in different stages of exploration and advancement. Six deposits are viable to be mined by conventional truck and shovel open pit mining techniques; they are: Nkran, Esaase, Miradani North, Abore, Dynamite Hill and Adubiaso.

All pits will utilize truck-loader mining methods operated by contractors as has traditionally been the case at the AGM. Ore and waste material will be drill and blasted as required in 6 m benches, loaded using front-end loaders or backhoe excavators and then hauled using a mix of articulated and rigid body trucks. Mining will be operated by experienced contractors using either 40-t CAT 740 and/or 91-t CAT 777 trucks, depending on pit size and equipment availability.

All six pits in this report were previously subject to mining activities. The last mining activity at the AGM was in the Esaase pit, terminated in May 2022, followed by the Akwasiso pit, terminated in July 2022; however, the mill continues operations using stockpiled ore.

There are ROM stockpiles near each pit and ROM stockpiles near the primary crusher adjacent to the processing plant. Ore from Esaase, Abore, Miradani North and Dynamite Hill will be stockpiled adjacent to the pits and then hauled by contractors to the processing plant near the Nkran pit. The Nkran and Adubiaso pits are close to the mill, so some ore will be directly fed to the crusher.

Bench geometries were determined by SRK geotechnical guidance and AGM operational experience and are specific to each pit.

Haulage roads are for two-way traffic for the upper parts of the pits and one-way for the last 2-3 benches in the pits. In some cases, the last one or two benches were assumed to be mined by smaller equipment, utilizing temporary ramping.

Pits were designed to best follow optimized pit shells and minimize strip ratios, while honouring geotechnical guidance, safety standards, and other spatial constraints, such as previously mined pit walls and regulatory boundaries relating to nearby villages and other infrastructure.

Waste materials will be hauled to the WSFs located near each pit.

Two SRK mining engineers visited the mine site in June and August 2022. They concluded that the mining operations were sound and the use of Ghanaian mining contractors has been safe and cost effective.

16.2 Input Parameters for the Final Pit Design

16.2.1 Geotechnical Parameters

Geotechnical analysis was conducted on each pit separately by SRK geotechnical engineers. Guidance on pit slope angles was generated that guided pit design bench geotechnical parameters including benching (double/triple), catch bench width and bench face angles. Guidance was dictated by slope domains that were distinct by rock type (oxide, transition, fresh and sometimes shale) and occasionally azimuth.

The overall slope angles used for the pit optimization can be found in Section 15.2.8. For geotechnical domains also refer to Section 15.2.8. Mine designs include the bench geotechnical design parameters assumed for each pit.

Beginning in March 2020 and through October 2021, SRK (South Africa) (Pty) Ltd. carried out a specialist structural geology study and provided oversight and assurance to a geotechnical drilling and core logging program implemented by the AGM. An associated revision of the slope designs for all active open pits at the AGM operations was also carried out during 2022. This work started with the Esaase and Nkran design studies, and was later extended to include the Abore, Adubiaso, Dynamite Hill and Miradani North pits. Geotechnical investigations for smaller deposits (Adubiaso and Dynamite Hill) are to a lower confidence level, but with similar geological, structural and rock mass environments, mining conditions are expected to be similar, resulting in expected similar performance of the associated slope designs. Where no new data was available, the revised pit designs were assessed geometrically against existing slope design parameters.

Structural and geotechnical studies have resulted in a robust understanding of the prevailing litho-structural controls on slope stability at AGM's operations. The resulting litho-structural model has been constructed to allow regular update from on-site mapping and other data and has been provided to AGM for further application and development.

The updated litho-structural model, and rock mass parameters from the laboratory strength testing program were utilized in calibration analyses for specific pit slopes that have experienced historic instabilities. This back-analysis of the historic instabilities at the Nkran and Akwasiso pits has further refined the material strength input parameters for subsequent predictive design analyses.

Geotechnical domains for all pits have been determined on a litho-structural basis, with the main lithological units, faults and shear zones forming the lateral domain boundaries. Additionally, vertical domain boundaries were determined from the weathering profile, providing vertical domains that consider the oxide/saprolite horizon, the saprock transition zone and the unweathered hardrock zone.

Unweathered rock consists of phyllites, quartzitic shales, sandstone and localized granitic intrusions, with graphite filled shear zones and associated foliation dominant in the quartzitic shales. It should be noted that the phyllites, shales and sandstones are often intercalated, and that the shear zone material is often graphitic and chloritized. The saprolite horizon is affected by remnant structure, with the in-situ oxidized material retaining its parent structure, and in turn providing planes of weakness within the saprolite mass along which instability may occur preferentially. The stability analyses modelled these materials in accordance with the available geological models, with the derived slope angles honouring the back-analysed material strengths.

The Nkran Cut 3 and Esaase designs were calibrated against observed performance in the current pits, while the Abore and Miradani North designs were based purely on laboratory strength data calibrated to the Nkran and Akwasiso back-analyses. It should be noted that the litho-structural environment across the site remains similar and that the pit slope conditions are thus considered similar, barring the influence of localized pit slope orientation.

16.2.2 Litho-structural Model Update

The foundation for developing sound litho-structural 3D models is the utilization of the full spectrum of data from mapping, drilling, geotechnical logging, macrostructural logging and downhole assays. By taking advantage of the information contained in all these different data sources, models that can be applied comprehensively in ore and country rock volume estimation are created. From this, reliable mine planning models and geotechnical design analyses can be built.

The litho-structural model updates for all the AGM pits carried out by SRK during 2020 and 2021 utilized all available current (from the 2020/21 litho-structural and geotechnical investigation program) and historic data to arrive at a revised interpretation of the structural controls on slope stability for the AGM pits. For this work, Seequent's LeapFrog Geo™ 3D geological modelling software was chosen.

As a result, unique foliation models were generated for each deposit/pit from orientation data of bedding/foliation planes collected from the drillhole data, surface mapping and known lithological boundaries, as illustrated in Figure 16-1. These so-called interpolant models are basically equidistant surfaces that are generated from the interpolated orientation data. The foliation models in conjunction with weak zone (shear zone) identification in the drill core and from physical surface and digital drone mapping, were used to provide guidance for the shear zones' modelling. This approach provided a thorough basis for geotechnical modelling by using 2D sections that were cut perpendicular to the slopes for the numerical stability simulations.

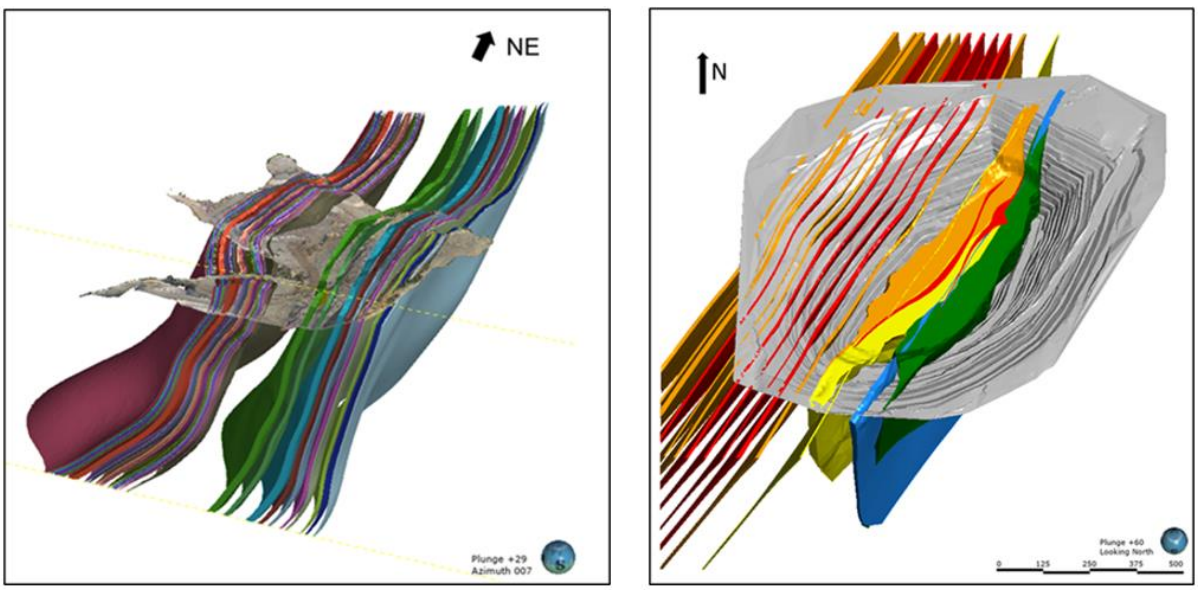


Figure 16-1 Esaase (left) and Nkran (right) foliation models, showing the shear zone interpretations

Going forward, new mapping or drillhole data can be added by the mine team at any point to the form interpolant function which will automatically recalculate and adjust the 3D model with a more representative shear zone interpolation, based on the new data.

16.2.3 Rock Mass Characterization

The rock mass at AGM has been further characterized via a dedicated geotechnical mapping and drilling program, including the drilling of 24 boreholes and approximately 6,064 m of core during 2020 and 2021. The core was geotechnically logged and sampled for laboratory strength testing as part of the investigation program. All 24 diamond bit drill holes were orientated and core was extracted via triple tube, split barrel coring techniques.

The geotechnical logging was carried out by AGM staff, with QAQC of the logging provided by SRK. The logging was carried out in SRK's proprietary logging application, CoreLOG Pro, which allows geotechnical and structural data to be captured together with core photographs, with real time data upload and reporting.

The Laubscher (1990) rock mass rating system (RMRL) was chosen for the rock mass characterization, as it satisfied the site requirements for effective and practical rock mass characterization and allowed correlation with previously logged data.

The intact rock and discontinuity strength properties reported on from laboratory testing of core samples from this investigation include:

- Uniaxial compressive strength (UCS), with measurement of elastic properties (Young's modulus E and Poisson's ratio ν)
- Brazilian tensile strength (BTS)
- Triaxial compressive strength (TCS)
- Base friction angle (BFA)
- Shear strength on open joints (SSOJ)

The combined UCS, BTS and TCS results were applied in determining the Hoek-Brown material parameters, including m_i, while BFA and SSOJ results provide shear strength parameters for the inclusion of structural defects in the design analysis.

Laboratory test results were examined to ensure the validity of the data applied to the rock mass model and to identify possible trends (normal and abnormal), variability with depth, specimen failure modes, correlations, gaps, or outliers within the data set. Engineering judgement was applied to the reported results to identify inconsistencies and outliers, and ultimately determine representative values for application in the design analysis.

Particular attention was given to the failure mode of the laboratory specimens, with post-failure photographs inspected to determine the dominant failure modes per material type, as well as per pit. The data analysis indicates clear strength anisotropy in all pits and this is believed to be related to the shear sympathetic bedding and foliation. Anisotropy was also observed in the pits, particularly along and sympathetic to the shearing.

Although the rock mass was domained both vertically and laterally for all pits, with the vertical domains defined by the saprolite/saprock contact and the saprock/unweathered rock contact, in the unweathered rock no correlation between intact strength and depth could be defined for any of the lithologies.

Laubscher (1990) RMRs were determined for each lithology within each pit, with downhole borehole plots of RMR_L interpreted from the relevant geotechnical logs. Furthermore, the specific RMR_L input parameters of fracture frequency, intact rock strength, weathering and joint condition (consisting of micro-roughness, joint infill and joint wall alteration) for each lithology were studied to ensure their representativeness.

The rock mass rating results indicate similarity in the litho-structural and rock mass setting across the AGM, with similar slope stability conditions and controls expected for all pits, with the noted exception that the granite and sandstone (SS, CASS and SI) at Abore and Miradani North appear more competent. This is considered to be related to the proximity of the shear zones to the core assessment and should be validated as additional data becomes available.

16.2.4 Hydrogeological Factors

SRK hydrogeologists were tasked with performing a hydrogeological assessment for the AGM and creating phreatic surfaces. The scope of work for this report included a review of the data and conceptual and numerical models for the active pits. The Abore, Adubiaso, Dynamite Hill and Miradani North deposits are new sites and a conceptual level of study was completed. SRK carried out a review of the hydrogeological data and groundwater management system for the Nkran, Esaase and Akwasiso pits in 2020 and 2021. Mining at the Akwasiso pit ceased in July 2022 and no further assessment was required.

This work was primarily based on a review of available hydrogeological data and updating the existing understanding of the hydrogeological conditions at each of the ore bodies. Following the collation and interpretation of available data, a numerical hydrogeological model for the Esaase mining area was constructed. The numerical model developed in the previous hydrogeological assessment for the Nkran pit was reviewed and updated with the new pit designs.

The hydrogeological assessments resulted in the following:

- Groundwater occurrence is associated with the weathered zone and specific geological structures. Some structures and intrusions are believed to compartmentalize groundwater.
- Moderate hydraulic conductivity is associated with the various lithologies and based on available data this is around 0.1 m/d (geometric mean). Groundwater inflows will occur in all pits and in particular when pits intersect permeable fractures and faults.
- The Esaase pits (North 150 mbgl (metres below ground level), Main 270 mbgl and South 150 mbgl) will have a combined peak inflow of approximately 58 L/s (5,000 m^3/d). Most of the ingress will occur at the Main Pit due to its size and depth. With additional dewatering boreholes and drainholes, the ingress can be reduced by 40% to 42 L/s (3,600 m^3/d) and highwalls can be depressurized.
- A peak ingress rate of approximately 10,900 m^3/d can be expected into the Nkran pit with current dewatering boreholes and drainholes. However, as the pit progresses, some of the existing dewatering boreholes and drainholes will need replacing. An additional 15 dewatering boreholes were simulated spatially around the pit to reduce the ingress into the pit to less than 500 m^3/d.
- Using the Jacob-Lohman analytical solution and assumed hydraulic parameters, inflows into the various new deposits were calculated and summarized in Table 16-1.

Table 16-1 Inflows into the new deposits

Pit	Pit Final Depth (m)	Period Mined	Inflows (L/s)
Abore	125	Oct-23 to Feb-26	24
Adubiaso	150	Mar-26 to Mar-27	39
Dynamite Hill	125	Apr-27 to May-28	20
Miradani North	235	May-24 to Nov-26	61

- A combination of dewatering boreholes located around the pit crests and sub-horizontal drain holes will be required to manage the groundwater inflows. The structural model and learning from the operational mining areas must be used to position the dewatering holes.
- Pore water pressure build-up behind the pit highwall was flagged as a potential trigger for slope failures at the existing operations. Pore water pressure build-up may be transient in nature, building up in response to specific rainfall events. The sub-horizontal drain holes, targeting particular pit areas and structures, will assist in depressurizing slopes.
- Vibrating wire piezometers (VWP) linked to data loggers are suggested for all the pits to accurately monitor pore pressure variation and build-up. Each VWP hole should have at least three transducers installed, targeting the saprolite and transition zones.
- Mine water management is integrated to achieve the required outcomes. Appropriate stormwater management outside of the pits is required to prevent runoff into the pits or enhanced seepage behind the highwall from ponded water.
- AGM should consider installing an automated system to monitor groundwater levels, pore pressures and dewatering rates in real-time, reporting to a central database. This will enable frequent recording of data (on a daily basis) and will improve the accuracy of data collected and inform timely decision making.

16.2.5 Design Slope Stability Analysis Results

Numerical slope stability analyses were carried out using the finite element analysis software (Rocscience RS2) on Esaase, Nkran, Abore, Adubiaso, Dynamite Hill and Miradani North. Back-analyses were carried out on past failures that occurred at Akwasiso and Nkran to check the validity and to update, as required, the material properties obtained from the laboratory data analyses. Analyses were carried out on the various pit design options provided by the mine design engineers. Additionally, a 3D numerical analysis was carried out on the proposed Nkran Cut 3 pit design in 3D finite element software (Rocscience RS3) to confirm the western slope geometry, particularly in relation to the prevailing shear zones.

The slope geometries provided by the mine design engineers were adjusted, as required, to provide the required stability, meeting the agreed design criteria for factors of safety exceeding 1.2 to 1.4, depending on the specific location and level of data confidence for the concerned design section.

Pore water pressures derived from site groundwater measurements and failure back-analyses were included in the predictive stability analyses, and recommendations provided for the associated slope depressurization requirements. It should be noted that the dominant structural control on slope stability is provided by the first and second order shear zones, and these are also zones of known groundwater flow at depth. The hydrogeology assessment by SRK has considered this in determining the dewatering requirements for each pit.

16.2.6 Slope Design Implementation

During design implementation, there are several operational focus areas that affect the efficacy of the geotechnical design, including:

- Groundwater and slope depressurization
- Surface water management
- Blasting, particularly wall control blasting practice
- Slope stability monitoring

To this end, AGM has adopted appropriate processes, technology and consulting inputs to ensure all of these important areas are managed to reduce geotechnical risks.

16.3 Final Pit and Phase Designs

This section includes final pit designs for each individual pit, as well as phase designs where applicable.

Pits were designed in Mineplan 3D (Deswik) software utilizing the optimized pit shells and honoring the geotechnical parameters provided.

16.3.1 Nkran

Production at the AGM commenced in 1997 with the Nkran deposit. Operations were terminated in 2001 and then restarted in 2015 and again terminated in June 2022. Nkran has produced 790,824 oz of gold to date and remains the highest-grade deposit at the AGM.

The Nkran pit is a semi-conical shape with a main axis at a 43° azimuth. To date, mining has occurred down to the 870 m bench, reflecting a pit wall height of 320 m. Currently in care and maintenance, a pit lake has formed at the pit bottom, which will require dewatering prior to mining restart. Water levels vary depending on the amount of dewatering and rainfalls; the lake was measured at 896 m in August 2022 and 903 m in September 2022.

Figure 16-2 shows the general location of the Nkran pit along with two photos taken in August 2022 during an SRK site visit. Of the six pits, Nkran is the closest to the mill and camp.

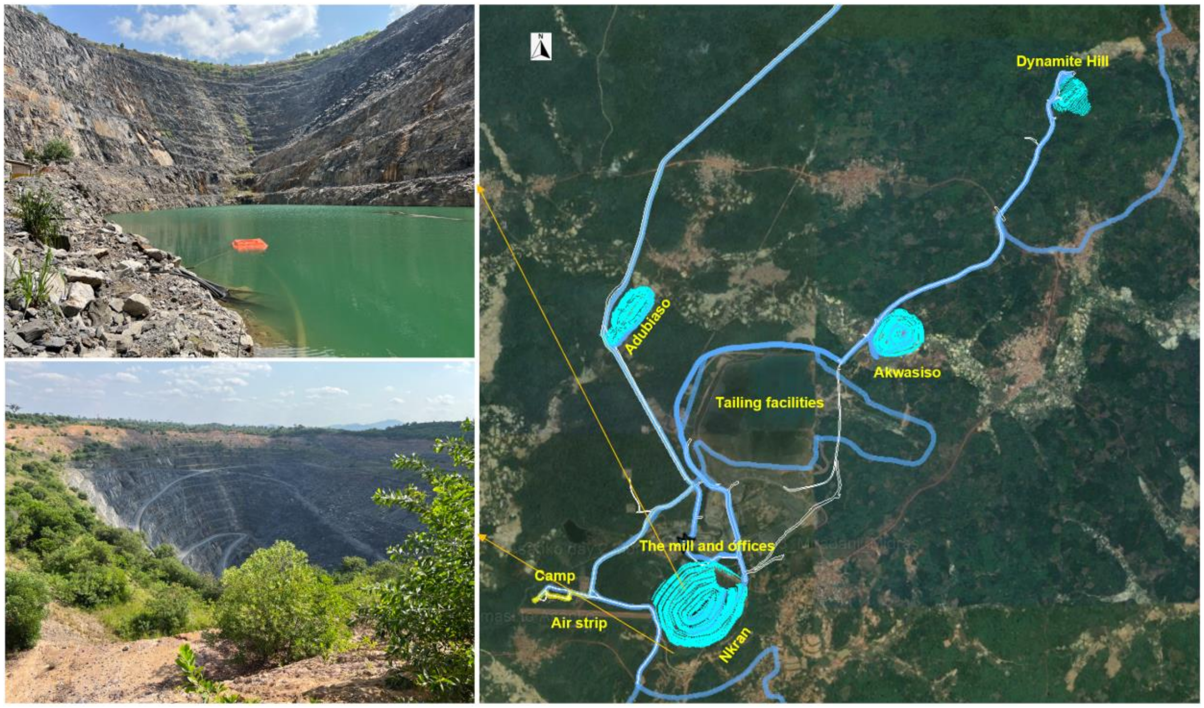


Figure 16-2 Nkran pit location and general views as of August 2022

The pit design detailed in this section is considered an expansion of the existing pit.

Geotechnical design criteria, which guided bench parameters used in design, vary based on domain. Domains are determined by both azimuth (North, East 1, East 2, South, West 1, West 2, shown in Section 15.2.8) as well as rock type (oxide, transition, fresh and shale). The combination of these different zones creates 20 unique slope domains (shale is only found in the western azimuths). Refer to Table 16-2 for details on bench designs for Nkran pit.

Working bench heights are 6 m. Based on the geotechnical guidance double and triple benching are applied for the final walls.

Table 16-2 Nkran pit geotechnical design criteria

Domain	Benching	Height (m)	Catch Bench Width (m)	Bench Face Angle (°)
Oxide West 1	Double	12	5.0	26.0
Oxide West 2	Double	12	5.0	26.0
Oxide North	Double	12	5.0	37.3
Oxide South	Double	12	5.0	37.3
Oxide East 1	Double	12	5.0	31.5
Oxide East 2	Double	12	5.0	31.5
Trans West 1	Double	12	7.0	50.0
Trans West 2	Double	12	7.0	50.0
Trans North	Double	12	7.0	70.0
Trans South	Double	12	7.0	70.0
Trans East 1	Double	12	7.6	70.0
Trans East 2	Double	12	7.6	70.0
Shale West 1	Triple	18	7.0	60.0
Shale West 2	Triple	18	7.0	60.0
Fresh West 1	Triple	18	7.0	72.0
Fresh West 2	Triple	18	7.0	72.0
Fresh North	Triple	18	7.0	80.0
Fresh South	Triple	18	7.0	80.0
Fresh East 1	Triple	18	7.0	70.0
Fresh East 2	Triple	18	7.0	70.0

The Nkran final pit design is shown in Figure 16-3 in both plan and cross section. Two haulage ramps are considered in the Nkran pit design. This will help the operation be more flexible and increases the safety of the operation. Both roads are designed so that they approach the WSF on the north side of the pit and both reach the surface at an elevation of 1175 m. Due to limited space available and to control the strip ratio, there will be only one ramp serving the pit from bench 910 to the bottom of the pit. The highest bench mined in Nkran is 1190 m in northwest wall and the lowest bench mined is at 755 m. At the end of mine life, the pit reaches to a depth of 415 m.

Note that to avoid the negative numbers in the maps and working models and based on an operational protocol, 1,000 m has been added to the actual elevations in Nkran pit. SRK followed this protocol. For example, the lowest elevation mined is actually -245 masl (meter above the sea level) but in AGM's records and designs, it is 755 m.

As shown in Figure 16-3, the pit had already reached its ultimate limits in the northeast wall; therefore, this section will not be further expanded. A 25 m wide geotechnical berm was added at the 1,115 m elevation on the western wall for stability purposes after a geotechnical assessment of the design by SRK geotechnical engineers.

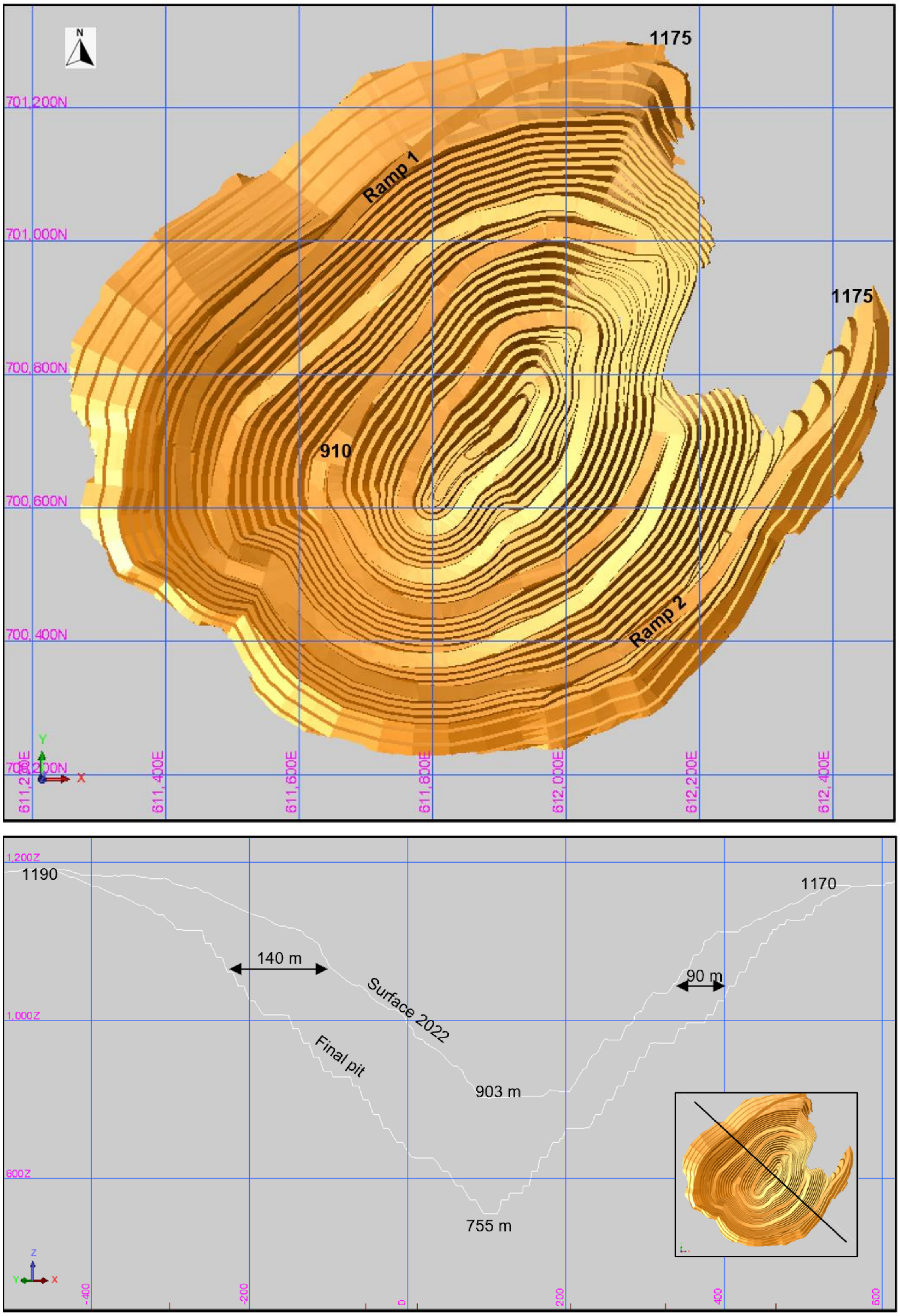


Figure 16-3 Nkran pit design and cross-section

Nkran considered the proximity of villages to the east, and as such maintained a 500 m buffer from mining activities to primarily mitigate the risk of potential flyrock from blasting. This boundary constrained additional ramping that may have been considered for the eastern wall.

Both ore and waste exit either of the two dual ramps and head north, where waste is sent northeast to the main Nkran WSF or to the immediate west to the old Resolute WSF, and ore heads west to the processing plant northwest of the Nkran pit.

16.3.2 Haulage Road Widths and Gradients

One of two truck fleets, 91-t rigid frame trucks or 40-t articulated trucks, were assigned to each pit based on expected production rates. The 91-t trucks are assigned to the larger pits.

Table 16-3 shows the road design criteria for the two truck sizes. SRK utilized one-way haulage road widths for the low-traffic lower benches of the pits in order to reduce waste stripping above, a common practice in mine design. In some cases, the lowest bench or two were assumed to be mined with smaller equipment and temporary ramping, based on previous mining experience at the AGM.

All haulage roads are designed at maximum gradient of 10% for 2-way traffic, 12% for 1-way traffic.

Table 16-3 Truck sizes assumed for each pit and associated ramp widths

Truck Model / Capacity	Pit	Ramp	Width (m)	Grade (%)
91-t Rigid Frame	Nkran, Esaase	2-way	22	10%
		1-way	16	12%
40-t Articulated	Miradani North, Abore, Adubaiso, Dynamite Hill	2-way	16	10%
		1-way	12	12%

16.3.3 Esaase

Esaase, mined until May 2022, is an along-strike relatively narrow pit with multiple pit bottoms and a satellite pit to the south. It has an existing stockpile that is currently used to feed the Nkran processing plant. Of the six pits described, Esaase is the furthest from the processing plant with an average distance of approximately 31 km. Figure 16-4 shows the pit and topography in May 2022 after mining activity ceased.

The Esaase deposit contains a low-grade high tonnage resource, and the mineralogy is complex compared to other deposits at the AGM, requiring an intensive grade control practice.

Geotechnical design criteria are based on rock type (oxide, transition and fresh) totaling three slope domains, summarized in Table 16-4. More information on the Esaase geotechnical assessment can be found in Section 15.2.8.

Table 16-4 Esaase pit geotechnical design criteria

Domain	Benching	Height (m)	Catch Bench Width (m)	Bench Face Angle (°)
Oxide	Double	12	5.0	31.5
Transition	Double	12	7.0	55.0
Fresh	Triple	18	7.0	70.0

Esaase will utilize 91-t trucks, similar to Nkran.

Esaase South, located 150 m south of Esaase Main, has a single two-way ramp going counter-clockwise from the pit exit at 244 m to a switchback at 211 m, facilitating an interim pit bottom, before reaching an ultimate pit bottom at 127 m. The final two benches are accessed by a one-way ramp, and the bottom bench is assumed to be mined with smaller equipment and temporary ramping. Figure 16-5 shows the Esaase final pit design and two cross-sections. The figure provides some information about the elevations and the widths of the cuts. The main pit had already reached to its limit in southeast section and will not be pushed back further.

SRK considered various phasing options for Esaase Main. Due to the complexity of ore characteristics in the sulphide zones, phasing was designed to prioritize mining oxide material to facilitate mill feed blending in the early stage of the project life cycle. Based on ore accessibility, the first mining phase starts with center pit, then followed by northern pit with more stripping, concluding with the Esaase South phase.

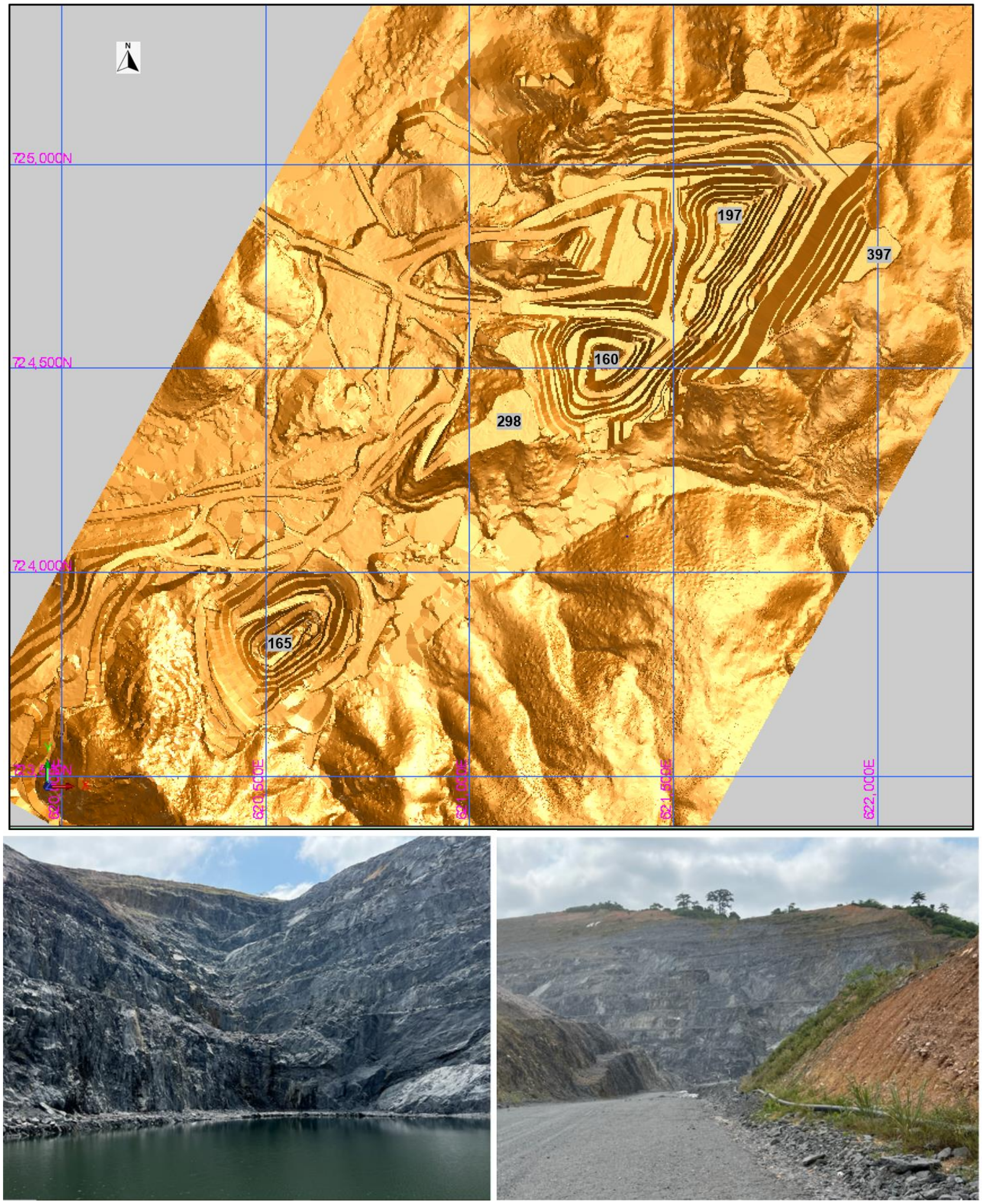


Figure 16-4 Esaase pit design and photos from July 2022

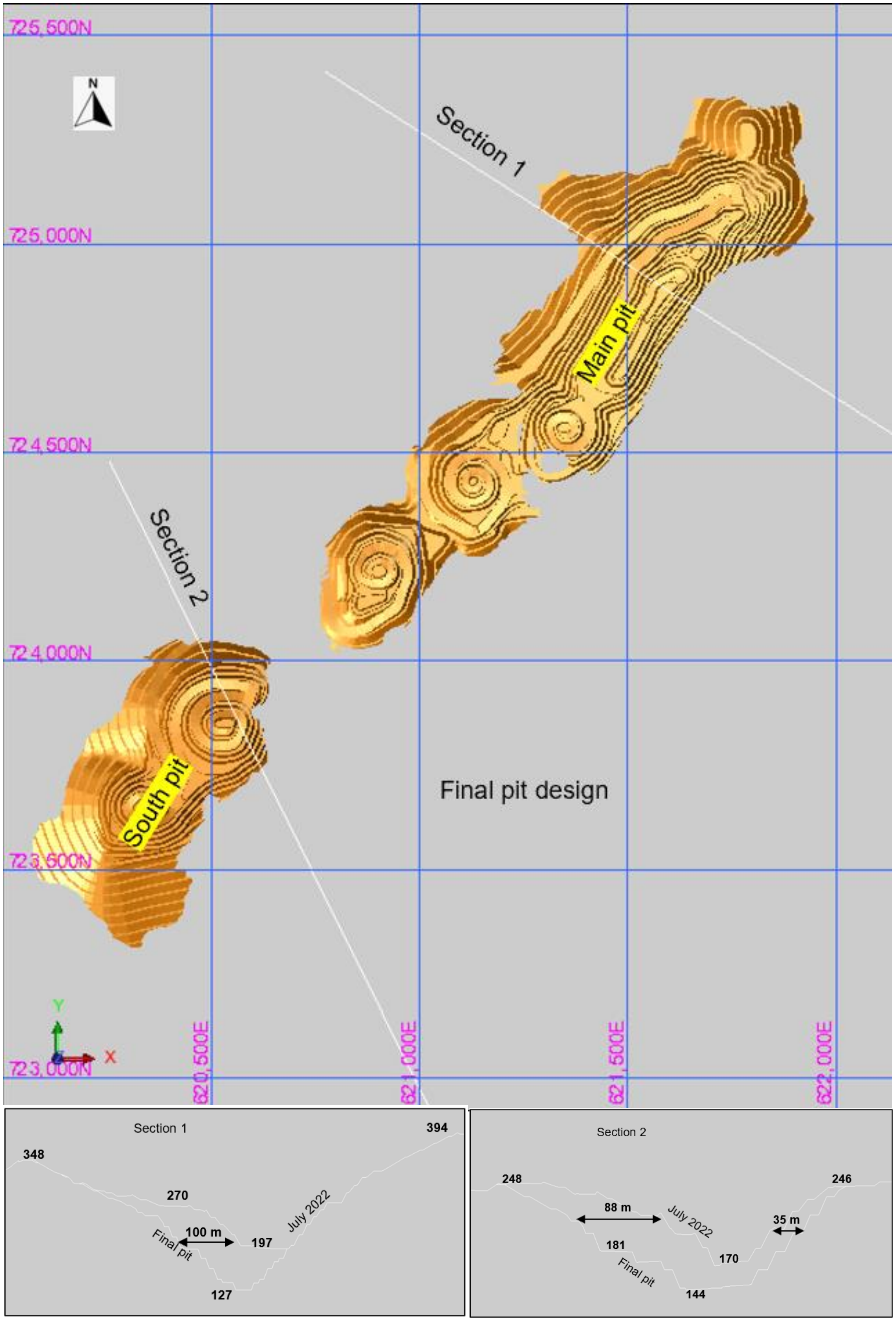


Figure 16-5 Esaase Main and South pit designs and cross-sections

16.3.4 Miradani North

At the Miradani North deposit, some open pit mining was conducted in the past by GPS Ghana Ltd. to a vertical depth of 30 to 40 m. The mine was then abandoned and recently became a place for artisanal mining activities.

In recent years, AGM conducted an intensive exploration drilling program. It is the southern most deposit at the AGM and is located approximately 10 km south of the Nkran processing plant. To facilitate ore haulage, AGM had designed a new road to the processing facility, planned to be built prior to mining at Miradani North. Figure 16-6 shows the topography surveyed in October 2022 as well as two photos taken in August 2022. Artisanal mining activities are focused on the remaining tailings and waste dumps left from past mining operations.

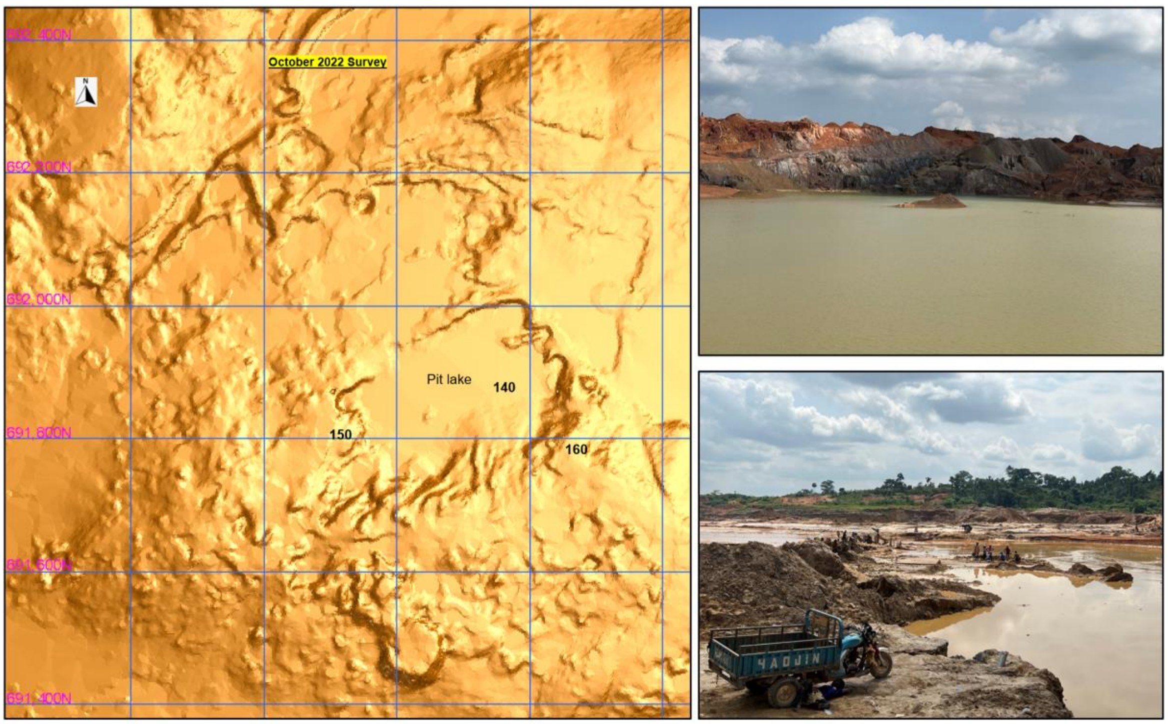


Figure 16-6 Miradani North pit area, artisanal mining activity and pit lake

Slope design in Miradani North is based on rock type and is divided into two slope domains based on pit wall orientation. This is described in Section 15.2.8 and summarized below in Table 16-5.

Table 16-5 Miradani North pit geotechnical design criteria

Domain	Benching	Height (m)	Catch Bench Width (m)	Bench Face Angle (°)
D1 - Oxide	Double	12	5.0	31.5
D1 – Trans	Double	12	7.0	55.0
D1 – Fresh	Triple	18	7.0	70.0
D2 - Oxide	Double	12	5.0	37.0
D2 – Trans	Double	12	7.0	55.0
D2 – Fresh	Triple	18	7.0	70.0

Figure 16-7 shows the final pit design with a cross-section. The Miradani North pit is designed to employ 40-t trucks. The pit is conical shaped with two haulage roads accessing the northeast and southwest walls. Both roads reach the surface at 142 m elevation. The dual haulage road will become a single access road below the 76 m elevation. The roads are two-way traffic except for the last three benches.

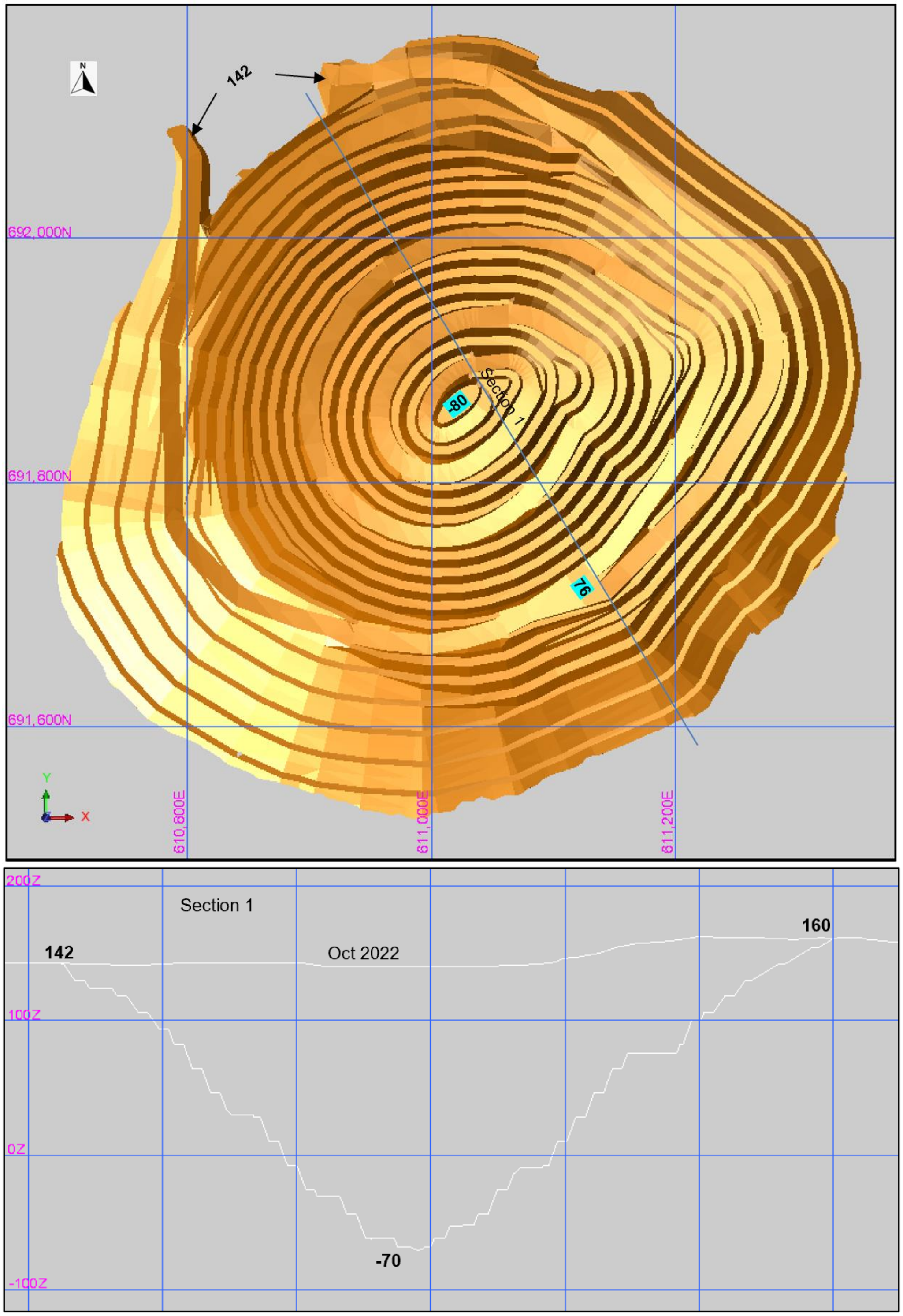


Figure 16-7 Miradani North final pit design and cross-section

The topography of the Miradani North area is relatively flat with ease of access to the pit from different directions. The lowest bench of the pit is at -80 m elevation. The highest wall of the final pit is at the southeast section, at 240 m high.

Miradani North pit is designed to be mined in two phases. This will help advance the high-grade ore. Figure 16-8 shows Phase 1 of the Miradani North pit.

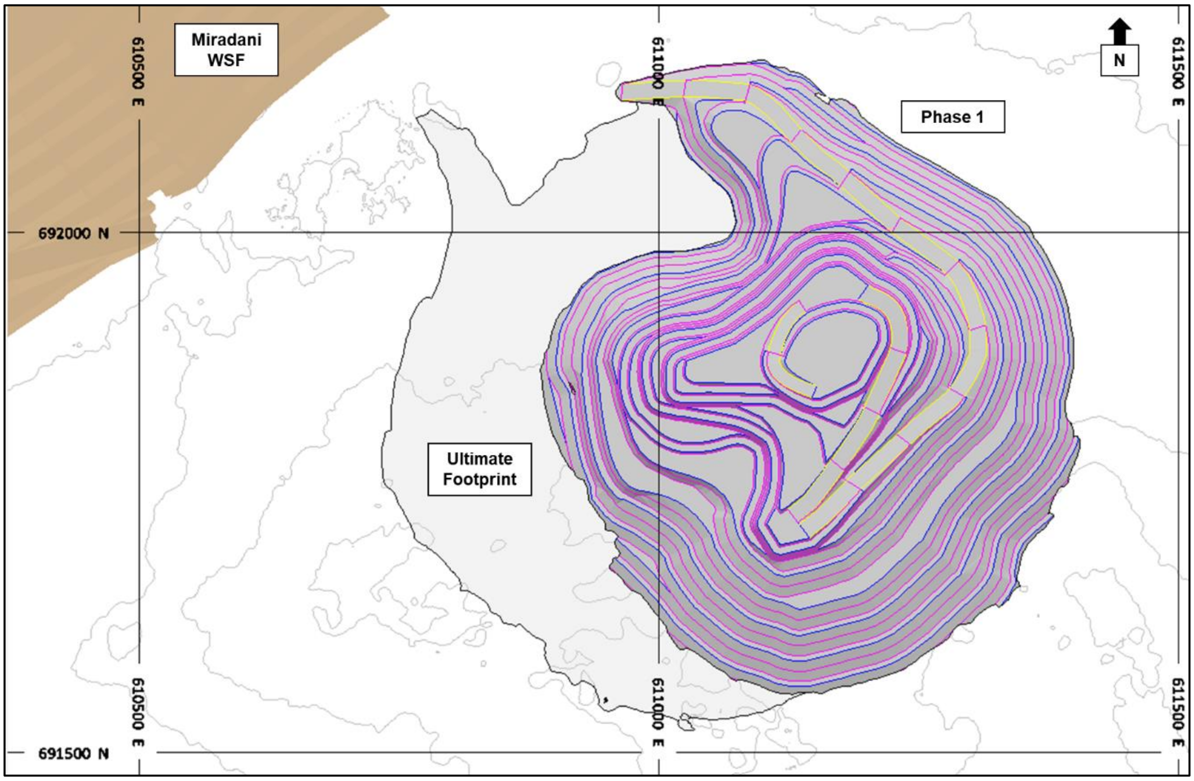


Figure 16-8 Miradani North Phase 1 pit design

16.3.5 Abore

The Abore deposit is located midway along the main haulage road between Esaase pit and the Obotan mill. It is about 15 km north of the mill and Nkran pit. The deposit is relatively narrow and steeply dipping. The pit follows the strike of the orebody and forms an along-strike narrow pit with multiple pit bottoms.

The deposit was mined from the late 1990s until the early 2000s along the strike of the orebody focusing on the oxide ore. Abore was mined to various depths but not more than 50 meters. Figure 16-9 shows the topography after the last mining activities, the newest topography (Oct 2022) and a photo taken in August 2022. The waste rocks were placed on east side of the pit that partially disturbed by artisanal mining activities. A very shallow lake has formed in this pit, as shown in Figure 16-9.

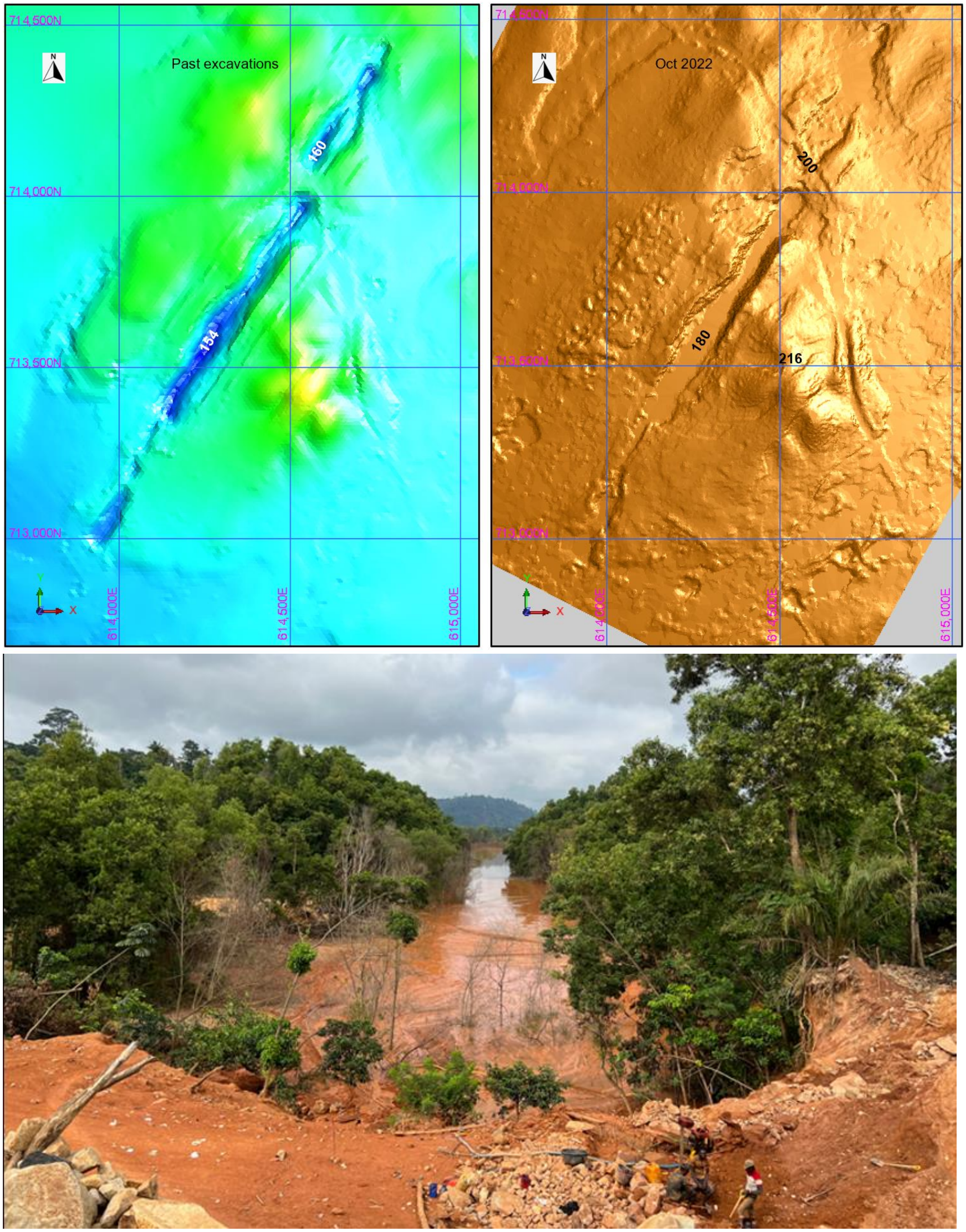


Figure 16-9 Abore mined area, Oct 2022 survey and a photo taken Aug 2022

The Abore slope design is mainly based on rock types and is divided into two main zones based on the wall orientation. Please refer to Section 15.2.8 for more detailed information. Table 16-6 shows the slope configurations for the Abore pit.

Table 16-6 Abore pit geotechnical design criteria

Domain	Benching	Height (m)	Catch Bench Width (m)	Bench Face Angle (°)
D1 – Oxide	Double	18	5.0	31.5
D1 – Transition	Double	12	7.0	55.0
D1 – Fresh	Double	12	7.0	70.0
D2 – Oxide	Double	18	5.0	35.0
D2 – Transition	Double	12	7.0	55.0
D2 – Fresh	Double	12	7.0	70.0

Figure 16-10 shows the final pit design for Abore. It is a long 2.1-km pit with the bearing of long axis measured at 32°. The pit width varies from about 100 m to a maximum of about 420 m. The pit bottom varies based on the shape and grade of the orebody as can be seen in Figure 16-10. The deepest part of the pit is in the center where the cross section is provided. The highest wall in this section is 175 m.

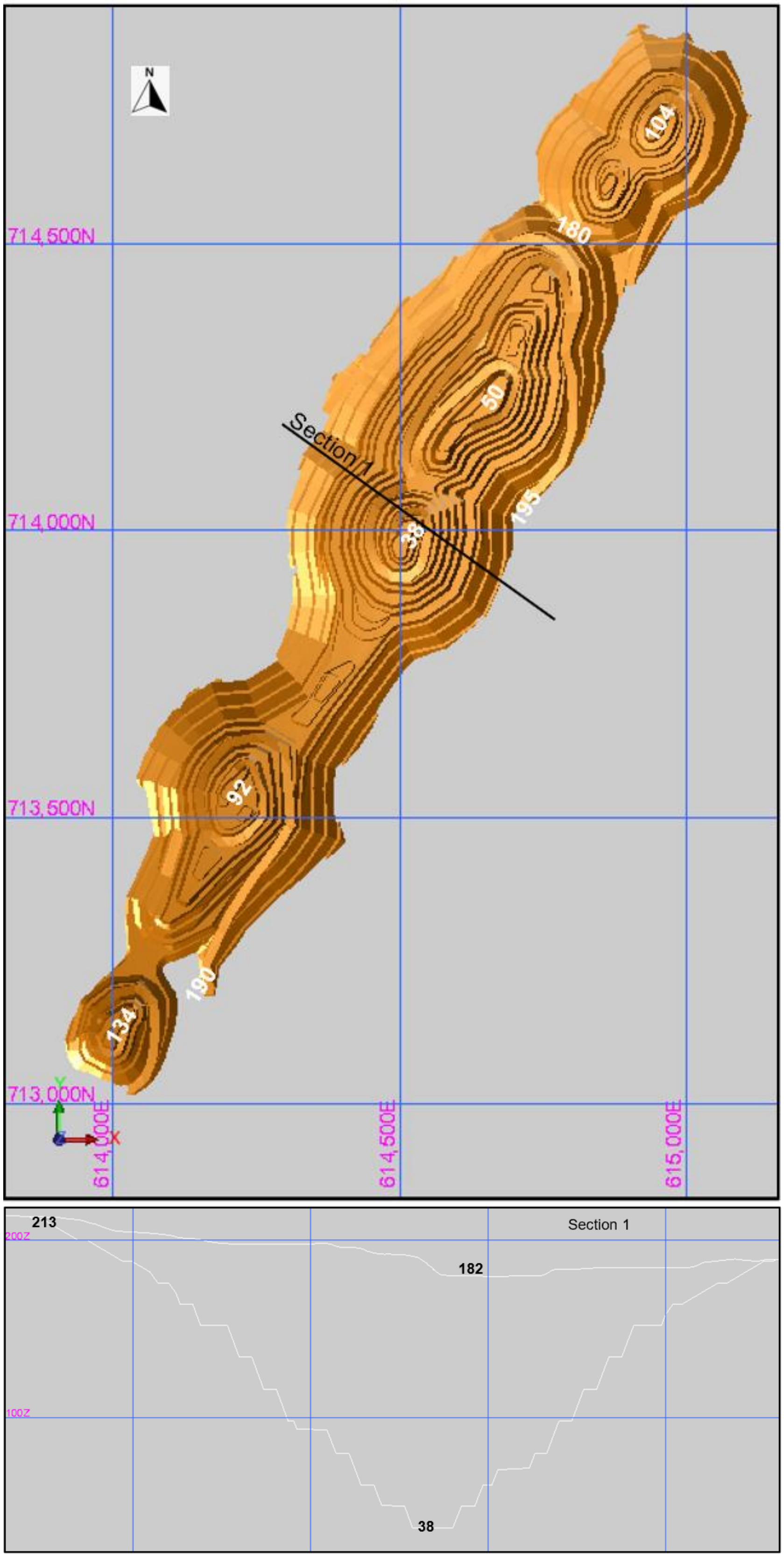


Figure 16-10 Abore final pit design and cross section

Due to its long shape, the Abore pit can be mined in different sections independently. SRK designed the final pit in four different sections called cuts. Figure 16-11 shows these individual cuts. In production scheduling, these cuts were used to advance mining of the highest grade ore.

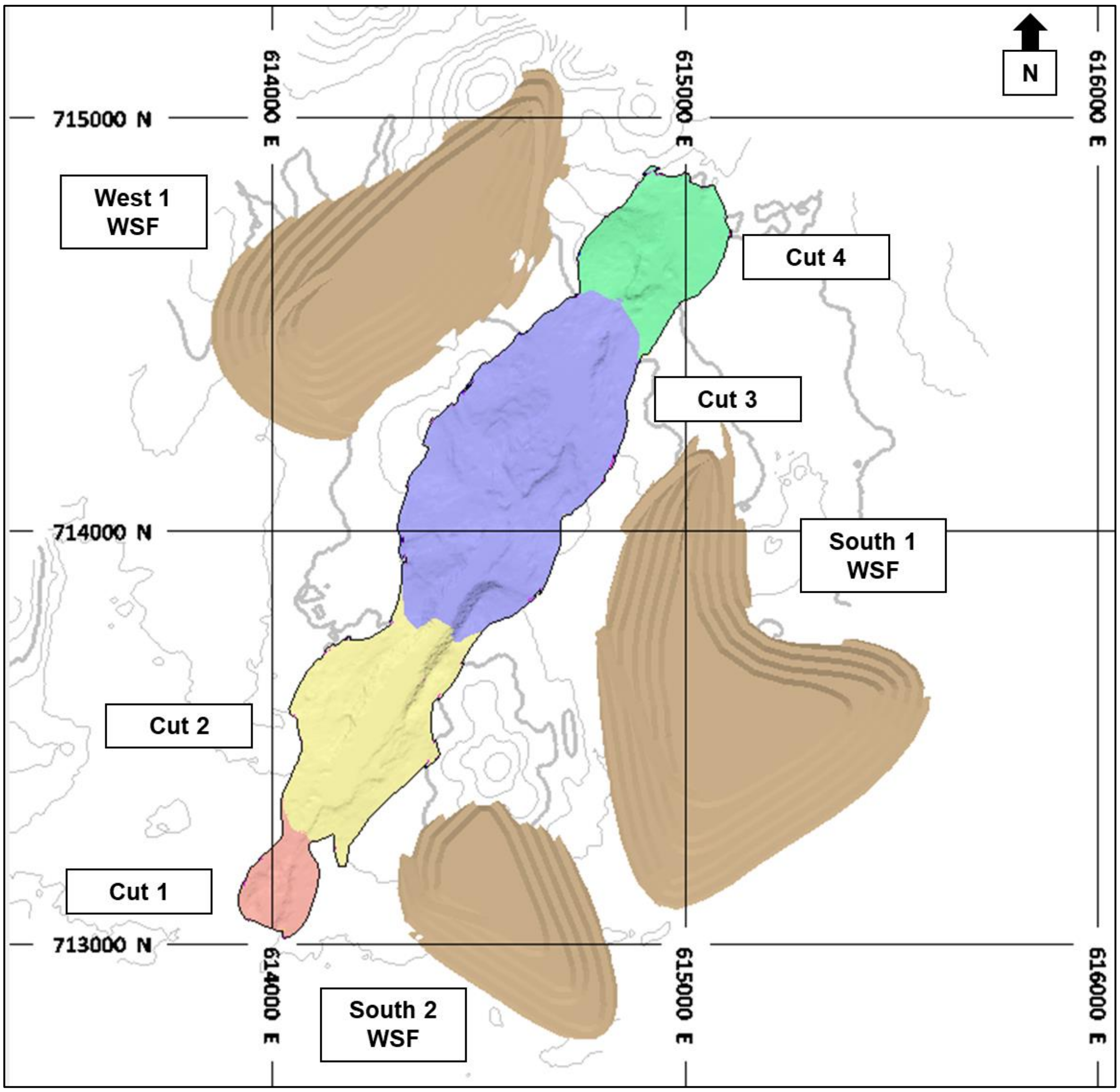


Figure 16-11 Abore Cuts 1-4

16.3.6 Adubiaso

Adubiaso is about 4 km north of the mill, just along the Esaase/Abore haul road. At Adubiaso, Resolute historically mined mostly oxides and transition material by open pit free dig methods. Mining was from October 1999 to December 2000. As reported by Brinckley (2001), a total of 3.79 Mm^3 of material was historically mined from the Adubiaso open pit. A total of 0.70 Mt at 2.43 g/t Au was delivered to the ROM pad, containing a total of 54,654 oz of gold. Total production of 52,677 oz (recovered) was achieved.

Figure 16-12 shows the latest survey conducted at site, dated September 2022. It shows the pit lake formed at the bottom of the pit. SRK visited the site, and at the time of the visit, there was artisanal mining activity observed to north side of the pit outside of the lake. There is an existing WSF on the northwest side of the pit across the access road that has been completely vegetated and is not recognizable.

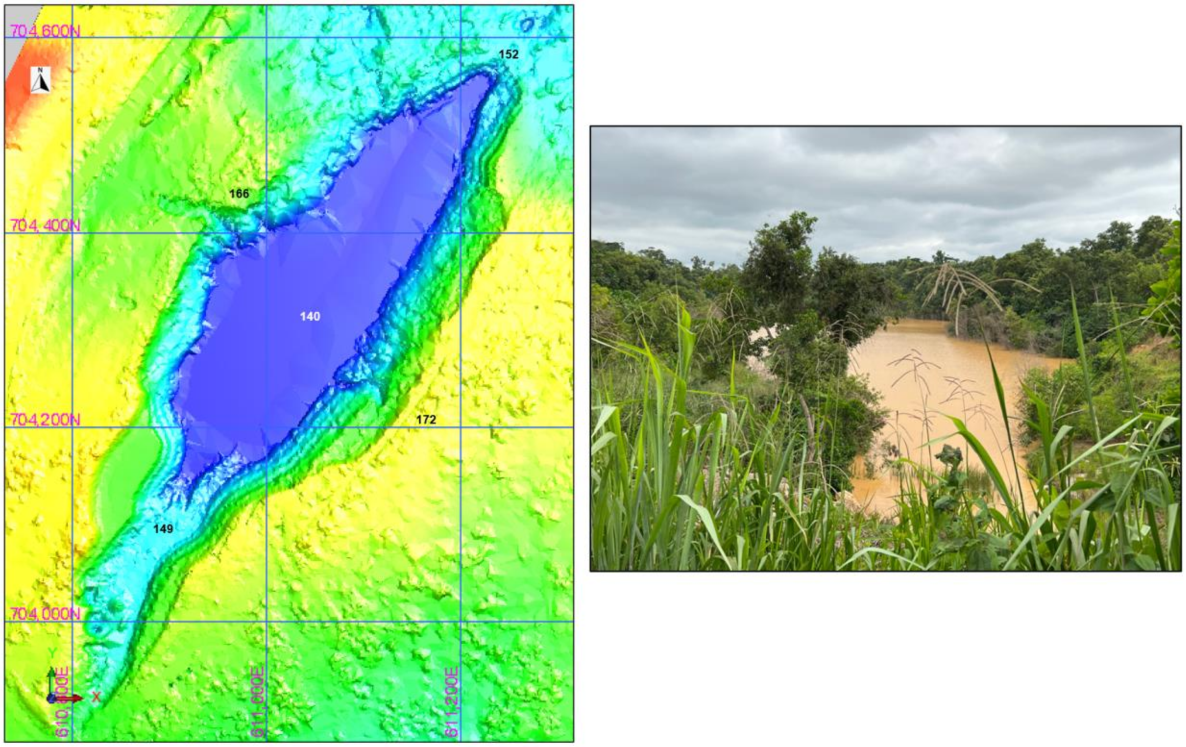


Figure 16-12 Adubiaso topography (Sept 2022) and a photo taken August 2022

For the Adubiaso pit, the slope design parameters are based on rock types and are the same for all directions. Table 16-7 shows the bench parameters used for the final pit design. There will be a geotechnical berm of 20 m or a haulage road of 16 m for various slope heights in different rock types (see Section 15.2.8).

Table 16-7 Slope design for Adubiaso pit design

Domain	Benching	Height (m)	Catch Bench Width (m)	Bench Face Angle (°)
Oxide	Double	12	5.0	32.0
Transition	Double	12	7.0	55.0
Fresh	Triple	18	7.0	70.0

The Adubiaso pit will be mined using 40-t trucks. The haul roads are designed at 16 m width and 10% gradient. Figure 16-13 shows the Adubiaso final pit design with a cross-section. There are two access roads for the pit, where one will exit to the north and another to the south. Most of the ore will exit the pit via the south ramp. The Adubiaso pit is about 1.1 km long with the bearing of the main pit axis measured at 32°. The width of the pit varies and is measured at 425 m in its widest section.

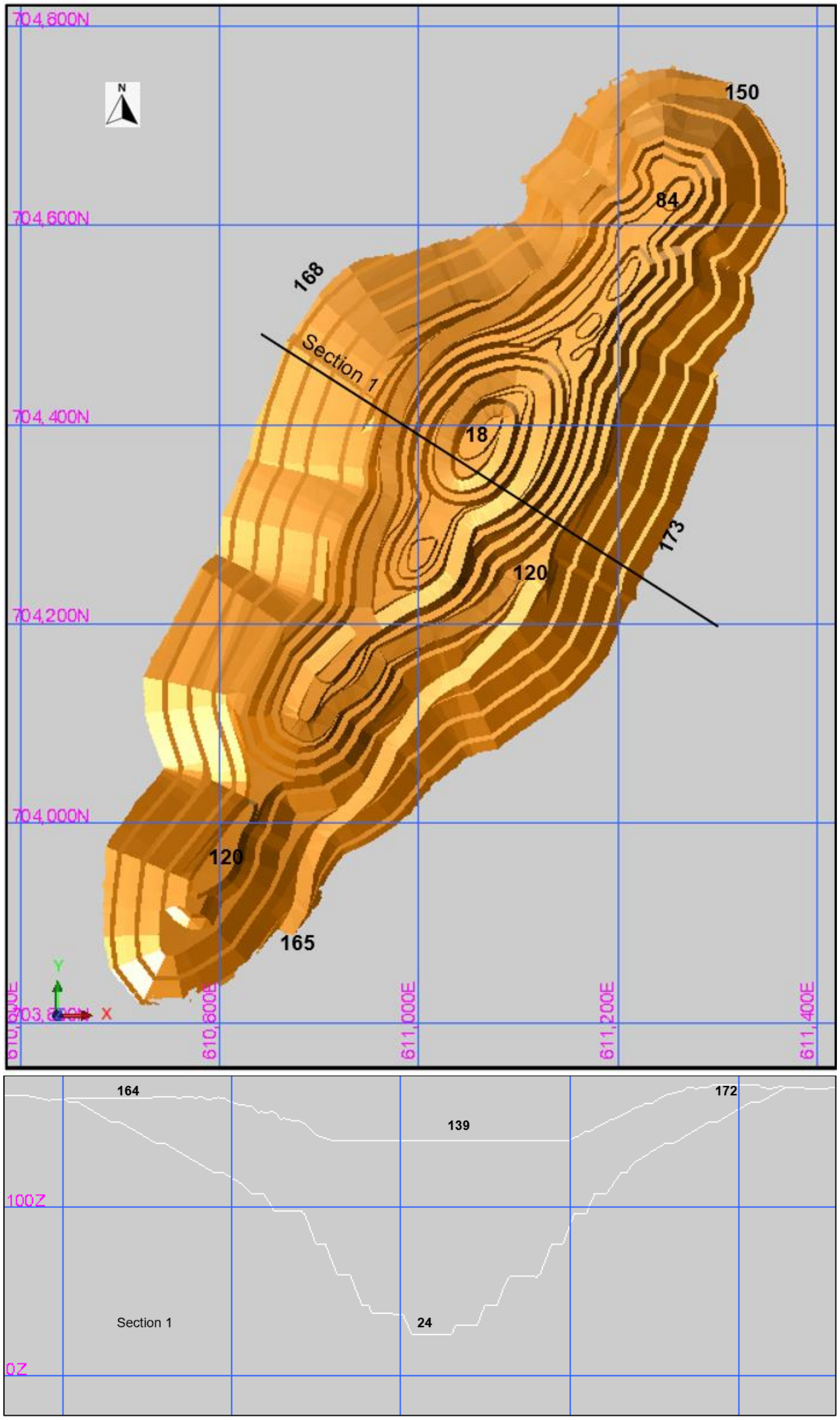


Figure 16-13 Adubiaso final pit design and cross-section

16.3.7 Dynamite Hill

The Dynamite Hill deposit was discovered in 2013 and put into production in Q4 2017. Production ceased in late 2019 and processed 93,411 oz of gold. The pit mined to a depth of 185 m. It is a relatively long pit on top of a hill with a long axis azimuth of 48°. A lake has formed at the bottom of the pit with a surface elevation of 1172 m (August 2022). Dynamite Hill is about 7.5 km northeast of the mill and the Nkran pit.

Figure 16-14 shows the final mining activities in August 2019 and the current situation as of August 2022 when the SRK team visited the site. There is minor artisanal mining in the area including mining the waste and very small underground excavations. The southeast wall has wall instabilities that need to be mitigated before initiating operations in this pit. There are established access roads to various elevations of the pit that make it easier for restarting the mine.

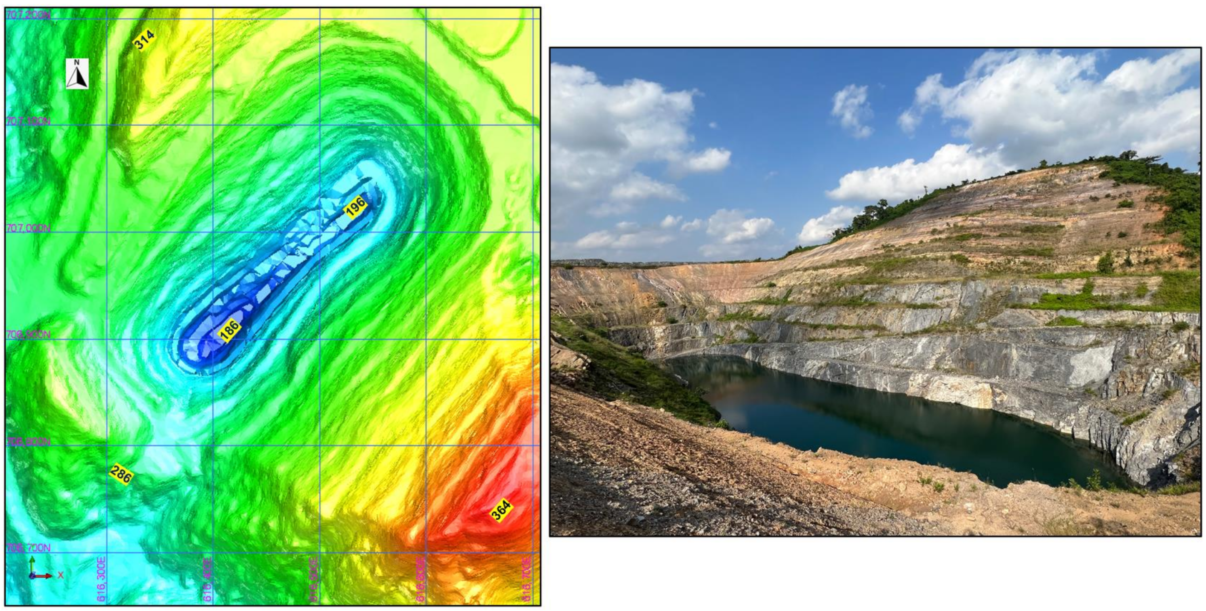


Figure 16-14 Dynamite Hill pit, topography (2019) and current situation (Aug 2022)

Geotechnical design criteria are defined based on the pit wall azimuth (north, east, south, west) as well as the rock type (oxide, transition and fresh). This can be seen in Section 15.2.8 of the report. The north and south domains have the same guidance and so were grouped together, culminating in nine distinct slope domains. Table 16-8 shows the slope configurations for Dynamite Hill.

Table 16-8 Dynamite Hill pit geotechnical design criteria

Domain	Benching	Height (m)	Catch Bench Width (m)	Bench Face Angle (°)
Oxide West	Double	12	5.0	31.5
Oxide East	Double	12	5.0	31.5
Oxide North/South	Double	12	5.0	31.5
Transition West	Double	12	7.0	55.0
Transition East	Double	12	5.0	60.0
Transition North/South	Double	12	5.0	65.0
Fresh West	Triple	18	7.0	70.0
Fresh East	Triple	18	7.0	70.0
Fresh North/South	Triple	18	6.0	70.0

Figure 16-15 shows the final pit design for Dynamite Hill. The pit will have narrow cuts, particularly on the southeast wall. It is planned to use track dozing for stripping the narrow sections of the southeast wall. The pit requires one spiral ramp for access. The topography of the area is favourable; it provides several access opportunities both on the west and east sides of the pit.

The Dynamite Hill pit design utilizes the existing pit exit at approximately 265 m elevation and then ramps downwards counterclockwise to a switchback at 245 m elevation, before continuing clockwise down to the pit bottom at 143 m elevation. The bottom two benches are one-way road widths.

SRK attempted multiple design iterations that sought to leave the south-eastern as-built wall untouched to reduce waste stripping; however this was not achievable without significant ore loss at depth. Any favourable adjustments to geotechnical guidance or spatial ore location should prompt re-visiting the pit design.

Benches above the pit exit are accessed from topography or from the external ramp along northwest of the pit crest. Waste from upper elevations is sent north to the North WSF, built upon an existing waste facility, while ore exits the pit and is hauled south via the external haul road to the processing plant at Obotan.

Once mining has reached the 245 m elevation and switchback, a slot cut is established to short haul waste to the South WSF as well as reduce haul time for ore heading south.

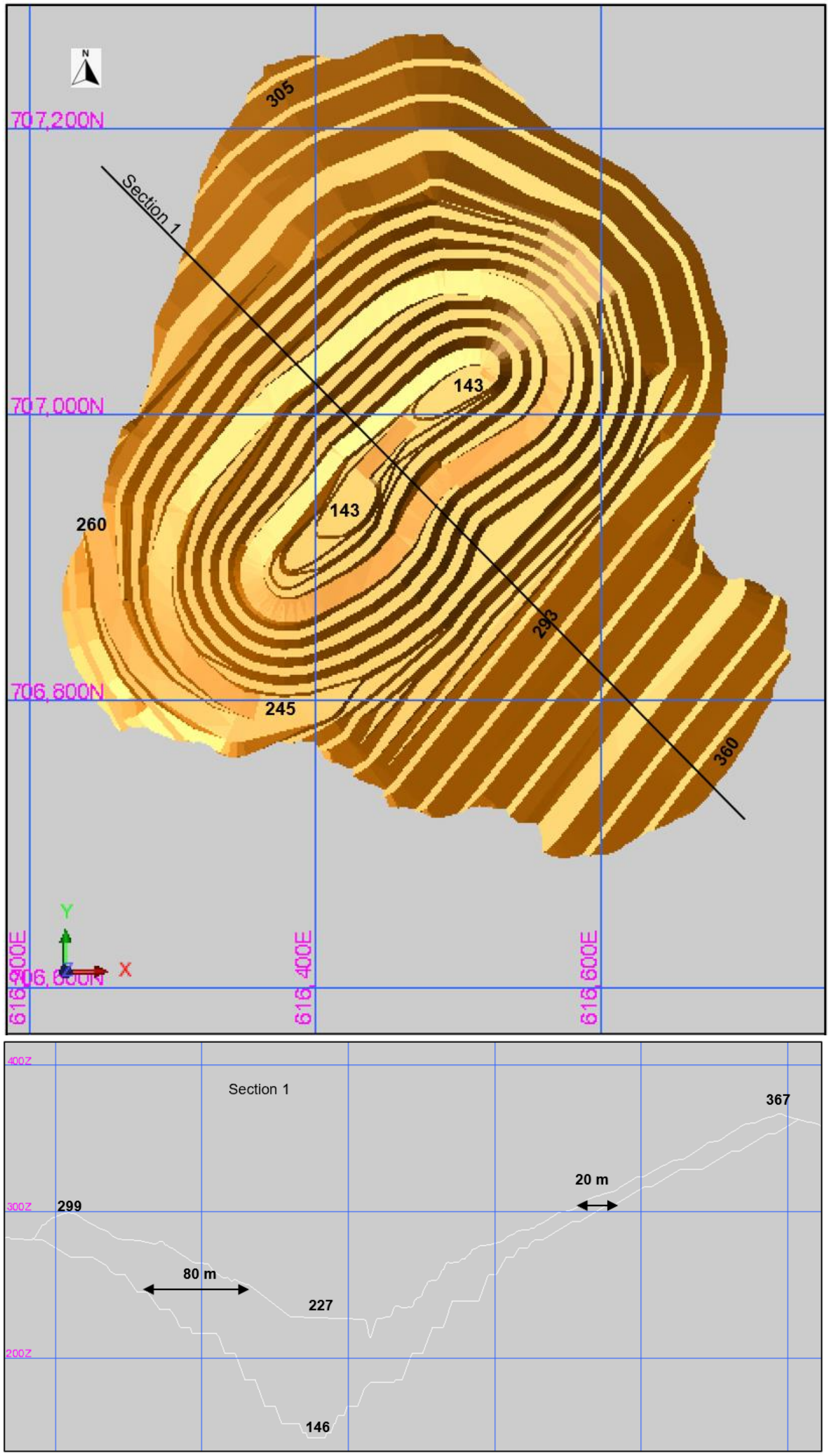


Figure 16-15 Dynamite Hill final pit and cross section

16.3.8 Existing Stockpile Inventory

Four pits have existing stockpiles from previous mining operations that will be reclaimed, although Akwasiso pit will not be mined as part of this study. Their inventories and grades are detailed in Table 16-9 below.

Table 16-9 Existing stockpile Inventory

Pit	Tonnes (kt)	Grade (g/t)	Ounces Contained (koz)	Ounces Recovered (koz)
Nkran	1,243	0.70	28	24
Esaase	4,439	0.67	96	81
Dynamite Hill	112	0.71	3	2
Akwasiso	1,408	0.64	29	24
Total	**7,202**	**0.67**	**155**	**131**

16.3.9 Summary of Final Quantities

Table 16-10 summarizes the materials mined from various pits at the AGM, as designed in the FS. Nkran pit mines only fresh rock. Esaase still has 3.7 Mt of oxide ore left in its pits. In general, 76% of the ore is fresh ore, with oxide and transition ore each contributing about 12% of the ore at the AGM.

Table 16-10 Ore mined from various pits by rock type

Pit	AGM Ore Mined from Various Pits											
	Oxide			Transition			Fresh			Total Ore		
	kt	Au g/t	koz Au	kt	Au g/t	koz Au	kt	Au g/t	koz Au	kt	Au g/t	koz Au
Nkran							9,921	1.82	582	9,921	1.82	582
Esaase	3,715	0.93	111	2,383	1.24	95	7,460	1.36	327	13,558	1.22	533
Miradani North	615	1.38	27	1,008	1.46	47	5,213	1.4	235	6,836	1.41	310
Abore	668	0.98	21	1,035	1.13	38	6,471	1.32	275	8,174	1.27	334
DH	26	0.89	0.75	27	0.9	0.784	1,007	1.33	43	1,060	1.31	45
Adubiaso	228	1.27	9	407	1.45	19	1,535	1.66	82	2,170	1.58	110
Total Ore Mined	**5,251**	**1.01**	**170**	**4,860**	**1.28**	**200**	**31,607**	**1.52**	**1,544**	**41,718**	**1.43**	**1,914**
Stockpiles										7,202	0.67	155
Total Reserves	**5,251**	**1.01**	**170**	**4,860**	**1.28**	**200**	**31,607**	**1.52**	**1,544**	**48,920**	**1.31**	**2,068**

All finalized pit designs were geotechnically validated and comply with the slope design parameters and associated recommendations provided from the SRK geotechnical studies carried out between 2020 and 2022.

16.4 General Site Layout and Waste Storage Facilities

Figure 16-16 shows the AGM general site layout. It shows the location of the six pits and travel distances. The figure also shows the processing facility, the camp, the air strip and TSF.

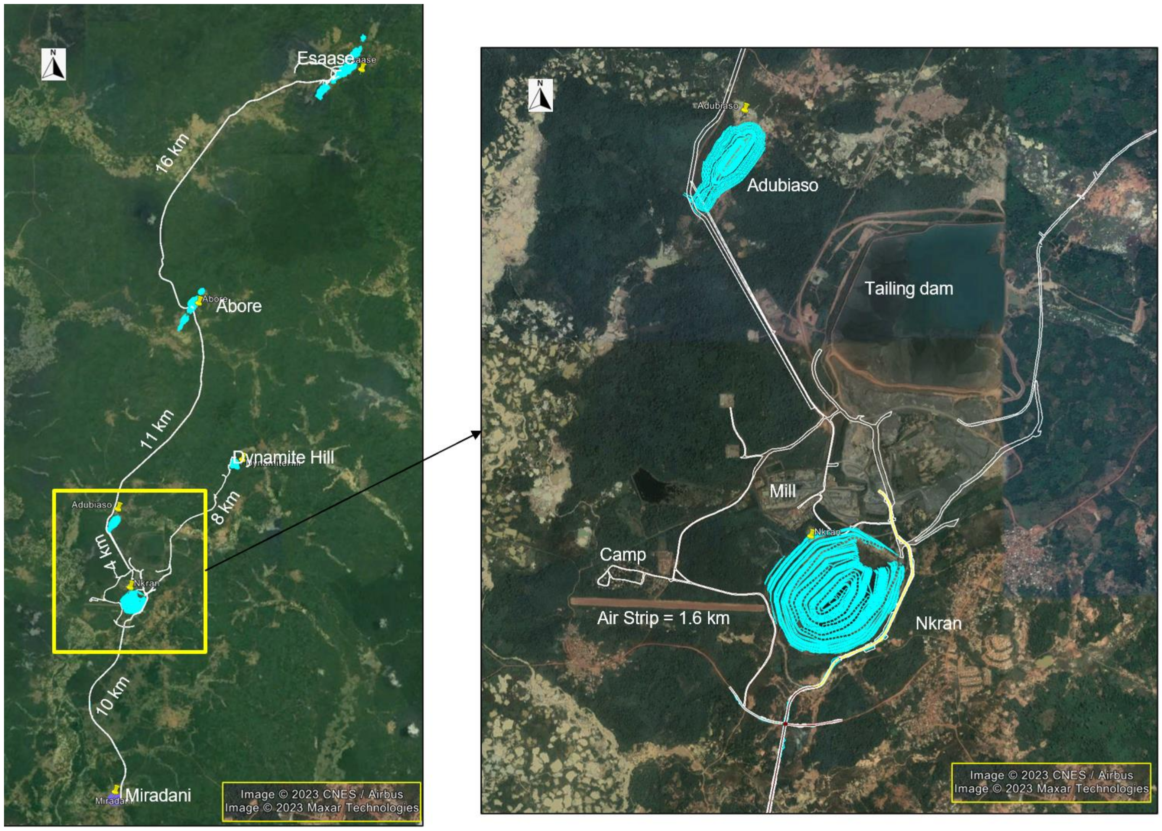


Figure 16-16 General site layout of the AGM

The WSFs are designed based on the overall volume of waste materials mined in each pit. Table 16-11 shows the volume of waste materials mined for each pit. The overall swelling factor varies for each pit based on the amount of rock types mined in each pit.

Table 16-11 Waste dump volume by pit

Pit	Waste	
	Tonnes	Volume (m^3)
Nkran	134,327,566	74,977,819
Esaase	60,596,785	36,803,016
Miradani North	38,368,778	24,968,010
Abore	39,409,928	27,841,419
Adubiaso	17,866,394	11,749,978
Dynamite Hill	10,338,931	6,799,481
Total	**134,327,566**	**183,139,724**

All the pits in Table 16-11 have existing waste dumps. For Adubiaso, Abore and Miradani North, the existing waste dumps are all naturally vegetated or disturbed by artisanal mining. For Nkran, Esaase and Dynamite Hill pits, the existing waste dumps will be utilized and expanded. Figure 16-17 to Figure 16-21 show the general site layout for each pit including the waste dump locations. For Abore and

Adubiaso, the existing roads around the pits must be reconfigured to accommodate the mine sequences and waste dumps. Capital allocation is included in the financial model to cover the cost of potential changes in the existing haulage roads around the pit.

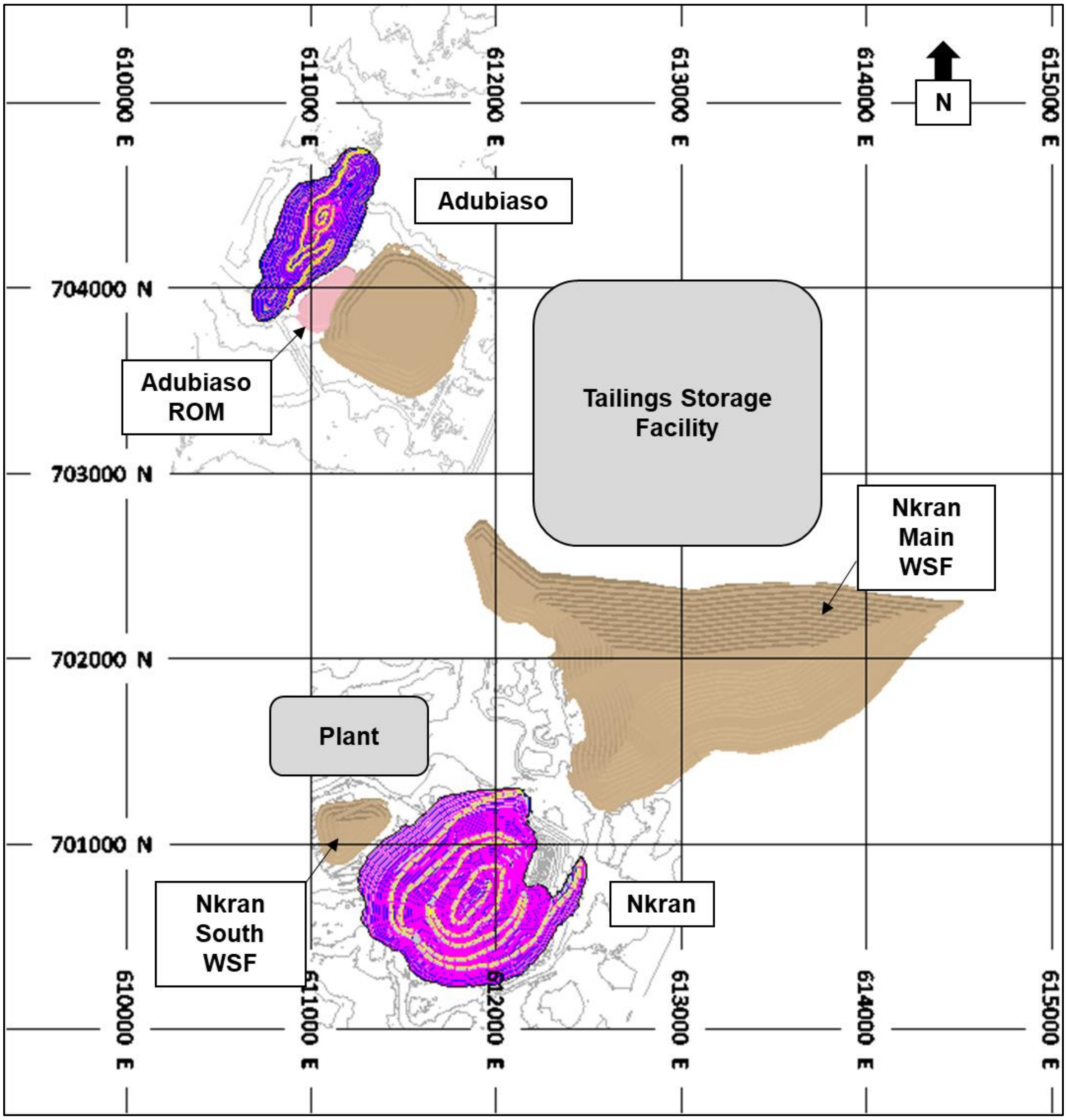


Figure 16-17 Site layout for Nkran and Adubiaso pits

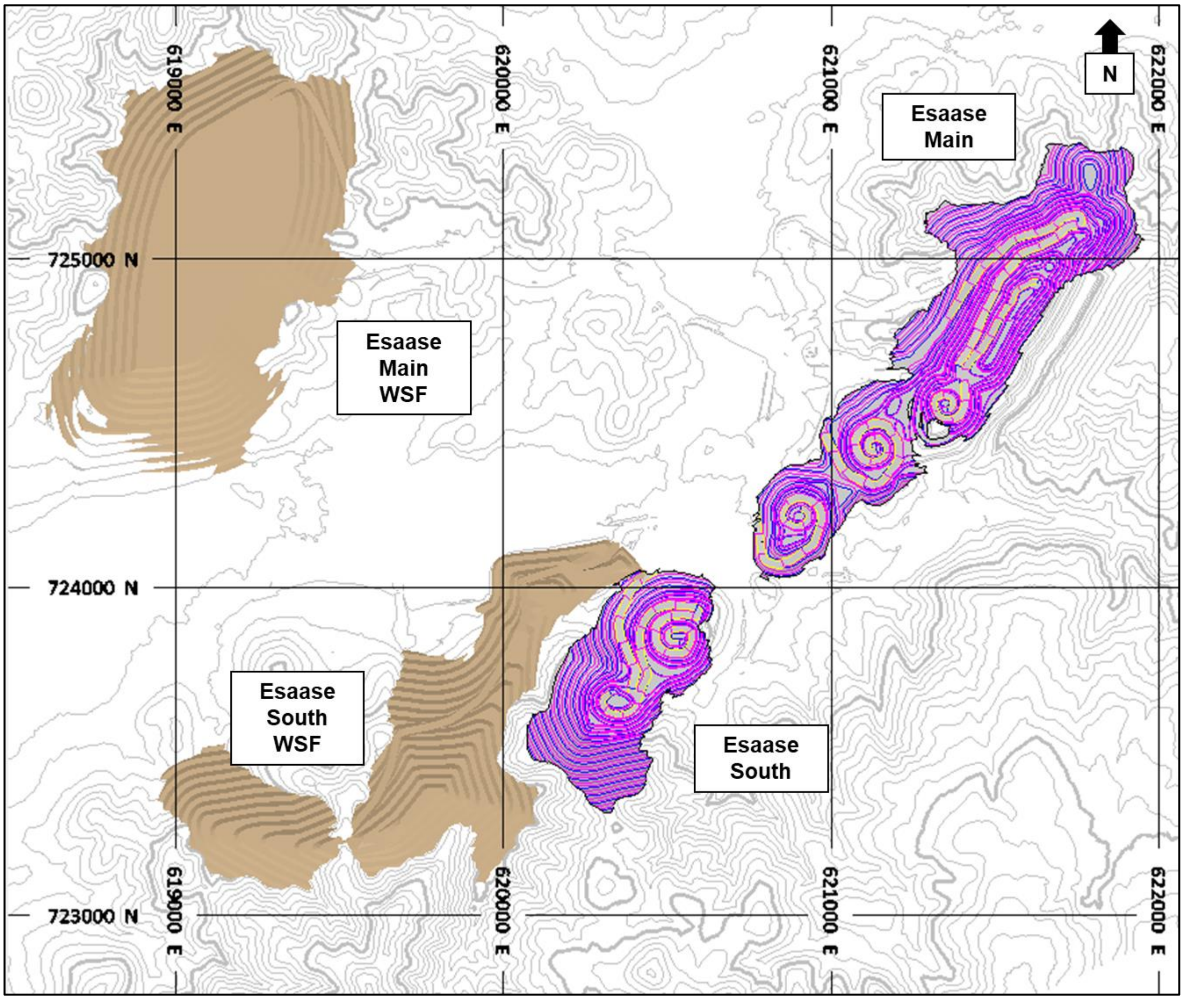


Figure 16-18 Site layout for Esaase pit

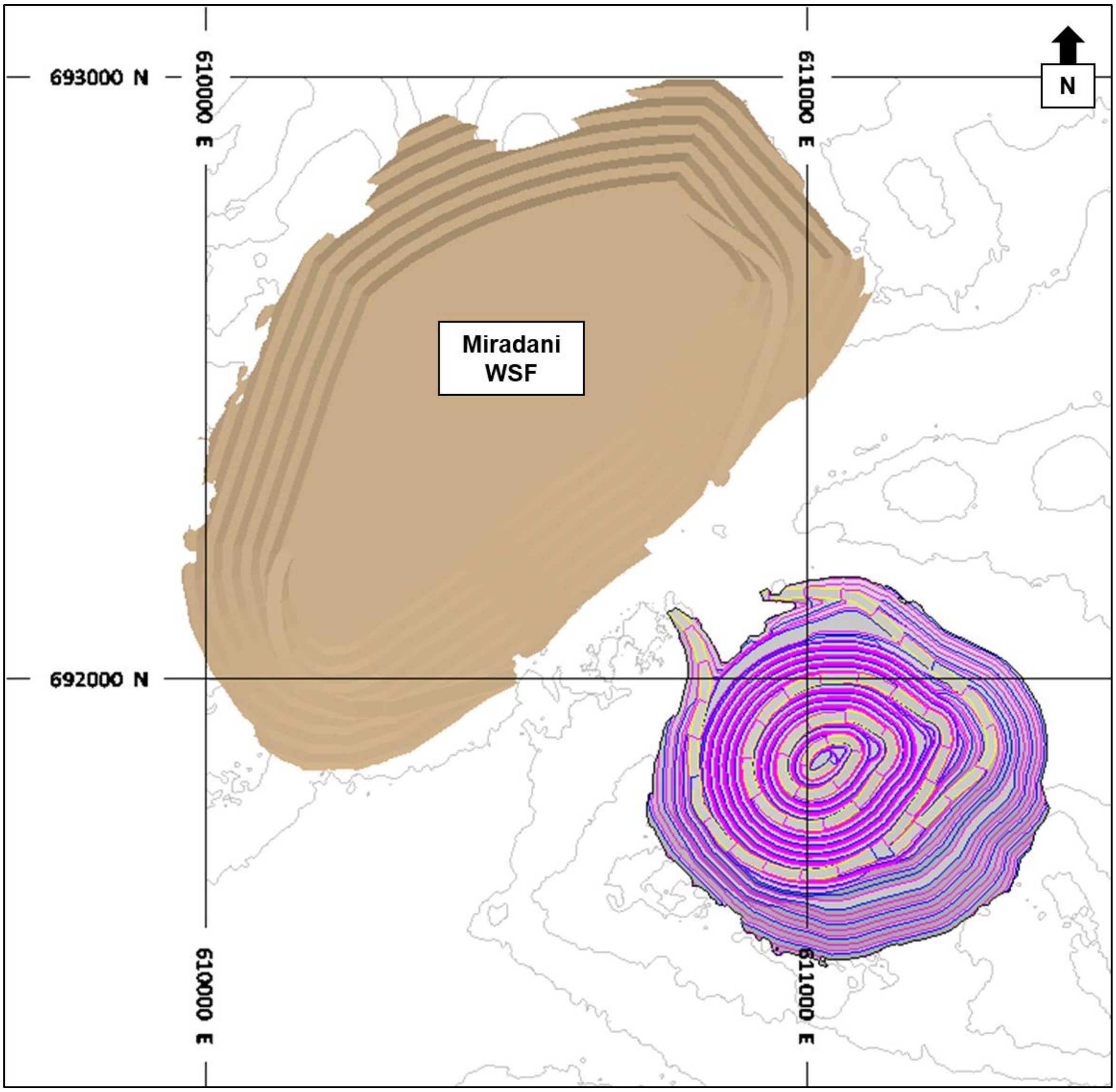


Figure 16-19 Site layout for Miradani North pit

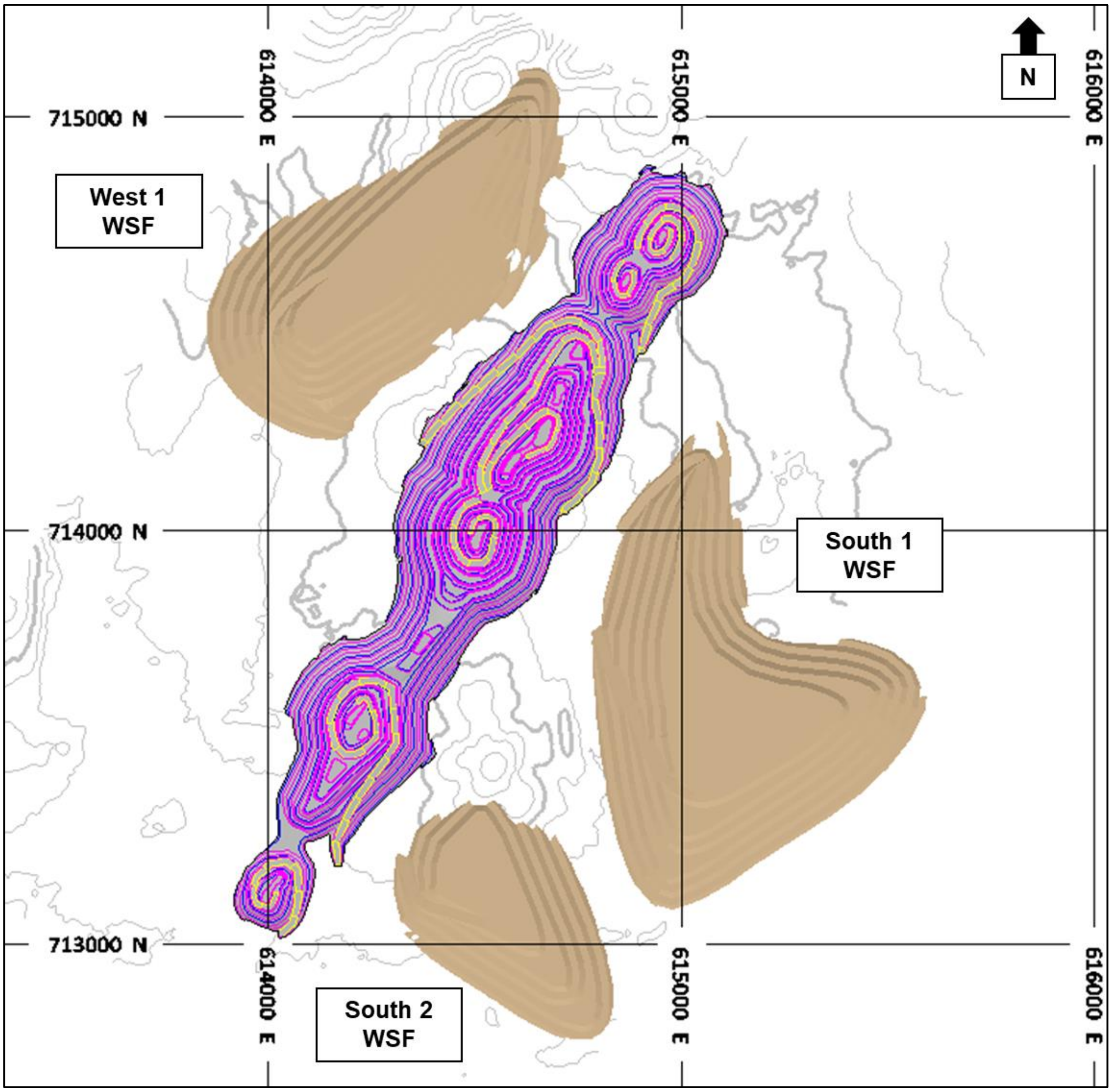


Figure 16-20 Site layout for Abore pit

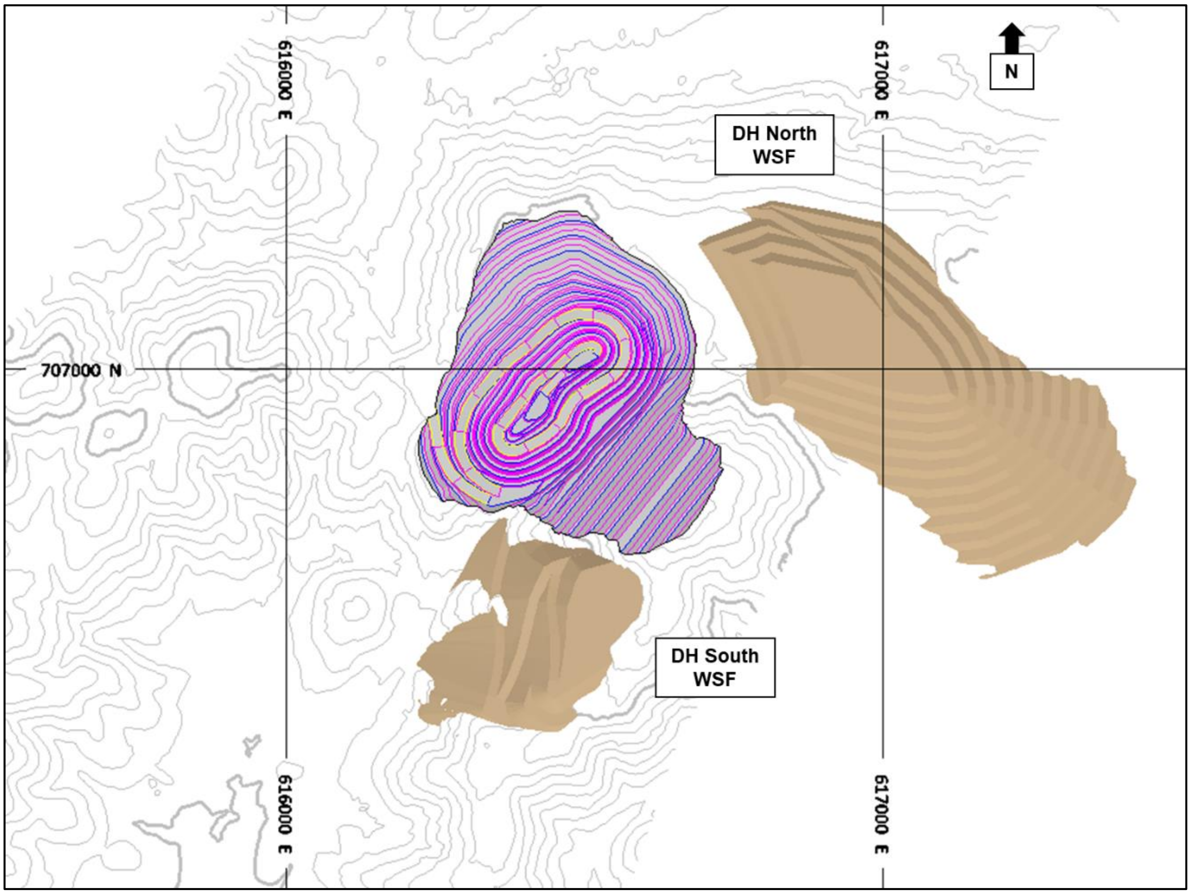


Figure 16-21 Site layout for Dynamite Hill pit

16.5 Mine Scheduling

16.5.1 Introduction

Scheduling was completed by SRK in Deswik scheduling software.

Monthly production schedules were completed for all six open pits and existing stockpiles to achieve a 5.8 Mt Mill feed per annum.

Mining operations will commence mostly with stripping in Abore pit in Q4 of 2023 and will end with Nkran pit in 2029. Mill feed will be provided by existing stockpiles to 2024, until ore production is available and continues into 2031.

The following sections describe assumptions and input parameters for scheduling, followed by stockpile inventories, and then production and mill feed schedules.

16.5.2 Assumptions and Input Parameters

All pits will be contract mined. Based on an assessment of site establishment and contractor mobilization schedule by Galiano, SRK assumed a start date of Q4 2023 for mining and processing. Early years of throughput would be supplied by existing stockpiles while mine production ramps up.

Production scheduling has two components:

1. Mining - Includes all mining schedule production from pit to ROM stockpiles and WSFs and considers the maximum contractor productivity in each mine

2. Stockpile to Mill - Includes schedule production from ROM stockpiles to mill, including existing stockpiles

Both components will contribute a total of 5.8 Mt mill throughput per annum.

Table 16-12 details the schedule assumptions by pit, including production rates and equipment. Where appropriate, pits are split into phases (Abore, Esaase).

Table 16-12 Mine schedule assumptions by pit phase

Pit/Phases	Start Date	Max Production (tpa)	Loader/Truck Equipment Capacity	Loader Productivity (BCMpd)
Miradani North	2024-05-01	1,500,000	5.5 m^3 /40 t	8,014
Nkran	2025-06-01	3,000,000	17.5 m^3 / 90 t	21,993
Dynamite Hill	2027-04-01	890,000	5.5 m^3 / 40 t	8,014
Adubiaso	2026-03-01	1,700,000	5.5 m^3 / 40 t	8,014
Abore / Cut 1, 2, 4	2023-10-01	1,700,000	5.5 m^3 / 40 t	8,014
Abore / Cut 3 (North)	2025-01-01	1,700,000	5.5 m^3 / 40 t	8,014
Esaase Short-Term	2024-01-01	3,000,000	17.5 m^3 / 90 t	21,993
Fresh Zone	2026-11-01	3,000,000	17.5 m^3 / 90 t	21,993

The production scheduling applied several constraints for mining that are based on the mill requirements. The constraints used are oxidation zoning (rock type), grade bins, and Bond Work Index (BWI).

Table 16-13 includes mill feed assumptions which include guidance on targets and priorities. Mill feed will be capped at 483 kt per month (~5.8 Mt per annum), and the BWI, which implies comminution requirements, is capped at 14 kwh/t. Oxide material will be capped at 0.5 kt per month. Mill feed will prioritize higher NSR as soon as possible.

Table 16-13 Mill feed schedule assumptions

Mill Feed Parameter	Value
Mill Feed	483 kt/m
Mill BWI	Max = 14 kWh/t
Ratio of oxide tonnage/mill feed tonnage	Max = 0.5
NSR	priority is with higher NSR as soon as possible

16.5.3 Mine Production Schedule

The mine production schedule spans a seven-year mine life, from October 2023 until 2029. To check the variation in production and be more precise, the production schedule is developed in monthly periods. Summaries are provided on an annual basis.

Mined materials are sent to one of two destinations: ROM stockpiles (where material is then hauled to the Obotan processing plant) and WSFs.

16.5.3.1 Production Schedule Summary

Table 16-14 and Figure 16-22 show the production schedule summary for all pit phases and existing stockpiles, including total tonnes mined by pit along with the strip ratio (SR) for each period.

Table 16-14 Production schedule summary

Total Mining	Units	Total	2023	2024	2025	2026	2027	2028	2029
From Mining Operations									
Total Tonnes Mined	kt	**342,627**	3,828	43,064	57,188	74,739	83,684	62,694	17,430
Waste Mined	kt	**300,908**	3,809	37,926	50,003	68,245	75,335	54,838	10,752
Total Reserve Tonnes	kt	**41,718**	20	5,138	7,185	6,495	8,349	7,855	6,678
Total Reserve Ounces	koz	**1,913**	0	182	316	277	354	380	403
Total Reserve Grade	g/t	**1.43**	0.67	1.10	1.37	1.33	1.32	1.51	1.88
Strip Ratio	w:o	**7.2**	194.0	7.4	7.0	10.5	9.0	7.0	1.6
Existing Stockpiles									
Tonnes Treated	kt	**7,202**	**5,787**	**1,335**	**80**	**0**	**0**	**0**	**0**
Grade	g/t	**0.67**	**0.68**	**0.64**	**0.63**	**0.00**	**0.00**	**0.00**	**0.00**
Ounces Contained	koz	**155**	**126**	**27**	**2**	**0**	**0**	**0**	**0**

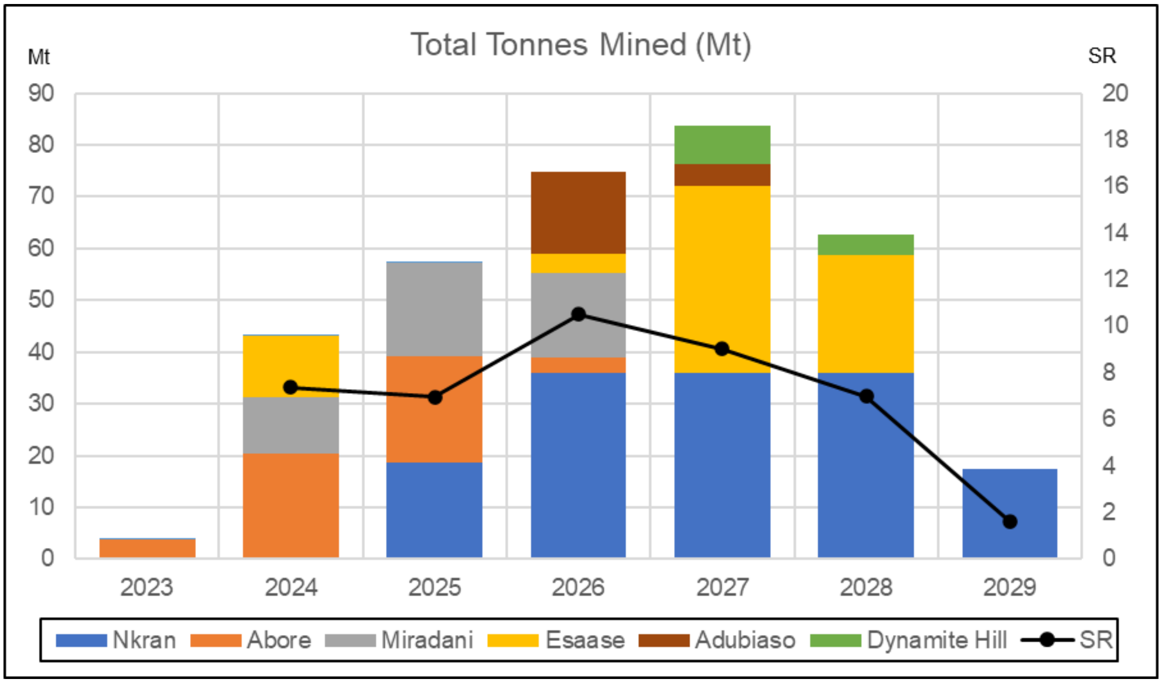


Figure 16-22 Total tonnes mined by year

Mining in 2023 is confined to a small amount of waste stripping in Abore Cut 3. Abore continues mining into 2024, which is then joined by Miradani North Phase 1 and Esaase oxide material. In 2025, Miradani North and Abore continue while Esaase is paused to allow Nkran to commence – the latter largely a waste stripping exercise until 2028. Adubiaso is brought online in 2026 and completed in 2027, while balance of the Esaase deposit commence in late 2026 and are completed in 2028. Dynamite Hill is mined over two years from 2027 to 2028.

Considering the strip ratio over the LoM, the lower strip pits were forwarded early in the schedule before the SR increases due to a waste hurdle at Nkran. Once consistent ore is produced in 2028, the SR drops to its lowest levels in the LoM.

Figure 16-23 shows the LoM ore mined against gold grade (ppm) by pit. The figure shows that generally the highest grades are found at depth in the Nkran pit.

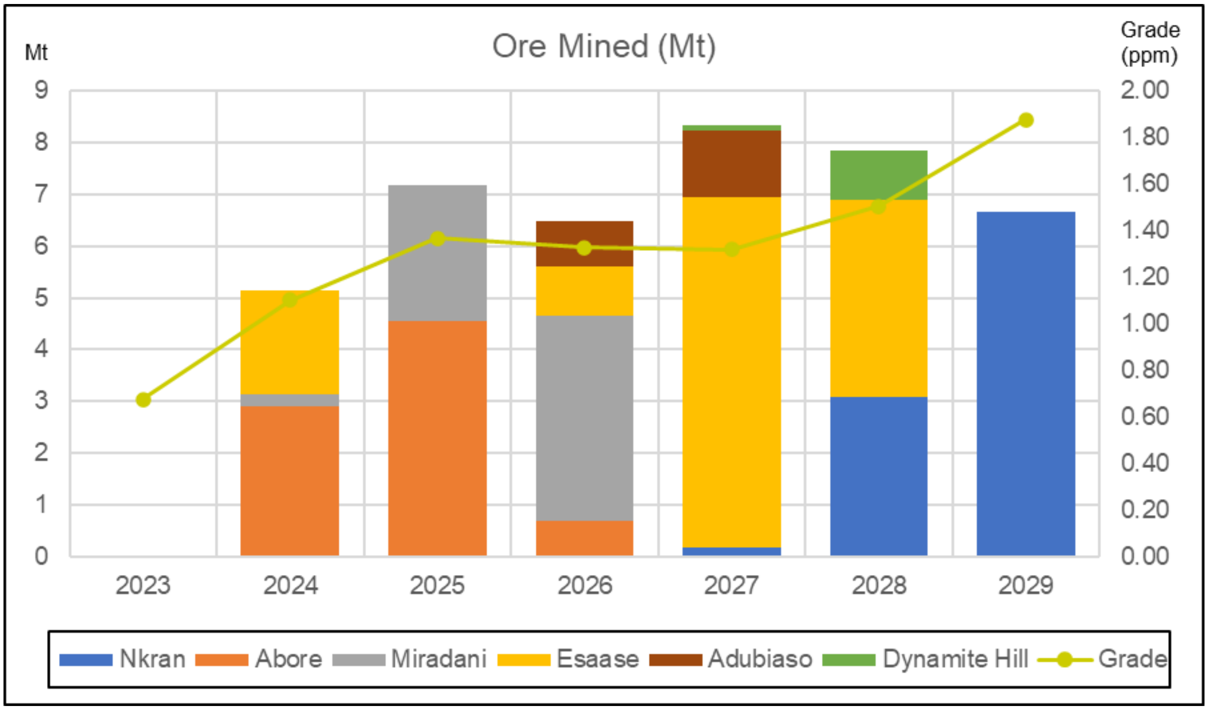


Figure 16-23 Total ore tonnes and grade mined by year

16.5.3.2 Period Plans

SRK checked the period plans produced in Deswik software pit by pit for accuracy and practicality. The QP is satisfied that the mine plan is achievable.

16.5.4 Mill Feed Production Schedule

Table 16-15 and Figure 16-24 show the mill feed per pit, occurring from 2023 until 2031. The mill feed takes into account not only ROM from mining, but also existing stockpile material, which is mostly utilized in the first two years of production. This allows for a consistent mill feed of 5.8 Mt per annum until the end of mine life in 2031. SRK did not assume a ramp-up typical for new mining operations, as the AGM is a restart of an existing operation.

Table 16-15 Annual mill feed from mining operations and existing stockpiles

Parameter	Units	Total	2023	2024	2025	2026	2027	2028	2029	2030	2031
Total Mill Feed											
Tonnes Treated	kt	**48,920**	5,787	5,792	5,794	5,794	5,794	5,794	5,794	5,794	2,579
Grade	g/t	**1.31**	0.68	0.99	1.45	1.39	1.58	1.60	1.57	1.51	0.76
Ounces Contained	koz	**2,068**	126	185	270	259	294	297	292	282	63
Ounces Recovered	koz	**1,846**	107	167	254	243	246	262	275	244	49
From Mining Operations											
Tonnes Treated	kt	**41,718**	0	4,457	5,714	5,794	5,794	5,794	5,794	5,794	2,579
Grade	g/t	**1.43**	0.00	1.10	1.46	1.39	1.58	1.60	1.57	1.51	0.76
Ounces Contained	koz	**1,913**	0	157	269	259	294	297	292	282	63
Ounces Recovered	koz	**1,715**	0	144	252	243	246	262	275	244	49
% Recovery	%	**90%**	0%	92%	94%	94%	84%	88%	94%	87%	77%
From Existing Stockpiles											
Tonnes Treated	kt	**7,202**	5,787	1,335	80	0	0	0	0	0	0
Grade	g/t	**0.67**	0.68	0.64	0.63	0.00	0.00	0.00	0.00	0.00	0.00
Ounces Contained	koz	**155**	126	27	2	0	0	0	0	0	0
Ounces Recovered	koz	**131**	107	23	1	0	0	0	0	0	0
% Recovery	%	**85%**	85%	84%	84%	0%	0%	0%	0%	0%	0%

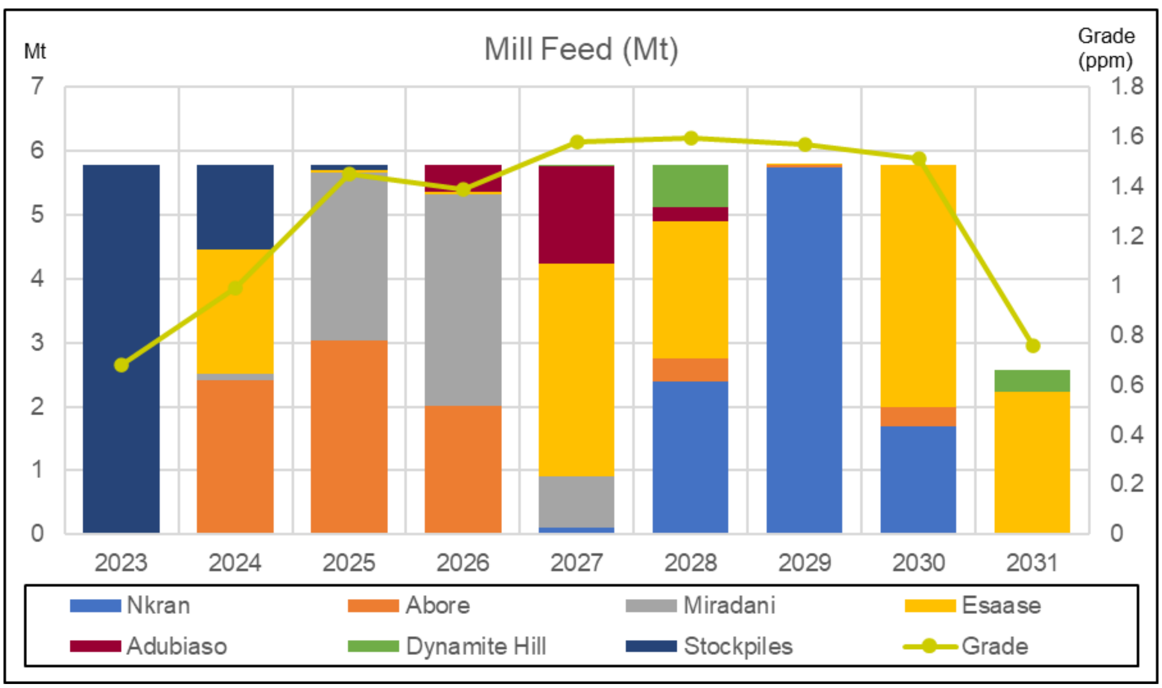


Figure 16-24 Mill feed per year

Figure 16-25 shows the output of metal based on the mill feed from Figure 16-24. The years of lower metal production correlated with the lower grades of the existing stockpiles. By 2025, the metal produced is relatively consistent until the end of mining.

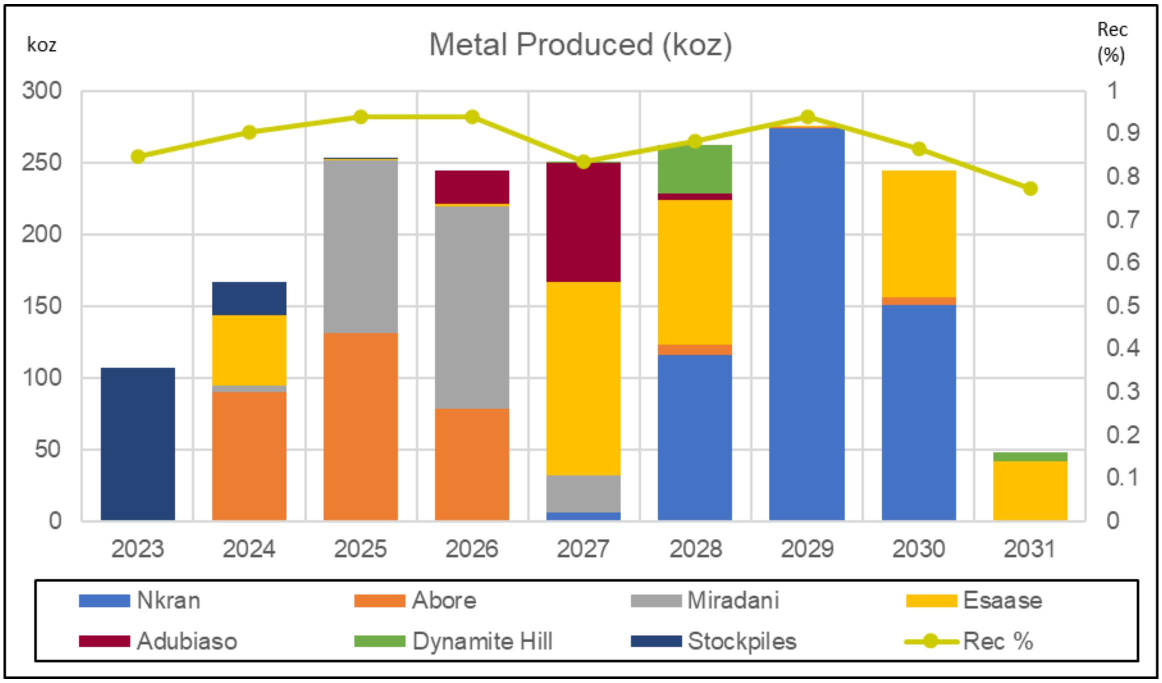


Figure 16-25 Metal produced by year

Table 16-16 provides the mill feed according to rock type.

Table 16-16 Total mill feed by rock type

Rock type	Units	Total	2023	2024	2025	2026	2027	2028	2029	2030	2031
Oxide	kt	**5,251**	0	2,296	638	327	353	304	4	760	569
Transition	kt	**9,294**	3,734	1,367	1,129	540	1,336	239	8	569	372
Fresh	kt	**34,375**	2,053	2,130	4,026	4,927	4,105	5,251	5,781	4,464	1,638
Total	**Kt**	**48,920**	**5,787**	**5,792**	**5,794**	**5,794**	**5,794**	**5,794**	**5,794**	**5,794**	**2,579**

16.6 Mining Operations

The AGM has historically operated as a contract mining operation. It has used a combination of larger regional mining contractors and local trucking contractors to mine and transport waste and ore from its open pits. This has been the continued assumption for the FS. Equipment identified by select mining contractors in a tender process at the end of 2021 are assumed for future mining at the AGM.

The following describes the main mining activities at the AGM. While reference is made to equipment unit sizes, equipment fleet sizing is something that will be determined by the selected mining contractors in ensuring they are able to meet the production requirements of the operations. Indicative fleet sizes are provided here.

16.6.1 Drilling and Blasting

It is envisioned that hammer drills (surface or down the hole) would be capable of meeting the drilling needs at AGM. Hole size for quoted equipment ranges from 90-150 mm diameter (e.g., Sandvik DP 1500i). It is envisioned that required units per pit could range from 3-10 units.

Blasting is to be accomplished with an explosives contractor responsible for manufacture and delivery of explosives and accessories "at the hole". It is envisioned that a mix of bulk and packaged explosives is to be adopted.

16.6.2 Hauling

As mentioned, two truck sizes are envisioned for the AGM open pits: 91-t rigid frame trucks (e.g., CAT 777) and 40-t (e.g., Volvo A40F or CAT 745). The larger trucks are to be deployed at Nkran and Esaase, while the smaller trucks will operate in the remaining pits as well as in the pit bottoms of the larger pits. Fleet sizes will range from 8-30 trucks per pit.

In addition to the in-pit trucks, there will be ex-pit haulage required to transport ore from the ROM stockpiles adjacent the pits to the mill at Obotan. These would be highway haulers with payloads of 25-40 t.

16.6.3 Loading

Excavators in backhoe configuration are envisioned to load both waste and ore. To complement the noted truck sizes, it is envisioned that 12-18 m^3 bucket machines (e.g., CAT 6020/6030) would load the 91-t trucks, while 5-8 m^3 bucket machines (e.g., CAT 395, Kom PC1250) would load the smaller trucks.

Front end loaders would load the ore haulers and serve as additional loading capacity in the pits.

16.6.4 Support

An assortment of equipment will be required to support the mining operations. These would include track dozers, graders and water carts. As well, various maintenance vehicles and equipment, light vehicles and personnel buses would be required by the mine contractor.

16.6.5 Dewatering

The mining contractor would also be responsible for in-pit dewatering. This includes pit sumps, pumps and water lines as well as the near horizontal drains for slope depressurization.

16.6.6 Grade Control

There is currently a grade control program that is operated by AGM personnel. This includes sampling of dedicated in-pit angled reverse circulation drilling, on-site assaying and modelling in active mines. This team will need to continue the work with intensive review and modifications.

17 Recovery Methods

17.1 Process Description

The existing AGM process plant located at Obotan is capable of processing approximately 5.8 Mtpa of total mill feed. Before the period of stockpile processing, the plant was fed primarily with ore from Esaase supplemented by feed from Akwasiso.

The key process operating criteria are shown in Table 17-1, the major equipment in Table 17-2 and the process block flow diagram in Figure 17-1.

Table 17-1 Key process plant operating criteria

Parameter	Units	Value
Crushing plant running time	hours/annum (hpa)	5,957
Crushing plant feed rate	tonnes per hour (tph)	975
Milling and carbon in leach (CIL) plant running time	hpa	7,998
Milling and CIL plant feed rate	tph	725
Life of Mine (LoM) Au head grade	g/t	1.31
LoM gravity gold recovery	%	50
Run of Mine (ROM) feed size (F_{100})	mm	800
Semi-autogenous (SAG) mill feed size (F_{100})	mm	270
SAG mill feed size (P_{80})	mm	90
Leach feed size (F_{80})	µm	106
CIL retention time (8 stages)	hr	17.4
CIL slurry feed density	% w/w	50.2
CIL feed gold grade	Au g/t	0.65
LoM average CIL cyanide (NaCN) consumption	kg/t	0.45
LoM average lime (CaO) consumption	kg/t	0.98
Elution circuit type		Split AARL[1]
Elution circuit size	t	5
Frequency of elution	batches/day	2

1 AARL – Anglo American Research Laboratories

Table 17-2 AGM process plant major equipment

Equipment Description	No of Units	Specification	Power (kW)
Nkran primary jaw crusher	1	CJ815	200
Nkran mobile jaw crusher unit	1	Model WJ1175	110
Nkran mobile jaw crusher unit	1	Model UJ440i	Diesel
Primary SAG mill	1	Shell support; discharge pebble ports; 8.6 m diameter; inside shell: 4 m equivalent grinding length (EGL)	6,500 LRS[1] /SER[2]
Secondary ball mill	1	Shell support: overflow; 5.8 m diameter; inside shell: 9.1 m EGL	5,600 LRS
Gravity gold recovery scalping screen	3	Horizontal vibratory, 2.44 m width x 4.88 m length; aperture 4 mm x 19 mm	44 (4 x 11)
Gravity gold concentrator	3	KC-QS48 (G5 cone)	55
Gravity intensive leach reactor	2	2000 BA reactor; 3.2 m^3	4
Gravity recovery electrowinning cells	2	12 cathode, 14 anode; 316 stainless steel (SS); 0.73 m (width) x 1.35 m (height) x 1.01 m (length); 1,000 A	12
Pre-leach trash screen	1	Horizontal vibratory, 3.05 m (width) x 6.10 m (length); aperture 0.8 mm x 8.8 mm	44 (4 x 11)
Pre-leach thickener	1	30 m diameter; high rate	11 (hydraulic)
CIL leach tank	8	14.0 m diameter x 14.3 m height; flat bottom; 2,100 m^3 live volume	
CIL tank agitator	8	XHH/90/15/90/M4PVSFK (MSRL[3]) hydrofoil dual impeller	90
CIL inter-stage screens	8	MPS 1450(P); 14.5 m^2; 304 L SS[4]; aperture 800 µm	22
Elution column	1	5 t carbon capacity, 13 m^3 total volume, SAF 2507 duplex SS	
Regeneration kiln	1	Horizontal tube; tube 321SS, 750 kg	Diesel
Elution electrowinning cells	6	12 cathode, 14 anode; 316 SS; 0.73 m (width) x 1.35 m (height) x 1.01 m (length); 1,000 A	12

1 LRS – liquid resistance starter; 2 SER – slip energy recovery drive; 3 MSRL – mild steel rubber lined; 4 SS – stainless steel

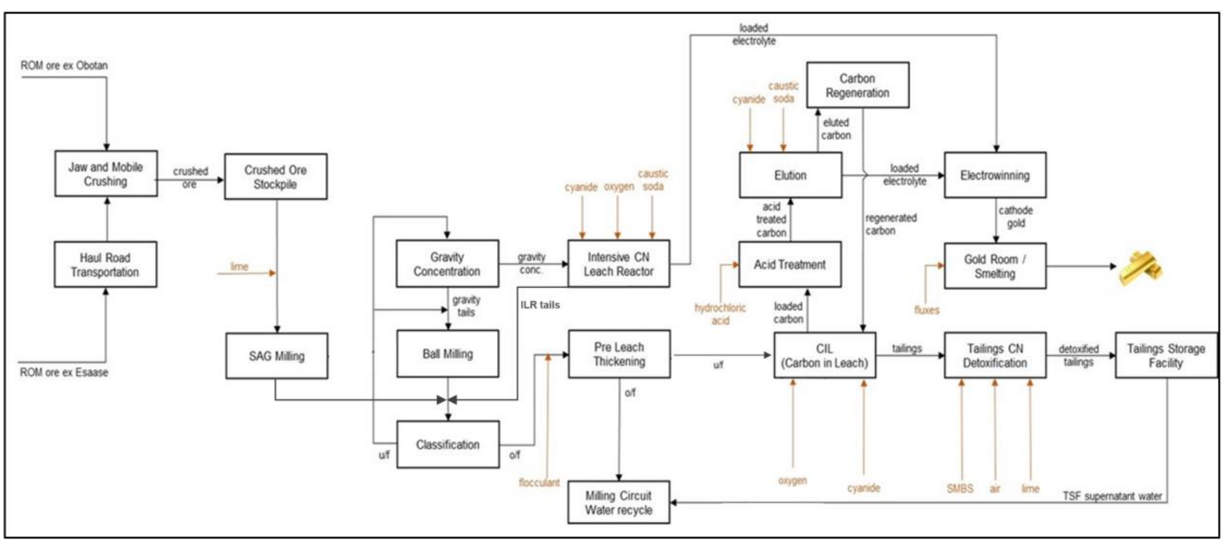


Figure 17-1 Process plant block flow diagram

17.2 Crushing

17.2.1 Esaase Source

ROM Esaase material P_{100} of 800 mm is loaded onto haul trucks which transport the material approximately 28 km to Obotan, where it is crushed in the crushing plant and thereafter joins the Obotan crushed material ahead of feeding to the milling circuit.

17.2.2 Obotan Source

The primary crushing circuit consists of a single tip with a dedicated ROM bin and a single jaw crusher in open circuit. Primary crusher product reports to the crushed ore stockpile (COS). The ROM (F_{100} 800 mm, F_{80} 500 mm) is loaded into a 100 t ROM bin by means of a front-end loader (FEL), or by direct tipping by haul trucks.

The ROM is drawn from the ROM bin at a controlled rate by a single, variable speed apron feeder and fed directly to the jaw crusher. The speed of the apron feeder is controlled to maintain crusher throughput. Fine material spillage from the apron feeder reports to the primary crushing conveyor, where it is combined with the primary crusher product (P_{100} 300 mm, P_{80} 125 mm). The primary crushing conveyor is fitted with a belt magnet to remove any tramp iron material. The primary crushing conveyor discharges the crushed material onto the COS.

17.3 Milling

The milling circuit is configured as a SAG milling, ball milling, crushing circuit (SABC circuit) comprising a primary SAG mill, a secondary ball mill and a pebble crushing circuit. Mill feed is withdrawn from the 1,550 t COS by apron feeders feeding onto the SAG mill feed conveyor. A weightometer indicates the instantaneous and totalized crushed mill feed tonnage and is used to control the SAG mill feed rate via the apron feeders as well as the addition rate of supplementary Esaase oxide material. The SAG mill feed conveyor discharges directly into the SAG mill feed hopper. The SAG mill discharge is screened via a 15 mm x 50 mm aperture trommel screen before gravitating to the ball mill discharge sump. Screen oversize is conveyed to a single pebble crusher, where it is crushed to below 12 mm prior to recycling back to mill feed conveyor. The pebble crusher feed conveyor is fitted with a weightometer for control purposes. A SAG mill pebble bunker is installed, in which any pebble overflow is stored for further handling.

The SAG mill operates in open circuit, discharging directly into the ball mill discharge sump and in closed circuit with the pebble crusher. The ball mill discharges into a sump from where the slurry is pumped to the cyclone classification circuit. A portion of the cyclone underflow (84% target) is diverted to the three gravity concentration units, each with its own scalping screen, which removes the oversize fraction and diverts this back to the ball mill discharge sump. The remaining cyclone underflow portion reports back to the ball mill discharge sump for further grinding. Gravity recovered gold concentrate reports to an intensive leaching reactor circuit (ILR) while the gravity tailings reports back to the ball mill discharge sump.

Cyclone overflow gravitates to the pre-leach thickening circuit, comprising a single high-rate thickener, where it is thickened to approximately 50% solids ahead of leaching and gold adsorption in the CIL circuit. Supernatant solution overflowing the thickener is recycled back to the process plant.

Quicklime is stored in a 100-t silo and is metered onto the SAG mill feed conveyor using a variable speed screw feeder. Quicklime is delivered to site by tanker and pneumatically transferred to the lime silo using an off-loading blower.

A ball loading system is used for loading of grinding media into the SAG mill (via the SAG mill feed conveyor).

Dust control is by way of a water dust suppression system at the stockpile area.

A mobile crushing array is used to assist with crushing of the ROM material, to optimize fragmentation and maintain throughput in the crushing circuit. Dust suppression, for dust control, is used at the crushing circuit.

17.4 Gravity Gold Recovery

Gravity concentrate originating from the three milling gravity recovery concentrators is treated in two ILRs. These reactors contain elevated levels of cyanide, caustic soda, catalyst and oxygen to enable maximum leaching of the precious metals in the concentrate. Leach residence time is approximately 8 hours. At the end of the leach cycle the pregnant solution is treated for gold recovery in two dedicated electrowinning cells to facilitate separate metallurgical accounting. ILR residue is pumped to the ball mill discharge sump. Average gravity recovery is approximately 50%.

17.5 Pre-leach Thickening

The secondary ball mill classification cyclone overflow stream gravitates to a horizontal vibrating trash removal screen, to remove any coarse particles, wood fragments, organic material and plastics that would otherwise become locked up with the circuit carbon and block the CIL inter-stage screens. The trash screen oversize reports directly to a trash bin, whilst the underflow reports to the pre-leach thickener, via a two-stage sampling system.

The pre-leach thickener is a high-rate thickener producing an underflow product of between 50% to 60% solids (w/w). The thickened underflow slurry is pumped to the CIL circuit by means of an underflow pump.

The thickener overflow product gravitates to the process water circuit. Flocculant and lime are added to the thickener feed.

17.6 Carbon-in-Leach (CIL)

The CIL circuit comprises 8 agitated tanks, numbered 0 to 7. This follows the conversion, in October 2021, of the pre-oxidation tank to CIL operation. This is now designated as Tank 0. Slurry and carbon flows are counter current with loaded carbon pumped upwards in the circuit and exiting at either Tank 0 or Tank 1. The slurry gravitates from Tank 0 to 7 through inter-stage screening (vertical, mechanically swept wedge wire screen) in each tank (facilitating carbon retention), exiting from CIL Tank 7 over a carbon safety screen, to recover any stray carbon particles. Each of the tanks contains a bypass facility which allows the removal of any tank from service for maintenance while CIL operation is continued.

Oxygen (90% purity) from the three, pressure swing absorption (PSA) plants, is added to all tanks. The first tank has 3 intensive reactor injection units installed in the slurry feed line in addition to the oxygen sparging in the tank to elevate the dissolved oxygen level to approximately 20 ppm. The remaining tanks are sparged with oxygen to target 17 ppm dissolved oxygen. This process enhances the dissolution of oxygen into the leach slurry, minimizing cyanide consumption and improving gold leach kinetics by increasing the dissolved oxygen concentration.

Total slurry residence time is approximately 17.4 hours. Carbon concentration per stage is 11 g/L with an anticipated loaded carbon value of 1,250 g/t in the first CIL tank. Daily loaded carbon throughput is approximately 10 t.

17.7 Tailings and Detoxification

As per International Cyanide Management Code (ICMC) guidelines, the CIL tailings needs to be discharged with a final cyanide concentration of less than 50 g CN_{WAD}/m^3 at the TSF spigot.

The current plant operating parameters utilize hydrogen peroxide as needed for cyanide detoxification of the CIL tailings. Provision has been made to use the INCO air/SO2 process for cyanide detoxification. The current detoxification circuit comprises a cyanide destruction feed box, gravity feeding into a single agitated tank, with a blower air sparging facility.

The detoxification process utilizes SO^2 and air in the presence of a soluble copper catalyst to oxidize cyanide to the less toxic compound cyanate (OCN). Sodium meta-bisulphite (SMBS) is used as the SO_2 source and is dosed into the cyanide destruction feed box as a 20% weight/volume (w/v) solution. The detoxification process requires the presence of soluble copper to act as a catalyst and to ensure that any free cyanide present is bound to copper as a CN_{WAD} component. Provision is made for the preparation and dosing of a copper sulphate solution, for dosing to the cyanide destruction feed box as a 15% w/v solution when required. Oxygen required in the reaction is supplied by sparging of blower air into the cyanide detoxification tank. The reaction is carried out at a pH of 8.5 which is maintained by controlled lime addition to the cyanide destruction feed box. The detoxified tailings are then pumped to the TSF. Supernatant TSF water is recovered via a barge pump and recycled to the plant as process water.

17.8 Carbon Treatment

Carbon is received from the loaded carbon recovery screen and loaded directly into the acid wash column. The carbon treatment circuit is designed to handle a batch size of 5 t of loaded carbon per elution. Based on the mass balance, an average of 60 elutions are required per month. The circuit comprises cold acid washing, using a solution of 3% HCl concentration, to remove inorganic foulants such as carbonates, a split AARL elution process operated at approximately 125°C, using an eluant solution comprising 3% NaCN and 3% NaOH, regeneration of the eluted carbon in a rotary kiln at 750°C to remove organic foulants such as grease and oils, and ultimately electrowinning of the pregnant solution in four dedicated electrowinning cells situated in the gold room.

The elution process is described in more detail as follows. The caustic solution is pumped into the strip (elution) solution make-up tank from the caustic mixing tank and the cyanide solution is pumped from the cyanide dosing tank. The reagents are mixed with filtered raw water in the strip solution make-up tank at the correct concentrations. When the elution column is filled, the strip solution pump turns on and pumps the strip solution through the recovery heat exchangers followed by the primary heat exchangers before entering the bottom of the elution column at 125°C. The strip solution is recycled through the carbon column via the strip solution pump, at a flow rate of two bed volumes per hour (BV/h) equivalent to 20 m^3/h, for a total of 50 minutes resulting in a carbon strip (removal of gold from the carbon). Eluate produced during the elution cycle is pumped to either one of the two eluate storage tanks located in the electrowinning area.

The fresh strip solution cycle is followed by a spent solution cycle. During this cycle, the rinse solution from the previous elution (stored in the intermediate solution tank) is circulated through the elution column at 125°C a rate of two BV/h (20 m^3/h) for 150 minutes. Once the cycle is complete, the spent solution is pumped to either one of the two eluate storage tanks.

Following this, the rinse cycle involves pumping water for 150 minutes at a rate of two BV/h through the elution column and storing the resulting solution in the intermediate solution tank for the spent solution cycle in the subsequent elution cycle. On completion of the elution cycle, cooling water is pumped from the intermediate solution tank, through the elution column at a rate of two BV/h for 30 minutes and reports to the CIL circuit.

Eluted carbon is removed from the elution column and transferred to the carbon regeneration kiln, via the static sieve bend drainage screen, by means of pressurized water. Drained carbon gravitates to the carbon regeneration kiln feed bin from where it is fed to the carbon regeneration kiln. The regenerated carbon is collected in the barren carbon quench tank, from where it is pumped to the carbon dewatering screen for re-introduction to the CIL circuit via CIL Tank 6 or CIL Tank 7.

17.9 Electrowinning

Currently the pregnant leach solution (PLS) from the ILR is collected in the ILR pregnant solution storage tank. This pregnant solution is circulated through two dedicated electrowinning cells via a common steady head tank.

Pregnant solution from the carbon elution circuit is collected in either one of the two eluate storage tanks. This solution is circulated through a dedicated electrowinning circuit consisting of four cells operating in parallel via a common steady head tank.

Gold is deposited on the electrowinning cell cathodes as a sludge while the solution is circulated until the desired barren gold concentration is achieved, or the cycle time has elapsed. After completion of an electrowinning cycle, barren solution is sampled before being pumped to the CIL feed. Loaded cathodes are removed periodically from the cells, the gold sludge is washed off using a high-pressure washer after which the washed solution is decanted.

Hydrogen cyanide, ammonia and hydrogen gas detection equipment is installed in the electrowinning circuit, together with relevant extraction and ventilation systems.

17.10Gold Room

Electrowon gold is recovered from the cathodes and the electrowinning cells using high pressure water jet sprays. The precious metal slurry is then filtered and dried in a drying oven at approximately 110°C to remove associated moisture. Once dried the precious metal powder is smelted in the melting furnace at approximately 1,700°C with fluxes, such as borax, sodium carbonate and silica to remove base metallic impurities such as copper, iron etc. The molten bullion mixture is then poured in moulds, allowed to solidify, cleaned, sampled and stamped with the mine name and sequential bar number. Gold content varies from 85% to 90%, with approximately 10% silver and approximately 2% to 5% base metal content. The bars are dispatched periodically to a refiner for production of 99.99% gold bars.

Slag from the smelting may be re-smelted if the gold content warrants this or be returned to the SAG mill for recovery through the circuit. Additional equipment in the gold room includes safes, scales and various security systems.

17.11 Reagents

17.11.1 Flocculant

Flocculant is delivered to site dry in 25 kg bags and is added manually to the flocculant hopper. The flocculant is then fed into a venturi tube by a screw feeder, where it is pneumatically transferred into a wetting head. The dry flocculant is mixed with filtered raw water up to a 33% (w/v) solution and discharged into the flocculant mixing tank where additional raw water is added. After a suitable hydration period under agitation, the flocculant solution is pumped to the flocculant storage and distribution tank, from where it is dosed to the respective areas by means of a ring main system fed via a duty/standby variable speed pumping arrangement.

17.11.2 Copper Sulphate

The current installation allows for the delivery of copper sulphate in 1.25 t bulk bags and manual addition to the mixing tank using a hoist and a bag breaker system. Provision is made for the addition of filtered raw water to the mixing tank to dilute the copper sulphate to a 15% (w/v) solution. The copper sulphate solution gravitates from the mixing tank to the dosing tank, from where it can be dosed directly to the plant CIL tailings cyanide detoxification circuit via a duty/standby variable speed pumping arrangement when required. Copper sulphate spillage is pumped to the CIL tailings cyanide detoxification circuit.

17.11.3 Sodium Metabisulphite (SMBS)

The existing installation allows for the delivery of SMBS in 1.2 t bulk bags and manual addition to the mixing tank using a hoist and a bag breaker system. Provision is made for filtered raw water addition to the mixing tank to dilute the SMBS to a 20% (w/v) solution. When required, the diluted SMBS solution is pumped from the mixing tank to the dosing tank, from where it is dosed directly to the cyanide detoxification circuit and reverse osmosis (RO) plant via a duty/standby variable speed pumping arrangement.

17.11.4 Diesel Fuel

Diesel fuel is delivered to the plant site by the fuel tanker and stored in a diesel storage tank for distribution to the generators associated with the fire water system, elution circuit, carbon regeneration kiln and the gold room.

17.11.5 Caustic Soda

Caustic is delivered to site in 1 t bags of ‘pearl’ pellets. The bags are hoisted by a crane into the mixing tank via a bag breaker system. The caustic soda is diluted with filtered raw water up to a final solution concentration of 20% (w/v). The diluted caustic solution is pumped from the mixing tank to the dosing tank, from where it is dosed to the respective areas (ILR, elution and electrowinning) by means of a duty/standby variable speed pumping installation.

17.11.6 Sodium Cyanide

Sodium cyanide is delivered as dry briquettes in 1 t boxes and added manually via a hoist and bag breaking system into the mixing tank. Filtered raw water is used to prepare a 20% (w/v) solution in the mixing tank. The diluted solution is pumped from the mixing tank to the dosing tank, from where it is distributed by means of dedicated variable speed dosing pumps.

17.11.7 Hydrated Lime

Hydrated lime is delivered dry in 1-t bulk bags and manually loaded to the lime make-up tank via a hoist and bag breaker system. The hydrated lime is fed into the lime make-up tank by means of a screw feeder. Filtered raw water is added to the make-up tank to produce a 20% (w/v) solution. The diluted milk of lime is distributed throughout the plant by means of a ring main system fed by a fixed speed duty/standby pumping installation.

17.11.8 Ferric Chloride

Ferric chloride is delivered in 25-kg bags which are manually loaded via a hoist and bag breaking system into the mixing tank. Filtered raw water is added to the mixing tank to prepare a 20% (w/v) solution. The diluted solution is dosed directly from the mixing tank to the return water treatment circuit, by means of a variable speed, duty/standby pumping installation.

17.11.9 Hydrochloric Acid

Hydrochloric acid is delivered in 1,000-L bulk containers at a solution strength of 33% w/v. This is used to acid wash the pregnant carbon prior to gold elution taking place.

17.11.10 Quicklime

Quicklime is delivered in 3- t bulk tankers and pneumatically off-loaded from the tanker into the lime silo. The lime is extracted from the silo using a variable speed screw feeder and dosed directly onto the SAG mill feed conveyor. A suitable dust extraction system is installed on the quicklime dosing system.

17.11.11 Anti-scaling Agent

The anti-scaling agent is delivered in 1-t intermediate bulk containers, from where it is pumped to the anti-scalant storage tank. The anti-scalant reagent is pumped from the storage tank, through the elution heat exchangers, back to the storage tank.

17.11.12 Activated Carbon

Fresh activated carbon is delivered in 500-kg bulk bags. The fresh carbon is added to the carbon quench tank using a hoist, as required for carbon make-up to the CIL circuit. The addition point will allow attrition of any friable carbon particles with subsequent fines removal on the sizing screen prior to entering the CIL tanks.

17.11.13 Grinding Media

The forged steel (125 mm diameter) grinding media is used in the SAG mill, while 60 mm grinding media is used in the secondary ball mill.

Grinding media is delivered in 200-L drums. SAG mill balls are added to the mill using a hydraulic ball feeder which discharges directly onto the mill feed conveyor. Secondary ball mill media is added to the ball mill feed box by use of a specially designed kibble and hoist, which safely transports the media from the loading area to the feed box.

17.12 Plant Process Services

17.12.1 Filtered Raw Water

Raw water is currently supplied to the plant raw water storage tank from the pit dewatering boreholes and several borehole pumps. Additional raw water is sourced from the Sediment Control Structure 4 and pumped to the plant raw water tank, via the raw water treatment plant.

Provision has further been made on site to route tailings return water to the plant raw water storage tank via the discharge water treatment settling and RO plant.

The raw water is used for gland service, carbon transfer duties, elution, gravity concentrator circuit water and reagent make-up.

The raw water storage tank has a reserve of water for fire-fighting purposes. This reserve is maintained by suitability positioned fire water and raw water pump suctions.

17.12.2 Fire Water

Firewater is drawn from the raw water tank. The firewater pumping system contains:

- An electric jockey pump to maintain fire water ring main pressure
- An electric fire water delivery pump
- A diesel driven fire water pump that automatically starts in the event that power is unavailable for the electric firewater pump.

Fire hydrants and hose reels are placed throughout the process plant, fuel storage and plant offices at intervals that ensure coverage in areas where flammable materials are present.

17.12.3 Potable Water

Potable water is taken from the borehole water line. It is pumped through a water treatment plant before being stored in the potable water tank. The potable water tank feeds the plant potable water tank, from where the plant and mining potable water is distributed.

17.12.4 Process Water and Plant Run-off

Plant run-off is contained in the pollution control dam, from where it is pumped to the plant process water dam.

The plant process water dam collects the water from the pit-dewatering pumps, TSF return water and any plant run-off from the pollution control dam. Provision is made for a raw water make-up stream, as required. Filtered water to the plant gravity concentration circuit is supplied by a dedicated pump system, while the remainder of the process water reticulation is undertaken by means of a duty/standby pumping arrangement. Provision is made in the design for the treatment of excess process water prior to discharge to the environment.

17.12.5 Discharge Water Treatment

The plant design allows for the treatment of the excess process water in a mechanically agitated arsenic precipitation tank, where ferric chloride would be dosed to precipitate out arsenic from solution (in the presence of oxygen), at a pH of 6. Provision was made for lime addition and hydrochloric acid addition to this tank, as required for pH control. The current design allows for the treated water to overflow to an intermediate transfer tank, from where it is pumped to a RO water treatment plant, complete with pre-filters, prior to discharge. Filter cake product from the RO plant filters will be re-pulped with RO brine in the arsenic waste disposal tank, from where it will be pumped to the final tailings disposal circuit.

17.12.6 High Pressure (Compressed) Air Reticulation

Plant instrument and plant air at 8.0 bar pressure are supplied by a dedicated, duty/standby compressor installation. The compressed air is stored in the instrument air receiver while a dedicated air receiver, located in the milling area, is provided for plant air storage and is fed from the main instrument air receiver.

All compressed air is dried and filtered prior to storage in the instrument air receiver, from where it is reticulated throughout the plant for instrument air requirements.

17.12.7 Low Pressure (Blower) Air Reticulation

A total of three low pressure blowers supply air to the water treatment circuits.

17.12.8 Oxygen Reticulation

The plant currently utilizes a 15 tpd oxygen plant (comprising three modules of 5 tpd each) to generate oxygen at 90% purity and 300 kPa pressure, for use in the ILR, pre-oxidation and CIL circuits. The oxygen is stored in the oxygen plant air receiver from where it is distributed.

17.12.9 Return Water and Return Water Treatment

The TSF return water is pumped from the TSF via a duty/standby pumping installation to the plant process water circuit. AGM has made provision for the routing of the TSF return water to the discharge water treatment and RO plant for treatment prior to discharge to the plant raw water tank, to supplement the raw water requirement.

18 Project Infrastructure

18.1 Existing Infrastructure

The Obotan plant commenced production in early 2016. The plant was erected close to the Nkran deposit and several satellite orebodies. The plant is currently processing 5.8 Mtpa of material.

18.1.1 Obotan – Existing Site Infrastructure

Current site infrastructure at Obotan includes:

- An established mining operation with various structures, including offices, stores, workshops and fuel storage facilities
- A CIL process plant with various structures, including offices, stores, workshops and reagent storage / mixing facilities
- An administration block, training facilities, exploration offices, core storage area, clinic and analytical laboratory
- Senior and junior accommodation facilities located to the west of the Nkran pit
- Tailings storage facility
- Waste rock dumps at Nkran, Akwasiso and Dynamite Hill
- Multiple boreholes for water supply
- Water treatment plant (construction in progress)
- A 161 kV incoming power line from the Asawinso substation
- Mobile communications facilities. A Vodafone tower is located at the Obotan camp and MTN connectivity is also available.

18.1.2 Esaase – Existing Site Infrastructure

Current infrastructure at Esaase includes:

- An exploration camp and office
- A geological core shed
- Basic camp requirements such as a clinic, offices, kitchen, accommodation, potable water services, power supply, IT connectivity, radio communications and sewage system
- Mine service facilities, including mobile equipment workshops, wash bays, fueling stations and administrative buildings
- Water treatment plant
- Waste rock dumps
- Community services including hospital and community boreholes
- 33 kV overhead power line supplied by the Electricity Company of Ghana (ECG).

18.1.3 Esaase-Obotan Haul Road

The 28-km Esaase to Obotan haul road was upgraded in 2019 to support an annual haulage rate of 3.0 - 3.6 Mtpa. Table 18-1 below summarizes the main design criteria for the road upgrade.

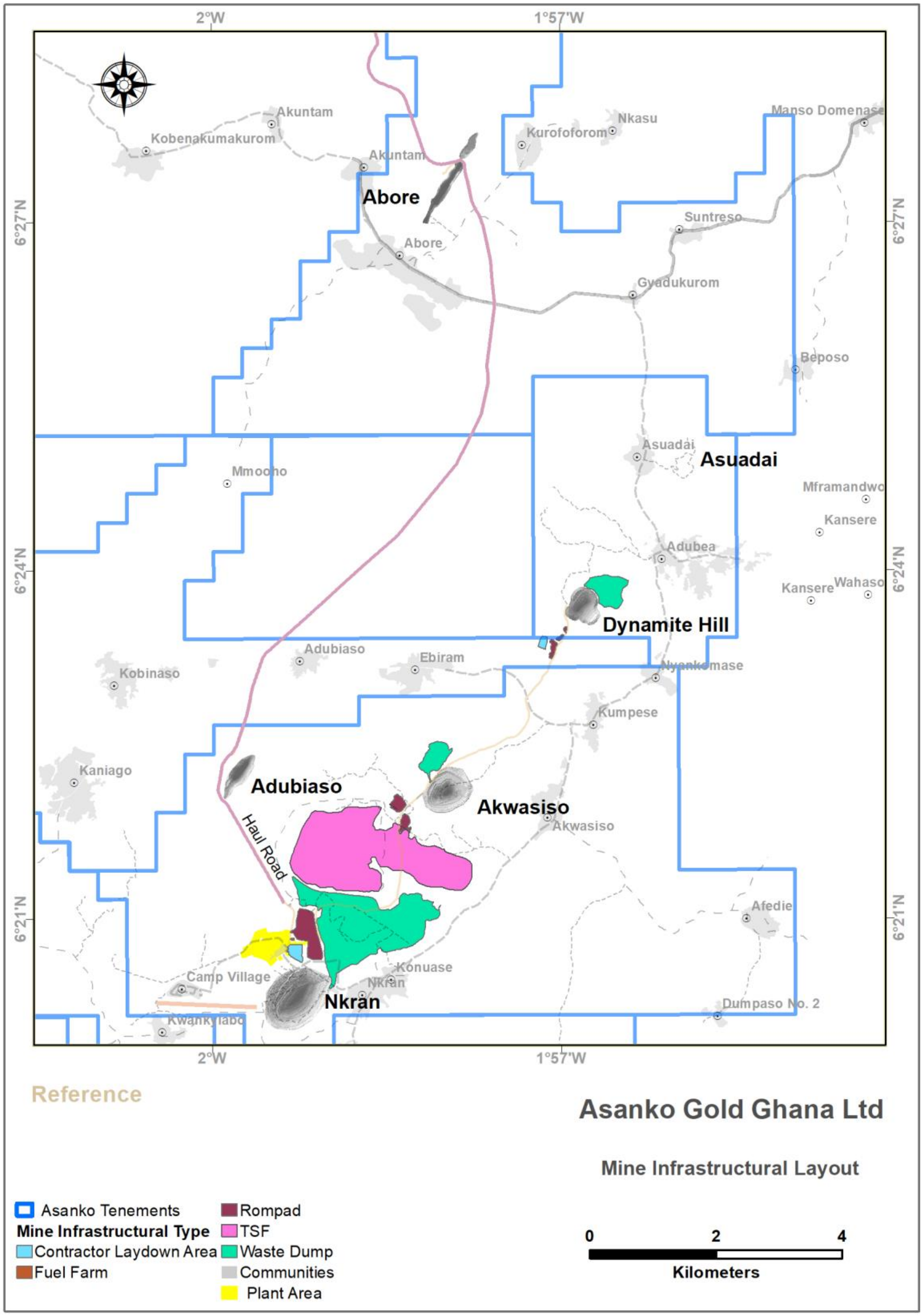
Table 18-1 Esaase to Obotan haul road upgrade – summary of design criteria

Description	Specification
Lane width	3.5 m - 4.5 m
Shoulder width	1.0 m - 1.5 m
Road width	9.0 m -12.0 m
Maximum design speed	60 km/h (50 km/h with the current design)
Maximum gradient	10% (1:10)
Cross fall slope	3% (recommended – 1% to 4%)
Base and Sub-base	Selected Graded Material
Surfacing	Compacted Gravel wearing course (no seal)
Finished road level	700 mm above NGL (200 mm-700 mm above NGL)

18.2 Site Layout

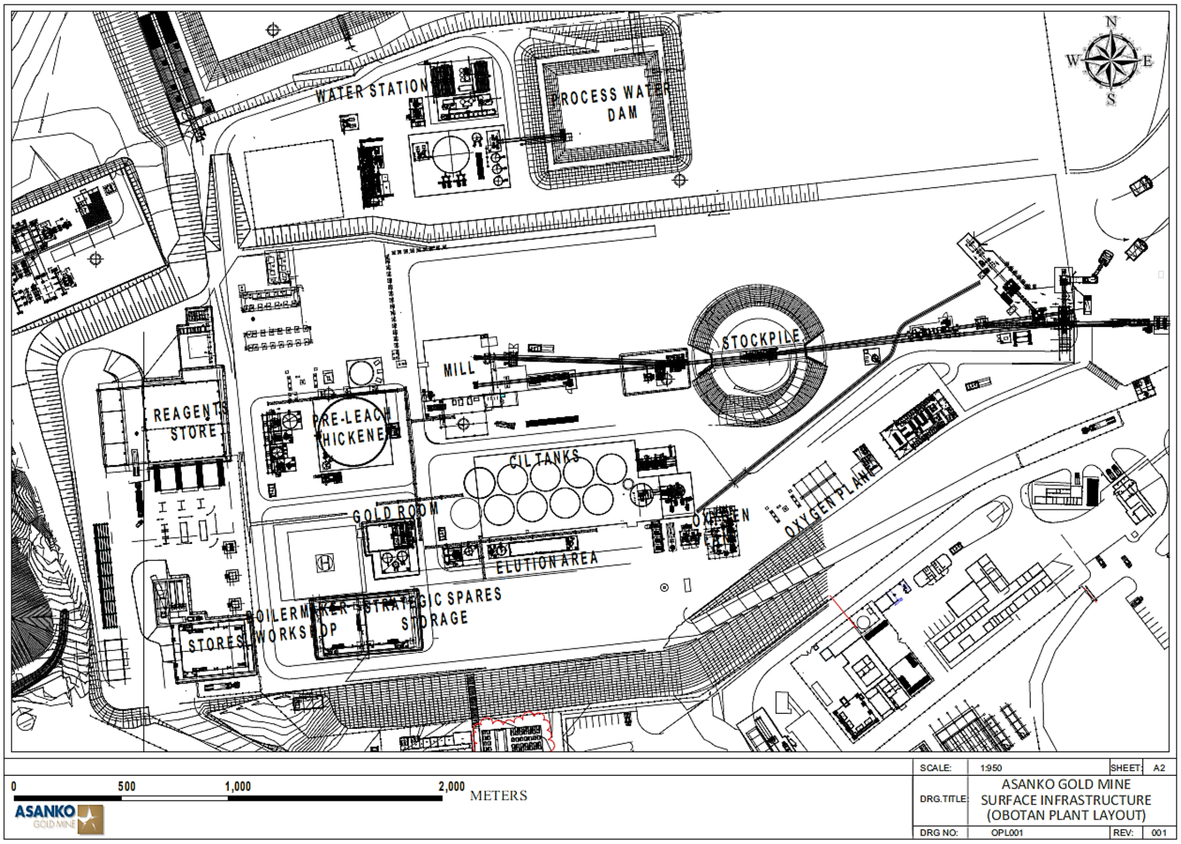
18.2.1 Obotan Layout

The processing plant area is well established on two bulk earthworks terraces with all the major infrastructure already in place. Figure 18-1 shows the Obotan existing site plan and surrounding infrastructure, while Figure 18-2 shows a closer view of the processing plant.



(Source: AGGL, 2022)

Figure 18-1 Obotan site plan and surrounding infrastructure

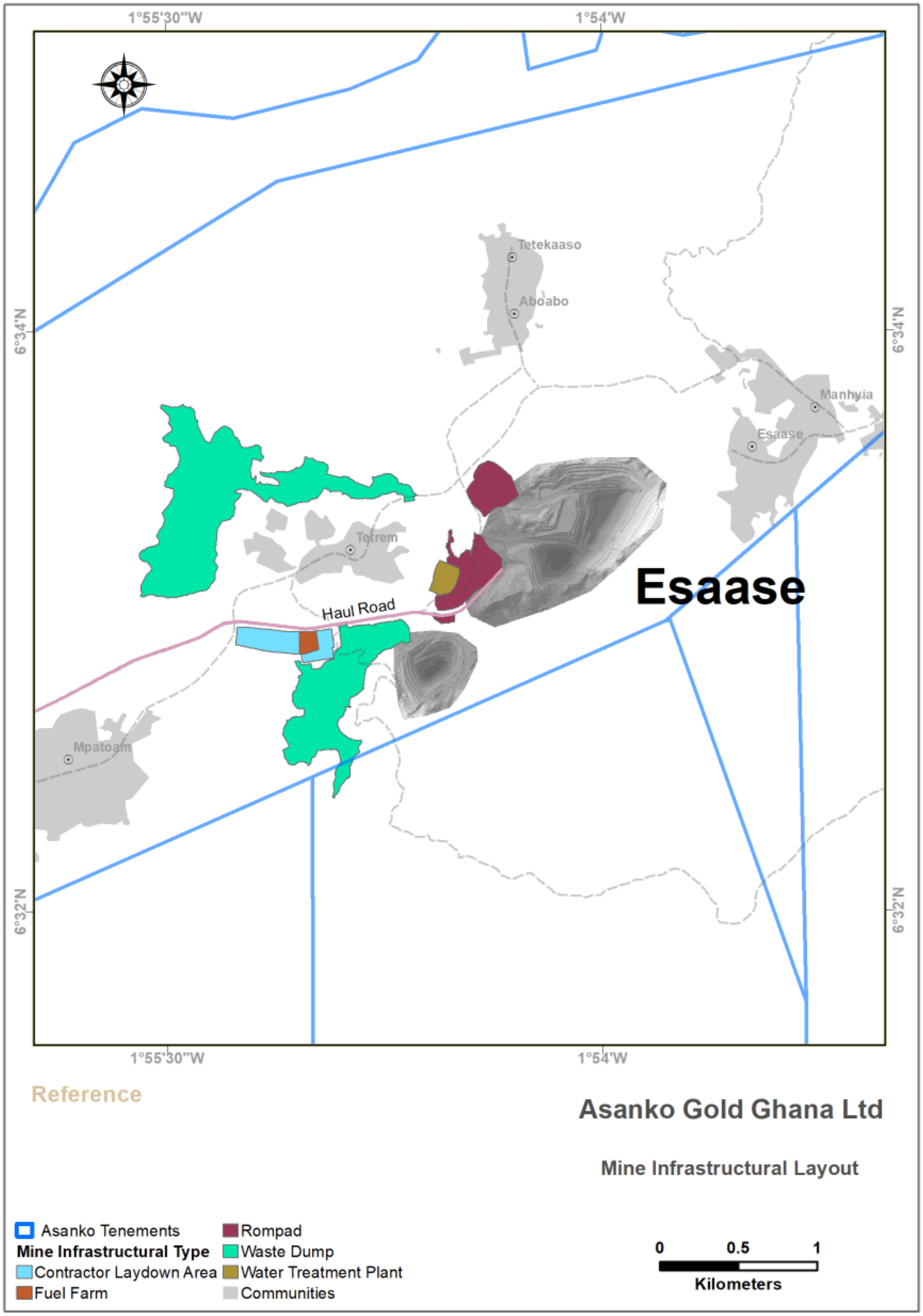


(Source: AGM, 2021)

Figure 18-2 Process plant layout

18.2.2 Esaase Layout

The existing Esaase site plan and the surrounding infrastructure are illustrated below in Figure 18-3.

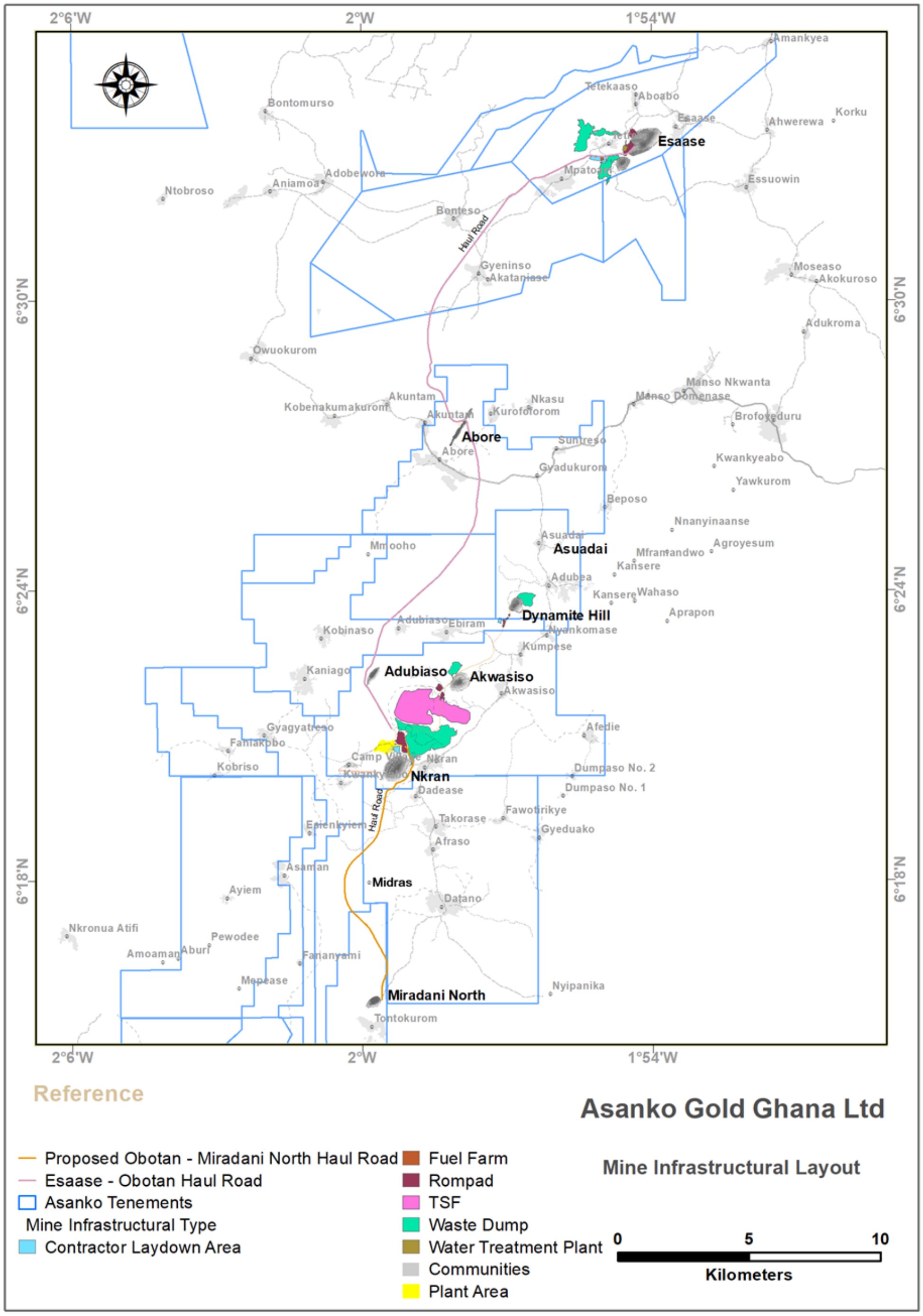


(Source: AGGL, 2022)

Figure 18-3 Esaase site infrastructure layout

18.2.3 Haul Roads

The Esaase to Obotan haul road is approximately 28 km long. The haul road route goes through thick vegetation, farmlands and artisanal mining areas. It also crosses various local gravel roads, one paved district road and a few overhead power lines. The Miradani North to Obotan haul road is not yet constructed but will be approximately 11 km. The envisaged haul road route (Figure 18-4) will also service the Midras deposit.



(Source: AGGL, 2022)

Figure 18-4 AGM haul road – overall site infrastructure layout

18.3 Site Access

The Esaase site is accessed by existing public roads from two directions through three routes:

- Kumasi/Sunyani road to the north-east (sealed road)
- Kumasi/Obuasi road to the south (sealed road)
- Kumasi/Manso Nkwanta road (sealed road), with the last 15 km being AGM's private haul road

Roads from both directions are gravel topped for the last 20 km to the Esaase site. Conditions of these roads can be described as fair to poor.

The process plant is accessed by the Kumasi / Manso Nkwanta road.

18.4 Waste Storage Facilities

WSFs associated with mining operations are constructed to meet the requirements of the Ghanaian Mining Regulation guidelines. The WSFs have been initially constructed with the natural rill angle of approximately 35° with 10 m lifts and 17 m berms. This is then contoured progressively to an overall slope angle of 18.5° (1:3) to allow for slope stability and re-vegetation.

The WSFs will be progressed by tipping from a higher level against a windrow and progressively pushing the waste out with a dozer. Geochemical testwork identified that the waste rock for Esaase and Nkran was non-acid generating. The WSF locations for Nkran, Esaase and the satellite pits are shown on the site layout diagrams, in Figure 18-1 and Figure 18-3.

The WSFs will be progressively rehabilitated with topsoil, where possible. Progressive rehabilitation has been undertaken where possible to date. Surfaces of dumps will be contoured to minimize batter scour and ripped at 1.5 m centres to a depth of 400 mm, where practicable. Seepage and shallow ground water flow along the perimeter of the mine residue deposits are controlled with suitable toe drains.

Select waste rock from Nkran will be used for future TSF stages where practical.

18.5 Tailings Storage Facility

The tailings storage facility is located near the process plant and consists of multi-zoned downstream raised perimeter embankments.

In accordance with The Ghanaian Minerals and Mining Regulations (GMMR) 263, a classification of 'A' has been adopted for the TSF. Furthermore, in accordance with ANCOLD (2019), CDA (2014) and ICMM (2020), the LoM TSF is classified as a 'High B', 'Very High' and 'Very High' severity TSF, respectively.

At an assumed average dry density of 1.45 t/m^3 for the operation of the LoM TSF (Stage 5-6 remaining capacity and Stage 7-8), the facility provides 36.2 Mm^3 of storage capacity for 52.5 Mt of tailings across four operational stages. This exceeds the required LoM tailings storage capacity for 48.9 Mt over 8.5 years. The TSF design stage capacities are presented in Table 18-2.

Table 18-2 Tailings storage facility design capacities

Parameter	TSF Stage 5*	TSF Stage 6*	TSF Stage 7	TSF Stage 8
Crest Height (m)	184.0	184.0	190.0	195.5
Assumed Dry Density (t/m^3)	1.45	1.45	1.45	1.45
Storage Capacity (Mt)	0.94	2.99	25.6	23.0
Cumulative Tailings (Mt)	0.94	3.93	29.5	52.5
Storage Capacity (Mm^3)	0.67	2.07	17.7	15.8
Cumulative Capacity (Mm^3)	0.67	2.74	20.4	36.2
Stage Life (years)	0.16	0.52	4.41	3.96
Life (years)	0.16	0.68	5.09	9.05
Stage Rate of Rise (m/yr)	-	-	3.4	1.7

*Note: * Stage 5 and Stage 6 is already constructed and receiving tailings (these assume supernatant pond sizes consistent with the December 2022 survey)*

18.5.1 Construction

The Stage 7 design comprises of the amalgamation of Stage 5 and Stage 6 with a downstream raise to RL 190.0 m. Stage 8 will comprise a further 5.5 m downstream raise to the facility embankments. The TSF embankments are proposed to be constructed using downstream construction methodologies. Bulk rock mine waste is proposed to form the majority of the downstream zone of the embankments. Locally obtained borrow materials are proposed to be used to form the low permeability face of the embankments. A filter/drainage medium comprising free draining sand/gravel is proposed to form a transitional zone located between the downstream bulk rock mine waste and upstream low permeability face. The filter/drainage medium is envisaged to be either locally obtained borrow (screened if required) or procured locally. A 1.5 mm thick HDPE geomembrane liner will be installed across the upstream face of the embankment.

Expanded areas of the TSF basin are proposed to be lined with a combination of a 0.3 m thick compacted soil liner (CSL) constructed of low permeability materials in combination with a 1.5 mm thick HDPE geomembrane liner to form a composite hydraulic barrier.

18.5.2 Water Recovery

The Stage 7 and Stage 8 designs incorporate a rock ring decant system constructed of mine waste rockfill for the filtration and collection of supernatant water. This system will replace the existing two separate decant towers over time as the supernatant collection point. The rock ring has been positioned in a centralised location where tailings will form around over the TSF LoM. A decant causeway constructed of mine waste has been incorporated into the design to facilitate access to the decant system for pumping operations. Subsequent facility raises will consist of a centreline raise of the decant causeway and raising the rock ring upstream, onto the formed tailings beach.

A water balance was developed for the LoM TSF, based on an estimation of the inflows and outflows from the facilities and determines the balance after plant water requirements have been met. Water shortfall or water in excess of requirements are indicated on a monthly and annual basis, and the volume of the supernatant pond is not allowed to exceed the maximum operating pond volume.

Water inflows to the TSF system consists of incidental rainfall and slurry water from the plant. Water outflows consist of evaporation from the supernatant pond and running beaches, retention of water within tailings and water pumped to the process plant or discharged to the environment. A water balance was undertaken for both average and 1:100 Annual Exceedance Probability (AEP) wet rainfall conditions.

Under average rainfall and evaporation, the water balance indicates that in addition to the average pump rate of 540 m^3/hr to the process plant for continued operation, an average of 425 m^3/hr and 400 m^3/hr are required to be abstracted, treated and discharged to the environment for the duration of the operation of Stage 7 and Stage 8, respectively (based on 8,000 operating hours per annum).

18.5.3 Spillway

A spillway for the routing of the Probable Maximum Flood (PMF) flood event away from the TSF has been accommodated as part of the design. The TSF spillway abuts the northwest embankment at an invert level 0.4 m below the embankment crest and a width of 30 m.

The initial spillway chute is proposed to extend for 100 m at a 1V:5H slope before tapering into the narrower existing spillway channel (approximately 20 m wide) that currently extends in a westerly direction, which directs spillway flows away from the facility. The initial spillway section is proposed to be lined along its entire length with HDPE to prevent any scour to the underlying embankment profile. A geotextile is proposed to overlay the HDPE liner of the initial spillway section to enable the spillway channel to be lined with rock to reduce flow velocities.

The TSF has been designed to satisfy the stormwater storage capacity required for a design storm event of ⅔ between the 1:1,000 AEP and PMF event (CDA, 2014), whilst maintaining the required freeboard at the crest. The required freeboard consists of 0.4 m to the spillway invert level, 1.0 m total freeboard (GMMR) and 0.5 m of additional freeboard (ANCOLD).

18.6 Storm Water Management

18.6.1 General

The surface water management system consists of two separate systems:

- A clean water diversion system to control the run-off from the higher lying natural environment
- A storm water system to capture the contaminated storm water from operational areas

Water accumulated within the clean water system is diverted around areas of disturbance and directed towards the natural watercourses.

Water accumulated in the dirty water system is either harvested for use or routed through sediment control structures prior to discharge to the environment. Water will only be discharged to the environment if it meets EPA sector specific effluent guidelines for mining and is approved by the environmental manager.

18.6.2 Sediment Control Structures

This infrastructure includes a network of water storage dams (ponds) and sediment control structures.

Four sediment control structures were constructed at Obotan and three are in operation. The sediment control structures were designed per the EIS to have embankment slopes of 1:3 for both the upstream and downstream ends of the Zone A Fill embankment with a 6.0 m width. The embankment height is 2.0 m with 1.5 m height to the spillway.

Based on the site topography, the run-offs from the waste rock dumps heads toward the sediment control structure with majority heading towards the Sediment Control Structure No. 4. Water is pumped from the sediment control structure back to the process plant for processing.

All run-offs from the processing plant are captured in the downstream drains and directed towards the Pollution Control Dam (PCD). Water from the PCD is pumped back to the processing plant. In the event of a spill, the water is directed towards Sediment Control Structure No. 4 for controlled discharged into the environment when EPA standards are met.

18.7 Potable Water Supply

Potable water demands for the Obotan and Esaase mine services area and camp are supplied by ground water boreholes.

18.8 Sewage Handling

Sewage is currently collected in tanks, then pumped to a contractor’s truck and discharged at the Obotan sewage treatment plant.

18.9 Power

Power is supplied to Obotan and Esaase from two different generation sources and two different distribution systems.

18.9.1 Power Supply – Obotan

Power to the existing Obotan plant is generated by the Volta River Authority (VRA) and transmitted from the Asawinso sub-station via a 161 kV overhead line, owned and operated by Ghana Grid Company Limited (GRIDCo). The capacity of the overhead line feeding the plant is 150 MW, which far exceeds the estimated power requirements for LoM.

18.9.2 Power Supply – Esaase

Power to Esaase is supplied by ECG and transmitted from the ECG network via a 33 kV overhead line. The 33 kV distribution network is in place throughout the Esaase mine.

18.10Fuel

Diesel is supplied by road from Takoradi and stored at existing fuel farms at both Nkran and Esaase. The fuel farms are operated by the fuel transport contractor, Zen Petroleum.

19 Market Studies and Contracts

19.1 Introduction

The commodity produced at AGM is gold, which is widely and freely traded on the international market with known and instantly accessible pricing information.

19.2 Marketing Strategy

The marketing approach for any future gold production is the same as that used for AGM production since commercial production commenced in Q1 2016.

The three key elements of the marketing strategy are as listed. Gold, as doré bar, is:

- Transported from the mine via Accra to Rand Refinery (Pty) Ltd in Johannesburg, South Africa. The transportation of the gold bar is the responsibility of the refining contractor.
- Refined at Rand Refinery under a refining contract
- Sold to the original project lenders under an off-take agreement

19.3 Marketing Contracts

19.3.1 Refining Contract

The gold refining industry is competitive with several gold refineries in South Africa, India, Switzerland and several other countries that have the capacity to refine gold from the AGM.

AGGL refines all doré bars produced at Rand Refinery under an agreement valid through to August 2024.

The contract specifies a standard refining charge. This charge is credited for payables (e.g., silver content of the doré) and debited for any deleterious content (e.g., arsenic) in accordance with specific terms in the contract.

19.3.2 Off-take Agreement

The AGM has an off-take agreement to sell 100% of the future gold production up to a maximum of 2.2 Moz to the original project lender, RK Finance Master Fund 1 Limited (Red Kite). Arrangements for sale of production after this agreement is satisfied will be reviewed as required.

As of 31 December 2022, the AGM has delivered 1,467,105 ounces to Red Kite under the offtake agreement.

19.4 Pricing

The off-take agreement specifies that the buyer can nominate the purchase price, being either the London Gold Market AM fixing price as published by the London Bullion Market Association or London Gold Market PM price or Comex (first position) settlement price during the nine-day quotation period following shipment from site. In practice, the buyer nominates the lowest of the spot prices during that period as the purchase price.

Under the off-take agreement, the buyer pays for 100% of the value of the gold on the tenth business day after shipment from the mine.

A provisional payment of 90% of the estimated value is made within one business day after receipt of the gold credits by the buyer, which is typically three or four business days after shipment from the mine.

19.5 Product Specification

The product specification is defined in the refining contract.

19.6 Shipping, Storage and Distribution

Transport of doré bars from mines across Africa to refineries in South Africa and elsewhere is a relatively common occurrence. Transport of doré bars from the AGM is the responsibility of the refinery. The doré bar is transported from the mine site via helicopter to Accra, where it is then transported to the refiner via commercial airliner.

20 Environmental Studies, Permitting & Social / Community Impact

This section provides an overview of the environmental legislation and guidelines applicable to the AGM, as well as a summary of the permitting process and stakeholder engagements conducted in respect of the mine.

20.1 Ghanaian Legislation and Guidelines

20.1.1 Environmental and Social

The key environmental and social legislation in Ghana are the Environmental Protection Agency Act 1994 (Act 490) and the Environmental Assessment Regulations 1999 (LI 1652). The Environmental Protection Agency (EPA) is the regulatory body that administers these laws.

The Environmental Protection Agency Act 1994 (Act 490) establishes Ghana's EPA and defines the various functions of the EPA two of which are as follows:

- To prescribe standards and guidelines relating to the pollution of air, water, land and any other forms of environmental pollution including the discharge of waste and the control of toxic substances
- To ensure compliance with the laid down environmental impact assessment procedures in the planning and execution of development projects, including compliance in respect of existing projects

The Environmental Assessment Regulations 1999 (LI 1652) support the Environmental Protection Agency Act 1994 (Act 490) and describe the process of environmental assessment in Ghana.

Proponents of undertakings that have a significant adverse impact on the environment (as defined in Schedule 2 of these Regulations) must submit an Environmental Impact Statement (EIS) to the Agency in accordance with the EPA LI 1652 obligations. It is instructive to note that the scope of the EIS covers both the biophysical and the socio-economic impacts of the project.

Though not expressly stated in the law, the Agency has some discretionary powers in Clause 2 (LI 1652) to establish some additional guidelines based on their technical judgment. In this context, the submission of an EIS is required for any mining project where the mining lease covers an area greater than 10 hectares. The regulations outline the environmental and social aspects that must be addressed in an EIS. This includes addressing the possible direct and indirect environmental impacts of the proposed undertaking during pre-construction, construction, operation, decommissioning (i.e., mine closure) and post-decommissioning phases.

As a first step, an Environmental Scoping Report must be prepared for, and approved by, the EPA prior to submitting an EIS. The purpose of the scoping document is to set out the scope of works for the EIS and must include its draft terms of reference.

In accordance with the traditional regulatory approach, a number of legally binding conditions for mitigating biophysical and social impacts of the project must be carried out once an Environmental Permit is obtained.

These typically include:

- Submit, and have approved, an environmental management plan (EMP) within 18 months of commencement of operations and thereafter every 3 years
- Submit an annual Environmental report 12 months after the commencement of operation and every 12 months thereafter
- Obtain an Environmental Certificate from the EPA within 24 months of commencement of operations
- Mining operations are required to submit closure plans to the EPA and obliged to post reclamation bonds. The Environmental Protection Agency Act, 1994 (Act 490) and the Environmental Assessment Regulations, 1999 (LI 1652) also contain provisions for community engagement.
- Obtain the Water Use License from the Ghana Water Resources Commission in accordance with the Water Resources Commission Act, 1996 (Act 522) as well as the Water Use Regulations, 2001 (LI 1692) that govern the abstraction, impoundment and discharge of water

20.1.2 Minerals and Mining

The Minerals Commission is the principal regulatory body of the mining industry in Ghana. It was established under the Minerals Commission Act, 1993 (Act 450) for the “regulation and management of the utilization of the mineral resources (of Ghana) and the co-ordination of policies in relation to them”.

The Minerals and Mining Act, 2006 (Act 703) aims to:

- Develop a national policy on mining and consolidate the disparate laws on mining in force prior to 2006
- Increase investment by foreign mining companies in Ghana
- Remove the uncertainty concerning the availability and conditionality of mining rights as well as the bureaucratic gridlock
- This Act requires that an application for a mineral right (e.g., mining lease) be accompanied by a statement providing:
  - Particulars of the financial and technical resources available to the applicant
  - An estimate of the amount of money proposed to be spent on the operations
  - The proposed program of mineral operations
  - A detailed program with respect to the employment and training of Ghanaians

Subject to Section 72 of the Minerals and Mining Act, 2006 (Act 703) the holder of a mineral right must have due regard to the effects of mineral operations on the environment and must take whatever steps necessary to prevent pollution of the environment as a result of mineral operations.

The Minister may, as part of a mining lease, enter into a Stability Agreement with the holder of the mining lease to ensure that the holder will not, for a period of up to 15 years, be adversely affected by a new enactment, changes to an enactment, or be adversely affected by subsequent changes to the level of, and payment of, royalties, taxes, customs or other related duties. The Stability Agreement becomes effective upon ratification by Ghana’s Parliament.

Where the proposed investment to be made by the mining company will exceed US$500 million, the Minister may, on the advice of the Minerals Commission, enter into a development agreement under the mining lease.

The development agreement may contain provisions relating to:

- The mineral right or operations to be conducted under the mining lease
- The circumstance or manner in which the Minister will exercise discretion conferred by, or under, the Minerals and Mining Act, 2006 (Act 703)
- Stability terms under a Stability Agreement
- Environmental management expectations and obligations of the holder to safeguard the environment in accordance with the Minerals and Mining Act 2006, or another enactment
- Settlement of disputes

The development agreement is also subject to the country's Parliamentary ratification in order to make it effective.

The Minerals and Mining (health, safety and technical) regulations provide mining, health, safety and environmental requirements that must be met by a mining lease holder.

In addition to the Minerals and Mining Act, 2006 (Act 703), seven subsidiary legislations regulate the various aspects of mining operations in Ghana. These are:

1. Minerals and Mining (General) Regulations 2012
2. Minerals and Mining (Licensing) Regulations 2012
3. Minerals and Mining (Support Services) Regulations 2012
4. Minerals and Mining (Compensation and Resettlement) Regulations 2012
5. Minerals and Mining (Explosives) Regulations, 2012
6. Minerals and Mining (HSLP and Technical) Regulations 2012.
7. Minerals and Mining (Local Content and Local Participation) Regulations 2020 (LI 2431)

20.1.3 Compensation

Acquisition and access to land in Ghana for development activities, including mining, may be undertaken either through the State's power of eminent domain, or by private treaty. The taking of land requires the payment of due compensation. The regulatory oversight of private sector land acquisition and resettlement related to mining activities and actions is governed by the Constitution of Ghana and two legislative acts:

- The 1992 Constitution of Ghana ensures protection of private property and establishes requirements for resettlement in the event of displacement from State acquisition (Article 20, Section 1,2 and 3)
- The State Lands Act 1962 (Act 125) and its subsequent amendment, State Lands (Amendment) Act 2000 (Act 586), mandates compensation payment for displaced persons and sets procedures for public land acquisitions

The Minerals and Mining Act, 2006 (Act 703) vests all mineral rights in land to the State and entitles landowners or occupiers to the right for compensation. Section 74 (1) requires compensation for:

- Deprivation of the use or a particular use of the natural surface of the land, or part of the land
- Loss of, or damage to immovable property
- In the case of land under cultivation, loss of earnings, or sustenance suffered by the owner, or lawful occupier, having due regard to the nature of their interest in the land
- Loss of expected income, depending on the nature of crops on the land and their life expectancy

20.1.4 Health, Safety and Labour

The principal health, safety and labour laws applicable in the mining industry include:

- The Minerals and Mining Act, 2006 (Act 703)
- Workmen's Compensation Act, 1987 (PNDCL 187)
- Labour Act, 2003 (Act 651)
- Minerals and Mining (Health Safety and Technical) Regulations (LI 2182)

Provisions in the mining law state in part that a holder of a mineral right shall give preference in employment to citizens of Ghana "to the maximum extent possible and consistent with safety, efficiency and economy."

As with other sectors, a foreign employee in the mining sector needs a work and residence permit in order to work. However, under the mining laws of Ghana, there are immigration quotas in respect of the approved number of expatriate personnel mining companies may employ.

20.2 Permitting Process

20.2.1 Obotan Permits

Two key regulatory permits were required for the AGM as follows:

- The Mine Operating Permits (MOP) issued by the Minerals Commission in respect of mining leases
- The Environmental Certificate issued by the EPA in respect of mining operations.

Following the required engagements, regulatory site visits and submission of the relevant documentation, the AGM has successfully obtained and renewed its Mine Operating Permits since commencement of operation in 2016 and is currently operating under the 2021 MOPs issued on 12 January 2021 in respect of the following leases, all of which form part of the operational complex of the AGM:

- LVD 7299/2013 located at Abirem
- LVD 21721/2012 located at Adubea
- LVD 21722/20 located at Abore
- LVD 3969A/90 located at Esaase
- LVD 8979A/95 located at Miradani
- LVD 5174/2012 located at Datano

The latest Environmental Certificate for the AGM (gold mining and mineral processing) was issued on 30 July 2021 and is valid for three years following which it will be due for renewal.

20.2.2 Esaase Permits

Asanko Gold (formerly known as Keegan Resources) acquired the Esaase concession in 2006 and, under an exploration permit issued by the Minerals Commission, conducted extensive geological survey and drilling program to define its Mineral Reserves.

Following completion of this work stream and preliminary establishment of a business case, a mining area application was submitted to the Minerals Commission in 2012 which defined the location of the proposed mine on the concession as well as locations of the pits, waste rock dumps and other related mining infrastructure and facilities.

The mining area application was approved by the Minerals Commission and a Temporary Mine Operating Permit issued that same year.

In 2014, further work was conducted to optimize the Project. The Minerals Commission was regularly updated on the Project and a formal application was submitted to the Minerals Commission in December 2016 which led to issuance of the permanent MOP for the Esaase concession in January 2017. The permanent Esaase MOP, as with all other AGM mining leases, has since been successfully renewed annually in line with regulatory requirements.

20.3 Stakeholder Engagement

20.3.1 Guiding Principles of Stakeholder Engagement

Extensive interactions were held with various stakeholder groups including the government, regulatory authorities and, particularly, members of communities that would be impacted by the development of Esaase as well as expansion projects at Obotan.

These interactions were guided by AGM’s principles of conducting stakeholder engagement in a manner that is:

- Respectful and sensitive to local culture and societal norms
- Transparent and honest in deliberations over issues of concern
- Based on continuous engagement and keeping stakeholders updated and their opinions sought, every step of the way
- Aimed at building mutually beneficial long-term partnerships

Further to these, there were extensive stakeholder engagements to ensure that, apart from legal and regulatory consent to the project, affected communities were fully informed about the project, its potential technical and socio-economic impacts on them, interventions to mitigate these impacts, among others, so the communities could make the decision on whether or not to allow the Project to be implemented on their land.

Key stakeholders relating to environmental, social and community aspects, as identified by AGM, are listed in Table 20-1.

Table 20-1 Key stakeholders for environmental, social and community aspects

Stakeholder Group	Frequency of Consultation	Engagement Method	Key Aspects
Employees and Contractors	Ongoing/daily	Meetings Regular briefings Monthly newsletter Engagement surveys Grievance mechanism	Training and career development Health & Safety Covid-19 Response Operational change Workforce management Career planning Strategy and direction of organization
Local Communities	Ongoing daily, quarterly, annually on a proactive and reactive basis	Meetings Company/community forums, associations, committees Open-door policy at site office Community information centres Monthly newsletter Galiano Gold website / Social Media Ceremonial gatherings Grievance mechanism	Local Training Employment and business opportunities Economic development Health & Safety Education Environmental protection Physical impacts of operations (dust and blasting) Infrastructure Investments Mine closure planning Land use payment
Traditional Authorities	Daily to annually	Meetings Company/community forums, associations, committees Grievance mechanism	Land rights Compensation Environment protection Infrastructure investments Community partnerships Local Employment
Unions	Ongoing, daily to monthly	Meetings Site visits Grievance mechanism	Health & safety Training and career development Salary & Benefits
Government/Public Sector Partnerships	Daily, quarterly to annually	Meetings Multi-stakeholder roundtables Active partnerships and collaboration Site visits Compliance and progress reporting	Regulatory and legal compliance Environmental stewardship Taxes & royalties Economic development National Service Program Workforce development / creation

Stakeholder Group	Frequency of Consultation	Engagement Method	Key Aspects
		Sustainability Reports	Infrastructure investments Community partnerships
Industry Bodies	Quarterly to annually	Chamber of Mines meetings Annual Mines Safety Competition Regular inspection visits to project sites	Health and safety performance Responsible business practices Environmental stewardship Sharing of information on best practice
NGO's	Daily to monthly	Meetings Multi-stakeholder roundtables Site visits Compliance and progress reporting Sustainability Reports	Governance Social performance Environmental stewardship Transparency and accountability

20.3.2 Engagement with Communities

The AGM has a catchment area which straddles parts of the Amansie South and Amansie West Districts of the Ashanti Region of Ghana. The mine's catchment area has 35 villages and approximately 135,000 inhabitants, based on the 2010 Ghana population census. Of these 35 communities, three (Nkran, Tetrem and Esaase) are directly impacted thereby necessitating either a partial or total resettlement. The partial resettlement of Nkran was successfully completed in 2015 whereas the total resettlement of Tetrem was completed in 2021. The relevant Resettlement Action Plan processes are currently in progress with respect to the planned partial resettlement of Esaase.

Formal consultations regarding various aspects of the then AGM Obotan Gold Project were conducted from as far back as 2011 through:

- Engagements with various government entities including relevant ministries, departments and agencies as well as the local government (i.e., district assemblies),
- Engagements with Project-affected-Persons in the catchment Area
- The formal Environmental and Social Impact Assessment Scoping Process which included holding of a Public Hearing involving all stakeholders of the project

As a result, the AGM has consistently and directly, engaged with the affected catchment communities since commencement of the Obotan project.

Principal engagement methods and venues to date have included:

- Multi-stakeholder forums
- Village level community liaison committees

- Establishment of staffed community information centres (CIC) as an ongoing access point for village residents
- Individual and focus group meetings
- Open door policy at the project site offices

A grievance management process was also instituted to ensure all community concerns were documented, reviewed, necessary actions taken and timely feedback provided to affected community members. Grievances are resolved between 14 to 30 days from the date of complaints.

The AGM further engaged additional community liaison officers to enhance the frequency and quality of interactions, particularly with the immediate communities, and also to build trusting relationships with stakeholders even before commencement of the Project.

A Stakeholder Engagement Plan was developed, with broad stakeholder groups and committees established in the communities, to keep members of the communities fully updated on the project and to deepen their relationship with the AGM, thereby building a strong linkage with the local population. This approach ensured effective information flow between the AGM and the catchment communities and provided the platform for building strong and collaborative working relationships with project stakeholders.

AGM has over time followed a well-defined communications plan with key discussion items as follows:

- New mine development activities
- Planned mining activities and any associated changes
- Rehabilitation works and post-closure land use requirements of stakeholders
- Development of partnerships with stakeholders for community development
- Proposals for company sponsored livelihood and agricultural land improvement programs
- Determination and review of crop compensation and deprivation of land use rates
- Sustainable development and community assistance projects
- Social Responsibility Forum (SRF) update
- Establishment of SRF Board of Trustees and training of the board and standing committees, on their activities as they relate to sustainable community development
- Baseline engagement on Voluntary Principles on Security and Human Rights (VPSHR) issues
- Ore transport and haul road safety management plan
- Encroachment and illegal mining activities on AGM tenements

20.3.3 Governmental Stakeholders

On the governmental and regulatory side, regular engagement sessions were held with the various regulators and government departments to provide the required updates on progress at the AGM.

To this end, the following governmental stakeholders have been kept fully informed, their opinions and inputs sought and are actively updated on the AGM with formal notifications, submissions and applications made as required. These included the:

- Ministry of Lands and Natural Resources
- Minerals Commission
- Inspectorate division of the Minerals Commission
- Ministry of Environment, Science, Technology and Innovation
- Environmental Protection Agency
- Water Resources Commission
- Forestry Commission
- Ashanti Regional Coordinating Council
- Amansie West District Assembly
- Amansie South District Assembly
- Ministry of Food and Agriculture – Amansie West & South Districts
- Ghana Education Service – Amansie West & South Districts
- Ghana Health Service – Amansie West & South Districts
- Land Valuation Board – Ashanti region

The relevant consents, regulatory permits and approvals continue to be successfully renewed and updated as required.

Partial resettlement will be required of affected community members located within the 500m buffer zone of the Miradani North and Abore pits. The development and implementation of the Resettlement Action Plan is to be initiated following the completion of the pit designs. This process will require consultation with the affected parties and community representatives, as well as representatives from the Government of Ghana.

20.4 Environmental and Social Management

20.4.1 Environmental Management System

Though the AGM is yet to go through ISO14001 Certification, its environmental management system (EMS) is aligned to the standard which follows the “Plan, Do, Check and Act” (PDCA) methodology. The EMS aligns with international best practice standards, including:

- IFC Performance Standards
- World Bank Environment, Health and Safety General and Mining Guidelines
- World Health Organization Guidelines for Drinking Water Quality
- ISO 14001: 2015
- International Cyanide Management Code (ICMC)

The AGM's EMS outlines anticipated mitigation measures to be developed to monitor environmental impacts associated with the Project. It addresses the following aspects:

- Corporate commitment and HSE policies
- Environmental management structure
- Financial allocations
- Project overview
- Existing natural environment
- Existing socio-economic environment
- Environmental impacts and mitigation measures
- Environmental Action Plans
- Monitoring programme
- Reclamation and decommissioning
- Emergency response plan
- Auditing and review
- Community relations and resettlement

Environmental and social impacts associated with the establishment and operation of the Obotan Mine were assessed in the 2013 ESIA and subsequent addendums to the ESIA.

Monthly and annual environmental performance reports are submitted to the Ghanaian EPA, which regularly performs environmental inspections and verification visits.

The AGM became a signatory to the International Cyanide Management Code (ICMC) and was fully certified in July 2021.

20.5 Environmental and Social Mitigation

The AGM is currently implementing the preventative approach to environmental management with the primary objective of limiting negative environmental impacts from the operational activities, whilst maximizing positive benefits. Where possible, AGM seeks to minimize such negative impacts through appropriate mitigation measures. This approach fulfils the aspirations of the corporate policy on the environment, environmental performance management systems and various impact-specific environmental action plans.

Waste rock from mining operations is placed in areas identified as suitable for the establishment of WSFs and are located in close proximity to the resource areas.

Tailings material from the plant is deposited on the expanded TSF. The current detoxification circuit comprises a cyanide destruction feed box, gravity feeding into a single agitated tank, with a blower air sparging facility. Hydrogen peroxide or SO2/air process is used for cyanide destruction prior to tailings deposition in the TSF.

The management of potentially acid generating material is implemented to limit the effect on the receiving environment.

A surface water management regime consists of a clean water diversion system to control the uncontaminated run-off from the higher lying natural environment and a dirty storm water system to capture the contaminated storm water from plant, operational and processing areas.

Water in the dirty water system is to be collected for reuse or routed through sediment control structures before being discharged into the environment. To this end, water is only discharged into the environment when it meets the EPA's effluent guidelines for mining.

The TSF and associated expansion has the following design characteristics associated with storm water management:

- Storm water capacity: ⅔ Between 1:1,000 Annual Exceedance Probability (AEP) and Probable Maximum Flood (PMF)
- Emergency spillway: PMF design flood

Given the expected geochemical characteristics of fresh rock from Esaase, a new water treatment plant was established at the process plant to the treat process water. A similar plant has already been built at Esaase to treat water from the pits following which the solution is allowed to settle and the treated water decanted and, finally, released to the environment.

Appropriate drainage control measures to minimize soil erosion will be put in place during preparation of each site.

20.6 Environmental and Social Monitoring

Monitoring information is assessed against the Ghana EPA guidelines (January 2001) as well as international best practice guidelines for the mining industry, including:

- IFC Environmental, Health & Safety Guidelines – Mining (December 2007)
- IFC Performance Standards on Social and Environmental Sustainability (January 2012)
- "Equator Principles III" 2013
- The Government of Ghana and EPA's Environmental Performance Rating and Disclosure Methodology for Mining Companies (AKOBEN Programme)

In line with regulatory requirements, the AGM has been monitoring and reporting all environmental incidents that may occur on or offsite as a result of its operations.

Monthly and annual environmental performance reports are submitted to the Ghanaian EPA, which regularly performs environmental inspections and verification visits.

20.6.1 Surface and Groundwater

The AGM maintains an extensive program for the regular monitoring of surface and groundwater quality. Compliance sampling is conducted monthly and results are analysed externally by an accredited laboratory to determine compliance with regulatory requirements. Control and reference sampling are typically conducted on a quarterly basis. As per International Cyanide Management Code (ICMC) requirements, weekly sampling is conducted at cyanide facility areas for free cyanide, WAD-cyanide and total cyanide levels. Pit water quality is also monitored monthly with additional monitoring conducted prior to any necessary discharges.

Multiple locations within the TSF surrounds are monitored daily to enable detection of any potential discharges. Supernatant and seepage water from the TSF are monitored monthly. Several piezometers have been installed on the embankments of the TSF to monitor pore pressure levels within the embankments. The piezometers are typically monitored monthly to enable observation of both seasonal and operational changes in water levels.

Surface water monitoring points required during construction, operation and closure for the Esaase Project include downstream of pit discharge points, waste rock dumps and stockpiles as well as locations around any other facility such as workshops and fuel bays.

Potable water sources in all the communities monitored during the baseline groundwater are monitored monthly.

20.6.2 Dust, Noise and Vibration

A Dust Management Plan (DMP) has been developed and is being implemented, to provide a coordinated approach to dust impact mitigation. An integral part of the dust management program is a monitoring program that has been instituted in the surrounding communities. Stations are monitored fortnightly and the results submitted to the EPA. Additionally, the monitoring stations also assess levels of nitrogen oxides and sulphur oxides (NOx and SOx).

Noise monitoring is similarly undertaken across several affected communities and is compared to the day and night-time guidelines.

The AGM’s extensive monitoring program tracks noise and vibration associated with blasting activities at each open pit. Since a blast can affect multiple communities, monitoring for each blast may be simultaneously undertaken at several locations. During 2021, this resulted in almost 984 monitoring occurrences being recorded.

20.6.3 Aquatic Environment

Appropriate drainage control measures to minimize soil erosion are in place by the AGM. These measures include:

- Settling ponds at appropriate locations downstream of mine infrastructure such as the waste rock dumps, the process plant and the mine services area
- Vetiver grass which has been planted on the crests and slopes of waste rock dumps and on exposed surfaces to prevent sedimentation arising from erosion
- Construction of drains around the perimeter of the pits, haul roads and access roads to enhance effective surface runoff management
- Early revegetation of disturbed areas using topsoil and subsoil stockpiled during the preparation phase

The AGM has established Water and Sanitation Committees (WATSAN) in communities where it has provided boreholes and, in addition to regular monitoring, the company provides the needed oversight and support to ensure these are in good working condition and also regularly maintained.

20.6.4 Ecological Environment

Although post-mining land uses are likely to be agriculturally oriented, a terrestrial fauna survey will be undertaken during the closure phase to assess habitat regeneration as well as compliance with AGM's Reclamation and Closure Plans.

In the interim, specific actions being pursued by the AGM include:

- Sampling of the freshwater environment
- Progressive land clearing as necessitated by mine development requirements
- Concurrent land reclamation program in line with the LoM Plan and operational opportunities
- Stockpiling of topsoil and overburden for reuse in reclamation efforts such as the ongoing re-spreading exercise on the slopes of the Nkran waste rock dump which has led to successful revegetation of the area

These actions have created favourable conditions for return of fauna to the reclaimed areas.

20.6.5 Acid Rock Drainage Monitoring

Sampling and assessment of rock types/lithologies from the operations is carried out routinely to understand acid base accounting, rock mineralogy and potential for ARD development. Routine ARD monitoring is conducted in-house with additional analyses conducted by external laboratories, as required.

20.6.6 Tailing Storage Facility

The monitoring program for the TSF is described in Section 20.6.1.

Additionally, an Independent Tailings Review Panel (ITRP) was established to provide advisory services to the ongoing monitoring, maintenance and construction of the TSF. The ITRP comprises of 4 international experts with experience in geology, geotechnical, geochemistry and hydrology. The ITRP supports the AGM's efforts to apply evolving international best practices and standards to ensure increased oversight, tracking, monitoring, capacity building and support for site level personnel.

The ITRP closely works with the Engineer-of-Record, AGM and Galiano senior management and the Board Committee on Sustainability as well as the JV partner. Semi-annual meetings are held to discuss a multitude of issues around water & geochemistry, capacity and containment, emergency preparedness, construction standards & scheduling, monitoring technology, closure practices and alignment to best practices.

The AGM became a signatory to the International Cyanide Management Code (ICMC) and was fully certified in July 2021.

20.6.7 Climate Change and Adaptation

The AGM continues to explore options to reduce fossil fuel reliance, working with local regulators to improve our access to non-fossil fuel energy sources. The AGM is also developing plans to mitigate the risks of climate change by adopting considerations of extreme weather conditions in its management plans, including the mine contingency plans and engineering parameters.

The Company put in place a climate change action plan to identify cost-effective measures for implementation as part of its environmental commitment. The Climate Change Vulnerability Risk

Assessment has been completed, resulting in a number of measures to help further integrate climate change risks into the enterprise risk assessment and management systems, as well as disclose climate-related metrics more comprehensively.

Two main energy sources are relied upon by the AGM to run its operations: diesel fuel for its vehicle fleet and mining equipment and purchased electricity to power the processing plant and support infrastructure, including camps, water bores and workshops.

20.7 Socio-Economic Aspects

The AGM has formed Community Consultative Committees (CCC) which comprise of representatives of the mine, the District Assemblies (local government), traditional authorities and various identifiable groups. The CCC presents an important platform for communicating with stakeholder, providing updates on the mine’s activities and projects, receiving feedback from community stakeholders and addressing any stakeholder concerns that may exist.

The company has further established the Asanko Development Foundation into which a contribution of $2/oz is made for every ounce of gold sold. The accrued amount is to be used for community-driven development projects.

20.8 LoM Supporting Works

For the Abore, Miradani North and Esaase deposits, partial resettlement of residential dwellings and commercial/non-commercial structures will be required. The Resettlement Action Plans (RAPs) for Miradani North and Abore will need to be finalized, and host areas surveyed for the parties affected. The Esaase RAP needs to be amended based on the revised pit perimeter and mine plan. Delays in the implementation of the RAPs may delay development of the affected assets.

A geochemical assessment is required for the Miradani North asset to assess the risk that the material may pose to the receiving environment. If the material poses a significant contamination risk, a special design and deposition strategy at the WSF will be required. Following this, a geohydrological assessment is required to confirm the post-closure water quality as well as the post-closure decant risk associated with Miradani North. If any decant occurs that is not compliant with the host country and IFC effluent standards, then measures will have to be developed to mitigate the risk.

20.9 Closure and Reclamation

The AGM’s reclamation objective is to ensure that the site is left in a condition that is safe and stable where long-term environmental impacts are minimized and any future liability to the community and future land use restrictions are minimized.

The final post-mining land use will be determined in consultation with the EPA, other Ghanaian government institutions, stakeholders and local communities. Natural soil covers and vegetation will as far as possible be re-established over the disturbed areas.

Financial provision for reclamation and closure are made in accordance with the requirements of the Reclamation Security Agreement (RSA) that has been entered into between the mine and the EPA. The RSA sets out criteria for Primary Completion, Land Use Completion and Final Completion. Final completion is achieved when an area continues to meet the completion criteria with no monitoring or maintenance for three seasonal cycles.

As various facilities reach the end of their useful life, AGGL will begin reclamation activities in tandem with ongoing mining operations. For instance, concurrent reclamation at the Nkran waste rock dump, which started in 2019 and has been extended to cover additional surface areas. Native timber species and food crops were planted to create a valuable revegetated land that resembles a natural forest (Figure 20-1).

Figure 20-1 Reclamation of native timber species and food crops

The AGM re-assess the closure and reclamation liability on an annual basis as changes occur. Changes include examples such as increase in land disturbance, reclamation work complete in tandem with ongoing operations, or change in regulatory/remediation requirements.

As at 31 December 2022 the asset retirement provision recognized under IFRS on the financial statements of the AGM was US$58.1M.

Total closure and reclamation cost for the LoM is estimated to be US$80.9M.

The estimates exclude any backfilling or partial backfilling of pits, as per the Environmental Management Plan commitments, due to the sterilization of resources in the affected pits.

21 Cost Estimate

21.1 Capital Cost Estimate

The AGM is an established operating mine that has been in operation since early 2016. Most of the infrastructure to support the LoM is already in place and continues to be in operation as at the effective date of this report.

The existing processing plant at the AGM commenced production in 2016. The plant was erected close to the Nkran deposit and several satellite orebodies. The plant has a throughput capacity of 5.8 Mtpa ore. There are no notable plant modifications envisaged in this study.

In 2018, the AGM commenced development of the Esaase orebody. All existing infrastructure between Obotan and Esaase, including a 28 km haul road, is established and is presently utilized for haulage of the stockpile material.

The AGM also constructed infrastructure to support the mining of satellite deposits at Akwasiso and Dynamite Hill. The Akwasiso deposit was in production until 2022 and the Dynamite Hill deposit was in production between 2017 to 2019.

Relatively little new infrastructure is required to support the current LoM. These include:

- New 11-km haul road to Miradani North deposit
- Utilities for newly established sites (Abore, Adubiaso and Miradani North)
- Crop compensation and partial resettlement of affected structures/land within 500 m buffer of pits
- Diversion of affected public roads
- Contractor site establishment (admin building, change house, workshop, laydown, mess, etc.)
- TSF Stages 7 and 8; note Stage 7 is under construction at the time of this report

Capital costs are summarized below in Table 21-1.

The base date for the capital cost estimate is Q4 2022 and it is expressed in US dollars.

Table 21-1 Capital expenditure summary

Description	Total ($000 USD)
Growth Capital	
Capitalized Waste Stripping (Nkran)	258,532
Site Establishment	58,361
Total Growth Capital	**316,893**
Sustaining Capital	
Capitalized Waste Stripping	169,846
Site Establishment	23,024
Tailings Storage Facility and Water Treatment	44,748
Plant and Infrastructure	27,477
Total Sustaining Capital	**265,095**
Closure and Reclamation	**80,857**
Total Capital Cost	**662,845**

Classification of growth versus sustaining capital is based on World Gold Council, Guidance Note on Non-GAAP Metrics: All-in Sustaining Costs and All-in Costs.

21.1.1 Capitalized Waste Stripping

Capitalized waste stripping is calculated with mine operating costs as described in Section 21.2.

21.1.2 Site Establishment

Site establishment capital entails all costs required to allow commencement of mining operations at the Nkran, Esaase, Abore, Miradani North, Adubiaso and Dynamite Hill deposits to support the LoM plan. These costs are broken down into subcategories defined below.

21.1.2.1 Crop Compensation

Crop compensation was calculated by establishing a 500 m buffer around the perimeter of all pit designs and calculating the affected area of land parcels within this buffer. Depending on their location, waste rock dumps, ROM pads and roads may also trigger crop compensation.

Crop compensation rates are standard approved rates issued by the Ghanian government that are annually updated. The standard 2022 rates were applied.

21.1.2.2 Resettlement and Structure Compensation

For the Abore, Miradani North and Esaase deposits, partial resettlement of residential dwellings and commercial/non-commercial structures will be required. A land survey was undertaken in 2022 for these villages to determine the number of houses and structures that are within a 500 m radius of the pit designs.

Costs of residential resettlement and structural compensation were based on analysis of actual costs incurred for large-scale resettlement projects undertaken by the AGM.

21.1.2.3 Roads

Establishment of Miradani North will require construction of a new 11.3-km haul road and diversion of a public road near the Tontokrom village. Detailed engineering work was completed for these roads to establish the bill of quantities and complete the associated cost estimate.

The Abore deposit shares the same existing haul road as the Esaase deposit. The existing haul road passes through the envisaged Abore pit and will need to be diverted. In addition, a public road to the village of Krofrom is affected. Conceptual diversion paths for these two roads were designed. In-house data of road construction costs undertaken by the AGM was utilized to extrapolate the capital cost.

21.1.2.4 Utilities

Utilities costs include establishment of potable water supply, power supply, radio communications, lightening protection and area lighting.

The bill of quantities and costs were based on first principles for each deposit and on relevant in-house data of costs from historical completed projects.

21.1.2.5 Boreholes and Monitoring

Borehole and monitoring costs consist of mechanized dewatering boreholes, environmental monitoring boreholes and installation of vibrating wire piezometers. Quantities and depths are specific to each deposit and are quantified by the hydrogeology team.

Drilling, mechanical and instrumentation costs are based on analysis of historical actual costs for similar activities undertaken by the AGM.

21.1.2.6 Contractor Site Establishment

Contractor site establishment costs cover the mining contractor's facilities, including administration, change house, workshop, laydown, mess, etc. All costs are based on analysis of competitive tenders obtained by the AGM in late 2021.

21.1.2.7 Waste Rock Storage Facilities and ROM Pads

Capital costs associated with WSFs and ROM pads are for preparation of foundations, including clearing and grubbing and topsoil stripping.

Overall footprints of new WSFs were measured for establishing quantities. An average of 300 mm topsoil stripping was assumed.

Unit rates were based on recent tenders.

21.1.3 Tailings Storage Facility

The bill of quantities for the TSF was generated based on the LoM design described in Section 18 of this report.

Unit rates for the construction of new TSF lifts are well understood as the AGM has recently completed construction of the Stage 6 lift and is presently progressing with the construction of Stage 7. Most recent contract rates were utilized for the estimates of Stages 7 and 8.

A water treatment plant with a capacity of approximately 120 m^3/hr was recently commissioned. Additional water treatment capacity is envisaged and an estimate of $10.0M is included as part of the capital cost estimate. The resulting treatment capacity for the supernatant water will be in excess of 400 m^3/hr. This estimate was based on an analysis of multiple vendor quotations.

21.1.4 Plant

Annual sustaining capital spend in 2021 and 2022 by the AGM was analyzed to estimate the LoM annual cost attributable to miscellaneous plant expenditures required for maintenance and on-going operation of the facilities.

Over the past two years, the AGM incurred on average US$1.5M per annum on miscellaneous expenditures relating to plant. An annual cost of US$1.5M per annum is estimated until 2028, at which point the cost estimate steadily decreases each year until closure of the mine.

21.1.5 Infrastructure

Annual sustaining capital spend in 2021 and 2022 by the AGM was analyzed to estimate the LoM annual cost attributable to miscellaneous infrastructure expenditures required for maintenance and on-going operation of the facilities.

Over the past two years, the AGM incurred on average US$1.9M per annum on miscellaneous expenditures relating to infrastructure. An annual cost of US$2.0M per annum is estimated until 2028, at which point the cost estimate steadily decreases each year until closure of the mine.

21.1.6 Closure and Reclamation

A conceptual reclamation and closure plan for the updated AGM LoM was developed as part of this Study. The focus of reclamation and closure planning is to ensure that:

- The proposed post-closure land use(s) for the site are defined and agreed with the regulatory authorities and local communities
- The nature, scale and cost of the works required to return the site to a condition consistent with the requirements of the post-closure land use(s) are defined and understood
- The necessary financial provisions are made for closure of the mine and that these are included in the assessment of the project's economic viability

The reclamation and closure costs have been based on surveyed and measured disturbances as well as preliminary designs of future surface infrastructure and associated disturbance.

The rates used in the cost estimate have been sourced from a combination of recent earthworks contract rates at the AGM, as well as in-house data of tendered rates for similar works carried out on other projects in western Africa (including Ghana, Mali and Guinea), as well as the DRC and South Africa.

Total closure and reclamation costs for the AGM are estimated to be $80,857,276.

21.2 Operating Cost Estimate

The AGM LoM operating costs are summarized in Table 21-2.

Table 21-2 Operating expenditure summary

Description	LoM Total $000 USD	Cost per oz (US$/oz)
Mining, Ore Transport and Rehandling	824,499	447
Processing Cost	528,273	286
Site and Corporate G&A	293,534	159
Royalties	161,960	88
Transport and Refining	8,251	4
Total Operating Cost	**1,816,517**	**984**

Note: Mining costs above are exclusive of deferred stripping

21.2.1 Mining, Ore Transport and Rehandling

Mining costs are primarily based on competitive tenders obtained by the AGM in Q4 2021. Major mining contractors prevalent in Ghana submitted tenders for the Nkran, Esaase and Abore deposits. The scope of work within the tender included contractor site establishment, mobilization and demobilization, monthly management fees, dewatering, drill & blast, load & haul and unit rates for other miscellaneous activities.

Tender values used for the mining costs were approximately 5% to 20% more expensive compared to the lowest conforming offer. In addition, rise-and-fall equations were provided and used to escalate fuel prices from the base of $1.00/L to $1.05/L, reflecting long-term Brent crude oil consensus prices.

Abore tenders were extrapolated for costing of the Miradani North, Adubiaso and Dynamite Hill deposits. Haulage profiles were assessed and haulage adjustment equations as provided in tenders were applied where required.

Grade control costs of $1.10/t ore were applied for all deposits and are based on actual costs at the AGM and SRK experience.

Ore transport costs are estimated from current contract rates for the Esaase deposit and are extrapolated from historical rates for Abore, Adubiaso, Dynamite Hill, Miradani North and Nkran. Ore rehandling costs at the Obotan ROM pad are based on current contract rates.

Ore transport and rehandling costs vary between $0.61/t ore (Nkran) to $6.15/t ore (Esaase), depending on the proximity of the deposit to the mill.

Lastly, AGM's Owner's mining general and administration (G&A) costs of $7.1M per annum are based on a combination of historical annual costs and projected organizational structure upon the restart of mining.

21.2.2 Processing

Processing costs are based on first principle calculations for power, reagents, process consumables, labour, maintenance and other fixed costs. Supply costs are based on actual site unit supply cost data. The resulting costs were compared against historical process operating costs at the AGM.

Costs are broken out by the oxidation state of feed material:

- Oxides – $8.81 / t ore
- Transition – $10.39 / t ore
- Fresh – $10.66 / t ore

21.2.3 Water Treatment Plant

Operating expenditures for future abstraction and treatment of tailings supernatant water are estimated based on an assumption of $0.80/m^3 water treated. This number is based on vendor provided benchmarks.

21.2.4 Site and Corporate General and Administration

The current G&A cost structure at the AGM and its corporate G&A costs in Accra were analyzed to support the G&A component of the operating cost estimate.

The current G&A structure is adequate to support the LoM plan. The following modifications were made throughout the LoM plan:

- G&A costs directly attributable to Esaase will no longer be incurred upon depletion of the deposit
- As mining concludes and the AGM transitions to 100% processing of low grade stockpiles, site G&A costs are estimated to reduce to 50% of present day costs
- Accra corporate G&A is unadjusted until closure of the mine. This cost includes the Galiano management fees.

Total G&A costs equate to approximately US$38M per annum.

22 Economic Analysis

22.1 Cautionary Statement

Certain information and statements contained in this section are "forward looking" in nature. Forward-looking statements include, but are not limited to, statements with respect to the economic and other parameters of the project; mineral resource and reserve estimates; the cost and timing of any development of the project; the proposed mine plan and mining methods; dilution and mining recoveries; processing method and rates and production rates; projected metallurgical recovery rates; infrastructure requirements; capital, operating and sustaining cost estimates; the projected life of mine and other expected attributes of the project; the NPV; future metal prices; the project location; the timing of the environmental assessment process; changes to the project configuration that may be requested as a result of stakeholder or government input to the environmental assessment process; government regulations and permitting timelines; estimates of reclamation obligations; requirements for additional capital; environmental risks; and general business and economic conditions.

All forward-looking statements in this report are necessarily based on opinions and estimates made as of the date such statements are made and are subject to important risk factors and uncertainties, many of which cannot be controlled or predicted. In addition to, and subject to, such specific assumptions discussed in more detail elsewhere in this report, the forward-looking statements in this report are subject to the following assumptions:

- There being no signification disruptions affecting the development and operation of the project
- Exchange rate assumptions being approximately consistent with assumptions in the report
- The availability of certain consumables and services and the prices for power and other key supplies being approximately consistent with assumptions in the report
- Labour and materials costs being approximately consistent with assumptions in the report
- Assumptions made in mineral resource and reserve estimates, including, but not limited to, geological interpretation, grades, metal price assumptions, metallurgical and mining recovery rates, geotechnical and hydrogeological assumptions, capital and operating cost estimates, and general marketing, political, business and economic conditions

22.2 Basis of Model

The economic analysis was undertaken using a discounted cashflow model that was constructed in MS Excel®. The model used constant (real) 2022 USD and modelled the project cashflows in monthly periods that were totalled on an annual basis.

LoM summary metrics of key project parameters and economics are provided in Table 22-1 and associated annual cash flows are summarized in Table 22-2.

Table 22-1 LoM metrics

General[1]	Units	Value
Gold price assumption (base case)	$/oz	1,700
Average gold production	*oz/year*	217,000
Peak average gold production (2025 to 2030, inclusive)	*oz/year*	254,000
Total gold production	*Moz*	1.8
Mine life	*years*	8.5
Total ore mined	million tonnes	41.7
Average mill head grade	*g/t Au*	1.31
Average mill recovery rate	*%*	89%
Proven and Probable Mineral Reserves	*Moz Au*	2.1
Economics		
Net present value (NPV 5%) *(pre-tax)*	*$ M*	477.8
LoM cumulative cash flow *(pre-tax)*	*$ M*	673.7
Net present value (NPV 5%) *(after-tax)*	*$ M*	343.3
LoM cumulative cash flow (*after-tax)*	*$ M*	490.8
Operating Costs		
Mining cost[2]	*$/t mined*	3.66
Processing cost	*$/t milled*	10.80
G&A cost[3]	*$/t milled*	6.00
Total cash costs[4]	*$/oz sold*	905
AISC[4]	*$/oz sold*	1,143
Capital Costs		
Development capital (excluding deferred stripping)	$ *M*	58.4
Sustaining capital (excluding deferred stripping)	$ *M*	95.2
Closure costs	*$ M*	80.9

1 Unaudited as at December 31, 2022

2 Mining costs include deferred stripping of $428.4M (LoM) and ore transportation of $101.3M (LoM)

3 G&A costs include management fees payable to Galiano of approximately $7.0M per year

4 Non-IFRS performance measures; total cash costs are exclusive of capitalized stripping, corporate G&A, rehabilitation accretion, sustaining capital, and capitalized lease payments

Table 22-2 Annual cash flow summary

Description	Units	LoM	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032-2035
Ore mined	kt	**41,718**	20	5,138	7,185	6,495	8,349	7,855	6,678	-	-	-
Waste mined	kt	**300,908**	3,809	37,926	50,003	68,245	75,335	54,838	10,752	-	-	-
Strip ratio	#	**7.2**	194.0	7.4	7.0	10.5	9.0	7.0	1.6	-	-	-
Mined Grade	g/t	**1.43**	0.67	1.10	1.37	1.33	1.32	1.51	1.88	-	-	-
Ore processed	kt	**48,920**	5,787	5,792	5,794	5,794	5,794	5,794	5,794	5,794	2,579	-
Grade Milled	g/t	**1.31**	0.68	0.99	1.45	1.39	1.58	1.60	1.57	1.51	0.76	-
Processing recovery	%	**89.3%**	84.6%	90.5%	93.9%	93.9%	83.6%	88.2%	94.0%	86.6%	77.2%	-
Gold produced	kt	**1,846**	107	167	254	243	246	262	275	244	49	-
Revenue		**3,138,047**	**181,366**	**283,951**	**431,347**	**412,583**	**418,210**	**445,475**	**467,313**	**415,323**	**82,479**	**-**
Mining Costs		**723,172**	13,065	95,182	108,652	131,083	134,643	157,284	74,396	5,809	3,059	-
Ore Transportation		**101,327**	21,022	14,950	227	211	18,762	12,094	14	21,438	12,610	-
Processing Costs		**528,273**	60,683	59,663	62,809	63,544	63,282	63,668	64,285	62,735	27,606	-
Stockpile movement (non-cash)		**16,634**	14,602	(11,861)	(20,023)	(18,679)	(34,994)	(28,228)	(1,644)	77,898	39,562	-
G&A		**293,534**	38,070	38,367	38,070	38,189	38,784	37,832	28,761	23,642	11,821	-
Royalties		**161,960**	10,062	15,089	21,620	20,644	22,052	23,132	23,366	21,515	4,481	-
Refining costs		**8,251**	477	747	1,134	1,085	1,100	1,171	1,229	1,092	217	-
Reclamation Accretion (non-cash)		**12,007**	2,119	2,119	2,119	2,119	2,119	1,413	-	-	-	-
Sustaining Capital		**95,249**	38,488	3,500	19,680	22,207	4,447	2,625	2,115	1,750	438	-
Sustaining Stripping Costs [1]		**169,846**	10,322	46,392	38,339	27,389	29,361	18,042	-	-	-	-
All-in sustaining costs		**2,110,253**	**208,908**	**264,149**	**272,626**	**287,792**	**279,556**	**289,033**	**192,521**	**215,878**	**99,792**	**-**
All-in sustaining costs	**US$/oz**	**1,143**	**1,958**	**1,581**	**1,074**	**1,186**	**1,136**	**1,103**	**700**	**884**	**2,057**	**-**
Nkran pre-strip		**258,532**	-	-	40,754	92,696	96,035	29,048	-	-	-	-
Development capex		**58,361**	23,663	30,940	3,758	-	-	-	-	-	-	-
Rehabilitation cash outflow		**80,857**	-	-	-	-	-	11,792	20,214	20,214	19,449	9,187
Working Capital inflows		**(15,000)**	-	-	-	-	-	-	-	-	(15,000)	-
Other non-cash items in AISC		**(28,640)**	(16,721)	9,742	17,904	16,560	32,875	26,816	1,644	(77,898)	(39,562)	-
Cash Taxes		**182,923**	-	-	1,372	27,705	40,214	14,415	31,119	68,099	-	-
Cash flow after tax		**490,760**	**(34,483)**	**(20,880)**	**94,933**	**(12,169)**	**(30,470)**	**74,371**	**221,815**	**189,031**	**17,800**	**(9,187)**
NPV		**343,320**										
Operating cash flow after tax [2]		**1,072,748**	**37,989**	**59,953**	**197,463**	**130,122**	**99,373**	**124,087**	**223,930**	**190,781**	**18,237**	**(9,187)**

[1] Excludes the pre-strip at Nkran

[2] Cash flow after tax before capital expenditures and stripping costs

22.3 Inputs and Assumptions

22.3.1 Macro-economic Assumptions

The discounted cash flow analysis assumes a discount rate of 5%. This is a rate typical for projects with gold-dominated revenue. The gold price is assumed to be US$1,700/oz.

22.3.2 Production Schedule

Details of the derivation of the project's production schedule is provided in Section 16.

22.3.3 Processing Recovery Assumptions

Processing and metallurgy are discussed in detail in Section 13 and recovery methods are described in Section 17. The LoM average milling recovery is assumed to be 89%.

22.3.4 Capital Cost Assumptions

LoM capital costs total US$663M. The capital cost assumptions are described in Section 21 and summarized below in Table 22-3.

Table 22-3 LoM Capital Expenditure Summary

Description	Total ($000 USD)
Growth Capital	
Capitalized Waste Stripping (Nkran)	258,532
Site Establishment	58,361
Total Growth Capital	**316,893**
Sustaining Capital	
Capitalized Waste Stripping	169,846
Site Establishment	23,024
Tailings Storage Facility and Water Treatment	44,748
Plant and Infrastructure	27,477
Total Sustaining Capital	**265,095**
Closure and Reclamation	**80,857**
Total Capital Cost	**662,845**

22.3.5 Operating Cost Assumptions

LoM operating costs total US$1,817M. The operating cost assumptions are described in Section 21 and summarized below in Table 22-4.

Table 22-4 LoM Operating Cost Summary

Opex Category	LoM Total ($000 USD)	Cost per oz (US$/oz)
Mining, Ore Transport and Rehandling	824,499	447
Processing Cost	528,273	286
Site and Corporate G&A	293,534	159
Royalties	161,960	88
Transport and Refining	8,251	4
Total Operating Cost	**1,816,517**	**984**

22.3.6 Taxes and Royalties

Corporate income tax was assessed at 35.0% of taxable income and included consideration of net operating losses that were carried through from 2022. The opening balance was US$180.0M and a total of US$162.8M was used over the course of the project.

All concessions carry a 10% free carried interest in favour of the Ghanaian government and as a result, the Ghanaian government holds a 10% interest in AGGL. The mining leases are also subject to a 5% royalty payable to the Government of Ghana. In addition, the Adubea mining concession is subject to an additional 0.5% royalty to the original concession owner. The Esaase mining lease is also subject to an additional 0.5% royalty to the Bonte Liquidation Committee. The Akwasiso pit on the Abirem mining lease is also subject to an additional 2% royalty payable to the original concession owner.

22.3.7 Off-site Costs

All doré produced by the AGM is refined at Rand Refinery under an agreement valid through to August 2024. The contract specifies a standard refining charge and includes credit for other payable metals (e.g., silver) and penalties for deleterious elements (e.g., arsenic). Based on analysis of costs from 2022, $4.47/oz Au was included in the cost estimate to account for transport and refining costs and totals US$8.3M over the mine life.

22.4 Results

Using the above assumptions and the production information described in Section 16, the AGM has a pre-tax NPV(5%) of US$477.8M, with an IRR of 85% and a payback period of 2.4 years. From a post-tax perspective, the project has an NPV(5%) of US$343.3M, with an IRR of 69% and a payback period of 2.4 years.

22.5 Sensitivity Analysis

The sensitivity of project value, as measured by NPV(5%), to changes in various key input assumptions is presented in Table 22-5.

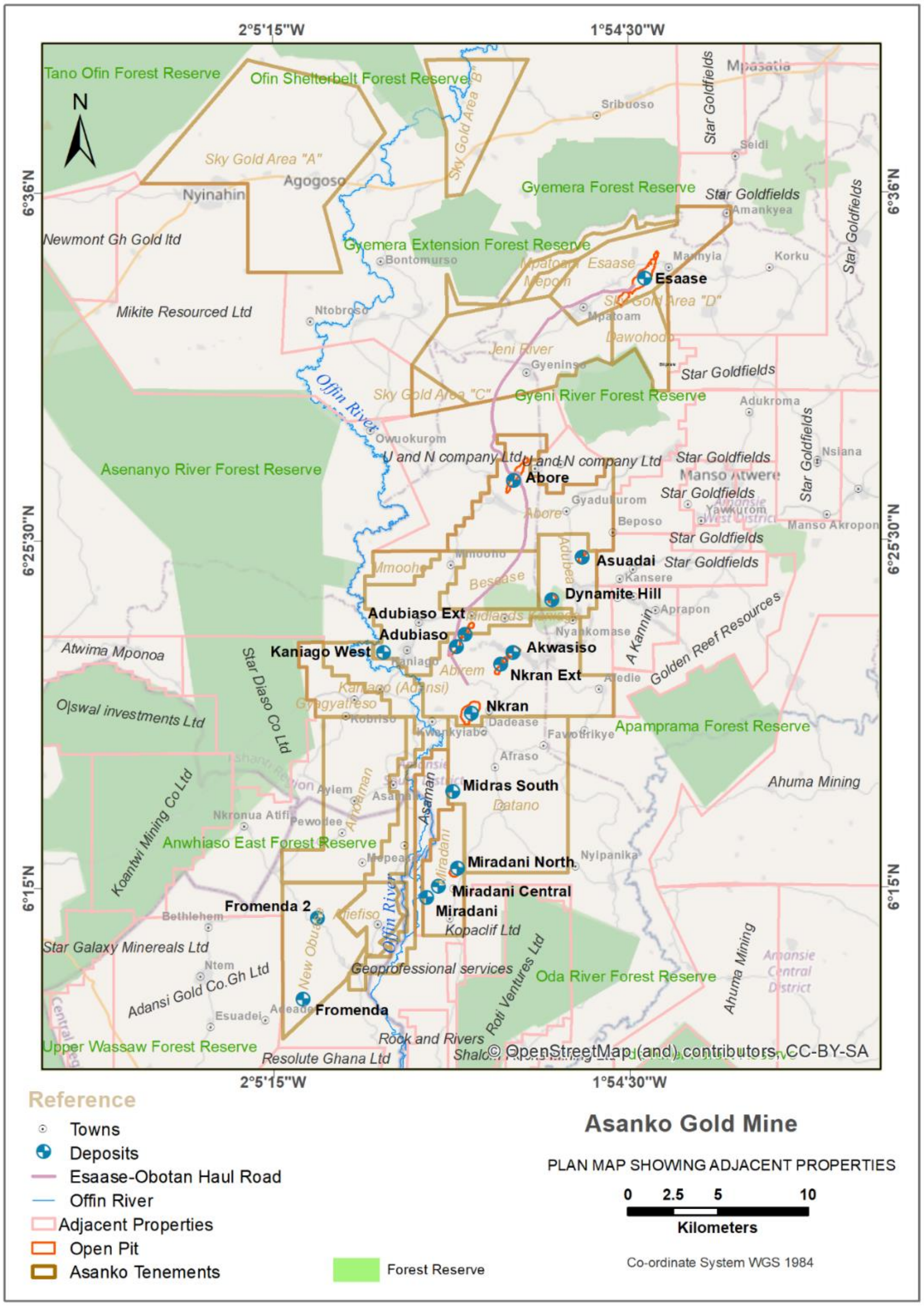
Table 22-5 Sensitivity Analysis

Change	Mining OPEX	Other OPEX	Capital Costs	Gold Price
-15%	450.5	414.3	358.5	99.7
-10%	414.7	390.6	353.4	183.4
-5%	379.0	367.0	348.4	261.9
0% (Base Case)	**343.3**	**343.3**	**343.3**	**343.3**
5%	307.5	319.6	338.3	424.8
10%	272.7	295.8	333.2	506.3
15%	239.0	272.8	328.1	587.8

Project value is most sensitive to changes in gold price. Project NPV changes by approximately US$16M for every 1% change in gold price. This sensitivity is very similar for other parameters that directly affect revenue, such as grade and recovery. Project value is least sensitive to changes in capital expenditures, with NPV changing by approximately US$1M for every 1% change in capital cost.

23 Adjacent Properties

Properties adjacent to the mine area and tenements are shown below in Figure 23-1. The AGM properties are shown in light brown lines and are named. The property listing is shown in Table 23-1. These properties are all located within the Kumasi basin and share similar underlying deformed siliciclastic metasediments as the primary rock type, with a range of syn- to late tectonic granite intrusives mainly to the east of the AGM tenements. None of these adjacent properties host mineral resources that are in alignment with a reporting code such as JORC, SAMREC or CIM.



(Source: AGM, 2022)

Figure 23-1 AGM tenements and adjacent properties

Table 23-1 Adjacent property listing

Tenement /PL Number	Tenement Owner
137	Tropical Minerals Co. Ltd
91	Moseaso Co. Ltd
155	Joam Enterprise Ltd
169	Rock and Rivers
234	Triple Key Co. Ltd
150	Hawanah Natural Resources
138	U & N Ltd
145	Westminister
257	Star Gold Ltd

Information on adjacent properties is based on publicly disclosed information. The QP has been unable to verify the information regarding adjacent properties. The information regarding adjacent properties is not necessarily indicative of the mineralization at the AGM.

24 Other Relevant Data and Information

All relevant data and information have been included in this report.

25 Interpretation and Conclusions

25.1 Risks and Opportunities Assessment

SRK conducted a semi-quantitative risks and opportunities assessment for the feasibility study. It is described below. Additional qualitative risk and opportunity identification is provided with some of the conclusions in Section 25.2.

25.1.1 Procedure

Risks and opportunities were quantified for both likelihood (probability of occurrence) and consequence (impact of occurrence) and then normalized out of 100. The consequences were assessed over five categories: safety impact, revenue impact, production rate, capital cost and operating cost. The likelihood of occurrence was based on professional opinion in the context of the current plans for the project.

The risks and opportunities assessed were considered at the AGM asset level. However, potential effects at the corporate level (Galiano), which may impact cost of capital or corporate reputation, were also reflected.

Consequences of events or outcomes are considered additive. That is, the total of all consequences of a single risk event should be considered together. The assessed likelihood and aggregated consequence ratings were used to produce an aggregated risk or opportunity ranking that was normalized out of 100, which were then categorized into five levels as summarized in Table 25-1.

Table 25-1 Summary of aggregate risk and opportunity rankings

Ranking	Category
0 to 4	Insignificant
5 to 10	Moderate
11 to 25	Major
26 to 50	Severe
51 to 100	Catastrophic

25.1.2 Summary of Risks

The highest probability-weighted risk of 22/100 (“Major”) is a mining risk associated with delivering grades that are 10% lower than the grades indicated in the production plan. The next highest risks are related to geotechnical engineering issues with inadequate slope design, inadequate slope depressurization or uncontrolled transient pore pressure increases. Interramp failures associated with these issues scored 19/100 (“Major”) and slope failures scored 15/100 (“Major”). While the consequences of a slope failure are more significant than an interramp failure, the probability of a slope failure occurring is much lower, leading to a lower overall score.

Key risks identified include:

- Delivering grades 10% lower than grades in production plan
- Inadequate slope design leading to interramp failure or slope failure
- Inadequate slope depressurization leading to interramp failure or slope failure
- Uncontrolled transient pore pressure increase leading to interramp failure or slope failure

25.1.3 Summary of Opportunities

The highest probability-weighted opportunity of 13/100 (“Major”) was associated with more favourable geologic interpretation at Esaase and a corresponding increase in revenue. The next highest opportunities scored 12/100 (“Major”) and are 10% higher ore recovery at Esaase, increased grade continuity at Esaase leading to a 50% increase in metal content and a 20% increase in gold price.

Key opportunities identified include:

- Gold price is higher than modelled
- Favourable geology interpretation at Esaase, resulting in increased ore and metal content
- Slope optimization
- Good surface water management and slope depressurization prevents uncontrolled transient pore pressure increase

25.2 Conclusions

25.2.1 Geology, Mineralization, Drilling, Quality Control and Mineral Resource

The geology and gold mineralization at the AGM are well-understood. Sufficient drilling has been conducted at the deposits to support the Mineral Resource as stated in Section 14. Visual inspection and verification of local geology and historical mining activities have also been considered in mineral resource modeling. SRK recommends that the number of QA/QC blanks and reference materials being sent to the analytical laboratories be increased in the future, but consider that the current QA/QC procedures that have been followed with respect to sample collection, custody and analysis provide sufficient reliability in the analytical results to support the Mineral Resource.

Mineral Resources and Mineral Reserves have been prepared in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves dated 19 May 2014 (CIM (2014) definitions) and CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines dated 29 November 2019. The effective date of the Mineral Resource Statement is 31 December 2022.

25.2.1.1 Geology and Mineral Resource Risks

Geology and mineral resource-related risks were identified but considered low ranking during SRK’s risk assessment process. These include:

- Inconsistent geological logging presents risk in geological modeling. In Esaase, this presents a potential risk in metallurgical recovery estimation.
- In Miradani North and Akwasiso, over-simplification of the lithological logging data results in a loss of geological information that may be important for domaining purposes and understanding the controls of gold mineralization
- In Adubiaso, northern extension continuity is more optimistic than the Main zone. There is a risk of overestimation of the gold mineralization; however, this risk is not considered material as the Main zone carries the majority of the metal content.
- In Nkran, the indicator interpretation of the mineralization was identified as a moderate risk to the Mineral Resource estimate

25.2.1.2 Geology and Mineral Resource Opportunities

Geology and mineral resource-related opportunities include:

- At Nkran, the Mineral Resource is open at depth, although economic extraction still needs to be demonstrated
- In general, gold mineralization at Abore, Miradani North and Esaase appears to be open at depth and/or along strike
- In Midras South, SRK noted several vein orientations that were mined by the artisanal miners. The deposit may contain high grade shoots at the intersection of veins and shears that differ from the interpreted gold trends in the current model.
- In Dynamite Hill, some granite intercepts parallel to the main granite intrusion were not modelled as part of the gold mineralization. These appear to form part of the same granite intrusion, are continuous over several drillholes and associated with the gold mineralization.

25.2.2 Mineral Reserves

With this comprehensive mining study and considering the conditions provided in this report, SRK is confident that the AGM is technically and economically viable. The QP does however provide observed opportunities and risks with respect to Mineral Reserves in the following sections.

25.2.2.1 Mineral Reserve Risks

For Miradani North, Abore and Adubiaso, the existing roads need to be relocated. Although this is low risk, it needs to be further investigated for any conflict with the overall mine design and scheduling.

Due to limitation in the mining width for Nkran, Dynamite Hill, Abore, part of Esaase pit and Adubiaso, pit expansion can only be executed in one or a maximum of two pushbacks. This will reduce the operations opportunity to mine to high-grade ore fast and limits its flexibility for mining equipment management.

Due to the shape of the orebody and grade distribution, particularly in the Esaase deposit, it is expected to have a high level of dilution in some areas. Therefore, there is a risk that the mine will not be able to deliver the grades as indicated in this study for some periods.

Miradani North pit is a major contributor to the project. The 10 km of haulage road for this pit is assumed to be constructed in about a year. This requires that all the legal access be obtained and that construction is completed on time.

25.2.2.2 Mineral Reserve Opportunities

There are substantial tonnages of Inferred resources in most of the deposits that can add value to the mine if additional exploration can convert them to Indicated/Measured resources.

25.2.3 Mining Methods

The QP provides some further opportunities and risks with respect to mining method in the following sections.

25.2.3.1 Mining Methods Risks

SRK included variable dilution in this study, however due to inherent uncertainty in the resource model and the complexity of the orebody, there is a risk that the grades reported in this study may be reduced due to an unpredicted amount of dilution.

The oxide surfaces used in these designs are based on data provided in the drillhole database. Slope design, recoveries and costs are all based on the rock types. The surfaces provided to SRK for rock types are based on limited information. There is a chance that during operation the oxide surfaces will change.

Pit wall instability has been observed in Nkran and Akwasiso in the past. Even using the approved slope designs that considered the issues above, there might be some slope failures that may affect ore production. This is mainly due to uncertainty in the oxide surfaces.

The WSF designs provided in this report are delivered by AGM after operational considerations and were checked by SRK team. It is possible that these waste dumps will need to be redesigned, affecting the haulage configuration and possibly the operating costs.

25.2.3.2 Mining Methods Opportunities

SRK checked the effect of Inferred resources on the mine design. There is a chance to increase the reserve and production rate by additional drilling. There is a chance to convert the Inferred resources to Indicated by additional drilling.

There are opportunities to increase the recovery in Esaase pit with further metallurgical testing.

There are opportunities to have additional ore in higher elevations of the Miradani North pit. This is related to uncertainty regarding the amount of historical mining activity in this deposit and the approach that was used, which eliminated some of the top benches.

A gold price of $1,500/oz was used for the optimization and reserve analysis in this study. An increased gold price will affect both the cut-off grade and the total reserve.

25.2.4 Metallurgy

Additional metallurgical testwork programs were conducted during 2022 in support of the Feasibility Study for Esaase, Nkran, Abore and Midras.

The focus of the metallurgical testwork conducted in support of this FS for Esaase was on Fresh ore material. While a sample of Oxide material was included in the testwork program, this was largely for confirmation purposes. The recovery model that has been used by AGM in recent times for Oxide material from Esaase has been based on the use of a fixed tailings grade of 0.10 g/t Au. SRK considers this approach to be valid going forward, noting that the tailings grade reported for the Oxide sample in the recent Esaase testwork was also 0.10 g/t Au. The recoveries developed for Esaase Fresh and Transition ore considered all of the relevant 2022 and historical metallurgical testwork data and for which data was available that identified the drillhole intervals that made up each particular composite or sample. Due to the preg-robbing behaviour exhibited at Esaase, the predicted recoveries from the testwork derived recovery-head grade equations have been discounted by 11.14%, as per a comparison of recoveries between predicted and actual when only Esaase low grade material was fed through the plant.

The available testwork data for Nkran, both historical and current, supports the ongoing use of a recovery figure of 94%.

Similarly, recovery figures of 94% have been quoted for the Obotan satellite deposits (Abore, Miradani North, Akwasiso, Dynamite Hill, Adubiaso, Midras South), mainly based on those periods over the past few years when these ores were fed to the AGM plant, albeit as a minor blend component, with Nkran ore representing the major blend component. However, the available historic testwork, together with some older sole plant feed data, support the ongoing use of this figure for these deposits.

25.2.5 Infrastructure

The mine infrastructure for the AGM is well-established. Continuation of mining requires pit-specific development, which is well-known, is readily costed based on past actual data and/or is subject to engineering studies (e.g., Miradani North access road). Consequently, infrastructure poses minimal risk for the AGM.

However, some noted risks are:

- The Miradani North road is a major earthworks project. Such projects can encounter unexpected conditions that can adversely impact construction. This risk exists for this major infrastructure item.
- The contractor site establishment costs are based on Q4 2021 tender submissions. AGGL will have to re-enter the tender process with updated mine plans. This could result in higher (or lower) site establishment costs.
- The Crop Compensation costs are based on government-set compensation rates. These are updated annually. There is a risk that these rates may increase above those envisioned in this study, thought it is not expected that such increases will be material.
- Risks associated with the TSF are considered relatively low as it is being constructed with a low risk downstream design.

25.2.6 Environment and Permitting

The AGM required two key regulatory permits:

- The Mine Operating Permits (MOP) issued by the Minerals Commission in respect of mining leases
- The Environmental Certificate issued by the EPA in respect of mining operations

Following the required engagements, regulatory site visits and submission of the relevant documentation, the AGM has successfully obtained and renewed its Mine Operating Permits since commencement of operation in 2016 and is currently operating under the 2021 MOPs issued on 12 January 2021 in respect of the following leases, all of which form part of the operational complex of the AGM. The latest Environmental Certificate for the AGM (gold mining and mineral processing) was issued on 30 July 2021 and is valid for three years, following which it will be due for renewal.

Extensive interactions were held with various stakeholder groups including the government, regulatory authorities and, particularly, members of communities that would be impacted by the development of Esaase as well as expansion projects at Obotan. Further to these, there were extensive stakeholder engagements to ensure that, apart from legal and regulatory consent to the project, affected communities were fully informed about the project, its potential technical and socio-economic impacts on them, interventions to mitigate these impacts, among others, so the communities could make the decision on whether or not to allow the Project to be implemented on their land.

AGM is currently implementing the preventative approach to environmental management with the primary objective of limiting negative environmental impacts from the operational activities, whilst maximizing positive benefits. This approach fulfils the aspirations of the corporate policy on the environment, environmental performance management systems and various impact-specific environmental action plans.

Waste rock from mining operations is placed in areas identified as suitable for the establishment of WSFs that are located in close proximity to the resource areas.

Tailings material from the plant is deposited on the expanded TSF. The current detoxification circuit comprises a cyanide destruction feed box, gravity feeding into a single agitated tank, with a blower air sparging facility. Hydrogen peroxide or SO_2/air process is used for cyanide destruction prior to tailings deposition in the TSF.

The management of potentially acid generating material is implemented to limit the effect on the receiving environment.

A surface water management regime consists of a clean water diversion system to control the uncontaminated run-off from the higher lying natural environment and a dirty storm water system to capture the contaminated storm water from plant, operational and processing areas. Water in the dirty water system is to be collected for reuse or routed through sediment control structures before being discharged into the environment. To this end, water is only discharged into the environment when it meets the EPA’s effluent guidelines for mining.

Given the expected geochemical characteristics of fresh rock from Esaase, a new water treatment plant was established at the Obotan process plant to treat process water. A similar plant has already been built at Esaase to treat water from the pits following which the solution is allowed to settle and the treated water decanted and, finally, released to the environment.

AGM maintains an extensive programme for the regular monitoring of surface and groundwater quality. As per International Cyanide Management Code (ICMC) requirements, weekly sampling is conducted at cyanide facility areas for free cyanide, WAD-cyanide and total cyanide levels. Pit water quality is also monitored monthly with additional monitoring conducted prior to any necessary discharges. Multiple locations within the TSF surrounds are monitored daily to enable detection of any potential discharges.

A Dust Management Plan has been developed and is being implemented, to provide a coordinated approach to dust impact mitigation. Noise monitoring is similarly undertaken across several affected communities and is compared to the day and night-time guidelines.

Appropriate drainage control measures to minimize soil erosion are in place at the AGM.

Although post-mining land uses are likely to be agriculturally oriented, a terrestrial fauna survey will be undertaken during the closure phase to assess habitat regeneration as well as compliance with AGM’s Reclamation and Closure Plans. AGM’s reclamation objective is to ensure that the site is left in a condition that is safe and stable where long-term environmental impacts are minimized and any future liability to the community and future land use restrictions are minimized. The final post-mining land use will be determined in consultation with the EPA, other Ghanaian government institutions, stakeholders and local communities. Natural soil covers and vegetation will as far as possible be re-established over the disturbed areas. Financial provision for reclamation and closure are made in accordance with the requirements of the Reclamation Security Agreement (RSA) that has been entered into between the mine and the EPA.

25.2.7 Market Studies and Contracts

The marketing of doré produced at the AGM is well established. However, the price of gold is everchanging and can have a significant impact on project economics. Thus, the price of gold is both an opportunity and a risk.

25.2.8 Cost Estimates and Economic Analysis

25.2.8.1 Infrastructure

The AGM is an established operating mine that has been in operation since early 2016. Most of the infrastructure to support the LoM is already in place and continues to be in operation as at the effective date of this report. There are no notable plant modifications envisaged in this study.

In 2018, the AGM commenced development of the Esaase orebody. All existing infrastructure between Obotan and Esaase, including a 28-km haul road, is established and is presently utilized for haulage of the stockpile material. The AGM also constructed infrastructure to support the mining of satellite deposits at Akwasiso and Dynamite Hill.

New infrastructure required to support the current LoM includes: a new 11-km haul road to Miradani North deposit; utilities for newly established sites (Abore, Adubiaso, Miradani North); crop compensation and partial resettlement of affected structures/land within 500 m buffer of pits; diversion of affected public roads; contractor site establishment (admin building, change house, workshop, laydown, mess); TSF Stages 7 and 8 (Note: Stage 7 is under construction at the time of this report).

25.2.8.2 Economic Analysis

Major categories of risk associated with project economics include the following:

Commodity Price Risk

There is a risk that commodity prices may not be consistent with assumptions made in this study and that revenue projections may not be realized.

Capital Cost Risk

There is a risk that the actual capital required to operate and support the project may be higher than that forecast in this study.

Operating Cost Risk

There is a risk that the operating costs incurred to operate the project may be higher than that forecast in this study. SRK notes that variability in the operating cost drivers is expected over time. The economic analysis assumed constant conditions but it is best thought of as reflecting an expectation of the average costs over the mine life.

26 Recommendations

26.1 Geology, Mineral Resources and Exploration

The following actions are recommended for AGM in the upcoming year:

- a small team of geologists conduct reconnaissance geological mapping and soil sampling on the Sky Gold tenements to form a view on their prospectivity and value (estimated to cost US$125,000)
- follow-up on the 2020 gradient array geophysics at Esaase by conducting high resolution (100 m line spacing) gradient array surveys along prospective structural corridors. Areas of focus should include but not be restricted to areas along strike from the Jeni River, along strike extensions to Esaase, Nkran, Kaniago, Miradani and Midras deposits and prospects. In addition, deeper penetrating pole-dipole IP orientation surveys over selected targets should also be conducted (estimated to cost US$0.7M).
- collect multi-element and whole rock geochemistry across a strategically selected suite of historic samples of the various units at Esaase to help reconcile true lithological contacts within the orebody. In addition to this, analyze historic Esaase drill pulps for C and S content to provide a C model that can potentially be used to further identify ore that may exhibit lower recoveries (estimated to cost US$0.5M).
- gold mineralization has a recognizable sericite-carbonate signature, however, the current dataset cannot be used to construct a reliable alteration model due to historical inconsistent logging. Dedicate a geologist to the collection of spectral data using AGM's inactive spectrometer. This data could be submitted to a consultancy for interpretation and use in better understanding hydrothermal alteration of the AGM deposits (estimated to cost US$0.5M)
- additional drilling at Nkran Deeps is recommended to explore for significant down dip and down plunge mineralization at Nkran (a Phase 2 Nkran Deeps drilling program is estimated to cost US$3.3M if drilled from surface)
- a well-defined steeply northeast plunging shoot is evident at Miradani Deeps and further drilling should be considered to explore for extensions and repetitions to this high grade (a Phase 1 Miradani Deeps directional drilling program is estimated to cost between US$2.0M to US$2.5M)
- an initial drill program is recommended to follow-up the strong soil geochemistry and visible gold samples identified at surface during reconnaissance mapping at Gyagyatreso (a combination of RC and diamond drilling program is estimated to cost US$1.0M)
- given Kaniago West's close proximity to the AGM processing plant, it is recommended that follow-up drilling be conducted to determine the potential size and economic viability of this deposit (a drill program is estimated to cost US$1.0M)
- follow-up exploration is recommended for the Gyagatreso-Kaniago-Abore trend, the Greater Midras-Nkran-Takorase trend, the Datano-Fawotrikye trend and the Abore-Jeni River-Esaase trend (a budget of approximately US$3.7M for 2023 is recommended for generative exploration activities across the AGM tenements)

26.2 Sample Preparation and Data Verification

Overall, the insertion rates of analytical quality control samples are considered low in comparison to industry best practices. Considering the variable performance of control samples, it is recommended to insert blanks and certified reference materials at a rate of 1 in 25 each for all future drilling programs, standardized across all deposits. The SOP for analytical quality control data should be prescriptive, accurately followed, and include clear and concise wording as to what constitutes a control sample failure as well as the corrective action that should be taken. Continued diligence in monitoring and instituting corrective action is strongly recommended.

Field duplicate data indicates that variability between core samples and RC splits is high. AGM should consider instituting a comprehensive check program involving the regular insertion of field duplicates (at a rate of 1 in 25), as well as the regular resubmittal of coarse reject and pulp duplicates to the primary lab (at least 2% of samples, each) to give a better indication of the source of this variability (inherent variability of the mineralization style or is also introduced during sample preparation and analysis). Additionally, AGM could consider changing to a 50-gram aliquot for analysis to determine whether increasing the sample size would significantly improve the representivity of samples.

Considering the biases observed in umpire pulp duplicate results, it is strongly recommended to institute a more regular analysis of 5% of samples for all drilling programs. An investigation should take place to determine the source of the bias to mitigate any future uncertainty in laboratory performance or sample homogenization. AGM could consider performing a check assay program using two umpire laboratories to test the reproducibility of results at multiple laboratories or ask the primary or secondary laboratories to perform an investigation of sample homogenization.

26.3 Mining

Pit designs and production rates at Abore, Miradani North and Adubiaso were based on Volvo ADT equivalent size trucks. These deposits can be mined with larger equipment, which is believed to yield lower mining costs and quicker access to ore. Utilization of larger equipment will be evaluated during the tendering process for each deposit.

The reserves QP recommends developing a comprehensive grade control study to establish a guideline for practical ore selection procedures for the operation.

SRK recommends the following prior to initiating mining of the pits at AGM:

- Conduct a grade control study to optimize the procedures used in the operation to enhance the ore selection and to reduce dilution
- Re-optimize the Abore pit to explore the effect of additional resources that may be available for inclusion into the reserve
- Conduct a pit optimization and design that considers mining Miradani North with the larger 91-t trucks (due to its material movement potential)
- Re-design the south pit wall at Miradani North. SRK received updated rock type guidance after pit optimizations were completed, which spatially affected the location of oxide and transition material, effectively steepening the walls where oxide was only found at lower depths. As much of this effect was in the southern area of the pit already constrained by the village buffer, a steeper wall at surface could allow additional higher-grade material found at the pit bottom to be mined.
- Further optimize WSF design and construction approaches to reduce haulage requirements

26.4 Future Work

A tabulation of the proposed AGM exploration activities is provided in Table 26-1. The QP supports the exploration budget of $US11M proposed by AGM.

Table 26-1 Exploration summary for 2023

Exploration Task			Budget (US$)
Geological Studies			
1	Geological Mapping (Gold Sky Tenements)		125,000
2	Geophysical Surveys (high resolution gradient array)		700,000
3	Geochemistry (multi-element analysis on Esaase core)		500,000
4	Spectral Analysis for alteration modeling		500,000
		Sub-total	**1,825,000**
Drilling			
1	Phase 2: Surface Drilling at Nkran Deeps		3,300,000
2	Phase 1: Miradani Deeps		2,000,000
3	Other Targets: Gyagyatreso		1,000,000
4	Other Targets: Kaniago West		1,000,000
		Sub-total	**7,300,000**
Regional Target Generation			
1	Activities across the AGM tenements		3,700,00
		Sub-total	**3,700,00**
		Total	**11,000,000**

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