TECHNICAL REPORT ON THE ESSAKANE GOLD MINE, SAHEL REGION, BURKINA FASO

Prepared For:

IAMGOLD Corporation

Prepared By:

Mr. Francois J. Sawadogo, MAIG.
Mr. Haithem Chattaoui, P.Eng.
Mr. Rémi Lapointe, ing.
Mr. Michel Dromacque, C.Eng.
Mr. Denis Doucet, ing.
Mr. Franck Napon, ing.

Report Effective Date:

30 September, 2023

CERTIFICATE OF QUALIFIED PERSON

I, Francois J. Sawadogo, MAIG, am employed as the Deputy Superintendent Geology with IAMGOLD Essakane SA of 146, rue 13.49, quartier Zogona, 09 BP 11, Ouagadougou 09, Burkina Faso.

This certificate applies to the technical report titled "Technical Report on the Essakane Gold Mine, Sahel Region, Burkina Faso" that has an effective date of 30 September, 2023 (the "technical report").

I graduated from the University of Ouagadougou, Burkina Faso in 1994 with a Bachelor of Science degree in general geology, and in 1995 with a Master's degree in Geological Sciences, Fundamental and Applied Geology (M.Sc.).

I have worked as a geologist for a total of 28 years since graduation. My relevant experience for the purpose of the Technical Report is:

- I have practiced my profession continuously since 1995 and have been involved in many gold mines and gold projects, in West, Central and North Africa;
- I have been working for IAMGOLD Essakane Gold Mine since September 2014 as Chief Geologist and Deputy Superintendent Geology overseeing both production and near-mine geology.

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.

I have been working at the Essakane mine site since 2014, and this familiarity with operations serves as my personal inspection.

I am responsible for Sections 1.1, 1.5, 1.6, 1.7, 1.8, 1.23; Sections 2.1, 2.2, 2.3, 2.4, 2.6, 2.7; Section 3; Section 6; Section 7; Section 8; Section 9; Section 10; Section 11; Sections 12.1, 12.2, 12.3.1; Section 23; Sections 25.1, 25.5, 25.6, 25.7, 25.8; Section 26; Section 27 of the technical report.

I am not independent of IAMGOLD as independence is described by Section 1.5 of NI 43–101.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

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

Dated: 18 December 2023

"Signed"

Francois J. Sawadogo

CERTIFICATE OF QUALIFIED PERSON

I, Haithem Chattaoui P.Eng., am employed as a Manager Resource estimation with IAMGOLD Corporation (IAMGOLD), with an office address at 2000, rue de l'Éclipse, 5e étage Brossard, Québec, J4Z 0P3.

This certificate applies to the technical report titled "Technical Report on the Essakane Gold Mine, Sahel Region, and Burkina Faso" that has an effective date of 30 September, 2023 (the "technical report").

I am a Professional Engineer of 'Ordre des ingénieurs du Québec'*;* 5018882. I graduated from École polytechnique de Montréal in 2011 with a degree in Geology Engineering

I have practiced my profession for 12 years My relevant experience for the purpose of the technical report is:

- My position as Manager resource estimation with IAMGOLD since July 2022;
- My position as specialist resource estimation with IAMGOLD;
- My position as corporate resource geology engineer with SEMAFO;
- My position as senior mining geology engineer with Canadian Royalties.

I have experience with various mineral deposit types and Mineral Resource estimation techniques. I have been directly involved with the modeling of geology and mineralized zones, and mineral resource estimation for the Côté Gold, Nelligan, Westwood, and BraceMac McLeod deposits in Canada, Rosebel deposit in South America, and the Essakane, Mana and Boungou deposits in West Africa. I have had direct involvement in data validation, geological interpretation, resource and grade control estimation, production geology and open pit and underground reconciliation. I have experience in gold, nickel, zinc and iron ore estimations in climate settings from tropical to polar.

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.

I most recently visited the Essakane operations from November 6–17, 2023, a duration of 12 days.

I am responsible for Sections 1.1, 1.8, 1.10.1, 1.10.3, 1.11 (excepting stockpiles), 1.21.2; Sections 2.1, 2.2, 2.3, 2.4, 2.5, 2.6; Section 3; Sections 12.1, 12.2, 12.3.2;

Sections 14.1, 14.3, 14.4.1, 14.4.3, 14.5, 14.6; Sections 25.1, 25.10, 25.20.2; Section 26; Section 27; of the technical report.

I am not independent of IAMGOLD as independence is described by Section 1.5 of NI-43–101.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

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

Dated: 18 December 2023

“Signed and sealed”

Haithem Chattaoui P.Eng.

CERTIFICATE OF QUALIFIED PERSON

I, Rémi Lapointe, ing., am employed as the Director of Metallurgy with IAMGOLD Corporation of 2000, rue de l'Éclipse, Bureau 500, Brossard, Québec, J4Z 0S2..

This certificate applies to the technical report titled "Technical Report on the Essakane Gold Mine, Sahel Region, Burkina Faso" that has an effective date of 30 September, 2023 (the "technical report").

I am a graduate of Université Laval, Québec, Canada in 1993 with a B.Sc.Eng. Degree in Metallurgical and Material Science Engineering.

I am registered as a Professional Engineer in the Province of Quebec (O.I.Q. licence number 111127). I have worked as an engineer for a total of 30 years since my graduation. My relevant experience for the purpose of the Technical Report is:

- IAMGOLD Corporation, as Director Metallurgy overseeing projects such as Côté Gold project, Boto Gold project, Saramacca Gold project, and Nelligan Heap Leach project and also providing site metallurgical governance for the Essakane, Rosebel, and Westwood mines;
- Ausenco Engineering Company Director M&M and Project Manager: Goldcorp Century Gold project, Lundin Gold Fruta Del Norte project, Algold Resources Tijirit project, Kinross Tasiast expansion project;
- SNC-Lavalin Inc. as Discipline Manager - Process and Metallurgy; SLIM Guelb II project, Taconite project, Iamgold Sadiola project, Adrianna Resource Lake Otelnuk Project, La Mancha Mont Ity Project;
- DEVONYX Canada Inc. as Manager of Training for Ambatovy Project in Madagascar;
- Nexans Inc. as Director of Operation for a continuous casting plant in Montreal-East;
- Noranda Inc. at Horne smelter as Chief Metallurgist,

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.

My most recent site visit was from September 10 to 14, 2023.

I am responsible for Sections 1.1, 1.8, 1.9, 1.15, 1.23; Sections 2.1, 2.2, 2.3, 2.4, 2.6; Section 3; Section 12.3.3; Section 13; Section 17; Section 21.3.2; Sections 25.1, 25.8, 25.9, 25.13; Section 26; Section 27; of the technical report.

I am not independent of IAMGOLD as independence is described by Section 1.5 of NI 43–101.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

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

Dated: 18 December 2023

“Signed and sealed”

Rémi Lapointe, ing.

IAMGOLD CORPORATION

CERTIFICATE OF QUALIFIED PERSON

I, Michel Dromacque, C.Eng., MIMMM QMR am employed as the Chief Engineer Long term planning and strategy with IAMGOLD ESSAKANE SA, a subsidiary of IAMGOLD Corporation (IAMGOLD), with an office address at 146, rue 13, quartier Zogona 09 BP 11, Ouagadougou, Burkina Faso.

This certificate applies to the technical report titled "Technical Report on the Essakane Gold Mine, Sahel Region, Burkina Faso" that has an effective date of 30 September, 2023 (the "technical report").

I am a graduate of the Royal School of Mines, Imperial College, England in 2000 with a master's degree in mining engineering with rock mechanics. I graduated from the ESSEC Business School, France in 2004 with a Master's degree in Management.

I am registered as a Chartered Engineer ("C.Eng."), with, and am a professional member of, the Institute of Materials, Minerals and Mining (the "Institute"), England (membership No. 0459884). I hold the designation Qualified for Minerals Reporting ("QMR") as conferred by the Institute.

I have worked as a mining engineer for a total of 17 years since my graduation. My relevant experience for the purpose of the Technical Report is:

- My position as Chief Engineer long term planning with Essakane Gold Mine since June 2023;
- My position as Chief Engineer long term planning with Rosebel Gold Mine;
- My position as Group Mining Engineer with La Mancha Resources;
- My position as Senior Long Term Engineer with Reminex Engineering, Managem Group;
- My position as Senior Mine Project Engineer with Ambatovy Mine, Madagascar.

Over the past 15 years, I have been involved in various mine operation and projects at various development stages from green field to operating mines including construction phase. I have led technical due diligence for mining merger and acquisition and been the mining lead for scoping, pre-feasibility, and feasibility studies on several occasions. I have mine engineering and operating experience of several commodities including uranium, nickel and gold in various climate conditions ranging from tropical to desert. I have performed cost modeling, pit optimisation, mine design, life of mine planning and economic analysis on multiple occasions for various operations and projects. I have

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prepared Mineral Reserve estimates and supported the preparation of mineral resources estimates for gold deposit. I led lead construction activities on several projects with earth works, civil, and mechanical assemblies required.

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.

I work at the Essakane Operations site, and have done since June 2023, and this familiarity with the operations serves as my personal inspection.

I am responsible for Sections 1.1, 1.2, 1.8, 1.10.2, 1.11 (stockpiles), 1.12, 1.13, 1.14, 1.16, 1.19, 1.20, 1.22, 1.23; Sections 2.1, 2.2., 2.3, 2.4, 2.5, 2.6; Section 3; Section 12.3.4; Sections 14.2, 14.4.2; Section 15; Section 16; Section 18; Section 21; Section 22; Section 24; Sections 25.1, 25.8, 25.11, 25.12, 25.14, 25.17, 25.18, 25.19, 25.21; Section 26; Section 27; of the technical report.

I am not independent of IAMGOLD as independence is described by Section 1.5 of NI 43–101.

I have been involved with the Essakane operations since 2023.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

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

Dated: 18 December 2023

“Signed”

Michel Dromaque, C.Eng.

IAMGOLD CORPORATION

CERTIFICATE OF QUALIFIED PERSON

I, Denis Doucet, ing., am employed as the Operations Manager with IAMGOLD Essakane SA, a subsidiary of IAMGOLD Corporation (IAMGOLD), with an office address at 146, rue 13, quartier Zogona 09 BP 11 Ouagadougou, Burkina Faso.

This certificate applies to the technical report titled "Technical Report on the Essakane Gold Mine, Sahel Region, Burkina Faso" that has an effective date of 30 September, 2023 (the "technical report").

I graduated from Université Laval, Québec, Canada in 1989 with a B.Sc.Eng. degree in mechanical engineering. I graduated from Université du Québec, Trois-Rivières, Québec, Canada in 2002 with a Master's degree in project management.

I am registered as a Professional Engineer in the Province of Quebec (O.I.Q. licence number 101018).

I have worked as an engineer for a total of 34 years since my graduation. I have practised my profession continuously since 1989 and have been involved in many gold, copper, zinc and iron mines, in Canada and Burkina Faso.

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.

I have been working at the Essakane mine site since 2020, and this familiarity with operations serves as my personal inspection.

I am responsible for Sections 1.1, 1.3, 1.4, 1.5, 1.8, 1.17.6, 1.18, 1.21, 1.23; Sections 2.1, 2.2, 2.3, 2.4, 2.5, 2.6; Section 3; Section 4; Section 5; Section 6; Section 12.3.5; Section 19; Section 20.8.3; Sections 25.1, 25.2, 25.3, 25.4, 25.6, 25.8, 25.15, 25.20; Section 26; Section 27 of the technical report.

I am not independent of IAMGOLD as independence is described by Section 1.5 of NI 43–101.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

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

Dated: 18 December 2023

"Signed and sealed"

Denis Douchet, ing.

CERTIFICATE OF QUALIFIED PERSON

I, Franck Napon, ing., am employed as the Health, Safety and Sustainability Manager with IAMGOLD ESSAKANE SA, a subsidiary of IAMGOLD Corporation (IAMGOLD), with an office address at 146, rue 13, quartier Zogona 09 BP 11 Ouagadougou, Burkina Faso.

This certificate applies to the technical report titled "Technical Report on the Essakane Gold Mine, Sahel Region, Burkina Faso" that has an effective date of 30 September, 2023 (the "technical report").

I am a graduate of École Polytechnique de Montréal (Canada), where I completed a bachelor's degree in mechanical engineering and a master's degree in industrial engineering. I also hold an MBA in Corporate Social Responsibility from Laval University (Canada).

Since 2008, I've been a member of the Quebec Order of Engineers as a Professional Engineer (No. 137863). I am also a certified safety professional with the Board of Canadian registered Safety professional.

I have 18 years' experience in occupational health and safety, environment and sustainable development in public services and private companies. I have been working with IAMGOLD Essakane SA since September 2018. My relevant experience for the purpose of the Technical Report is:

- My position as Health, Safety and Sustainability Director since March 2023;
- My position as Health, Safety, Environment and Reclamation Manager since December 2021;
- My position as Environmental Health and Safety Expert and Superintendent since September 2018.

My duties have supported, but not been limited to, 1) environmental permitting, reporting and compliance, including Indigenous consultation; 2) planning and execution of progressive reclamation and mine closure activities and 3) Heath, Safety and Environment System management (ISO 14001 and ISO 45001:2018, I ensure the development and implementation of the environmental, health and Safety, and community relations program, health, safety and environment, security, business improvement and project management. I have developed, conducted and/or directed environmental and social studies including baseline investigations; closure planning and costing; and environmental and social impact assessment at Iamgold Essakane SA.

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.

I have been working at the Essakane mine site since 2005, and this familiarity with operations serves as my personal inspection.

I am responsible for Sections 1.1, 1.8, 1.17, 1.23; Sections 2.1, 2.2, 2.3, 2.4, 2.6; Section 3; Section 12.3.6; Section 20; Sections 25.1, 25.8, 25.16; Section 26; Section 27 of the technical report.

I am not independent of IAMGOLD as independence is described by Section 1.5 of NI 43–101.

I have read NI 43–101 and the sections of the technical report for which I am responsible have been prepared in compliance with that Instrument.

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

Dated: 18 December 2023

“Signed and sealed”

Franck Napon, ing.

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1.1 Introduction

Mr. Francois J. Sawadogo, MAIG, Mr. Haithem Chattaoui, P.Eng., Mr. Rémi Lapointe, ing, Mr. Michel Dromacque, C.Eng., Mr. Denis Doucet, ing, and Mr. Franck Napon ing., have prepared this technical report (the Report) on the Essakane Gold Mine (the Essakane Mine or the Project) in Burkina Faso for IAMGOLD Corporation (IAMGOLD).

IAMGOLD, through its wholly-owned subsidiary Essakane S.A., owns 90% of the Project, with the government of Burkina Faso (the Government) holding the remaining 10%.

The Essakane Mine has been in operation since May 2009, and attained commercial production in July 2010.

Mineral Resource estimates are reported for the Essakane (EMZ, Lao, and Gourouol zones) and Gossey deposits and in stockpiles. The Falagountou and Wafaka deposits are mined out, and the area is under reclamation and closure.

Mineral Reserves are reported for the EMZ and Gourouol zones within the Essakane deposit, and stockpiled material.

The Report was prepared to support disclosure of an updated Mineral Resource and Mineral Reserve estimate and mine plan as announced on December 18, 2023 in IAMGOLD's news release titled "IAMGOLD files updated NI 43-101 technical report for Essakane Gold Mine.

Units used in the report are metric units unless otherwise noted. Monetary units are in United States dollars (US$) unless otherwise stated. The Report uses Canadian English.

Mineral Resources and Mineral Reserves are reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014; the 2014 CIM Definition Standards) and were prepared with reference to the CIM Estimation of Mineral Resources & Mineral Reserves Best Practice Guidelines (November, 2019; the 2019 CIM Estimation Guidelines).

1.2 Key Outcomes

- Mine life: from 2023 to 2028. Mining will occur from three remaining pit phases in the EMZ pit, and the Lao and Gourouol satellite pits;
- LOM plan: Overall production of 2.4 Moz, and an annual average gold production of approximately 400,300 oz from 2023–2028;
- Capital cost estimate: US$502.7 million;
- Operating cost estimate: Average estimated operating costs over the LOM (2023–2028) of US$35.40/t milled including capitalized waste stripping, or US$32.49/t milled net of capitalized waste stripping (excluding capitalized waste stripping and stockpile movements, with capitalized waste stripping being transferred to sustaining capital) for a total of US$2,607 million.

1.3 Project Setting

Essakane is located in Burkina Faso at the boundary of the Oudalan and Seno provinces in the Sahel region and is approximately 330 km northeast of the capital, Ouagadougou. It is situated approximately 63 km northwest of the nearest large town, Dori, and near the village of Falagountou to the east.

Access from the Ouagadougou is via a 263 km paved road to Dori, followed by approximately 63 km via a laterite road to Essakane. Within the exploration permits, access is via local tracks and paths. An airstrip has been built on packed laterite within the fenced perimeter of the Mine site area and daily flights are made between Essakane and Ouagadougou using an aircraft owned and operated by Essakane S.A., as well as chartered flights.

The climate is typically Sahelian, i.e., hot, sunny, dry, and somewhat windy all year round. A wet season occurs between late May and September. Temperatures range from 10–50°C, with annual pan evaporation rates of 3,000 mm/a. The mean annual rainfall is 397.5 mm with an estimated 100 year maximum of 171 mm in a 24-hour period. Mining operations are conducted year-round. Weather conditions have had minimal impacts on the mining operations thus far, however, proper planning is required to ensure an adequate water supply during the dry season.

The Mine area is characterized by relatively flat terrain sloping gently towards the Gourouol River to the north of the EMZ deposit and towards the Feildegasse River to the south of the Mine area. The average elevation over the Essakane Mine area is 250 m above sea level. Vegetation consists mostly of light scrub and seasonal grasses. Deforestation has been significant, particularly in the area surrounding the original village of Essakane. There are no major commercial activities in the Mine area and economic activity is confined to subsistence farming and artisanal mining.

1.4 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

IAMGOLD owns a 90% interest in Essakane S.A., while the government has a 10% free-carried interest.

The Burkina Faso Mining Code includes a 1% levy on the annual turnover of mining companies in Burkina Faso to serve local community development, a corporate tax rate of 17.5%, and 10% free-carried shares to the State of Burkina Faso. In addition, the government receives a royalty on the revenues from mineral production based on a sliding-scale gold price. The royalty rates were set by a governmental decree signed on October 27, 2023. The rates vary between 3% and 7% depending on the London Metal exchange gold price. The government also collects various taxes and duties on the imports of fuels, supplies, equipment, and outside services, as specified by the Burkina Faso Mining Law.

The Project consists of one mining permit (the Essakane Mining Permit), which contains the Essakane Main Zone (EMZ), including the Gourouol and Lao sub-areas, and the mined-out Falagountou and Wafaka deposits. The mining permit is surrounded by three exploration permits (Koritigui, Laogountoure 2, and Alkoma 2) held in the name of Essakane Exploration SARL. The satellite Gossey deposit is located approximately 12 km northwest of the EMZ, inside the Koritigui and the Lao Gountouré 2 permits.

The mining permit was granted in April 2008, has an area of 100.2 km^2, is valid for an initial period of 20 years, and is renewable every five years until the Mineral Reserves have been depleted. The exploitation permit was in good standing at the Report effective date.

The Koritigui permit was granted on April 23, 2020 and renewed on June 6, 2023 for additional three-year term.

The Lao Gountouré 2 and Alkoma 2 permits reached the end of the last period of renewability in November 2018. Following an exception request, the permits were then granted for a special period of three years. IAMGOLD applied for these same tenure areas under a new permit on November 26, 2021. The grant process is delayed, but the application is still under consideration by the authorities. As the prior permit holder, IAMGOLD believes there is a reasonable basis for the tenure applications to be granted.

Surface rights in the mining permit area belong to the State of Burkina Faso. Use of the surface rights is granted by the mining permit under the condition that the current users are properly compensated and that statutory payments are made to the government. At the Report effective date, all payments were current, and the mining permit was in good standing.

Water is sourced, depending on end use, from a combination of groundwater wells, recycling of process water, the Gourouol River, and from water storage basins.

1.5 History and Exploration

Prior to IAMGOLD's Project interest, companies that had conducted exploration in the Project area included Bureau des Mines et de la Géologie du Burkina ("BUMIGEB"), Compagnie d'Exploitation des Mines d'Or du Burkina ("CEMOB"), BHP Minerals International Exploration Inc. ("BHP"), Coronation International Mining Corporation ("CIMC"), Ranger Minerals, Orezone Resources, Gold Fields Orogen Holding Ltd ("Orogen"), Gold Fields Essakane Limited ("GF BVI" or "Gold Fields"), Essakane Limited ("Essakane BVI"), and Essakane SA. Work conducted included geological and structural mapping, geochemical sampling, trenching, rotary air blast (RAB), reverse circulation (RC) and core drilling, metallurgical testwork, resource estimation, feasibility studies, mining, and heap leaching.

IAMGOLD obtained its Project interest in 2009, and has completed geological mapping, geophysical surveys, aircore, RAB, RC and core drilling, mining studies, Mineral Resource and Mineral Reserve estimates, and open pit mining.

1.6 Geology and Mineralization

The deposit types within the Project area are considered to be examples of greenstone-hosted orogenic gold deposits.

The geological setting of northeast Burkina Faso consists predominantly of Precambrian rocks of the Oudalan-Gourouol greenstone belt that forms part of the Paleoproterozoic Baoulé-Mossi domain of the West African Craton and hosts numerous gold deposits and prospects including Essakane and Gossey. The Markoye Shear Zone, located through the western portion of the greenstone belt, trends north–northeast, and separates Paleoproterozoic rocks on the east from older granite–gneiss terranes to the west.

In the Project areas, the sedimentary rocks have been subdivided based on lithology into deep water turbidites (the Birimian) and coarse clastic basin margin sequences (the Tarkwaian). The Birimian rocks consist of wackes, arenites and mudrocks (argillites), pebbly arenites, and minor tuffs, which have been metamorphosed to lower greenschist facies. Arenite is the dominant lithology. Intermediate intrusive rocks occurring as sills are common and appear to pre-date all gold mineralization in the district. Occasionally, the contact between the intermediate intrusive sills and the sedimentary rocks is slightly mineralized. The sill itself is typically not mineralized. The Tarkwaian rocks are typically sandstones with thin intercalated bands of matrix-supported, polymictic conglomerates.

The Mine area preserves evidence for at least two regional deformational events. D1 structural elements such as the Essakane-host anticline are refolded by a series of north–northeast-trending F2 folds. Later localized deformation occurs near the margin of a calc-alkaline batholith in the south of the Mine area. The Markoye Fault trends north–northeast through the western portion of the Mine area and separates the Paleoproterozoic rocks from an older granite-gneiss terrane to the west.

The major alteration assemblage observed locally is sericite > carbonate > silica ± albite ±chlorite ± arsenopyrite ± pyrite. Disseminated tourmaline and rutile are found in accessory amounts. The main alteration minerals tend to occur in clearly defined veins and stringers. Traces of chalcopyrite, pyrrhotite, galena, and hematite, magnetite, fuchsite occur. Remobilized graphite can occur.

Weathering of arenite and argillite by meteoric processes has produced a consistent, although very uneven weathering profile.

The deposits are characterized by multiple quartz and quartz–carbonate vein sets and stringers. Vein arrays occur in the east limb, fold hinge (or fold axis), and west limb lithostructural domains.

Arsenopyrite and pyrite tend to be late, and concentrated near the margins of the veins or in cross-cutting stringers.

Faults reactivated during the D1 and D2 regional deformation events provide the structural control on the mineralization.

Gold mineralization is associated thrust faults or shear zones with brecciated, banded, sheared quartz veins and boudins within highly silicified zones.

Mineralized bodies form as subvertical, or slightly inclined to the east, and consist of lenses, quartz stockwork and/or quartz–carbonate veins. The preferred emplacement is on the fold hinge or the limbs (EMZ, Tassiri, Gourara) or along shear corridors (Gossey, Korizena, Sokadie).

1.7 Drilling and Sampling

A total of 29,601 drill holes (855,045 m) has been completed in the period 1995–2023 in the Essakane and Gossey–Korizena areas. Drilling completed in the mined-out Falagountou and Wafaka deposits is not included in the Project total, comprising 1,326 core (338,915 m), 2,514 RC (312,858 m), 44 RC holes with core tail holes (12,507 m), and 25,717 aircore (190,765 m) drill holes. Drill holes were completed for exploration, infill, Mineral Resource and Mineral Reserve estimation, geotechnical, hydrological, condemnation and metallurgical purposes.

The database close-out date for resource estimation at Essakane is March 1, 2023, and includes 987 core hole, and 1,880 RC holes with core tails (511,569 m). The database close-out date for resource estimation at Gossey is May 10, 2018 and includes 60 core and 672 RC holes with core tails (94,802 m).

Since 2010, RC drilling has been carried out using 140 mm (5½ in.) diameter holes with 5 m sample intervals to a depth of 150 m or until the water table is intersected. Core holes were drilled at Essakane using PQ (85 mm core diameter) HQ (63.5 mm) and NQ (47.6 mm) sizes. Core drilling at Gossey consisted of HQ and NQ sizes.

During IAMGOLD programs, aircore and RAB holes were logged for lithology, weathering, and regolith type. RC drill hole chips and drill core were photographed, and logged for lithology, alteration, weathering, mineralization, oxidation, veining, and hardness.

Recovery is typically acceptable to very good, with IAMGOLD programs averaging 96–98%. Areas of lower recovery were typically associated with saprolite, saprock or fault zones.

Drill collars were surveyed using global positioning system (GPS), total station, and differential global positioning system (DGPS) instruments.

Downhole surveys for the pre-IAMGOLD drill programs were performed using Eastman, Reflex EZ-Shot and gyroscopic instruments. Downhole surveying on IAMGOLD core holes was initially carried out using either the Essakane Reflex EZ-TRAC XTF instrument or the drilling contractor's Reflex EZ-TRAC tool, and are currently completed using the drilling contractor's gyroscopic downhole survey tool that performs readings. Depending on the program, readings could be taken at 3 m below the casing or at 12 m (whichever was the shallower) and every 25–50 m thereafter, or at 5 m intervals down hole.

On average, for holes drilled at a -60º inclination, the true width of the Essakane mineralization is about 90–95% of the downhole drilled length, and at Gossey, is 75–80% of the downhole drilled length. True widths vary depending on local orientation of the mineralized zones and the drill hole orientation.

Drilling completed at EMZ and Lao to June 30, 2023, after the March 1, 2023 Essakane database closure, included 43 core holes and seven advanced grade control RC holes for a total of 5,520 m. Although the newer drill holes may change the grades locally, the QP considers that the new drilling should have no material effect on the overall tonnages and average grade of the current Mineral Resource estimate.

Drill data are considered to be suitable for use in Mineral Resource and Mineral Reserve estimation. There are no drilling, drill sampling or drill recovery factors in the drill data that support the estimates that are known to the QP that could materially impact the accuracy and reliability of the results.

No information is available to IAMGOLD on the sampling procedures for the early geochemical, trenching, aircore and RAB programs. RC samples were taken at 1 m intervals. Core sampling was typically on 1 m intervals.

During IAMGOLD programs, aircore samples were collected at 1 m intervals. RC samples are collected over 1 m intervals. Core sample lengths vary, from 1 m in HQ and PQ core, to 1.5 m in NQ core.

Density data are collected at 25 m intervals at Essakane, using the water displacement method, on 10–15 cm lengths of HQ core or 15–20 cm lengths of NQ core. Gossey samples are also determined using water displacement. Where material is classified as saprock or saprolite at Gossey, the core interval measured is typically 15–20 cm in length. If the material is fresh, the sample interval may be 1 m for HQ size core and 1.5 m for NQ size core. All density measurements were performed by the Essakane mine laboratory.

Prior to IAMGOLD's Project interest, the following laboratories had been used:

- SGS Tarkwa Ghana, independent of IAMGOLD, accredited to ISO/IEC 17025:2017 for selected analytical techniques;
- SGS Essakane, independent, accredited to ISO/IEC 17025:2017 for selected analytical techniques;
- TransWorld Ghana (now Intertek Minerals Limited, Tarkwa Minerals Laboratory Branch), independent, accreditations at the time of use unknown.

IAMGOLD currently performs all sample preparation and analysis at the Mine. The Mine laboratory is not independent, and is not accredited.

Check assays for the IAMGOLD programs are performed at the following laboratories:

- ALS Ouagadougou, independent, accredited to ISO/IEC 17025:2017 for selected analytical techniques;
- SGS Ouagadougou, independent, accredited to ISO/IEC 17025:2017 for selected analytical techniques.

Sample preparation has included, depending on the laboratory and sample type:

- Crushing to 90% passing 425 µm; 80% passing 2 mm; 95% passing (P95) 500 µm, or P95 2 mm;
- Pulverizing to 90% passing 75 µm; or P95 105 µm.

Gold analytical methods have included, depending on the laboratory and sample type:

- Bulk leach extractable gold (BLEG) analysis;

- Leachwell rapid cyanide leach method, with gold analysis via atomic absorption spectroscopy (AAS) and fire assay of 1:10 tails;
- LeachWell rapid cyanide leach, with fire assay of the tails when the grade is >5 g/t Au;
- A 1 kg sub-sample is assayed by LeachWell rapid cyanide leach over 12 hours with an AAS finish. Initially, 10% of assays that returned >0.3 g/t Au had their solid residues re-assayed using fire assay. This percentage was raised to 25% in 2016. In addition, 5% of assays <0.3 g/t Au had their solid residues re-assayed using fire assay.

All IAMGOLD samples are assayed for graphitic carbon (Cg), sulphur, and arsenic by inductively coupled plasma-mass spectrometry (ICP-MS) and ELTRA elemental analysers.

The Gold Fields drill program included the insertion of standard reference materials (standards), blanks and duplicates in the sample stream.

IAMGOLD implemented an industry standard QA/QC program including the submission of standards, blanks, and duplicates and to the laboratory, and the results are reviewed regularly to ensure that appropriate and timely action is taken in the event of a QA/QC failure. Reviews of the standard performances show that the failure rate was within accepted industry norms. The standard results indicate acceptable laboratory accuracy for gold analyses and no significant bias. Reviews of the blank performances show that the failure rate was within accepted industry norms. No significant contamination has been observed. Review of field duplicates from Essakane indicate acceptable precision of the gold analytical results at Essakane. As the Gossey deposit is characterized by high-nugget gold, field duplicate results are reflective of the higher gold variability between samples, and show less precision between analyses of the same sample.

Essakane check samples were selected based on the presence of arsenopyrite mineralization regardless of the original gold grade. Reviews of the check assay results indicated acceptable precision of the gold analytical results at Essakane and Gossey.

Sample security has relied upon the fact that the samples are always attended or locked in appropriate sample storage areas prior to dispatch to the sample preparation facility.

The QP is of the opinion that the sample preparation, analysis, quality control, and security procedures are sufficient to provide reliable gold data to support estimation of Mineral Resources and Mineral Reserves, and can be used in mine planning.

1.8 Data Verification

The QPs individually reviewed the information in their areas of expertise, and concluded that the information supported Mineral Resource and Mineral Reserve estimation, and could be used in mine planning and in the economic analysis that supports the Mineral Reserve estimates.

1.9 Metallurgical Testwork

Metallurgical testwork on the Essakane deposit has been conducted by a number of independent laboratories and third-party consultants over the Project life. These include the laboratories SGS Johannesburg, Kappes Cassidy Associates, McClelland Laboratories, SGS Johannesburg, Philips, SGS Lakefield Research Ltd, Auralia Metallurgy Pty Ltd., ALS Metallurgy, Orway Mineral Consultants (Orway), and third-party consultants GRD Minproc (Pty) Ltd., GMS, Crowe Metallurgical Consulting Inc., Enhance Mining Inc., and Soutex Inc. There is no international standard of accreditation provided for metallurgical testing laboratories or metallurgical testing techniques.

Work completed included mineralogy, comminution, leaching (carbon-in-leach (CIL), whole ore, intensive, diagnostic), preg-robbing, gravity concentration, static settling, and rheology testing, as well as examinations of the effects of grind size and the effects of surfactants on preg-robbing. This testwork showed that a conventional crushing, milling, gravity concentration, and CIL gold plant was suitable for the mineralization at Essakane.

No metallurgical testwork has been undertaken on the Gossey deposit.

The results of the metallurgical test programs indicate that the ore types tested are amenable to CIL methods. Laboratory tests and plant trials also showed good recoveries for marginal mineralization.

The average CIL gold recoveries used by weathering zone are based on SGS Lakefield testwork:

- Saprolite: 95.0%;
- Transition: 92.8%;
- Fresh rock: 91.9%.

The gold recoveries are, however, highly influenced by graphitic carbon concentrations. Since 2020, graphitic carbon and sulfur have been included in the predictive model, and are used to forecast the metallurgical recoveries, based on a combination of ratios, ore type and the amount of graphitic carbon present. As a result the fresh rock recoveries used for Mineral Resource and Mineral Reserve estimation are slightly more conservative than the testwork result to allow for the impact of graphitic carbon.

The major deleterious element is preg-robbing graphitic ore. To manage the preg-robbing effects, mill feed is blended to reduce the carbon grade. In areas of very high gold and graphite grades, plant reagents are adjusted for short batch campaigns. Other steps taken to mitigate the preg-robbing effects include installation of a Hyperjet in the process flow, to improve aeration, and the use of fresh water, rather than cyanide, in the gravity circuit. IAMGOLD continues to examine options in relation to reducing the preg-robbing effects in the gravity circuit in particular.

1.10 Mineral Resource Estimation

1.10.1 Essakane

Estimation is based on a structural model and a grade shell model. The structural model is based on a combination of drill data and pit mapping and includes sill delineation, fault zones, and a mineralization continuity interpretation. The grade shell model consists of three grade shells, a high-grade shell at ≥1 g/t Au, a low-grade shell at ≥0.15 g/t to <1 g/t Au, and a waste shell at <0.15 g/t Au. Caps were applied to each of the high-grade, low-grade, and waste shells prior to compositing.

The block model is constrained by the original pre-mining topography, generated using standard LiDAR flyover methods.

The median density value of each lithology, in each weathering zone, was used as the default value in the block model to avoid the influence of any outliers present in the dataset.

Data were composited on 5 m intervals, which is appropriate for the 10 m benches used in operations.

Variogram models were interpreted for gold within the low-grade domain on the east side of the deposit, where the mineralisation is not folded, then applied across the deposit following dynamic ellipsoids.

Gold grades within the mineralized and waste domains were estimated by ordinary kriging (OK) using a three-pass strategy. A high-grade restriction approach was used to limit the influence of high-grade values in the high-grade and low-grade domains.

Mineral Resources were classified based on the data search distance used to estimate each block. Mineral Resources are classified based on the average distance between the composites used to estimate a block grade. No Measured Mineral Resources were classified other than for stockpiles. Indicated Mineral Resources were classified for those blocks where average distance between composites used to interpolate a block is ≤30 m. Inferred Mineral Resources were classified for those blocks where the average distance between composites used to interpolate a block is ≤60 m.

Model validation was completed, and no significant biases or issues were noted in the validation steps.

A gold price of US$1,700/oz was used in the conceptual pit shell that was used to constrain the Mineral Resource estimate. Mineral Resources are reported within the conceptual open pit shell.

Cut-off grades used are 0.34 g/t Au in saprolite, 0.41 g/t Au in transition, and 0.48 g/t Au in fresh rock.

1.10.2 Stockpiles

The stockpile tonnage estimate is based on Wenco truck counts that are reconciled on a monthly basis with drone surveys of the stockpiles. Grade is assigned to the stockpiles from the grades of the material mined from the short-term grade model. Stockpiled material is reported above 0.34 g/t Au for saprolite, 0.41 g/t Au for transition, and 0.48 g/t Au for fresh rock.

1.10.3 Gossey

Estimation is based on a lithology model and a grade shell model. The grade shell model consists of a mineralized zone (MZ shell), constructed using 5 m composites grading ≥0.1 g/t Au and a waste model, which includes all material outside the MZ. Caps were applied to the domains prior to compositing.

The block model is constrained by a 2023 LiDAR survey.

The average density value of each lithology, in each weathering zone, was used as the default value in the block model to avoid the influence of any outliers present in the dataset.

Data were composited on 3 m intervals for estimation purposes.

Variography was performed for the MZ domain but is only used to confirm the confidence in defining search ellipsoid ranges.

Gold grades within the mineralized and waste domains were estimated by inverse distance weighting to the third power (ID3) using a three-pass strategy in the MZ and one pass in the waste domain. A high-grade restriction approach was used to limit the influence of high-grade values in the estimates.

Mineral Resources were classified based on the data search distance used to estimate each block. The main classification criteria were based on the drilling spacing, number of drill holes used in estimation, and estimation passes. Indicated Mineral Resources were classified for those blocks where the drilling spacing is ≤50 m and a minimum of three drill holes were used in interpolation in pass 1 or pass 2 inside the MZ domain. Inferred Mineral Resources were classified for those blocks where the drilling spacing is ≤100 m, and at least two drill holes were used in interpolation.

Model validation was completed, and no significant biases or issues were noted from the validation steps.

A gold price of US$1,700/oz was used in the conceptual pit shell that was used to constrain the Mineral Resource estimate. Mineral Resources are reported within the conceptual open pit shell.

Cut-off grades used are 0.38 g/t Au in saprolite, 0.45 g/t Au in transition, and 0.51 g/t Au in fresh rock.

1.11 Mineral Resource Statement

Mineral Resources are reported with an effective date of September 30, 2023, using the Mineral Resource definitions set out in the 2014 CIM Definition Standards.

Mineral Resources are reported either in situ or within stockpiled material, inclusive of those Mineral Resources converted to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Mineral Resources are reported on a 100% basis. IAMGOLD has a 90% Project interest and the Government of Burkina Faso has a 10% interest.

Indicated and Inferred Mineral Resources estimated for the Essakane deposit, including the EMZ, Gourouol and Lao zones, are provided in Table 1-1 and are reported insitu. Measured Mineral Resources are reported as in place stockpiled material. The Qualified Person for the insitu estimate is Mr. Haithem Chattaoui, P.Eng, an IAMGOLD employee. The Qualified Person for the stockpiles is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.

Mineral Resources estimated in stockpiles are provided in Table 1-2 and are reported as in place stockpiled material. All Mineral Resources within the stockpiles have been classified as Measured. The Qualified Person for the estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee. The Measured Mineral Resources in Table 14-14 are not additive to those Measured Mineral Resources reported in Table 14-13.

Indicated and Inferred Mineral Resources estimated for the Gossey deposit are provided in Table 1-3, and are reported insitu. The Qualified Person for the estimate is Mr. Haithem Chattaoui, P.Eng, an IAMGOLD employee.

Factors that may affect the Mineral Resource estimate include: changes to long-term gold price assumptions; fluctuations in commodity price and exchange rates; changes to the current regulatory regime; fluctuations in operating cost assumptions; changes to environmental, permitting and social license assumptions; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological shape and continuity assumptions; changes to metallurgical recovery assumptions; geotechnical and design parameter changes impacting dilution and mining recovery factors; and potential for lower mill recovery in new mining areas or from long-term stockpiles.

Table 1-1: Essakane Mineral Resource Statement

Resource Confidence Category	Saprolite			Transition			Fresh Rock			Total		
	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)
Measured	—	—	—	5,508	0.54	95	15,472	0.67	335	20,981	0.64	429
Indicated	1,096	0.54	19	2,753	0.78	69	64,782	1.44	3,001	68,631	1.40	3,088
Total M+I Resources	***1,096***	***0.54***	***19***	***8,261***	***0.62***	***164***	***80,254***	***1.29***	***3,336***	***89,612***	***1.22***	***3,517***
Inferred	449	0.68	10	454	0.81	12	7,619	1.55	380	8,521	1.47	402

Notes:

1. Measured Mineral Resources are reported in place as stockpiles. Indicated and Inferred Mineral Resources are insitu. All Mineral Resources have an effective date of September 30, 2023. The Qualified Person for the insitu estimate is Mr. Haithem Chattaoui P.Eng, an IAMGOLD employee. The Qualified Person for the stockpile estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.
2. Mineral Resources are reported using the 2014 CIM Definition Standards on a 100% basis. IAMGOLD has a 90% project interest and the Government of Burkina Faso has a 10% interest.
3. Mineral Resources are reported inclusive of those Mineral Resources converted to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources are reported assuming a gold price of US$1,700. Mineral Resources are confined within a conceptual pit shell that uses the following input assumptions: conventional open pit mining methods; process through a carbon-in-leach (CIL) plant; variable metallurgical recoveries based on weathering zones (95% in saprolite, 93% in transition material and an average of 90.07% in fresh rock); variable processing rates based on weathering zones (15 Mt/a in saprolite, 13.09 Mt/a in transition material and 12.29 Mt/a in fresh rock); no allowance for mining dilution; mineralization based costs that vary by weathering zone (US$16.49/t treated in saprolite, US$19.48/t treated in transition material and US$21.71/t treated in fresh rock); allocations for waste rock and incremental bench cost; overall pit slope angles that vary by weathering zone are the same used for operation and a 6.5% royalty. Mineral Resources are reported at variable cut-off grades that vary by weathering zone (0.34 g/t Au for saprolite, 0.41 g/t Au for transition material and 0.48 g/t Au for fresh rock).
5. Table numbers have been rounded. Totals may not sum due to rounding.
6. The Measured Mineral Resources in Table 1-2 is not additive to this table.

Table 1-2: Mineral Resources in Stockpiles

Resource Confidence Classification	Material Type	Stockpiles	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Measured	Transition	Low-grade	5,508	0.54	95
	Fresh Rock	Marginal-grade	892	0.51	15
		Low-grade	9,813	0.65	207
		Medium-grade	4,466	0.71	102
		Run-of-mine pad	27	1.68	1
		Primary crusher	274	1.14	10
	Total Stockpile		***20,981***	***0.64***	***429***

Notes:

1. Measured Mineral Resources in stockpiles are reported as in place stockpiled material, with an effective date of September 30, 2023. The Qualified Person for the estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.
2. Mineral Resources are reported using the 2014 CIM Definition Standards on a 100% basis. IAMGOLD has a 90% project interest and the Government of Burkina Faso has a 10% interest.
3. Mineral Resources are reported inclusive of those Mineral Resources converted to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources in stockpiles are reported assuming a gold price of US$1,700/oz Au, and above a cut-off grade of 0.34 g/t Au for saprolite, 0.41 g/t Au for transition and 0.48 g/t Au for fresh rock.
5. Table numbers have been rounded. Totals may not sum due to rounding.
6. The Measured Mineral Resources in this table are not additive to the Measured Mineral Resources in Table 1-1.

Table 1-3: Gossey Mineral Resources Statement

Resource Confidence Category	Saprolite /Regolith			Transition			Fresh Rock			Total		
	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)
Indicated	3,512	0.73	83	2,856	0.92	85	1,286	1.33	56	***7,654***	***0.90***	***223***
Inferred	832	0.86	23	439	1.06	15	242	1.59	13	***1,513***	***1.04***	***50***

Notes:

1. Mineral Resources are reported insitu with an effective date of September 30, 2023. The Qualified Person for the estimate is Mr. Haithem Chattaoui P.Eng,, an IAMGOLD employee.
2. Mineral Resources are reported using the 2014 CIM Definition Standards on a 100% basis. IAMGOLD has a 90% project interest and the Government of Burkina Faso has a 10% interest.
3. Mineral Resources are reported inclusive of those Mineral Resources converted to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources are confined within a conceptual pit shell that uses the following input assumptions: conventional open pit mining methods; process through a carbon-in-leach (CIL) plant; variable metallurgical recoveries based on weathering zones (95% in saprolite, 93% in transition, and 92% in fresh rock); variable processing rates based on weathering zones (15 Mt/a in saprolite, 13.09 Mt/a in transition material and 12.29 Mt/a in fresh rock); no allowance for mining dilution; mineralization based costs that vary by weathering zone (US$18.49/t treated in saprolite, US$21.48/t treated in transition material and US$23.71/t treated in fresh rock); allocations for waste rock and incremental bench costs; and overall pit slope parameters that vary by weathering zone (30° in saprolite, 35°in transition material and 46° in fresh rock). Mineral Resources are reported at variable cut-off grades that vary by weathering zone (0.38 g/t Au for saprolite, 0.45 g/t Au for transition material and 0.51 g/t Au for fresh rock)
5. No constraints were placed on the estimate due to proximity to Gossey village.
6. Table numbers have been rounded. Totals may not sum due to rounding.

Metallurgical recovery assumptions for Gossey were based on the Essakane deposit as an analogue, and assumed the use of a CIL plant. No metallurgical testwork has been performed on Gossey mineralization.

A portion of the Mineral Resource estimate for the Gossey deposit is under the footprint of the Gossey village. Future development of some portions of the deposit may require either the development of a re-location program, similar to the one that was completed previously at Essakane; or the consideration of a mining buffer zone to restrict mining activities proximal to the village.

1.12 Mineral Reserve Estimation

Probable Mineral Reserves are reported for the EMZ, Lao, and Gourouol zones, and have been converted from Indicated Mineral Resources. Proven Mineral Reserves are reported for stockpiled material, are based on grade control data, and have been converted from Measured Mineral Resources.

Mine designs supporting the Mineral Reserves were based on the operating mine life-of-mine plans assuming open pit mining methods. Inferred Mineral Resources within the mine designs were converted to waste.

IAMGOLD uses a standard optimization approach to determine pit shells for the Essakane Operations. Inputs were developed based on the latest financial information available developed for the 2024 Essakane budget process, and included mining, processing cost, general and administrative (G&A), sustaining capital and capital costs. The slope angles used for the optimisation are based on design recommendations, and include geotechnical berms and the access ramp. A series of engineered design were developed based on the selected shell. Operational and geotechnical parameters such as berms, haul roads and minimum mining width were incorporated into the designs. Dilution and mining losses are included in the designs.

1.13 Mineral Reserve Statement

Mineral Reserves are reported with an effective date of September 30, 2023 using the Mineral Reserve definitions set out in the 2014 CIM Definition Standards, and are reported at the point of delivery to the process plant.

The Qualified Person for the estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.

Mineral Reserves are summarized in Table 1-4.

Factors that may affect the Mineral Reserve estimates include: changes to long-term gold price assumptions; fluctuations in commodity price and exchange rate; changes to the current regulatory regime; fluctuations in operating cost assumptions; changes to environmental, permitting and social license assumptions; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological shape and continuity assumptions; changes to metallurgical recovery assumptions; geotechnical and design parameter changes impacting dilution and mining recovery factors; and the potential for lower mill recovery in new mining areas or from long-term stockpiles.

1.14 Mining Methods

Mining is carried out using a conventional drill, blast, load, and haul surface mining method with an Owner fleet. Equipment is conventional for open pit operations.

Geotechnical design parameters are based on information obtained from: geotechnical drilling campaigns; mapping; laboratory testing; and modeling. These studies are continuously updated by confirming initial models, updating structural models with as-built data, continuous pit mapping, and addition geotechnical drilling as necessary. Geotechnical controls include an annual internal geotechnical audit and continuous geotechnical support provided by third-party consultants SRK, who also provide the design hydro-geotechnical recommendations. Industry-standard instrumentation for wall stability monitoring is in place. These include a Reutech movement and surveying radar (MSR) and Leica robotic total station instruments.

Ground water management in the pits uses sump and pump methods to dewater benches immediately below mining activities. During the rainy seasons, stormwater runoff outside of the EMZ pit is diverted via diversion ditches to collection basins and depleted mining areas.

Pit haul roads are designed to industry standards and are 30 m wide to permit safe operation of two-way traffic haulage. For phase bottom benches where the grades are high and the mining duration is short, haul road widths can be reduced to 25 m for one-way traffic. The pit haul road design grade is typically 10%. Waste rock facility and stockpile roads are maintained to have widths of 30 m and grades of 6%.

Table 1-4: Mineral Reserve Estimate

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Proven Mineral Reserves (open pit)	—	—	—
Proven Mineral Reserves (stockpile)	20,089	0.64	413
Probable Mineral Reserves (open pit)	45,440	1.32	1,934
Total Proven and Probable	***65,529***	***1.11***	***2,348***

Notes:

1. Mineral Reserves are reported for the Essakane Main Pit, Lao, and Gourouol Satellite areas at the point of delivery to the process plant with an effective date of September 30, 2023. The Qualified Person for the estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.
2. Mineral Reserves are reported using the 2014 CIM Definition Standards on a 100% basis. IAMGOLD has a 90% project interest and the Government of Burkina Faso has a 10% interest.
3. Mineral Reserves are reported assuming a gold price of US$1,400/oz. Mineral Reserves are confined within a an open pit shell that uses the following input assumptions: conventional open pit mining methods; process through a carbon-in-leach (CIL) plant; average CIL recovery of 90.26%; process average throughput rate of 12.29 Mt/a; mining dilution of 7–12%; ore loss of 1–4%; inclusion of 5% mining royalty at US$1,400/oz Au; mining cost: US$4.76/t mined, processing cost: US$16.22/t milled (inclusive of power), G&A cost: US$5.71/t milled; bench face slope angles that vary by geotechnical zone (50–85°); and variable cut-off grades ranging from 0.41–0.57 g/t Au.
4. Mineral reserves are based on topographic surveyed surfaces at September 30, 2023.
5. Numbers have been rounded. Totals may not sum due to rounding.

Waste material is deposited in the designated waste rock storage facilities (WRSFs), which are located east of the EMZ pit. Various ore stockpiles, sorted by rock type (saprolite, transition, or fresh rock) and grade (marginal, low-, and high-grade), are located to the west of the EMZ pit, just north of the primary crusher.

The mine life is forecast from 2024 to 2028, averaging 400,200 oz Au/year with a total production of 2.001 Moz Au from 2024 to 2028. The LOM plan is based on the completion of five different mining phases:

- EMZ: three phases, Phases 5, 6, 7. Represents 87% of the gold to be mined in the LOM plan. Phase 5 is the current north phase of the EMZ pit, and the main source of ore at the Report effective date. Phase 6 is the final push back for the south part of the EMZ pit. Phase 7 is the final push back for the north part of the EMZ pit, and represents an extension of Phase 5 on the eastern wall of the EMZ pit;
- Gourouol: located to the north of the EMZ pit;

- Lao: located to the south of the EMZ pit, and accounts for 12% of the gold to be mined in the LOM plan.

The Essakane processing plant has a process rate limit of 12.29 Mt/a of hard rock equivalent. The 2024 LOM plan assumes a processing throughput capacity of 13.05 Mt/a. This is achieved by ensuring a minimum of 1.1 Mt/a of softer transition and saprolite ore will be fed to the process plant.

Mining production rate starts at a rate of 47 Mt/a in 2024 and decreases every year with the LOMP completed in 2028.

The primary mine production equipment fleet consists of a load, haul, dump fleet including shovels, excavators, loader, trucks, drill rigs, dozers, a grader, a water truck, and a tow haul. Ancillary equipment includes fuel and water trucks, mobile light plants, utility vehicles, and service trucks. There are currently no plans for additional production equipment for the remainder of the LOM, and the fleet numbers will be progressively reduced for the remainder of the LOM.

1.15 Recovery Methods

The metallurgical testing presented in Section 13 and information in the various feasibility studies provided the data to finalize the process design criteria and the Essakane mill flowsheet.

Ore is currently processed using two stages of crushing, semi-autogenous grinding (SAG), ball mill grinding, pebble crusher grinding (SABC), gravity concentration, and a CIL gold plant.

The 2008 feasibility study proposed a process plant throughput rate of 7.5 Mt/a. During construction, some debottlenecking improvements were made to the design, resulting in a revised nameplate capacity of 9.0 Mt/a based on processing 100% saprolite ore. This first phase is referred to as line A. Due to additional operational improvements, plant throughput has increased beyond the constructed design capacity.

Fresh rock CIL plant feed gradually increased from 2012 onwards. To maintain gold production levels, with increasing proportions of fresh rock in the CIL plant feed, an expansion was completed in 2014, referred to as line B. The objective was to double the fresh rock processing capacity from 5.4 Mt/a on a 100% fresh rock basis to 10.8 Mt/a. The expansion consisted of the addition of a secondary crushing circuit and a second process line (grinding, gravity concentration, and leach-CIL) in the CIL plant. The process plant expansion was commissioned in February 2014, and effectively doubled the fresh rock processing capacity.

In 2019, the targeted plant capacity was revised, based on the total specific energy requirements for 11.7 Mt/a of fresh rock, such that that >11.7 Mt/a total ore can be processed, if the required total specific energy for the ore blend (saprolite, transition, and fresh frock) is less than or equal to the required total specific energy for 11.7 Mt/a of fresh rock. Plant modifications were subsequently implemented to support a capacity increase to 12.29 Mt/a.

The process flow sheet consists of the following:

- Crushing;
- Grinding;
- Pre-leach thickening
- Gravity concentration and intensive cyanidation;
- Leach and CIL;
- Tailings thickening plant;
- Tailings disposal;
- Acid wash and elution;
- Carbon regeneration;
- Fine carbon incineration;
- Electrowinning and refining;
- Reagents make-up and distribution;
- Water storage;
- Air services and plant water service.

Process consumables consist of reagents and grinding media.

The main water source in the wet season is the Gourouol River. There are three water storage ponds that can provide additional process water; one contains recycled water from the TSF and water from pit dewatering activities, and the remaining two contain fresh water. The ponds fill to capacity in the wet season and are drawn down in the dry season. A water management plan is in place to optimize water use and reduce consumption from the Gourouol River.

Power is sourced from a combination of generators and a solar plant. The total average consumption is around 40 MW and the process plant uses about 35 MW.

1.16 Project Infrastructure

The key infrastructure to support the Essakane Operations as envisaged in the LOM is in place. Infrastructure includes: three open pits (current and mined-out); stockpiles; waste rock storage facilities; process plant; tailings storage facility; water management facilities, including diversion channels, water storage ponds, and potable water treatment; accommodations camp; airport; power generation facilities, including a solar plant; mine office complex (mine and administrative offices, change houses, and canteens); equipment workshops; wash-down bays; warehouse and lay-down yard; blasting and explosives compound; roads; security gatehouse; communications facilities; diesel storage and dispensing facility; core storage facility.

The operations are primarily accessed through the main gatehouse. Materials and supplies such as food for the accommodations camp are brought into the site using national and regional roads. Service roads are used for internal travel within the operations, and for security patrols. Personnel are brought to site by air. Air may be used for emergency supplies.

Personnel live in a purpose-built accommodation village when on site.

The operations are served by a radiocommunications system.

The on-site fuel oil storage at the Report effective date included six light (LFO) and four heavy (HFO) fuel oil storage tanks.

Power is supplied by 11 generators and a photovoltaic solar plant. Supplemental or emergency power is provided by six LFO generator sets.

A 5 km long diversion of the Gourouol River was undertaken to protect the EMZ pit from flooding during seasonal rains.

The existing infrastructure, staff availability, existing power, water, and communications facilities, and the methods whereby goods are transported to the mine are all in place, well-established, and can support the estimation of Mineral Resources and Mineral Reserves.

There is no current infrastructure at the Gossey deposit. The Mineral Resource estimate assumes that existing Essakane infrastructure would be used to support any future mining operation at Gossey.

1.17 Environmental, Permitting and Social Considerations

1.17.1 Environmental Considerations

Baseline and supporting environmental studies were completed to assess both pre-existing and ongoing site environmental conditions, as well as to support decision-making processes during operations start-up. Characterization studies were completed for climate, air quality, hydrology and surface water quality, hydrogeology, flora, fauna, soils, overburden, agriculture and land use, and the socioeconomic environment.

An Environmental and Social Management Plan was developed as part of the Environmental and Social Impact Assessment to address aspects of operations. This include site monitoring, and emergency management are part of the Environmental and Social Management Plan. Other specific plans were developed to address significant environmental aspects. A comprehensive monitoring program is in place at the mine, as well as in the neighbouring villages. This program encompasses water quality monitoring (potable water, groundwater, domestic waste water, surface water, and community well water), air quality (dust and greenhouse gas emission), soil, biodiversity (fauna and flora), noise, vibration, weather, and follow up and assessment of the community investment program (health, education, potable water access, agriculture, and animal husbandry).

1.17.2 Closure and Reclamation Planning

A conceptual rehabilitation and closure plan was developed in 2009, updated in 2013 and again in 2018. Asset retirement costs are updated annually, and the final closure cost is updated whenever the mining development plan is amended.

A preliminary closure plan will be conducted prior to mine closure. A final closure plan must be completed after the preliminary closure plan and must be approved by the relevant authorities.

Essakane S.A. opened an account in which funds are deposited in escrow as part of the Mining Environment Preservation and Rehabilitation Fund (Order No. 2007-845/PRES/PM/MCE/MEF of December 26, 2007).

The closure cost estimate used in the economic analysis is US$104.3 million, incurred from 2024–2036. About US$96.8 million will be expended after 2028, when most closure activities will occur.

As at December 31, 2023, IAMGOLD forecasts approximately $50.2 million will have been placed an escrow account with respect to funding its closure obligations.

1.17.3 Permitting Considerations

IAMGOLD holds all necessary permits for mine operations at Essakane, and for the LOM plan.

No study has been completed at the Report effective date as to the potential environmental and social impacts of a mining operation at Gossey. Current activities are restricted to securing access to allow additional drilling of the deposit.

1.17.4 Environmental Infrastructure

Storage areas for waste rock were planned and designed to reduce haulage distances between pit ramp exits and the storage areas. Geochemical studies demonstrated that the waste is non-potentially acid generating (NPAG); however, certain types of rock are potentially arsenic leaching. The closure plan includes control of leachable rocks.

The TSF site footprint is 462 ha, delimited by 30 m high and 10 m crest wide perimeter dams, and with internal raise dams and lined cells, and currently has a capacity of 203 Mt. A final dam raise will be completed in 2024–2026, which will increase the capacity to 219.3 Mt, sufficient for the remaining LOM needs. Geochemical studies have shown that tailings are NPAG; however, the tailings leach arsenic and contain process water with cyanide. Tailings water confinement is ensured by deposition in lined cells and by a perimeter hydraulic barrier with more than 40 pumping wells. A tailings site steering committee meets bi-annually, and an Independent Tailings Review Board meets annually. Both review the operational monitoring of the tailings site, the tailings management system and provide guidance to improve environmental performance. A governmental technical committee also review the tailing management facility environmental performance on a regular basis.

The water management plan includes pit dewatering, waste rock runoff capture, diversion systems, and storage ponds. As part of the storm water management plans, diversion and drainage channels route storm water to the depleted satellite pits that serve as storage basins for mine and process plant fresh water needs. The stored water reduces the site's reliance on the Gourouol River.

1.17.5 Social Considerations

Essakane S.A. implemented two resettlement plans consistent with Burkinabé laws and best practices recommended by international organizations (Performance Standard 5 of the International Finance Corporation). In both instances, memorandums of understanding were signed, and resettlement follow up committees (CSR) comprising key representatives of affected villages and administrative authorities were created. The CSR committees meet every month to follow up on the progress of the two Resettlement Action Plans.

A Community Management Program encompasses all engagement actions and community development projects of the community relation development department. Key performance indicators of the Community Management Program are reviewed on a quarterly basis.

1.17.6 Security

The political and security environment remains volatile in the Sahel region of Burkina Faso, particularly in the area where Project is located. The country experienced military coups in January 2022 and September 2022. Terrorist-related incidents continue unabated in the country, the immediate region of the Essakane mine and, more broadly, the West African region.

IAMGOLD continues to take proactive measures to ensure the safety and security of in-country personnel and is constantly adjusting its protocols and the activity levels at the site according to the security environment.

1.18 Markets and Contracts

No market studies are currently relevant as Essakane is an operating mine producing a readily-saleable commodity in the form of doré. The doré bars are shipped offsite to a refiner who refines the doré into bullion. The bullion is then sold directly on the open market to gold trading institutions at prevailing market prices.

Commodity prices used in Mineral Resource and Mineral Reserve estimates are set by IAMGOLD corporately. The current gold price provided for Mineral Reserve estimation is $1,400/oz, and $1,700/oz for Mineral Resource estimation.

The operations produce gold doré bars, which are shipped to major refineries. Existing refining agreements include terms and conditions that are consistent with standard industry practices. Refining charges include treatment and transport.

The largest in-place contracts other than for product sales cover items such as light fuel oil, heavy fuel oil, explosive supply and management, mobile fleet parts, mill liners, lubricants, process plant reagents, grinding media, RC drilling, air transport and off-road tires. Contracts are negotiated and renewed as needed. Contract terms are typical of similar contracts in Burkina Faso and in accordance with in-country regulations.

1.19 Capital and Operating Cost Estimates

Capital costs include capitalized waste stripping, equipment overhaul costs, equipment capital spares, resource development, mill equipment, mining equipment refurbishment, and tailings dam capital expenditures.

Capital expenditures are based on detailed estimates including vendor quotes and existing contracts rates for services. The capitalized waste stripping costs are based on LOM plan operating costs.

Planned capital spending expenditures over the LOM from 2023 to 2028 total US$502.7 million, or $209.30/oz Au sold, including capitalized waste stripping. Capital expenditures related to 2023 include actual expenditures for year to date to September 30, 2023, with the remaining three months of 2023 as forecast.

The capitalized waste stripping is the largest capital element estimated at US$287.0 million, or US$119.50/oz Au sold, over the LOM, and represents 57% of the LOM capital. In 2023, the total capital cost, including capitalized waste stripping, is US$125.6 million, or $313.30/oz Au sold.

Non-sustaining total capital is estimated at US$49.3 million, and is primarily associated with a relocation action plan for the Essakane village and community (the RAP 1 project).

The mine operating costs are estimated based on mine plan physical quantities, realistic equipment productivity assumptions, overall equipment efficiency, and updated consumables prices.

Average operating costs over the LOM (2023–2028) are estimated at US$35.40/t milled including capitalized waste stripping, or US$32.49/t milled net of capitalized waste stripping (excluding capitalized waste stripping and stockpile movements, with capitalized waste stripping being transferred to sustaining capital). The overall LOM operating cost forecast is US$2,607 million.

A summary of the capital and operating cost estimates as forecast to be incurred in the LOM schedule are provided in Table 1-5.

1.20 Economic Analysis

IAMGOLD is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration is supported by overall site positive cash flows and net present value assessments. Considerations of internal rate of return and payback are not relevant as the mine is operating.

Table 1-5: Annual Capital and Operating Cost Expenditures Over LOM Mine Schedule

	Units	2023	2024	2025	2026	2027	2028	Total
Schedule								
Ore mined	000 t	9,490	10,087	9,070	8,725	8,507	5,785	***51,664***
Grade mined	g/t Au	1.3	1.23	1.27	1.39	1.42	1.3	***1.32***
Waste mined	000 t	33,848	36,743	35,724	28,625	15,750	5,628	***156,318***
Total mined	***000 t***	***43,338***	***46,830***	***44,794***	***37,350***	***24,257***	***11,414***	***207,983***
Ore milled	000 t	11,213	12,733	13,072	13,011	13,055	10,525	***73,609***
Mill grade	g/t Au	1.23	1.1	1.1	1.12	1.12	1.08	***1.12***
Metallurgical recovery	%	90.3	90	90.2	90.5	90.5	90	***90.2***
Gold production	***000 oz***	***401***	***406***	***417***	***424***	***425***	***329***	***2,402***
Operating Costs								
Mining cost (including capitalized waste stripping and stockpiles)	US$M	218.3	236.9	213.4	162.3	109.2	52.2	***992.3***
Process cost	US$M	207.8	224.9	208.5	199.8	191.9	161.5	***1,194.3***
G&A cost	US$M	87.9	86.0	76.9	68.1	53.8	47.6	***420.4***
Total	***US$M***	***514.1***	***547.8***	***498.9***	***430.2***	***354.9***	***261.2***	***2,607.0***
Mining unit cost (including capitalized waste stripping and stockpiles)	US$/t mined	4.96	5.06	4.76	4.35	4.50	4.57	***4.76***
Mining unit cost(net of capitalized waste stripping and stockpiles)	US$/t processed	12.84	12.15	14.99	7.47	6.99	8.95	***10.56***
Process unit cost	US$/t processed	18.48	17.66	15.95	15.35	14.70	15.34	***16.22***
G&A unit cost	US$/t processed	7.82	6.76	5.88	5.24	4.12	4.52	***5.71***

	Units	2023	2024	2025	2026	2027	2028	Total
Total unit cost (net of capitalized waste stripping and stockpiles)	***US$/t processed***	***39.14***	***36.56***	***36.83***	***28.07***	***25.81***	***28.81***	***32.49***
Total unit cost (including capitalized waste stripping and stockpiles)	***US$/t processed***	***45.72***	***43.02***	***38.16***	***33.06***	***27.18***	***24.82***	***35.40***
Capital Costs								
Total sustaining capital	US$M	123.8	150.4	76.5	82.7	19.8	0.2	***453.4***
Non-sustaining capital	US$M	1.8	4	12	11.5	10	10	***49.3***
Total capital expenditure	***US$M***	***125.6***	***154.4***	***88.5***	***94.2***	***29.8***	***10.2***	***502.7***

Notes:

1. 2023 metrics based on actual year to date up to September 30, 2023, with remaining three months of 2023 as forecast in mine plan.
2. Mining cost including capitalized waste stripping and stockpiles is the mining cost which includes capitalized waste stripping and stockpile movement costs.
3. Mining (net of capitalized waste stripping and stockpiles) is the mining cost excluding capitalized waste stripping and stockpile movements, with capitalized waste stripping being transferred to sustaining capital.

1.21 Risks and Opportunities

1.21.1 Risks

Risks identified include:

- The political and security environment remains volatile in the Sahel region of Burkina Faso, particularly in the area where Project is located. The country experienced military coups in January 2022 and September 2022. Terrorist-related incidents continue unabated in the country, the immediate region of the Essakane mine and, more broadly, the Sahel region of West Africa;
- The security situation in Burkina Faso and its neighboring countries continues to apply pressures to supply chains and continued security incidents and concerns could have a material adverse impact on future operating performance;
- The continued deteriorating security situation in Burkina Faso may increase the cost of bringing employees, contractors, supplies, and inventory to the mine over those costs assumed in the Mineral Reserve estimates and the economic analysis supporting those Mineral Reserves.
- The Lao Gountouré 2 and Alkoma 2 permits reached the end of the last period of renewability in November, 2018, and were granted a special three-year renewal. In 2021, IAMGOLD applied for these same tenure areas under a new permit. The granting process is delayed, but the application is still under consideration. IAMGOLD believes there is a reasonable basis for the application to be granted. If the new application is not granted, IAMGOLD will not hold any tenure over the Gossey deposit, and thus the Mineral Resource estimate will become invalid as the company will not hold the underlying mineral concession rights.

1.21.2 Opportunities

Opportunities identified include:

- Conversion of some or all of the Measured and Indicated Mineral Resources (that have not been converted to Mineral Reserves) to Mineral Reserves, with appropriate supporting studies;
- Upgrade of some or all of the Inferred Mineral Resources to higher-confidence categories, such that such some or all of this material could be used in Mineral Reserve estimation;
- While there is a history of silver in doré payments (lowering operating costs as a by-product credit), silver is not estimated in the Mineral Resources or Mineral Reserves, and therefore not included in cost estimates. Payments for silver in doré represent a minor upside to the Project;
- There are marginal material stockpiles at the Mine site, which are not currently included in the Mineral Resources estimates. IAMGOLD are planning a sampling program to verify the grade in the stockpile. If the sampling is positive, and a review inputs suggests the material has reasonable prospects for eventual economic extraction, it represents upside for the Mineral Resource estimate, and, potentially, with completion of applicable mining studies, some or all of those estimated Mineral Resources could be converted to Mineral Reserves.

1.22 Interpretation and Conclusions

An economic analysis was performed in support of estimation of Mineral Reserves; this indicated a positive cash flow using the assumptions and parameters detailed in this Report.

1.23 Recommendations

As the Essakane Operations are an operating mine, the QPs have no meaningful recommendations to make.

2 INTRODUCTION

2.1 Introduction

Mr. Francois J. Sawadogo, MAIG, Mr. Haithem Chattaoui, P.Eng., Mr. Rémi Lapointe, ing, Mr. Michel Dromacque, C.Eng., Mr. Denis Doucet, ing, and Mr. Franck Napon ing., have prepared this technical report (the Report) on the Essakane Gold Mine (the Essakane Mine or the Project) in Burkina Faso for IAMGOLD Corporation (IAMGOLD). The Project location is shown in Figure 2-1.

IAMGOLD, through its wholly-owned subsidiary Essakane S.A., owns 90% of the Project, with the government of Burkina Faso (the Government) holding the remaining 10%.

The Essakane Mine has been in operation since May 2009, and attained commercial production in July 2010.

Mineral Resource estimates are reported for the Essakane (EMZ, Lao, and Gourouol zones) and Gossey deposits and in stockpiles. The Falagountou and Wafaka deposits are mined out, and the area is under reclamation and closure.

Mineral Reserves are reported for the EMZ and Gourouol zones within the Essakane deposit, and stockpiled material.

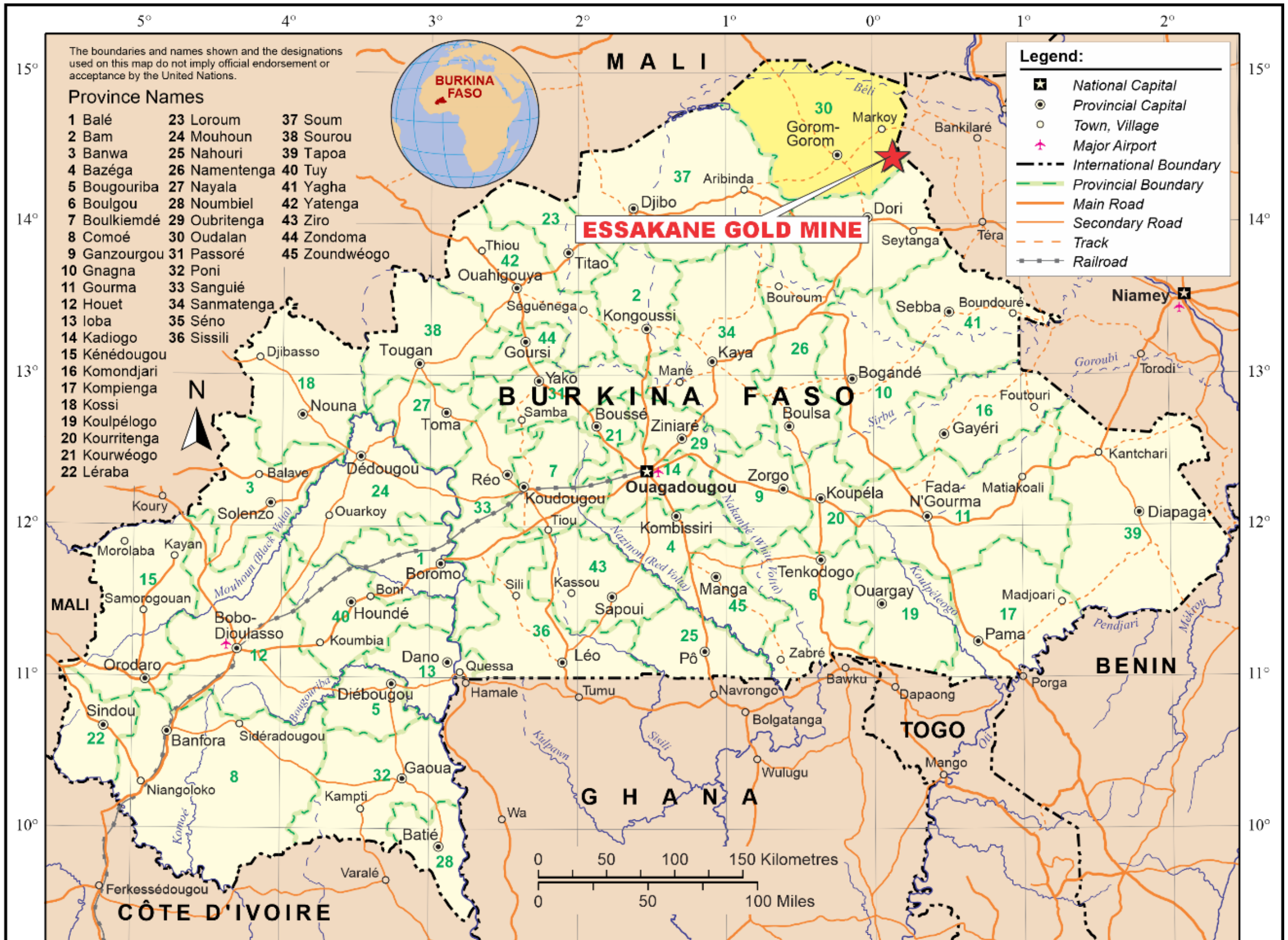
2.2 Terms of Reference

The Report was prepared to support disclosure of an updated Mineral Resource and Mineral Reserve estimate and mine plan as announced on December 18, 2023 in IAMGOLD's news release titled "IAMGOLD files updated NI 43-101 technical report for Essakane Gold Mine".

Units used in the report are metric units unless otherwise noted. Monetary units are in United States dollars (US$) unless otherwise stated. The Report uses Canadian English.

Figure 2-1: Project Location Map

4-3



Source: Map No. 4230, United Nations, 2004.

Note: Figure modified by IAMGOLD, 2023.

Mineral Resources and Mineral Reserves are reported in accordance with the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards for Mineral Resources and Mineral Reserves (May 2014; the 2014 CIM Definition Standards) and were prepared with reference to the CIM Estimation of Mineral Resources & Mineral Reserves Best Practice Guidelines (November, 2019; the 2019 CIM Estimation Guidelines).

2.3 Qualified Persons

The following serve as the qualified persons (QPs) for this Report as defined in National Instrument 43-101, Standards of Disclosure for Mineral Projects, and in compliance with Form 43-101F1:

- Mr. Francois J. Sawadogo, MAIG, Deputy Superintendent Geology, IAMGOLD Essakane S.A;
- Mr. Haithem Chattaoui, P.Eng.., Manager, Resource Estimation, IAMGOLD Corporation;
- Mr. Rémi Lapointe, ing, Director of Metallurgy, IAMGOLD Corporation;
- Mr. Michel Dromacque, C.Eng., Chief Engineer Long-Term Planning and Strategy, IAMGOLD Essakane S.A.;
- Mr. Denis Doucet, ing., Operation Manager, IAMGOLD Corporation.
- Mr. Franck Napon, ing., Health, Safety and Sustainability Manager, IAMGOLD Essakane S.A.

2.4 Site Visits and Scope of Personal Inspection

Mr. Sawadogo works at the Essakane Operations site and has done so since 2014. This familiarity with the operations serves as his personal inspection. While on site, he has reviewed core drilling and grade control practices, visited the core shed, inspected core cutting and sampling, visited the open pit, and discussed aspects of grade control, quality assurance and quality control (QA/QC) with operations staff.

Mr. Chattaoui's most recent site visit was from November 6–17, 2023. He also visited site from June 15–28, 2023, March 19 to April 12, 2023, November 22 to December 1, 2022, and June 14 to July 2, 2022. During these visits, he reviewed core and reverse circulation (RC) drilling used in Mineral Resource estimation, visited the core shack and reviewed the sampling chain, including the analytical laboratory's process and QA/QC procedures, reviewed the grade control process in the field, reviewed stockpile volumes and placement, reviewed aspects of the geological interpretation, with the site geologists, and participated in site presentations related to the Essakane deposits and environment.

Mr. Lapointe's most recent site visit was from 10 to 14 September 2023. He had previously visited site in July 2022 and February 2023. While on site, he regularly inspects the plant, and performs reviews of metallurgical performance, equipment condition from a process performance point of view, and metals accountability. Mr. Lapointe has discussed aspects of process performance, metallurgical recovery, and operating costs with operations staff.

Mr. Dromacque works at the Essakane Operations site, and has done so since June 2023. This familiarity with the operations serves as his personal inspection. While on site he has reviewed the site infrastructure including the power plant, the camp, the tailings storage facility, the ore stockpiles, the waste rock storage facility he inspected the open pit on a regular basis and held regular discussions with the geology department. He supervised the preparation of the long term mine plan and reviewed all aspect of the plan in term of equipment, personnel, costs, and operating performance.

Mr. Doucet works at the Essakane Operations site, and has done so since April 2020. This familiarity with the operations serves as his personal inspection. While on site he has inspected the open pit, viewed the mining related infrastructure including the tailings storage facility, stockpiles, waste rock storage facilities, haul roads, and workshop facilities. He discussed aspects of annual and long-term mine planning, equipment and personnel requirements, actual cost performance versus predictions, and Mineral Reserve estimation practices with operations staff. While on site, Mr. Doucet regularly meets with senior technical staff to discuss aspects of mine operations, management, and administration.

Mr. Napon works at the operations and has done so since 2018. This familiarity with the operations serves as his personal inspection. While on site, he has participated in reviews of aspects of risk management, environmental and social performance, including environmental compliance, permitting status, and stakeholder, community, and government relations.

2.5 Effective Dates

The Report has a number of effective dates including:

- Date of database close-out date for Essakane: March 1, 2023;
- Date of database close-out date for Gossey: May 10, 2018;
- Date of Mineral Resource estimate for Essakane: September 30, 2023;
- Date of Mineral Resource estimate for Gossey: September 30, 2023;
- Date of Mineral Reserve estimate: September 30, 2023.

The overall effective date of the Report is the date of the Mineral Reserve estimate, which is September 30, 2023.

2.6 Information Sources and References

The reports and documents listed in Section 2.7 and Section 27.0 of this Report were used to support the preparation of the Report.

Additional information was sought from IAMGOLD and Essakane operations personnel where required.

2.7 Previous Technical Reports

IAMGOLD has previously filed the following technical reports on the Project:

- Gignac, L., Glacken, I.M., Hawxby, J., Gignac, L-P., and Bedell, P., 2009: Updated Feasibility Study, Essakane Gold Project, Burkina Faso: report prepared for Orezone Resources Inc., effective date June 3, 2008, readdressed to IAMGOLD Corporation, March 3, 2009;
- Chénard, L., Sirois, R., Gignac, L-P, Girard, J., Gaultier, P., Ferlatte, G., and Lemelin, B., 2016: Technical Report On The Essakane Gold Mine, Sahel Region, Burkina Faso: report prepared for IAMGOLD Corporation, effective date December 31, 2015;
- Blanchet, V., Chabot, P., Rivard, S., Isabel, D., Denoncourt, L-B, Manning, T.J., Saunders, E., Scott, C., Bouchard-Marchand, E., and Sirois, R., 2018: Technical Report On The

Essakane Gold Mine Heap Leach Pre-Feasibility Study, Sahel Region, Burkina Faso: report prepared for IAMGOLD Corporation, effective date June 5, 2018;

- Purchase, J., and Sirois, R., 2019: Mineral Resource Estimate, Gossey Deposit, Essakane Mine, Burkina Faso: report prepared by G Mining Services for IAMGOLD Corporation, effective date January 18, 2019;
- Blanchet, V., Chabot, P., Rivard, S., Isabel, D., Denoncourt, Sawadogo, F.J., Manning, T.J., Burnley, R.B., Sirois, R., and Purchase, J., 2019: Technical Report On The Essakane Gold Mine Carbon-In-Leach and Heap Leach Feasibility Study, Sahel Region, Burkina Faso: report prepared for IAMGOLD Corporation, effective date November 6, 2019.

3 RELIANCE ON OTHER EXPERTS

This section is not relevant to this Report.

4 PROPERTY DESCRIPTION AND LOCATION

4.1 Introduction

Essakane is located in Burkina Faso at the boundary of the Oudalan and Seno provinces in the Sahel region and is approximately 330 km northeast of the capital, Ouagadougou. It is situated approximately 63 km northwest of the nearest large town, Dori, and near the village of Falagountou to the east (refer to Figure 2-1).

Co-ordinates for the key areas are:

- Project centroid: 14°23’ N and 0°04’ E;
- Essakane deposit centroid:
  - Essakane Main: 14°23.21’ N and 0°04.48’ E;
  - Falagountou: 14°22.09’ N and 0°09.07’ E;
  - Wafaka: 14° 22,01’ N and 0° 09, 77’ E;
- Gossey deposit centroid:
  - Gossey Main: 14°27,444’ N and 0°00,06’ E;
  - Gossey South: 14°26.73’ N and 0°00.03’ E.

4.2 Mineral Tenure

4.2.1 Introduction

The Project consists of one mining permit (the Essakane Mining Permit), which contains the Essakane Main Zone (EMZ), including the Gourouol and Lao sub-areas, and the mined-out Falagountou and Wafaka deposits. The mining permit is surrounded by three exploration permits (Koritigui, Laogountoure 2, and Alkoma 2) held in the name of Essakane Exploration SARL.

The satellite Gossey deposit is located approximately 12 km northwest of the EMZ, inside the Koritigui and the Lao Gountouré 2 permits within the Essakane Exploration SARL tenures.

A location plan is provided as Figure 4-1.

4.2.2 Mining Permit

The mining (exploitation) and exploration permits are subject to Burkina Faso's 2015 Mining Code No.3 036-2015/CNT, dated June 26, 2015 (the Burkina Faso Mining Law).

In April 2008, following the filing by Orezone Resources Inc. (Orezone Resources) of the 2007 Essakane Definitive Feasibility Study (DFS), completion of an Environmental and Socio-Economic Impact Assessment (ESIA), and grant of the Essakane Environmental Permit, the government awarded Essakane S.A. the Essakane Mining Permit. The mining permit has an area of 100.2 km^2, is valid for a period of 20 years, and is renewable every five years until the Mineral Reserves have been depleted.

The permit perimeter is defined by UTM coordinates of the corner posts as listed in Table 4-1; the permit limits were shown in Figure 4-1. Infrastructure in relation to the permit boundaries is shown in Figure 4-2.

According to the Mining Law of Burkina Faso, a mining convention must be negotiated between the mining permit owner and the government before operations can begin. The mining convention outlines the governmental commitments, operational tax regime, and obligations of the mining permit owner to the government of Burkina Faso. Once executed, the mining convention cannot be changed without the mutual agreement of both parties. If tax law changes are promulgated, the mining permit owner may choose to continue with the current terms of the mining convention or adopt the new terms if such terms are deemed more favourable. The mining convention between Essakane S.A. and the government was signed on July 14, 2008.

The current Burkina Faso Mining Code came into effect on June 16, 2015. The application decrees were completed in 2017. The Burkina Faso Mining Code includes a 1% levy on the annual turnover of mining companies in Burkina Faso to serve local community development, and a corporate tax rate of 17.5%.

Essakane S.A. is a Burkinabè company created for the purpose of developing and operating the Mine. IAMGOLD owns a 90% interest in Essakane S.A., while the government has a 10% free-carried interest.

Figure 4-1: Essakane Mining and Exploration Permits

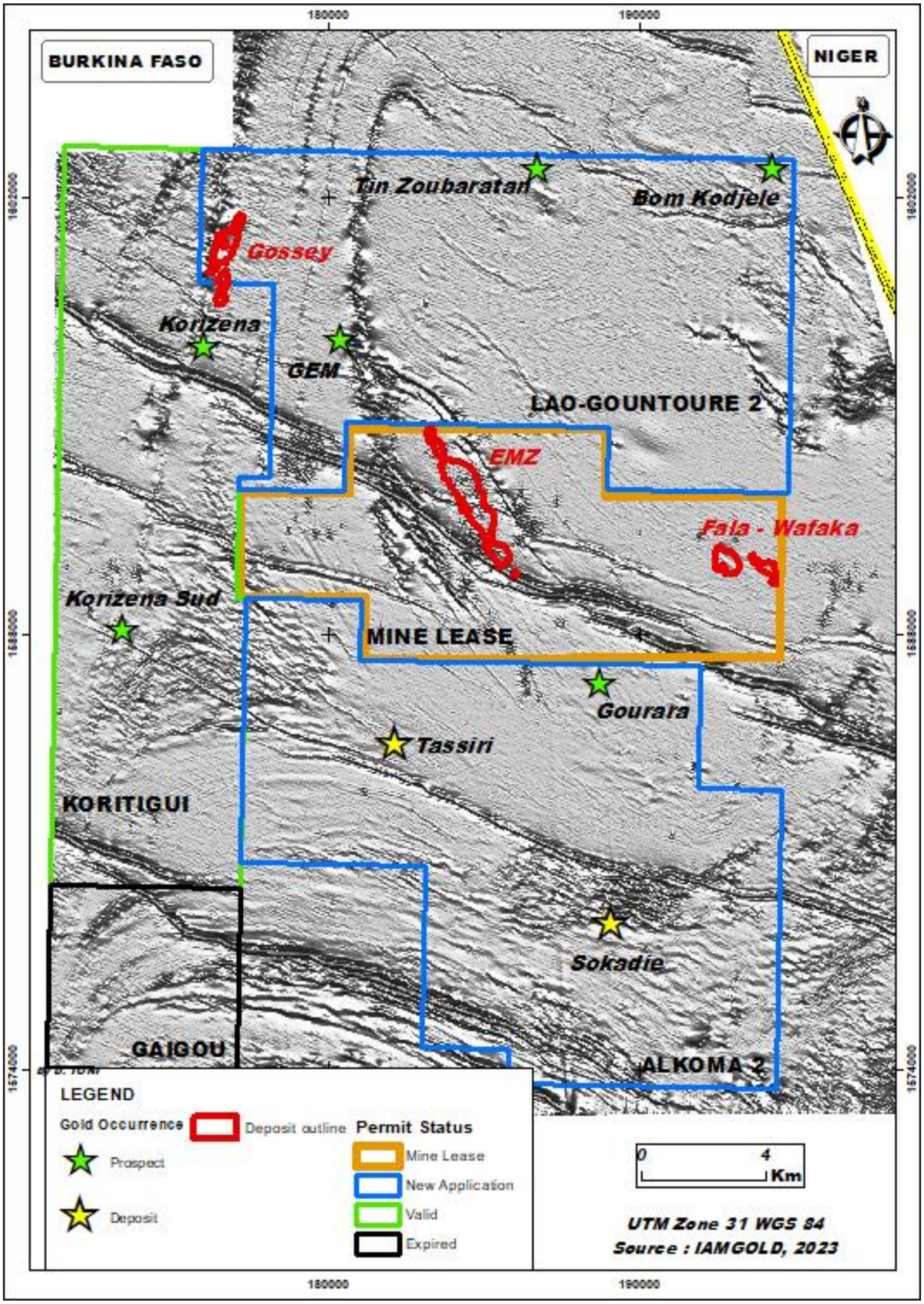
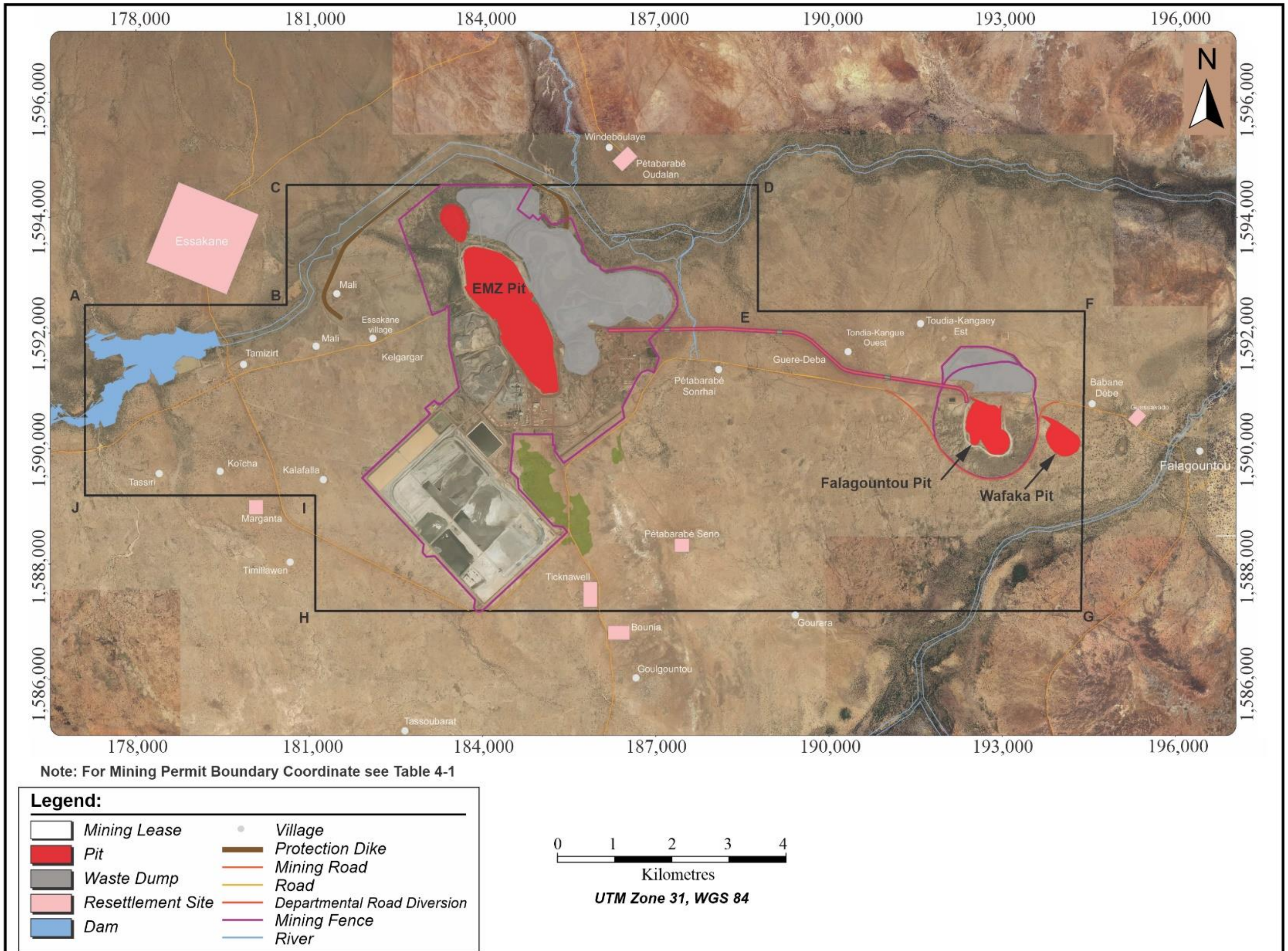


Table 4-1: Essakane Mining Permit Boundary Coordinates

Points	Datum	Zone	X	Y
A	Adindan BF	31P	177,115	1,592,488
B	Adindan BF	31P	180,607	1,592,488
C	Adindan BF	31P	180,607	1,594,564
D	Adindan BF	31P	188,770	1,594,564
E	Adindan BF	31P	188,770	1,592,379
F	Adindan BF	31P	194,430	1,592,379
G	Adindan BF	31P	194,367	1,587,187
H	Adindan BF	31P	181,104	1,587,187
I	Adindan BF	31P	181,104	1,589,186
J	Adindan BF	31P	177,115	1,589,186

Figure 4-2: Mine Infrastructure in Relation to Mining Permit Boundary



Source: IAMGOLD, 2019.

In addition, based on a decree issued on 27 October, 2023, the government receives a 3% royalty on the revenues from mineral production if the gold price is <US$1,000/oz, 4% if the gold price is ≥US$1,000/oz and <US$1,300/oz, 5% if the gold price is ≥US$1,300/oz but ≤US$1,500/oz, 6% if the gold price is ≥US$1,500/oz but <US$1,700/oz, 6.5% if the gold price is ≥US$1,700/oz but <US$2,000/oz, 7% if the gold price is ≥$2,000/oz.

The government also collects various taxes and duties on the imports of fuels, supplies, equipment, and outside services, as specified by the Burkina Faso Mining Law.

4.2.3 Exploration Permits

The mining permit is surrounded by four exploration permits, which currently cover a total area of 547.51 km^2. The permit limits were shown in Figure 4-1.

The Burkina Faso Mining Law gives the exploration permit holder the exclusive right to explore for the minerals requested on the surface and subsurface within the boundaries of the exploration permit. Exploration permits are guaranteed by the law and its associated decrees (arrêtés) provided that the permit holder complies with reporting requirements and annual exploration expenditures totalling 270,000 CFA francs per km^2, or approximately $650/km^2.

The exploration permit also gives the holder the exclusive right, at any time, to convert the exploration permit into a mining permit, in accordance with the law. Each mining permit application requires a separate feasibility study (FS), however, there are precedents in Burkina Faso for variations to this rule.

Exploration permits are valid for a period of three years from date of issue and may be renewed for two additional consecutive terms of three years each for a total of nine years; however, on the second renewal, at least 25% of the original area must be relinquished.

The exploration permits have been granted by the Minister of Mines, Quarries, and Energy (MMCE) as a decree under Burkina Faso's 2003 Mining Code (Code Minier, No. 31–2003/AN dated May 8, 2003).

The Koritigui permit was granted by the MMCE on April 23, 2020, April 23, 2020 and renewed on June 6, 2023 for an additional three years.

The Lao Gountouré 2 and Alkoma 2 permits reached the end of the last period of renewability on November 24, 2018. Following an exception request, the permits were then granted for a special period of three years. IAMGOLD applied for these same tenure areas under a new permit on November 26, 2021. The grant process is delayed, but the application is still under consideration by the authorities. As the prior permit holder, IAMGOLD believes there is a reasonable basis for the tenure applications to be granted.

The exploitation permit was in good standing at the Report effective date. Essakane S.A. was issued a decree dated April 28, 2008, by the government of Burkina Faso for 20-year period.

The exploration permits were in good standing at the Report effective date. Essakane S.A. was issued with Certificate #1587/2007 [SS2] (Issue date 04/10/2007) by the Office Notarial in Ouagadougou.

The decree numbers and expiry dates are listed in Table 4-2 and the exploration permit coordinates are listed in Table 4-3.

4.3 Surface Rights

Surface rights in the area of the mining permit belong to the State of Burkina Faso. Use of the surface rights is granted by the mining permit under the condition that the current users are properly compensated and that statutory payments are made to the government. At the Report effective date, all payments were current, and the mining permit was in good standing.

Exploration activities within the exploration permit areas is allowed under the permit grant. If the area planned for exploration affects local landholders or local infrastructure, compensation payments for disturbance are directly negotiated with the affected individuals.

Table 4-2: Essakane Exploration Permit Details

Permit Name	Decree Granted	Date Granted	Status	Surface Area (km²)
Alkoma 2	09/262/MCE/SG/ DGMGC	24/11/2009	New application lodged, in process	186.600
Koritigui (formerly Korizéna)	056/MME/SG/ DGCM	23/04/2020	Valid	140.696
Lao Gountouré 2	09/264/MCE/SG/ DGMGC	24/11/2009	New application lodged, in process	172.02
Total				***499.316***

Table 4-3: Essakane Exploration Permit Coordinates

Permit Name	Points	Datum	X	Y	Surface Area (km²)
Alkoma 2	A	ITRF 2008	762 700	1 587 600	186.600
	B	ITRF 2008	766 400	1 587 600	
	C	ITRF 2008	766 400	1 585 700	
	D	ITRF 2008	777 300	1 585 700	
	E	ITRF 2008	777 300	1 581 800	
	F	ITRF 2008	780 000	1 581 800	
	G	ITRF 2008	780 000	1 572 200	
	H	ITRF 2008	771 400	1 572 200	
	I	ITRF 2008	771 400	1 573 300	
	J	ITRF 2008	768 600	1 573 300	
	K	ITRF 2008	768 600	1 579 100	
	L	ITRF 2008	762 700	1 579 100	
Koritigui (formerly Korizéna)	A	ITRF 2008	756 265	1 602 270	140.696
	B	ITRF 2008	760 932	1 602 270	
	C	ITRF 2008	760 932	1 597 658	
	D	ITRF 2008	763 286	1 597 658	
	E	ITRF 2008	763 286	1 591 576	
	F	ITRF 2008	762 465	1 591 576	
	G	ITRF 2008	762 465	1 590 955	
	H	ITRF 2008	762 529	1 587 659	

Permit Name	Points	Datum	X	Y	Surface Area (km²)
	I	ITRF 2008	762 529	1 578 244	
	J	ITRF 2008	756 265	1 578 244	
Lao Gountouré 2	A	ITRF 2008	761 000	1 602 000	172.160
	B	ITRF 2008	780 000	1 602 000	
	C	ITRF 2008	780 000	1 591 300	
	D	ITRF 2008	774 200	1 591 300	
	E	ITRF 2008	774 200	1 593 300	
	F	ITRF 2008	765 800	1 593 300	
	G	ITRF 2008	765 800	1 591 100	
	H	ITRF 2008	762 400	1 591 100	
	I	ITRF 2008	762 400	1 591 500	
	J	ITRF 2008	763 400	1 591 500	
	K	ITRF 2008	763 400	1 597 700	
	L	ITRF 2008	761 000	1 597 700	
Total All Permits					***499.316***

4.4 Water Rights

Water rights and water supply are discussed in Section 20.7. Water is sourced, depending on end use, from a combination of groundwater wells, recycling of process water, the Gourouol River, and from water storage basins.

Extraction from the Gourouol River in the period 2010–2022 averaged approximately 6,046,000 m^3, ranging from 3,090,000–7,620,000 m^3.

Extraction from underground sources for the period 2019–2022 averaged about 992,094 m^3, ranging from 714,800–1,180,074 m^3.

The government levies a fee of CFA 125/m^3 of water withdrawn for mining and industrial purposes.

4.5 Royalties

Royalties are discussed in Section 4.2.2.

4.6 Permitting Considerations

Permitting considerations for the Project are discussed in Section 20.

4.7 Environmental Considerations

Environmental considerations for the Project are discussed in Section 20.

Current liabilities with respect to the environment primarily consist of the existing open pits, mine roads, exploration roads, former mine sites, process plant, waste rock storage facilities and the tailings storage facility.

Liabilities and closure considerations associated with the Project are provided in Section 20.

4.8 Social Considerations

Social considerations for the Project are discussed in Section 20.

4.9 QP Comment on Item 4 "Property Description and Location"

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 Project other than as discussed in this Report.

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

5.1 Accessibility

Access from the capital city of Ouagadougou is via a 263 km paved road to the town of Dori, followed by approximately 63 km via a laterite road to Essakane. Access via the town of Gorom-Gorom, located 42 km to the west, is also possible. Within the exploration permits, access is via local tracks and paths.

There is no operating railroad.

An airstrip has been built on packed laterite within the fenced perimeter of the Mine site area and daily flights are made between Essakane and Ouagadougou using an aircraft owned and operated by Essakane S.A., as well as chartered flights.

5.2 Climate

The Mine is located in the northeast of Burkina Faso and the climate is typically Sahelian, i.e., hot, sunny, dry, and somewhat windy all year round. Temperatures range from 10–50°C, with annual pan evaporation rates of 3,000 mm/a. The mean annual rainfall is 397.5 mm with an estimated 100 year maximum of 171 mm in a 24-hour period.

A wet season occurs between late May and September, and the mean annual runoff in the Gourouol River is conservatively estimated to be 91 Mm^3/a. Rainfall is sporadic or absent throughout the rest of the year.

Mining operations are conducted year-round. Weather conditions have had minimal impacts on the mining operations thus far, however, proper planning is required to ensure an adequate water supply during the dry season.

5.3 Local Resources and Infrastructure

There are no major commercial activities in the Mine area and economic activity is confined to subsistence farming and artisanal mining.

Electricity is supplied by on-site diesel generators. A 26 MW power plant, fueled with heavy fuel oil (HFO), was built for the production phase. An additional 31 MW of capacity was added in 2013 to power the expanded milling circuit.

In 2018, a photovoltaic solar farm was commissioned. This power plant provides 15 MW to the Mine without any carbon emissions and helps to reduce the Mine's reliance on fossil fuels while also protecting the environment.

Satellite and internet communications are available at the Mine.

The main sources of water are the Gourouol River during the rainy season and well fields around the Essakane pit and near the Gourouol River. Water is pumped from wells (boreholes) in sufficient quantities for exploration drilling and the mining camp.

Essakane S.A. initiated local training programs for local artisans. Unskilled labour was sourced locally with skilled labour drawn from Burkina Faso at large. Approximately 90 to 150 expatriates from North America and Europe were required in the initial years of production, however, that number decreased as local Burkinabé workers acquired the expertise and experience to replace the expatriate employees.

Additional information on the Project infrastructure is provided in Section 18.

5.4 Physiography

With the exception of the Falagoungou mining area, the Mine area is characterized by relatively flat terrain sloping gently towards the Gourouol River to the north of the EMZ deposit and towards the Feildegasse River to the south of the Mine area. The average elevation over the Essakane Mine area is 250 m above sea level.

The Falagountou mining area is slightly less flat terrain than that in the Essakane Mine area. The average elevation over the Falagountou mining area is 264 m above sea level. The Falagountou west and Wafaka pits are on land that has average elevations of 264 m and 260 m, respectively.

Vegetation consists mostly of light scrub and seasonal grasses. Deforestation has been significant, particularly in the area surrounding the original village of Essakane.

5.5 Sufficiency of Surface Rights

There is sufficient surface area within the Project boundaries for the open pits, waste rock storage facilities, plant, tailings storage facility, associated infrastructure, and other operational requirements for the life-of-mine (LOM) plan discussed in this Report.

6 HISTORY

6.1 Project History

The Project history is summarized in Table 6-1.

6.2 Production History

From 1992 to 1999, heap leach processing of gravity rejects from artisanal winnowing and washings was carried out by CEMOB. CEMOB placed a total of 1.01 Mt of material on the heap leach pad at an average grade of 1.9 g/t Au and achieved 73% recovery during its ownership.

Table 6-2 shows heap leach plant production from 1992 to 1999, when the Project was operated by CEMOB. Table 6-3 shows the CIL plant production from 2010 to mid-2023, under IAMGOLD. It is estimated that approximately five million ounces of gold has been produced from the Project area since 1992.

There is no past production from the Gossey deposit.

Table 6-1: Project History

Year	Operator	Work Completed
1985		Artisanal mining; at peak, up to 15,000 artisanal miners worked at the EMZ deposit
1986–1992	Bureau des Mines et de la Géologie du Burkina (BUMIGEB)	1:50,000 mapping of the Essakane zone, regional gold and base metals geochemical sampling, and evaluation of the surficial gold deposits exploited by artisanal miners. Arranged and financed a program of heap leach testwork
1991–1993	Compagnie d'Exploitation des Mines d'Or du Burkina (CEMOB)	Granted the Essakane Mining Exploration Permit; this permit covered most of the area which is now included within the Essakane Mining Permit (excluding the Gomo permit). Constructed a heap leach facility, gold production. Efforts were also made to leach saprolite from the EMZ deposit, however, based on verbal accounts, leaching failed due to high cement consumption, and plugging and binding in the heaps.
1993–1996	BHP Minerals International Exploration Inc. (BHP)/CEMOB	Joint venture, with BHP as operator. Excavated and sampled 26 trenches (4,903 m) along the EMZ deposit. Completed scout reverse circulation (RC) drilling at Essakane, Falagountou and Gossey prospects, RC drilling at Essakane, consisting of 7,404 m of vertical holes on a 100 x 50 m grid), and core drilling in the main area of artisanal mining at Essakane (1,462 m). 11 shallow RC drill holes at Gossey. Low gold prices and operational problems caused CEMOB to go into liquidation at the end of 1996, and BHP decided to withdraw from the project.
2000	Coronation International Mining Corporation (CIMC)	Obtained the Essakane Mining Exploration Permit and six additional licences, including the Lao Gountouré permit that hosts the Gossey deposit.
2000–2001	Ranger Minerals/CIMC	Joint venture with Ranger as operator. Rotary air blast (RAB; 12,867 m) and RC drilling of oxide mineralization at Essakane Nord, Lao (formerly Essakane South), Falagountou, and Gossey. Follow up RC drilling (22,393 m) at the EMZ deposit; 1,070 m of core drilling as twinned holes and extensions. Mapped and sampled veins in the BHP trenches. Ranger withdrew in 2001.
2002	Orezone Resources	CIMC merged with Orezone Resources.
2002–2006	Gold Fields Orogen Holding Ltd (Orogen)/Orezone Resources	Orogen formerly Orogen Holdings (BVI) Limited, a subsidiary of GFL Mining Services Limited. Joint venture with Orezone Resources as operator from 2002–2006, when management assumed by Gold Fields Essakane Limited (GF BVI), an Orogen subsidiary. Geomorphological and geological interpretations, regional, geological, and structural mapping reviewed analytical data, completed geological modelling, and Mineral Resource estimation at Essakane. Completed 100 RC drill holes at Gossey (7,321 m) and 4 core holes (680 m).

Year	Operator	Work Completed
2007–2008	Orezone Resources/GF BVI/Essakane Limited (Essakane BVI)	Joint venture. Essakane BVI completed a feasibility study in 2007. Orezone Resources acquired GF BVI's 60% interest in Essakane BVI, and became owner of a 100% interest in Essakane BVI, subject to the interest of the Burkina Faso government. Obtained Environmental Permit, and concluded a Memorandum of Understanding (MOA) with the local population; was granted the Essakane Mining Permit
2008	Essakane S.A.	A Burkinabé private company was created for the purpose of owning and operating the Essakane Mine. Updated feasibility study completed.
2009–Report effective date	IAMGOLD	Acquired Orezone Resources and the Essakane Gold Mine was transferred to IAMGOLD Essakane S.A. Completed regional high-resolution aeromagnetic/radiometric survey in 2009. Commercial production from Essakane started on July 16, 2010. Detailed surface mapping of Korizéna and part of Lao Gountouré 2 permits from 2010–2012. Completed 9 RC holes (1,072 m) and 10 core holes (2,508 m) at Gossey, and 48 RC holes (5,712 m) and 12 core (2,846 m) at Korizéna. Essakane plant expansion in 2013. Aircore drilling in Gossey area. Falagountou/Wafaka satellite deposit mining commenced in 2015; deposits mined out in 2020. Completed 124 RC drill holes (15,254 m) at Gossey in 2017 and an additional 191 RC drill holes (14,284 m) in 2018. Helicopter-borne geophysical survey of approximately 238 km^2 flown over the Gossey–Korizéna deformation corridor in 2018. Resource estimate completed for Gossey deposit. Combined carbon in leach and heap leach feasibility study completed 2019.

Table 6-2: CEMOB Heap Leach Plant Production

Year	Tonnage (000 t)	Grade (g/t Au)	Ounces Produced (000 oz Au)
1992	42	4.5	6
1993	116	5.1	18
1994	157	1.7	8
1995	148	1.5	7
1996	257	1.0	8
1997	165	0.8	4
1998	72	1.4	3
1999	50	2.0	3
Total	***1,007***	***1.9***	***58***

Table 6-3: Essakane Mine and CIL Plant Production

Year	Tonnes Mined (000 t)	Grade Mined (g/t Au)	Tonnes Milled (000 t)	Grade Milled (g/t Au)	Ounces Produced (000 oz Au)
2010	10,097	1.05	2,973	1.49	136
2011	10,110	1.08	7,977	1.53	375
2012	9,562	1.04	10,762	1.10	350
2013	11,869	0.84	10,613	0.89	277
2014	12,580	0.98	11,897	1.06	369
2015	11,519	1.14	11,716	1.23	426
2016	11,374	1.21	12,005	1.22	419
2017	11,696	1.16	13,890	1.07	432
2018	13,866	1.12	13,031	1.18	450
2019	12,990	0.89	13,373	1.04	409
2020	8,930	0.79	12,439	1.18	404
2021	12,333	0.91	12,948	1.31	457
2022	10,504	1.20	11,632	1.44	480
2023 (to September 30)	6,369	1.32	8,167	1.16	293
Total	***153,799***	***1.04***	***153,423***	***1.18***	***5,277***

7 GEOLOGICAL SETTING AND MINERALIZATION

7.1 Regional Geology

The geological setting of northeast Burkina Faso (Figure 7-1 and Figure 7-2) consists predominantly of Precambrian rocks of the Oudalan-Gourouol greenstone belt that forms part of the Paleoproterozoic Baoulé-Mossi domain of the West African Craton and hosts numerous gold deposits and prospects including Essakane, and Gossey (Nkuna, 2009).

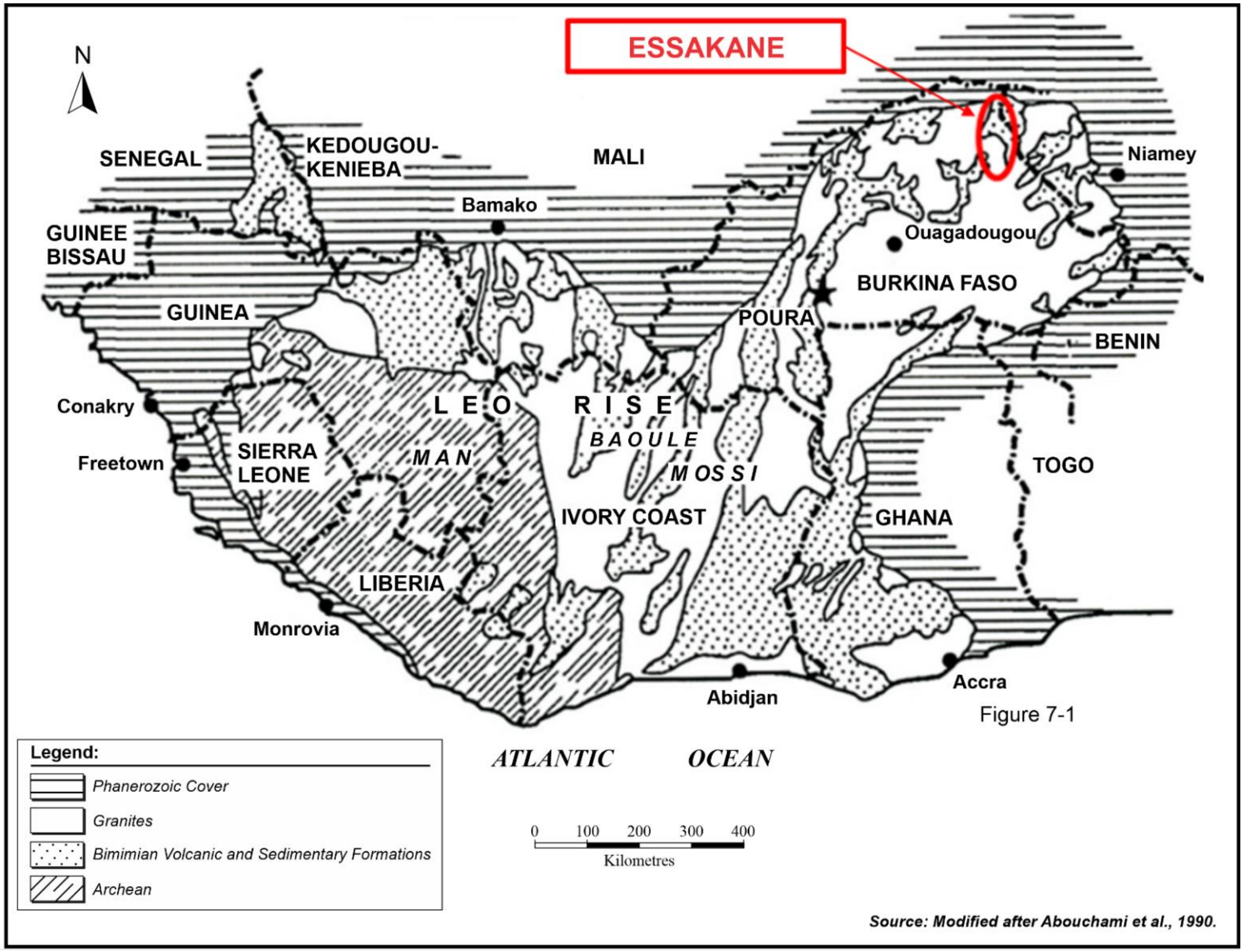
The Oudalan-Gourouol greenstone belt is bounded by intrusive granitic rocks belonging to the plutonic belt (Tshibubudze et al., 2010) (Figure 7-3). Along its western edge, granitic–gneissic rocks are exposed in local tectonic thrust slices. The Birimian sedimentary and volcano-sedimentary sequences in the belt are dominated by metavolcanoclastic, greywacke, metaconglomerate, siltstone and shale, carbonate (dolomite), and volcanic unit pillowed basalts (Tshibubudze et al., 2009)

The Oudalan-Gourouol greenstone belt is bounded and/or cross-cut by several major north–northeast- to northeast-trending shear zones, including the crustal-scale, steeply east-dipping Markoye Shear Zone, the Tin Takanet-Bellekcire Shear Zone, the Dori Shear Zone, and the Kargouna Shear Zone. The Markoye Shear Zone, located through the western portion of the belt, trends north–northeast, and separates Paleoproterozoic rocks on the east from older granite–gneiss terranes to the west (Tshibubudze et al., 2009).

Structural investigations in the northern part of the belt suggested that the Markoye Shear Zone has been affected by at least two phases of tectonic reactivation associated with two phases of regional deformation (Tshibubudze et al., 2009). The first deformation (D1) involved a northeast-southwest-directed compression and resulted in the formation of north–northwest- to northwest-trending folds and thrusts during dextral-reverse displacement on the Markoye Shear Zone. This deformation predates the Eburnean Orogeny and is termed the Tangean Event dated at ca. 2,170–2,130 Ma (Tshibubudze et al, 2009). The second deformation (D2) involved a period of northwest–southeast oriented crustal shortening and sinistral-reverse displacement on the Markoye Shear Zone, and is correlated with the ca. 2.0 Ga Eburnean Orogeny (Feybesse et al., 2006).

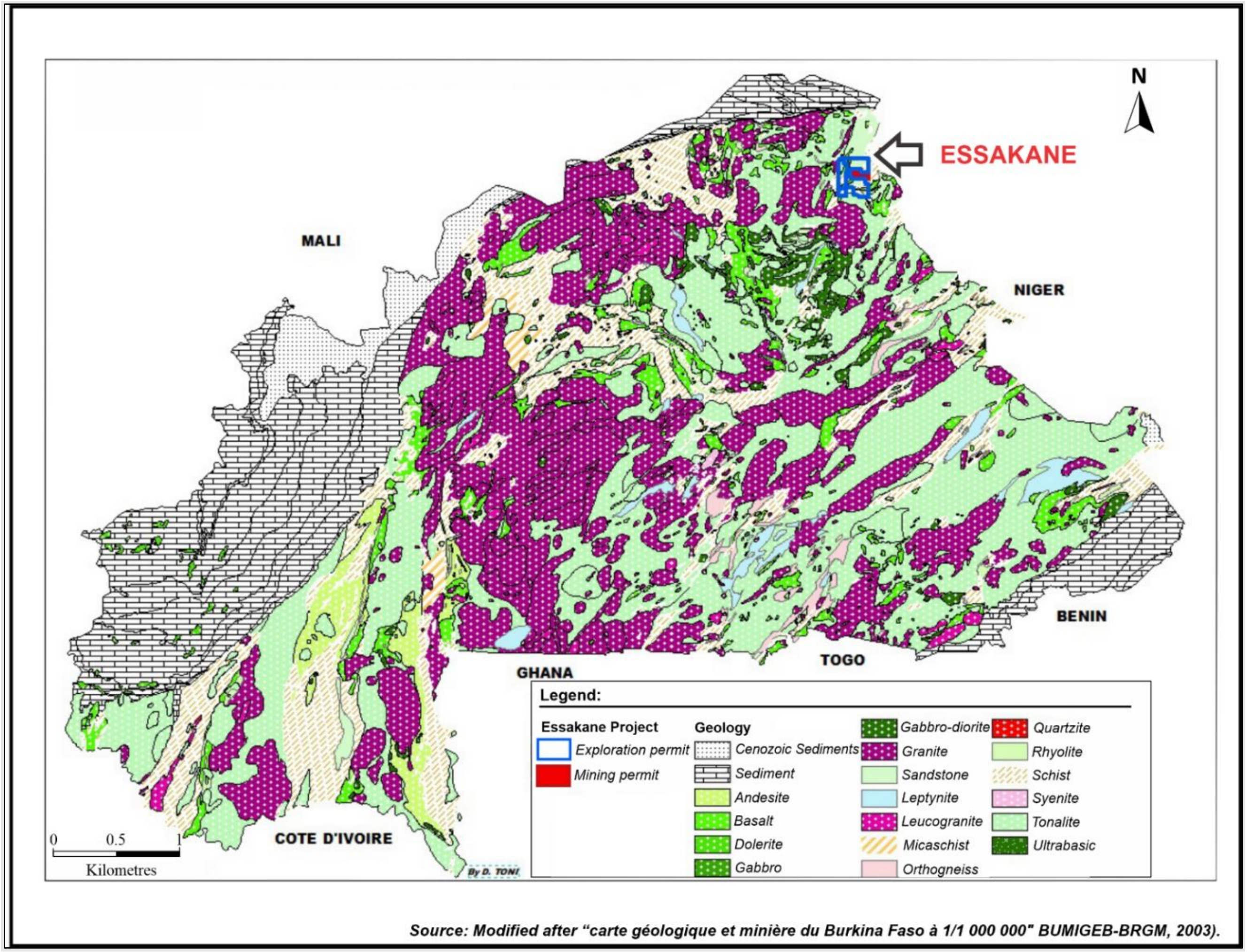
7-3

Figure 7-1: Location of Oudalan-Gourouol Greenstone Belt within West African Craton



Note: Figure prepared by IAMGOLD, 2023.

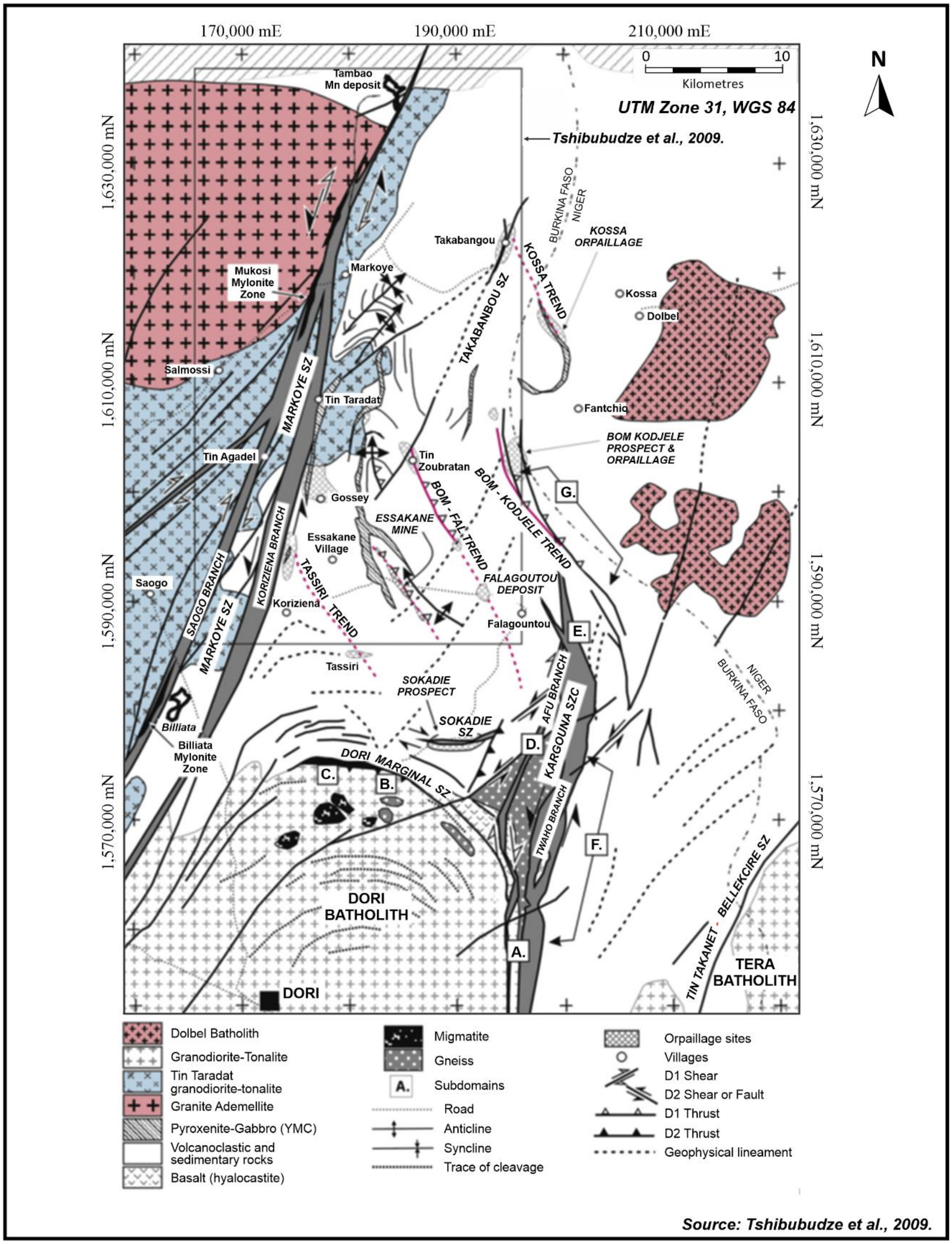
Figure 7-2: Regional Geological Setting



Source: Modified after "carte géologique et minière du Burkina Faso à 1/1 000 000" BUMIGEB-BRGM, 2003).

Note: Figure prepared by IAMGOLD, 2023.

Figure 7-3: Geological Map of the Oudalan-Gourouol Greenstone Belt



Note: Figure prepared by IAMGOLD, 2023.

D2 is characterized by northeast-trending regional folds and a pervasive northeast-trending foliation. D1 structures are compatible with pure-shear dominated transpression, while the D2 deformation is characterized by a switch to the strike-slip dominated east–west to west–northwest oriented transpressional regime (Tshibubudze et al., 2009; 2010).

Gold mineralization is generally hosted in the hanging wall of northeast-trending faults and/or northwest-trending folds in metasiltstone, sandstone, and shale sequences (Nkuna, 2009). Gold deposits are most often related to transcurrent D2 shear zones and faults as these discontinuities have served as the main conduit for mineralized fluids. Gold is either disseminated or concentrated in quartz veins (Beziat et al., 2008). As with other Precambrian orogeny, the early fabrics were modified by the regional-scale D2 transcurrent shear zones, which acted as pathways during the gold mineralization events (Nkuna, 2009).

7.2 Local Geology

7.2.1 Lithologies

Figure 7-4 shows the boundaries of the exploration permits and the EMZ deposit area (highlighted in red) in the context of a simplified presentation of the geology. Figure 7-5 shows a more detailed geology map of the Project area.

The sedimentary rocks have been subdivided on the basis of lithology into deep water turbidites (the Birimian) and coarse clastic basin margin sequences (the Tarkwaian).

The Birimian rocks consist of wackes, arenites and mudrocks (argillites), pebbly arenites, and minor tuffs, which have been metamorphosed to lower greenschist facies. Arenite is the dominant lithology. Intermediate intrusive rocks occurring as sills are common and appear to pre-date all gold mineralization in the district. Occasionally, the contact between the intermediate intrusive sills and the sedimentary rocks is slightly mineralized. The sill itself is typically not mineralized.

The Tarkwaian rocks are typically sandstones with thin intercalated bands of matrix-supported, polymictic conglomerates; however, they differ from similar lithologies found in Ghana. In particular, the conglomerate matrices are not enriched in heavy minerals, nor do they show the alteration mineral assemblages of the Ghanaian Tarkwa and Iduapriem mines (held by parties other than IAMGOLD).

Figure 7-4: Boundaries of the Updated Exploration Permits and Local Geology

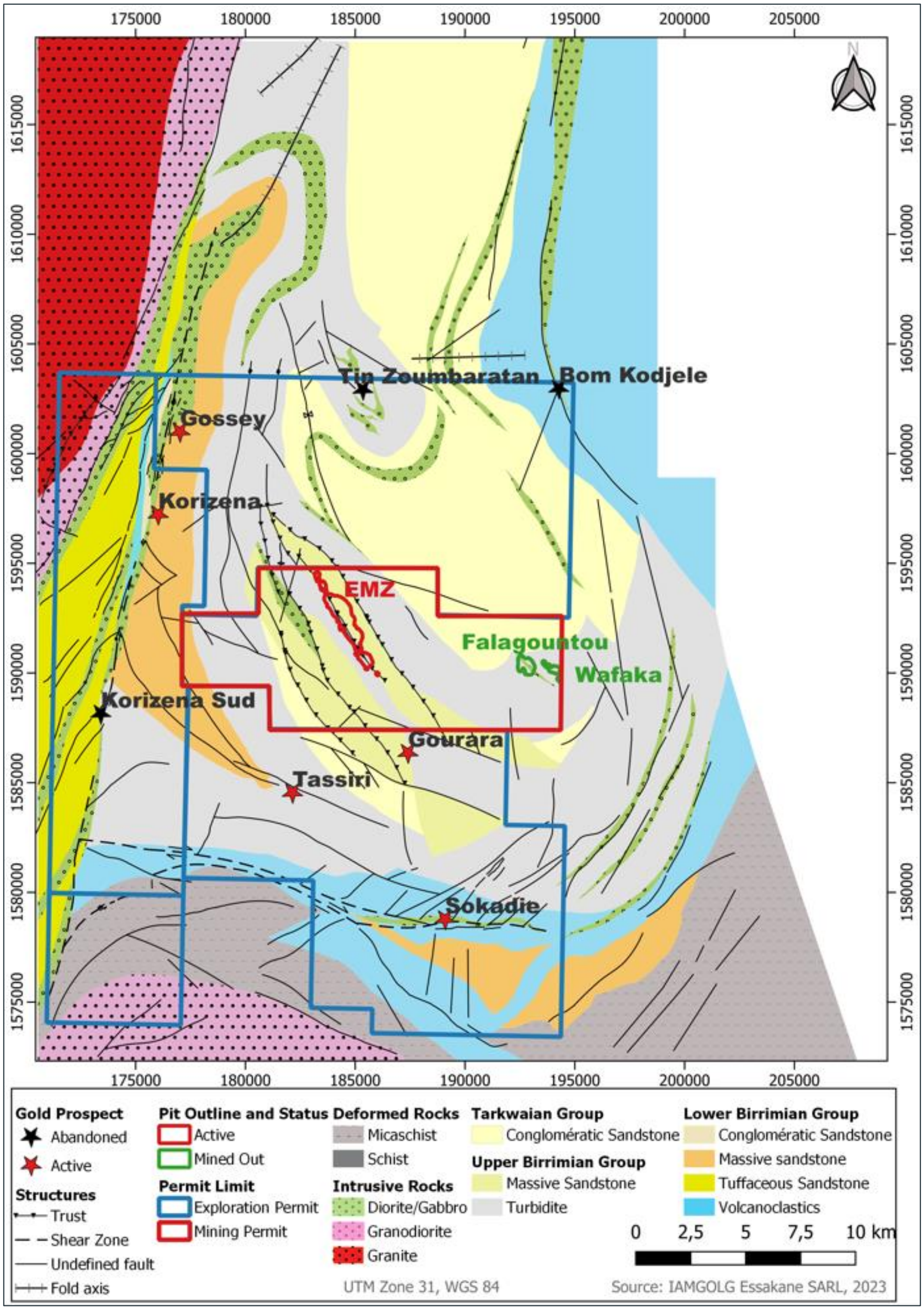
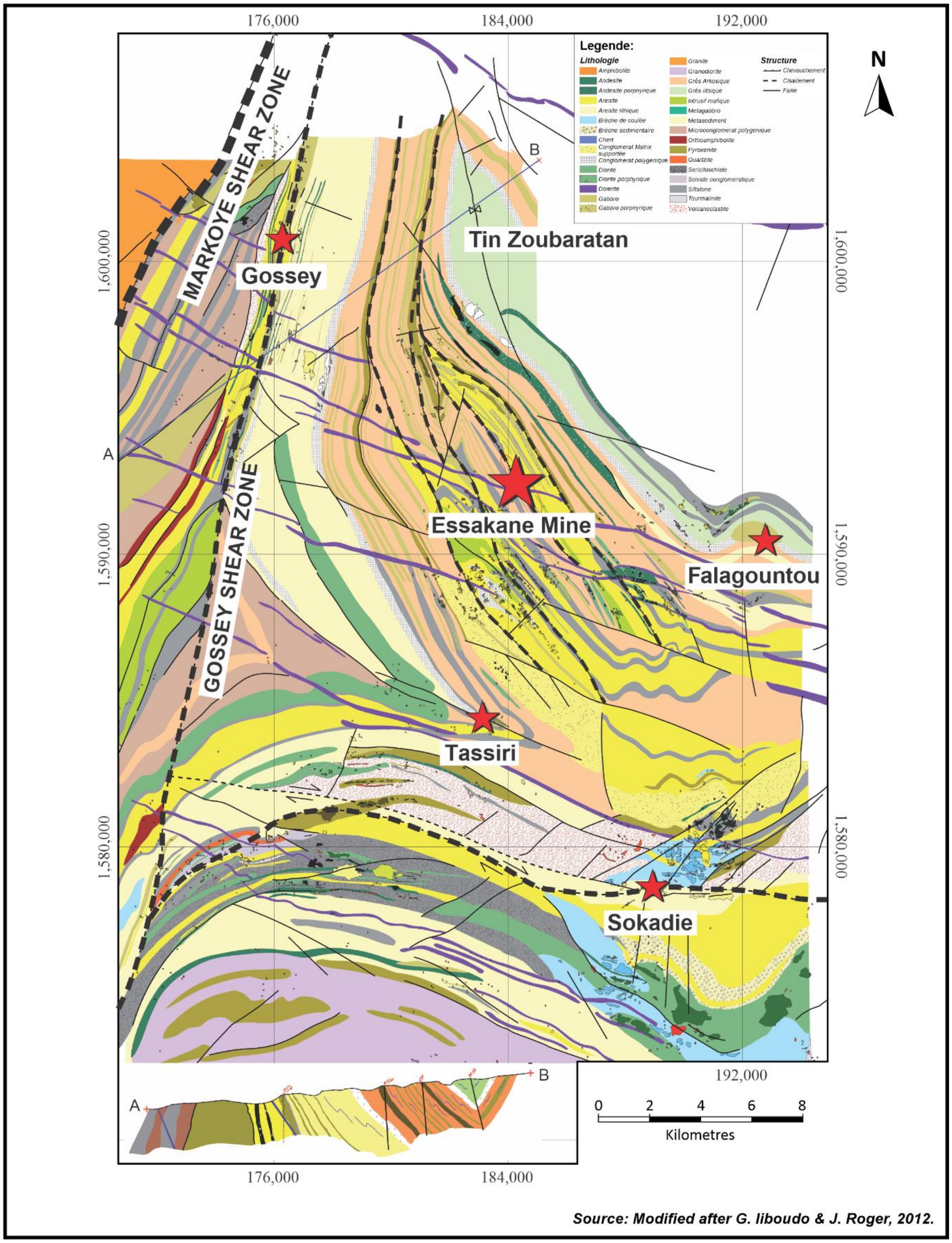


Figure 7-5: Project Geology Map



Note: Figure modified IAMGOLD, 2023.

Each succession contains intercalated intermediate and mafic intrusive units that collectively comprise up to 40% of the total stratigraphic section.

7.2.2 Structure

The Birimian and Tarkwaian rocks are bounded to the west by the major north–northeast-trending Markoye Fault and to the south by the Dori batholith. The Markoye Fault is interpreted to be a left-lateral wrench fault that was an active basin margin fault at the time of sediment deposition. Other regional faults in the district trend northeast and west-northwest. Mesozoic age dolerite dykes cross-cut the faults. Fold axes within the Birimian rocks typically trend northwest and north, except in the south where units are re-folded adjacent to the batholith.

The Mine area preserves evidence for at least two regional deformational events. D1 structural elements such as the Essakane-host anticline are refolded by a series of north–northeast-trending F2 folds. Later localized deformation occurs near the margin of a calc-alkaline batholith in the south of the Mine area. The Markoye Fault trends north–northeast through the western portion of the Mine area and separates the Paleoproterozoic rocks from an older granite-gneiss terrane to the west.

7.2.3 Alteration

The major alteration assemblage observed locally is sericite > carbonate > silica ± albite ±chlorite ± arsenopyrite ± pyrite. Disseminated tourmaline and rutile are found in accessory amounts. The main alteration minerals tend to occur in clearly defined veins and stringers. Traces of chalcopyrite, pyrrhotite, galena, and hematite, magnetite, fuchsite occur. Remobilized graphite can be found.

7.2.4 Weathering

Weathering of arenite and argillite by meteoric processes has produced a consistent, although very uneven weathering profile. The Brown's hardness scale is used to differentiate between saprolite, transition and fresh rocks. The base of transition (or top of fresh rock) is gradational, and the contact is placed at the Brown's value of R3 (that is, the rock can be peeled by a pocket-knife with difficulty; shallow indentations can be made by firm blows with the point of a geological hammer). Oxidation of sulphides on vein margins and joints can extend into fresh rock for some distance below this position.

7.2.5 Mineralization

The deposits are characterized by multiple quartz and quartz–carbonate vein sets and stringers. Vein arrays occur in the east limb, fold hinge (or fold axis), and west limb lithostructural domains. Arsenopyrite and pyrite tend to be late, and are concentrated near the margins of the veins or in cross-cutting stringers.

Faults reactivated during the D1 and D2 regional deformation events provide the structural control on the mineralization.

Gold mineralization is associated with thrust faults or shear zones with brecciated, banded, sheared quartz veins and boudins within highly silicified zones.

Mineralized bodies form as subvertical, or slightly inclined to the east, and consist of lenses, quartz stockwork and/or quartz–carbonate veins. The preferred emplacement is on the fold hinge or the limbs (EMZ, Tassiri, Gourara) or along shear corridors (Gossey, Korizena, Sokadie).

7.3 Deposits

7.3.1 Essakane (EMZ, Essakane Nord, Gourouol)

7.3.1.1 Dimensions

The EMZ deposit is about 3,000 m long. Mineralization has an average thickness of approximately 200 m. Mineralization has been intercepted at 600 m vertically below surface; however, the deposit remains open at depth and along strike.

The Essakane Nord and Gourouol deposits are situate immediately north of the EMZ deposits. The Essakane Nord deposit is mined out. The mineralized zone was approximately 400 m in length, averaged about 40 m in thickness, and was intercepted to 200 m depths below surface. The Gourouol deposit is being infill drilled. It is approximately 300 m in length, averages about 30 m in thickness, and has been intercepted to 125 m depths below surface.

7.3.1.2 Lithologies

The EMZ deposit is a quartz-carbonate stockwork vein deposit hosted by a folded turbidite succession of arenite and argillite (Figure 7-6).

The laminated sedimentary units are part of turbidite (Bouma) sequences. The regularly-laminated unit consists of alternating sandstone, siltstone, and grey–black argillite. The lateral extension of this unit is limited. The irregularly-laminated unit is thicker than the regularly-laminated unit, and consists of an alternating sequence of sandstone, siltstone, and poorly sorted argillite. Argillite is the predominant rock type in the irregularly laminated unit.

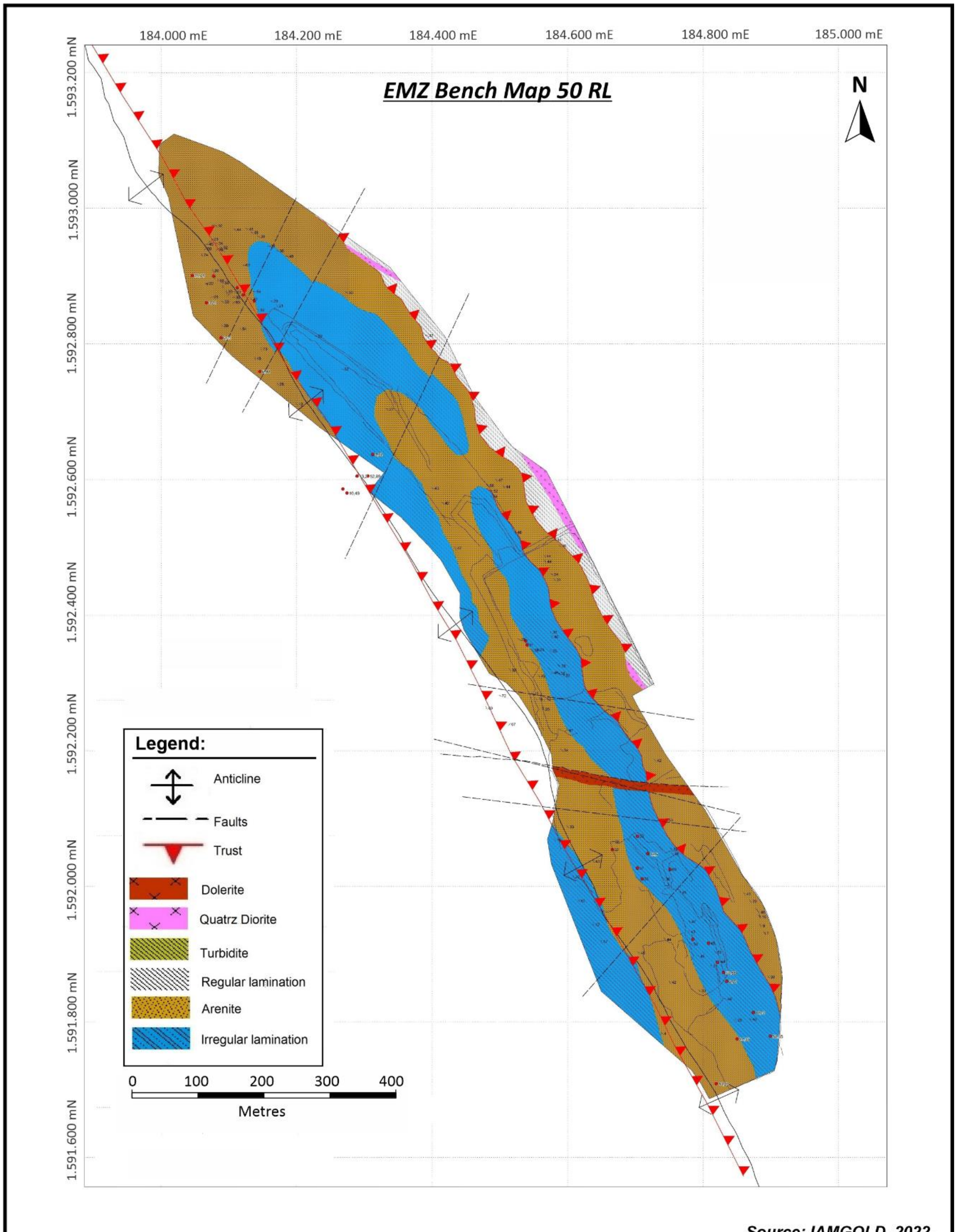
The geology of the EMZ deposit is dominated by the persistent east limb main arenite. The top contact of the east limb domain is a sharp, sheared contact with no significant gold mineralization above it. The shearing appears to be parallel to the bedding; however, some loss of vertical succession has occurred. The main arenite below this contact is the lower coarse-grained part of a turbidite cycle. The locus of bedding-parallel deformation and alteration is within the east limb of the main arenite. Graphitic argillite occurs immediately above the contact. The deformation shifts into the hanging wall argillite unit to the north of the EMZ deposit.

Essakane Nord and Gourouol are hosted in the same lithologies as the EMZ deposit. These comprise turbidite sequences overlying grey-black argillite and coarse-grained sandstone. The sedimentary units are intruded by dolerite dykes and Intermediate sills (diorites).

7.3.1.3 Structure

The EMZ deposit is hosted in an anticlinal fold with flexural slips between layers and is westward thrusting along weakness planes parallel to bedding, with minor displacement. The fold closure is sharp, sometimes truncated by thrusts, and the transition from east limb to west limb takes place over a few metres. The position of the fold axis is often marked by a breccia in the arenite unit. The fold hinge zone in the argillite unit is marked by tight kink structures and sheath folds with rapid transitions from east-dipping footwall rocks to near vertical west limb beds below the fold axial plane. Quartz veins fill brittle extension and shear deformation structures caused by the folding.

Figure 7-6: EMZ Bench Map 50RL



Source: IAMGOLD, 2022.

The main structural features of the EMZ deposit include:

- The lithologies are folded into a west-verging anticline;
- There are competency contrasts between arenite and argillite, and flexural slip along bedding planes in a pervasive deformation style throughout the deposit;
- Early bedding-parallel, grey laminated quartz veins are related to flexural slip;
- Syn-deformational, steep extensional quartz veins with visible gold occur in the fold hinge and east limb domains;
- Axial-planar pressure solution seams are developed in the fold hinge.

Mine mapping and oriented core drilling have demonstrated that continuity of mineralization within the fold hinge domain is caused by conjugate vein sets. These vein sets have been repeatedly sealed and reactivated during a deformation history that saw a 40° clockwise rotation of the stress fields. Away from the hinge, dissemination of mineralization along flexural slips and lithological contacts are the more prevalent mechanisms of emplacement.

Pressure solution veining appears to be more common in the footwall argillite and provides grade continuity down the fold axis. The lengths of individual veins are usually short and only a few veins longer than ten metres are exposed in the pit. The vein density (number of veins in a given volume) is the most important factor to delineate favourable gold concentration. This pattern of mineralization extends into the east limb main arenite, with steep north-south veins supplemented by a lower frequency of east-west and 140° veins.

The Essakane Nord and Gourouol deposits are developed on a major thrust fault, associated with a fold hinge. The mineralization is structurally controlled and occurs in zones of northwest-striking structural corridors that contain a complex networks of extensional dilation fracture systems.

7.3.1.4 Alteration

Hydrothermal alteration and meteoric weathering are pervasive through the east limb main arenite.

Hydrothermal alteration is generally associated with quartz veining and gold mineralization in the deformed main arenite.

The alteration assemblage is sericite > carbonate > silica ± albite ± arsenopyrite ± pyrite. The main alteration minerals tend to occur in clearly defined veins and stringers. Sulphide mineralization preferentially occurs in the coarser arenaceous layers.

Arsenopyrite and pyrite occur within and adjacent to quartz veins as well as disseminated throughout areas of wall rock alteration. These sulphides tend to be late and concentrated near the margins of the veins or in late cross-cutting stringers. Traces of chalcopyrite, pyrrhotite, galena, and hematite occur with arsenopyrite.

Minor amounts of tourmaline with fine needles of rutile are found in the main arenite and in interbedded arenite stringers in the footwall argillite. The fine-grained argillites can be strongly enriched in tourmaline. Remobilized graphite can be found associated with tourmaline.

Minor hematite alteration of turbidite units is noted at Gourouol.

7.3.1.5 Mineralization

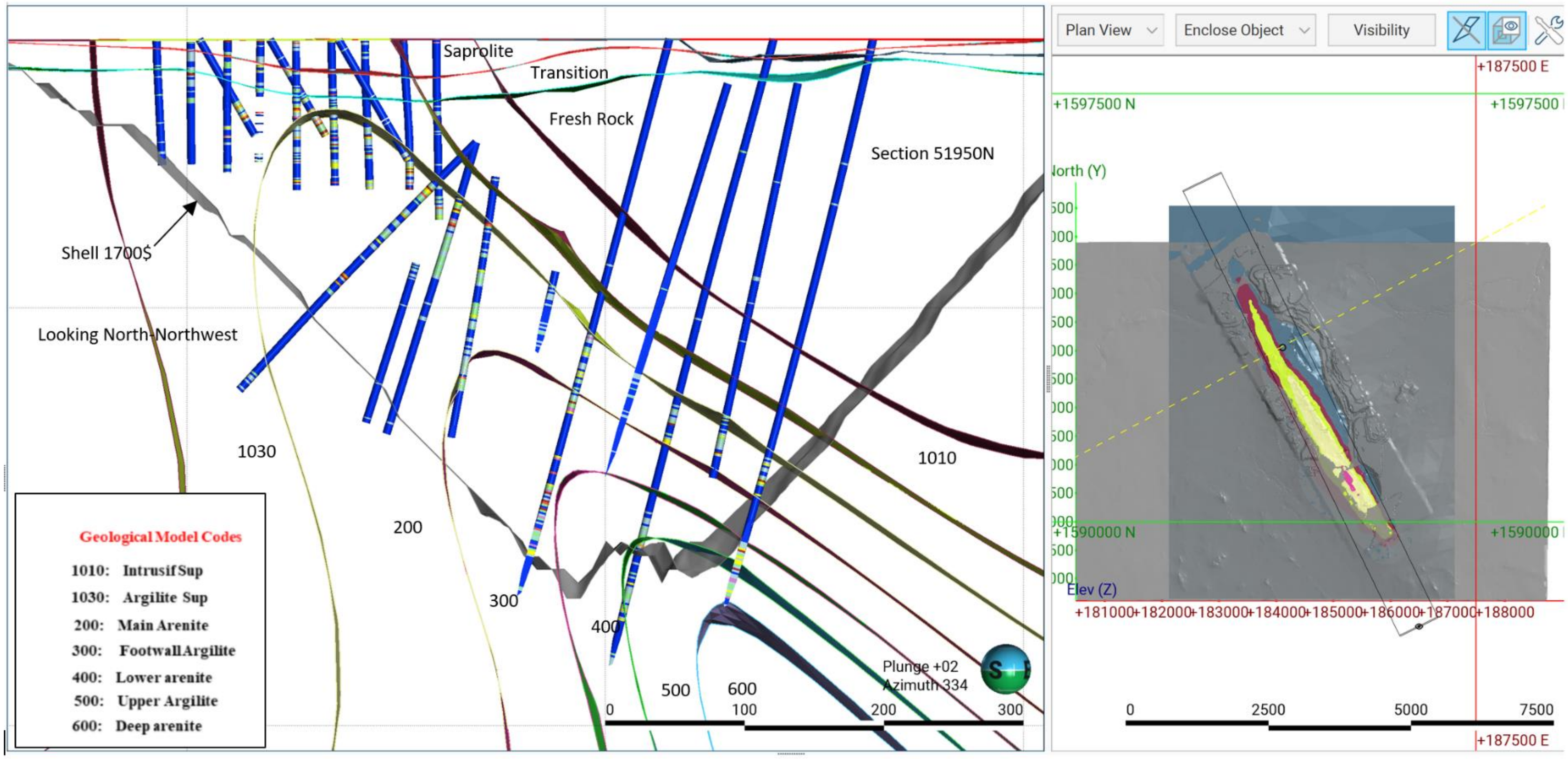
A cross-section through the EMZ deposit model showing the orientation of the drilling to the mineralization is shown in Figure 7-7. Figure 7-8 shows the block model interpretation in relation to the drilling. The model is based on the mine geology mapping and interpretation from extensive oriented core drilling.

The EMZ deposit is characterized by multiple quartz and quartz-carbonate vein sets and stringers. The vein arrays in the EMZ deposit are complex and consist of the following:

- Early bedding parallel laminated quartz veins caused by flexural slip and showing ptygmatic folding;
- Late, steep extensional quartz veins as vein filling in extension and shear joints formed by the folding;
- Axial-planar pressure solution cleavage (with pressure solution seams normal and parallel to bedding). All veins may be displaced by two sets of late opposing thrusts (Figure 7-9).

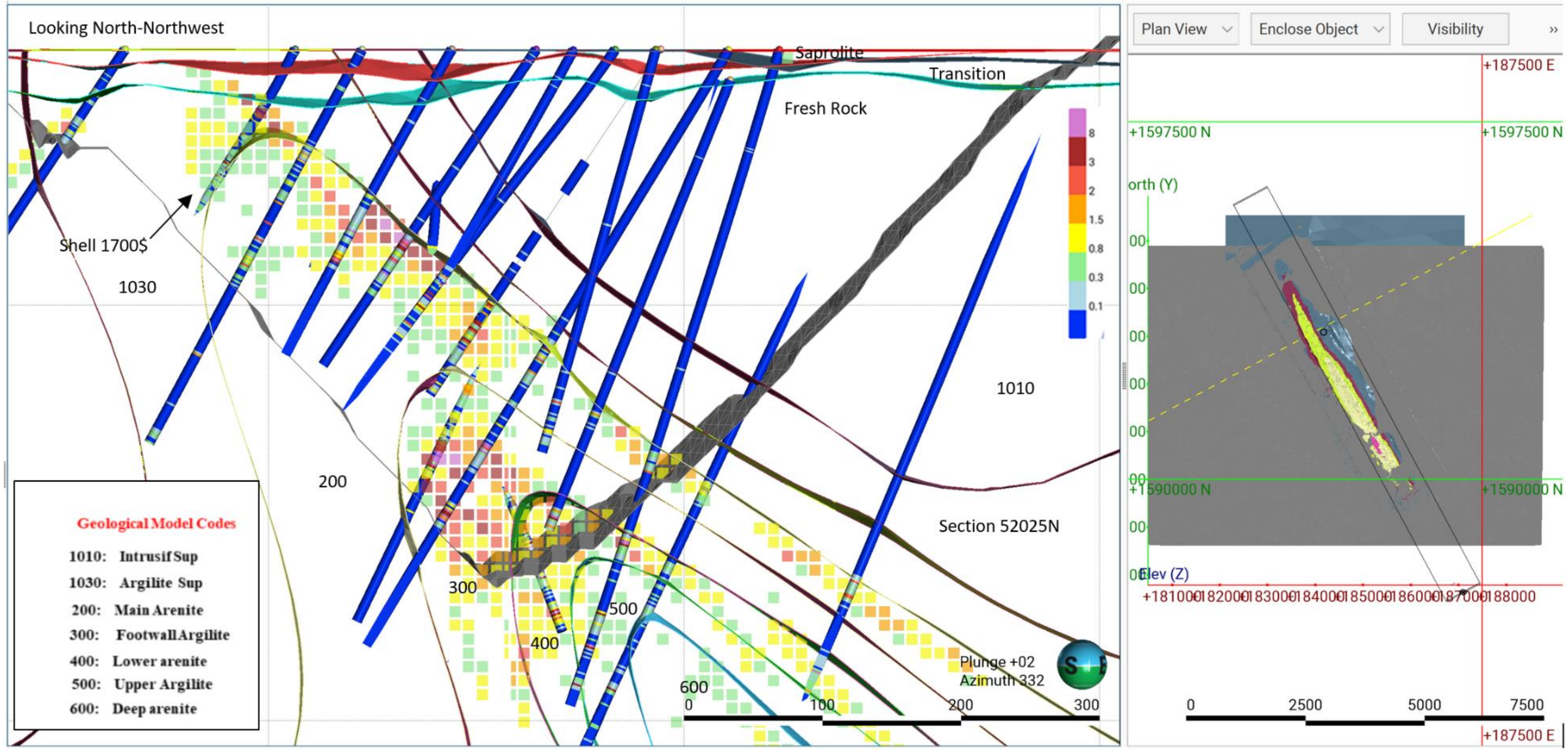
Vein arrays occur in the east limb, fold hinge (or fold axis), and west limb lithostructural domains.

Figure 7-7: EMZ Cross-Section 51950N, Drilling and Simplified Lithology



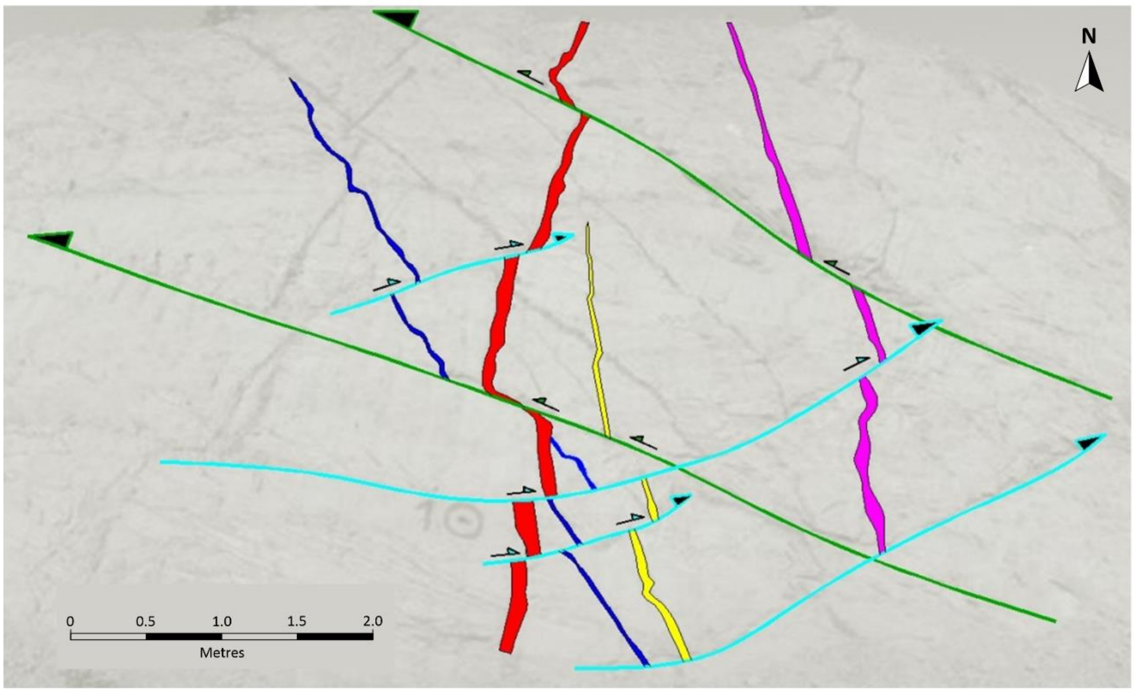
Note: Figure prepared by IAMGOLD, 2023.

Figure 7-8: EMZ Cross-Section 50,775N, Block Model, Drilling and Simplified Lithology



Note: Figure prepared by IAMGOLD, 2023.

Figure 7-9: Vein Displacements Along Minor Thrusts (West Wall EMZ Deposit)



Source: IAMGOLD, 2015.

The paragenetic sequence of veining is interpreted to be as follows:

- Early quartz–carbonate–albite ± sericite veins;
- Quartz veins with tourmaline and pyrite containing gold;
- Diffuse quartz–albite–carbonate veins with arsenopyrite;
- Later tourmaline–rutile–arsenopyrite stringers with gold;
- Late skeletal pyrite and carbonate–quartz–pyrite stringers.

Arsenopyrite and pyrite tend to be late and concentrated near the margins of the veins or in late cross-cutting stringers.

Grade continuity is best developed along the following lithological contacts:

- Upper part of the east limb main arenite;
- The arenite–argillite contact at the base of the main arenite;
- The gradational contacts between the footwall argillite and footwall arenite units;
- The arsenopyrite-rich layers in the deep argillite.

Except for vein sets located in the turbidite-hosted Birimian sills, all recorded vein sets are mineralized. The east–west and north–south vein sets both appear to exhibit higher average gold grades than the other vein sets; however, they are also more variable, with a higher proportion of the lower values also appearing in the same vein sets. Tests conducted in December 2010, over three areas inside the pit with oriented grade control drilling, have demonstrated that the grade difference between holes oriented 242° (initial drill pattern) and 120° (later pattern that intersects more of both vein sets) can be as high as 9%.

Continuity of mineralization in the steep west limb is poor. The mineralization is usually low grade due to the frequency of white, late-stage extensional quartz veins with visible gold; however, there are a few east–west extensional veins cross-cutting the west limb that have been worked by artisanal miners. Gold dissemination into the wall rock is rare, and gold is largely confined to the early stage, bedding parallel, and conjugate veins sets.

Gold occurs as free particles within the veins and is also intergrown with arsenopyrite ± tourmaline on vein margins or in the host rocks. Gold is typically coarse. Visible gold particles have been recorded during core logging within and on the margins of quartz veins, intergrown with coarse arsenopyrite, and as isolated grains in the host rock. The common associations are:

- Gold particles in white, extensional, quartz–carbonate veins;
- On fractures or peripheral to late carbonate which has developed along quartz grain boundaries;
- Associated with clusters of arsenopyrite grains.

Mineralogical testwork shows that the gold occurs in a number of forms:

- On sulphide grain boundaries;
- As small filamental grains concentrated along fractures within sulphides;
- As coarse flakes >100 µm in size and wholly occluded by sulphides;

- Interstitial to concentrations of tourmaline and arsenopyrite in the host rocks.

Gold particles occur without sulphides in the weathered saprolite.

The gold is free milling in all associations.

Disseminated arsenopyrite in the host rock rapidly decreases away from the veins and is strongly associated with the gold mineralization. The same relationship is seen away from lithological contacts, which generally show higher densities of bedding-parallel veining. Oriented core drilling shows that significant concentrations of gold with arsenopyrite can be found in the arenite-argillite lithological contacts in association with quartz veining or in veinlets of massive arsenopyrite. Deeper below the main arenite unit, significant concentrations of gold are found in association with coarse arsenopyrite in the argillitic unit.

In the Essakane North ant Gourouol deposits, gold mineralization is associated with quartz-carbonate stockwork veins hosted by a folded turbidite succession of arenite and argillite.

7.3.2 Lao

7.3.2.1 Dimensions

The deposit is about 900 m long. Mineralization has an average thickness of 60 m. The deposit has been drill tested to 300 m. It remains open at depth and along strike.

7.3.2.2 Lithologies

The Lao deposit is the southern extension of the EMZ mineralized zone. The geological setting of this deposit is similar to EMZ, consisting of alternating sequence of argillite and arenite intercalated by intermediate to mafic sills and intruded by late dolerites dykes.

7.3.2.3 Structure

The main structure is a northeast-dipping recumbent fold.

7.3.2.4 Alteration

Hydrothermal alteration consists of silica, carbonate, and lesser chlorite and epidote.

7.3.2.5 Mineralization

Gold mineralization is associated with zones of complex networks of fracture systems filled by quartz and quartz-carbonate. Pyrite and arsenopyrite are observed associated with gold.

A cross-section through the deposit is provided in Figure 7-10.

7.3.3 Gossey

The Gossey deposit is located about 15 km northwest of the Essakane Mine.

7.3.3.1 Dimensions

The deposit is about 2,700 m long. Mineralization has an average thickness of 40 m, and has been drill tested to about 150 m depth. The deposit remains open at depth and along strike.

7.3.3.2 Lithologies

The deposit consists of mineralized lenses of quartz vein stockworks and quartz–carbonates associated with pyrite, arsenopyrite, and more rarely, pyrrhotite.

The mineralization is primarily hosted in sandstone to conglomeratic sedimentary formations along contacts with basic to intermediate intrusive dykes and is rarely developed within these intrusive units.

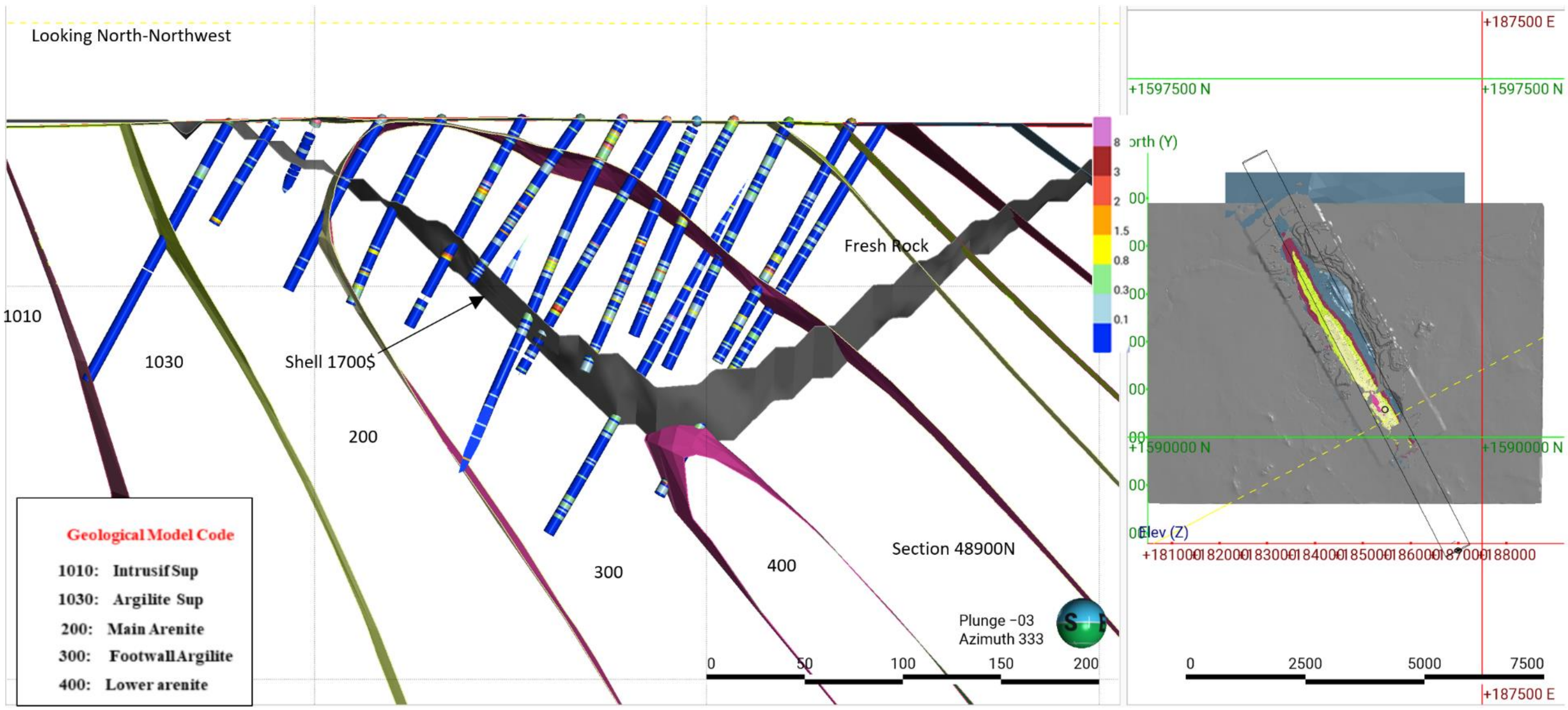
7.3.3.3 Structure

Gold mineralization is associated with the D2 deformation phase, during which there was reactivation of pre-existing structures, generation of new structures, and fluid injections into zones of weakness.

7.3.3.4 Alteration

The alteration associated with gold mineralization comprises sulphides (pyrite ± arsenopyrite), tourmaline (locally), and silicification of varying intensity.

Figure 7-10: Lao Cross-Section, 49200N, Drilling and Simplified Lithology



Note: Figure prepared by IAMGOLD, 2023.

7.3.3.5 Mineralization

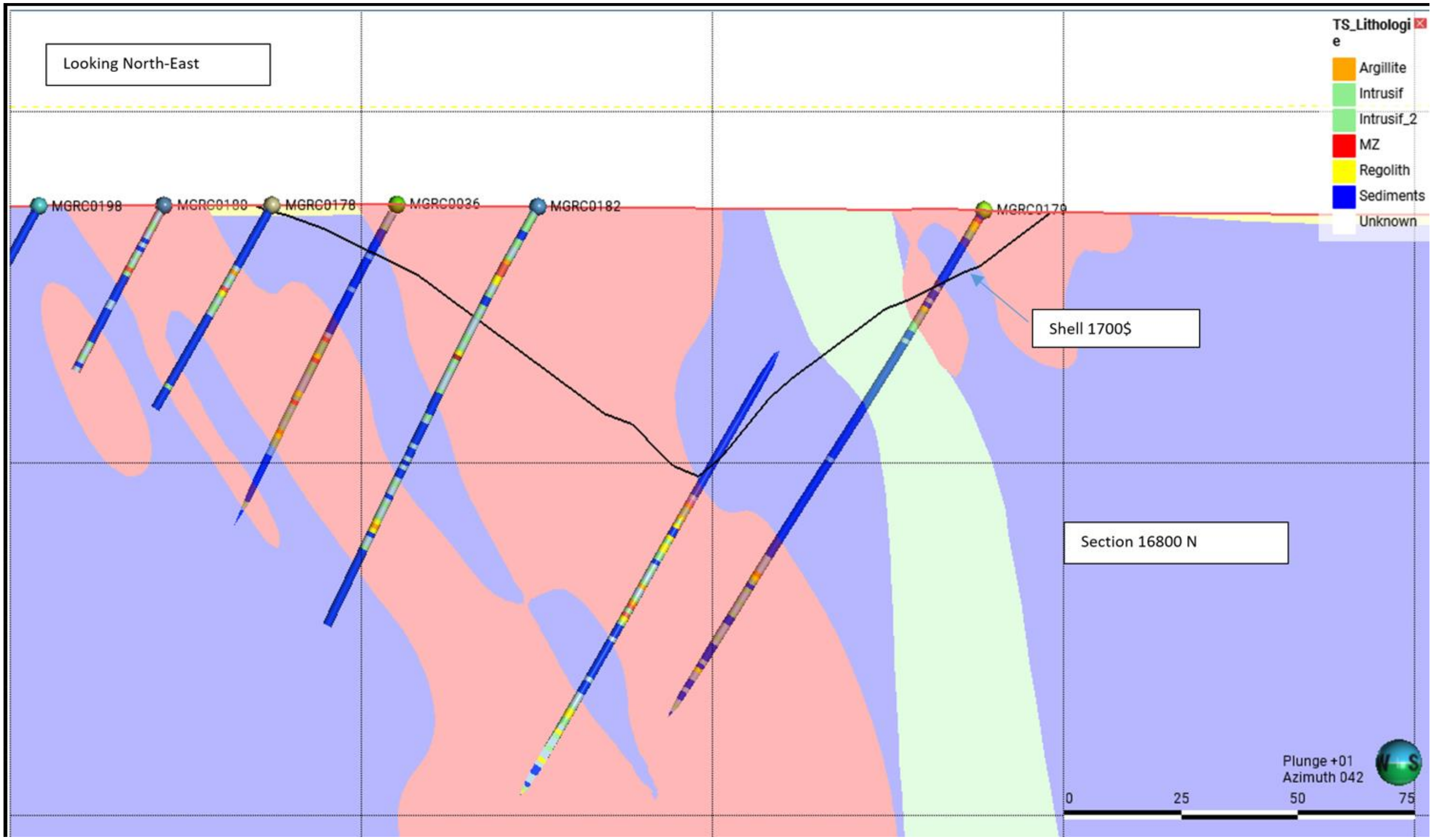
A cross-section through the Gossey deposit model showing the orientation of the drilling to the mineralization is shown in Figure 7-11. Figure 7-12 shows the block model interpretation in relation to the drilling.

Gold mineralization is associated with brecciated, banded, sheared quartz veins and boudins within highly-silicified zones.

Mineralized bodies occur as subvertical, or slightly inclined to the east, lenses of quartz vein stockworks, and quartz-carbonates associated with pyrite, arsenopyrite, and more rarely, pyrrhotite. The mineralized structures are typically oriented at N10° with a subordinate direction of N35°.

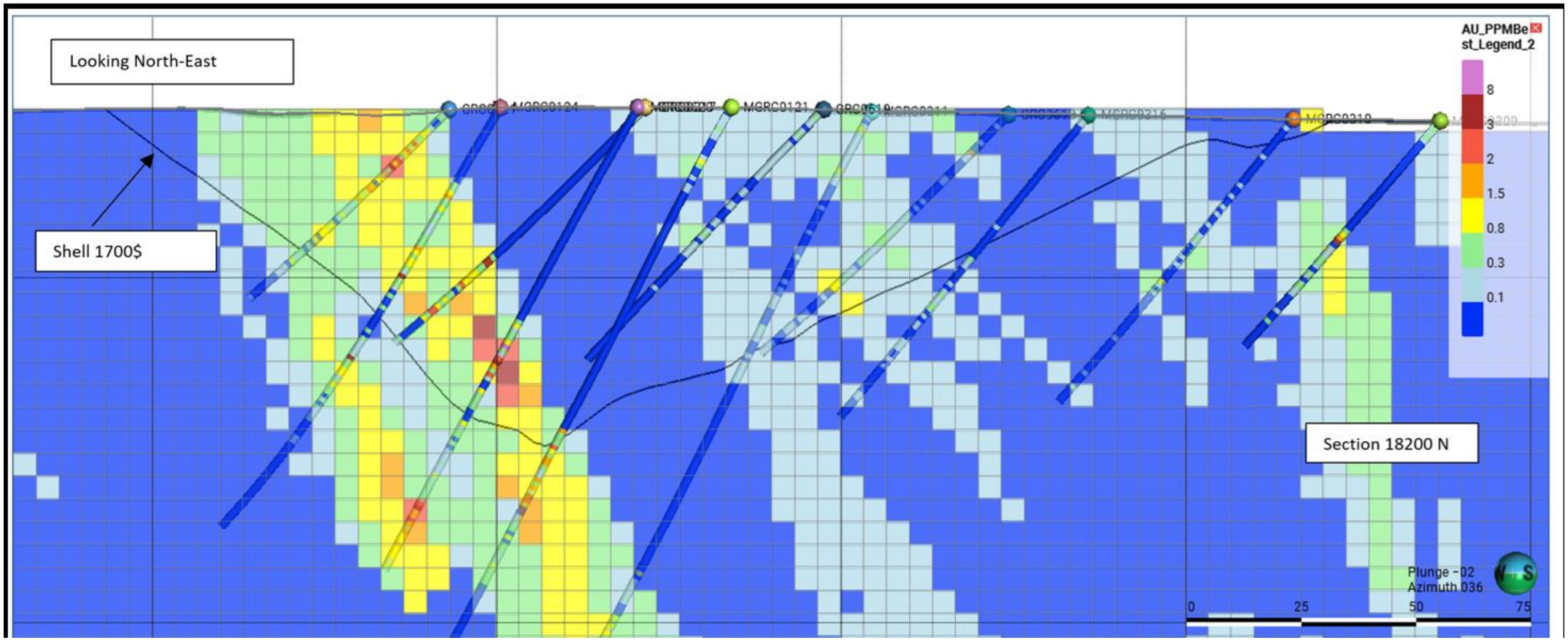
Mineralogical studies identified interstitial gold (with traces of silver) in the quartz grain edges, associated with sulphides such as pyrite, arsenopyrite, and pyrrhotite. Many grains of gold occluded in these minerals were also observed. Gold grain sizes were variable, ranging from as small as <5 µm to 10–30 µm.

Figure 7-11: Gossey Cross-Section 16800, Drilling and Simplified Lithology



Note: Figure prepared by IAMGOLD, 2023.

Figure 7-12: Gossey Cross Section 18,200 Block Model and Drilling



Note: Figure prepared by IAMGOLD, 2023.

8 DEPOSIT TYPES

8.1 Introduction

The deposit types within the Project area are considered to be examples of greenstone-hosted orogenic gold deposits. Such deposits have many synonyms including mesothermal, mesozonal and hypozonal deposits, lode gold, shear zone-related quartz–carbonate deposits, or gold-only deposits (Groves et al., 1998).

8.2 Deposit Type Description

Orogenic gold deposits occur in variably deformed metamorphic terranes formed during Middle Archean to younger Precambrian, and continuously throughout the Phanerozoic. The host geological environments are typically volcano–plutonic or clastic sedimentary terranes, but gold deposits can be hosted by any rock type. There is a consistent spatial and temporal association with granitoids of a variety of compositions. Host rocks are metamorphosed to greenschist facies, but locally can achieve amphibolite or granulite facies conditions.

Gold deposition occurs adjacent to first-order, deep-crustal fault zones. Economic mineralization typically formed as vein fill of second- and third-order shears and faults, particularly at jogs or changes in strike along the crustal fault zones.

Mineralization styles vary from stockworks and breccias in shallow, brittle regimes, through laminated crack-seal veins and sigmoidal vein arrays in brittle-ductile crustal regions, to replacement- and disseminated-type orebodies in deeper, ductile environments.

Quartz is the primary constituent of veins, with lesser carbonate and sulfide minerals. Sulfide minerals can include pyrite, pyrrhotite, chalcopyrite, galena, sphalerite, and arsenopyrite. Gold is usually associated with sulfide minerals, but native gold can occur.

8.3 QP Comment on Item 8 "Deposit Types"

The QP considers that a greenstone-hosted orogenic gold model is a reasonable basis for exploration targeting for gold mineralization in the Project area.

9 EXPLORATION

9.1 Grids and Surveys

The Project coordinate system uses the World Geodetic System 1984 (WGS84) Universal TransMercator (UTM) zone 31N.

The topography surface at Essakane is generated from a drone survey. The last update of this surface for Mineral Resource and Mineral Reserve estimation purposes was completed on June 30, 2023.

A LiDAR-derived topographic surface was used for constraining the Mineral Resources estimate at Gossey .

9.2 Geochemical Sampling and Regolith Mapping

Geochemical sampling, which involved assaying for gold and arsenic, conducted in the area successfully located targets for follow up pitting and drilling.

A regolith map was completed during the soil sampling process. Outcrop is limited and there is an extensive cover sequence of residual soils and transported material. The southern permits are characterized by a higher proportion of outcrop.

From 2001 to 2004, Orezone Resources collected pisolith samples over the major prospects of the Essakane area. A follow up of the anomalies using aircore drilling was completed in 2007.

Since 2010, Essakane Exploration SARL has conducted several campaigns of regional shallow and deep follow-up aircore drilling over a large portion of the exploration permits with the aim of finding gold mineralization masked by transported material and therefore not able to be located by conventional geochemical sampling.

From 2020 to 2021, the Essakane resource development team completed 4,317 m of aircore infill drilling over three Mine Lease targets (ML1, ML2, and ML3). This drilling program was designed based on lineament and structural interpretation, geophysics, and regional gold-in-soil geochemistry compilation. Most of the aircore drill holes were inclined and the maximum hole length was 20 m.

The program identified a northwest–southeast to north–northwest–south–southeast-trending 400 m long gold-in-soil anomaly on the western side of the ML1 target. A shallow RC program testing this anomaly did not return any significant gold values. Anomalies in the ML2 and ML3 target areas were weak and scattered and were not considered to warrant additional work.

No additional aircore drilling has been conducted since 2021.

9.3 Satellite Imagery Interpretation

An interpretation of structural geology derived from Aster image and aeromagnetic data was carried out by Orezone Resources in 2002–2003. A number of fold axial traces observed have a spatial relationship with the main gold mineralization. These observations suggest that a significant proportion of the gold occurrences on the permits are associated with this folding event (Figure 9-1).

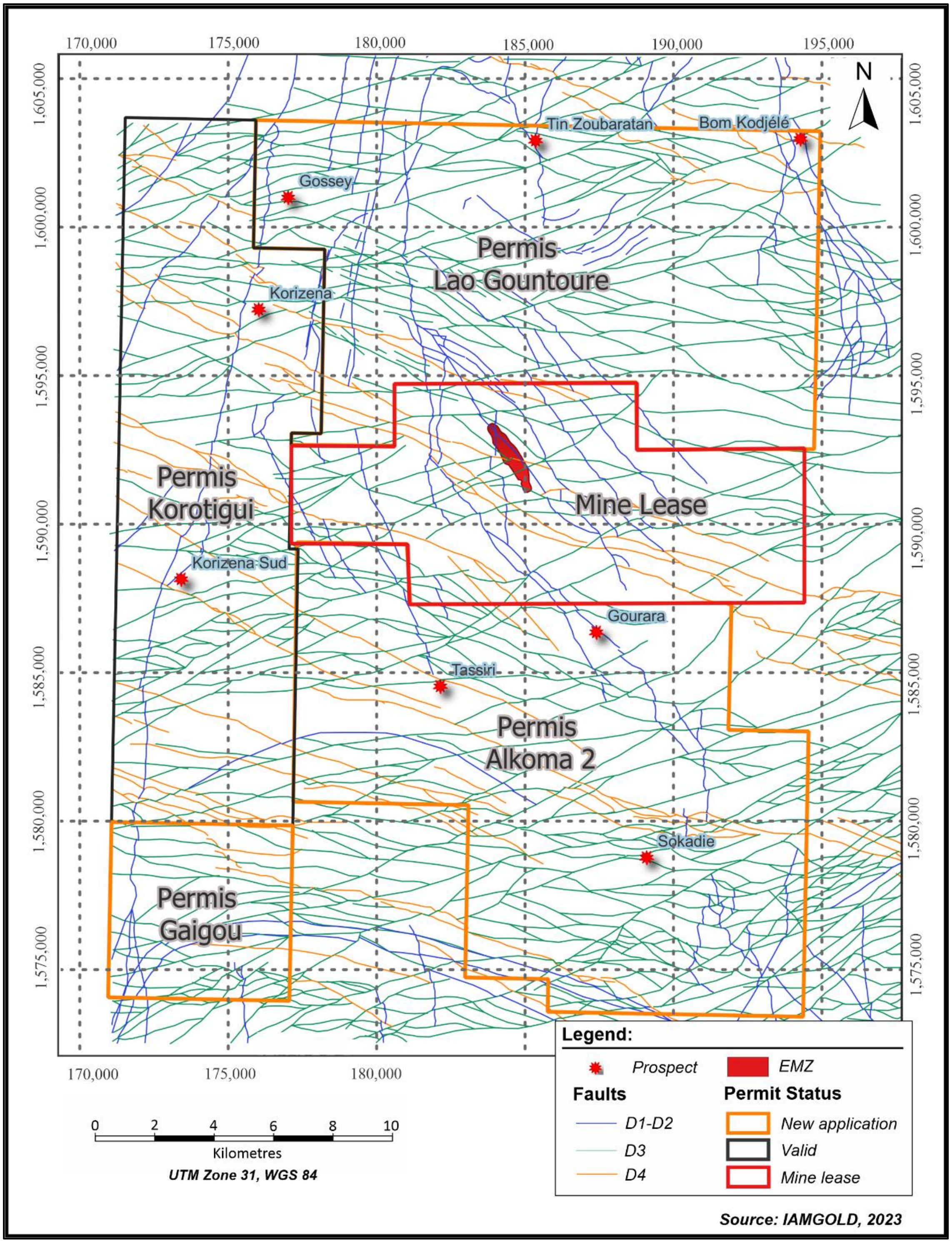
During 2020, a structural interpretation was completed by SRK Consulting (Canada) Inc. (SRK) based on regional airborne magnetic and radiometric data from a survey completed by Xcalibur Airborne Geophysics in 2009 to 2010), a VTEM survey completed by Geotech Ltd, 2017, and aircore sample geochemistry .

Four episodes of deformation (D1 to D4) were identified during the 2D desktop interpretation of the airborne magnetic data:

- D1 and D2 deformation is characterized by north-northwest-trending to northeast-trending faults, early northwest-trending F1, and northeast-trending F2 regional folds (with associated faults);
- D3 deformation is characterized by east to northeast-trending, linear to curvilinear faults;
- D4 faults are uniformly northwest-trending extensional faults coincident with the emplacement of dolerite dykes.

Gold mineralization is likely associated with D3 deformation; however, the D1 and D2 faults are important conduits for gold-bearing fluids and the intersection between these zones provides a credible target for mineral exploration (Smith and Craggs, 2020).

Figure 9-1: Essakane Structural Interpretation Map



9.1 Trenching

A total of 13 trenches (1,888.5 m) were completed by the Essakane Exploration SARL team over the Gourara prospect in 2015–2016. An additional and eight trenches (982 m) were completed at the Tassiri prospect. The intent was to expose bedrock and structural features to allow channel sampling (Zamparutti and Traoré, 2017; Paré and Valea; 2016). A total of 3,624 samples were collected from the Gourara prospect and 1,836 samples were collected from the Tassiri prospects. Samples were 1 m long channel samples from the trench walls and floors.

The areas were considered prospective for additional RC drilling.

The locations of the trenches are provided in Figure 9-2.

9.2 Geophysics

Locations of the geophysical surveys completed are shown in

The first airborne geophysical survey reported in the area was an aeromagnetic/radiometric survey completed by BHP over both the exploration and mining permit areas in 1995.

Between November 26, 2009, and February 10, 2010, a high resolution magnetic/radiometric survey totalling of 30,407 line-km was flown over the Project area by Xcalibur Airborne Geophysics. Total and vertical gradient magnetics along with uranium/potassium/thorium (U/K/Th) radiometric data were recorded. This survey was used to delineate major lithological units, lithological contacts, and major faults.

Two induced polarization (IP) areas were surveyed by Sagax Geophysics in 2010: one immediately north of the EMZ deposit and the other immediately south. Interpretation of the results suggests that the host structure to mineralization may continue both north and south of the known mineralized area.

During April 2017, two areas were covered by a helicopter borne geophysical survey using versatile full waveform time-domain electromagnetic (VTEM Plus) instrumentation, completed by GEOTECH Airborne Geophysical surveys.

Figure 9-2: Trench Location Map

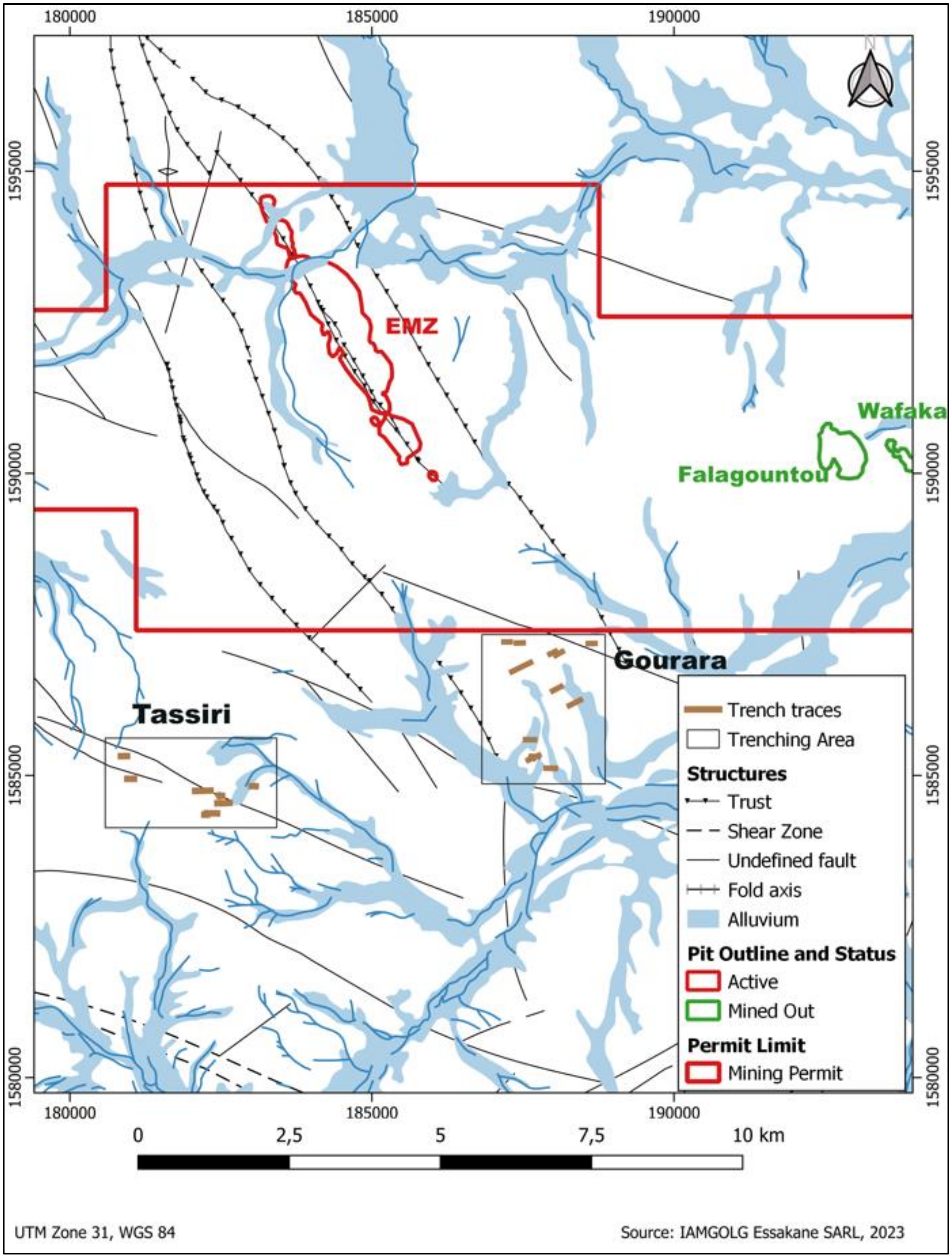
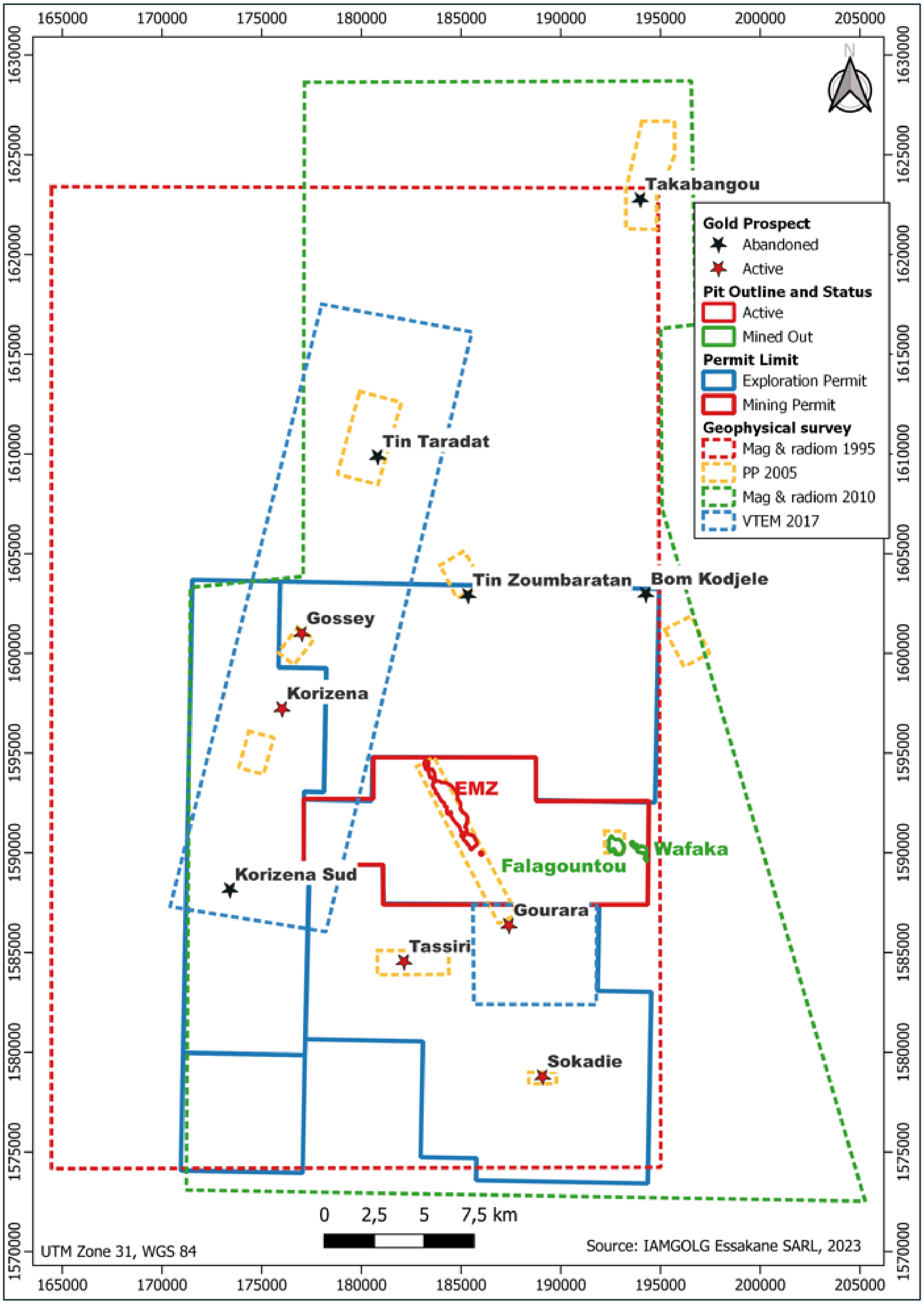


Figure 9-3: Geophysical Survey Location Map



The two survey areas, Tin-Taradat-Gossey-Korizéna block and Gourara block, are located approximately four kilometres south and seven kilometres west of the Essakane Mine, respectively (Figure 9-4).

A total of 2,674 line-km covering 238 km^2 and 341 line-km covering 30 km^2 was surveyed over the Tin-Taradat–Gossey-Korizéna block and the Gourara block, respectively. The survey areas were flown in an east–west (N100°E azimuth) direction for the Tin-Taradat–Gossey–Korizéna block and east–west (N90°E azimuth) direction for the Gourara block with traverse line spacing of 100 m. Tie lines were flown perpendicular to the traverse lines at a spacing of 1,000 m. Interpretation of the survey results indicates the presence of conductive zones that may be the result of fault zones associated with strong hydrothermal alteration, and accompanying sulphide enrichment or graphitic zones.

9.3 Exploration Potential

9.3.1 Essakane

The Essakane deposit remains open along strike and at depth.

Based on a metallogenic study (Gaboury, 2021), there may also be opportunities to intercept high-grade gold mineralization at depth associated with black pelites cut by quartz veins on the western flank of the Essakane fold.

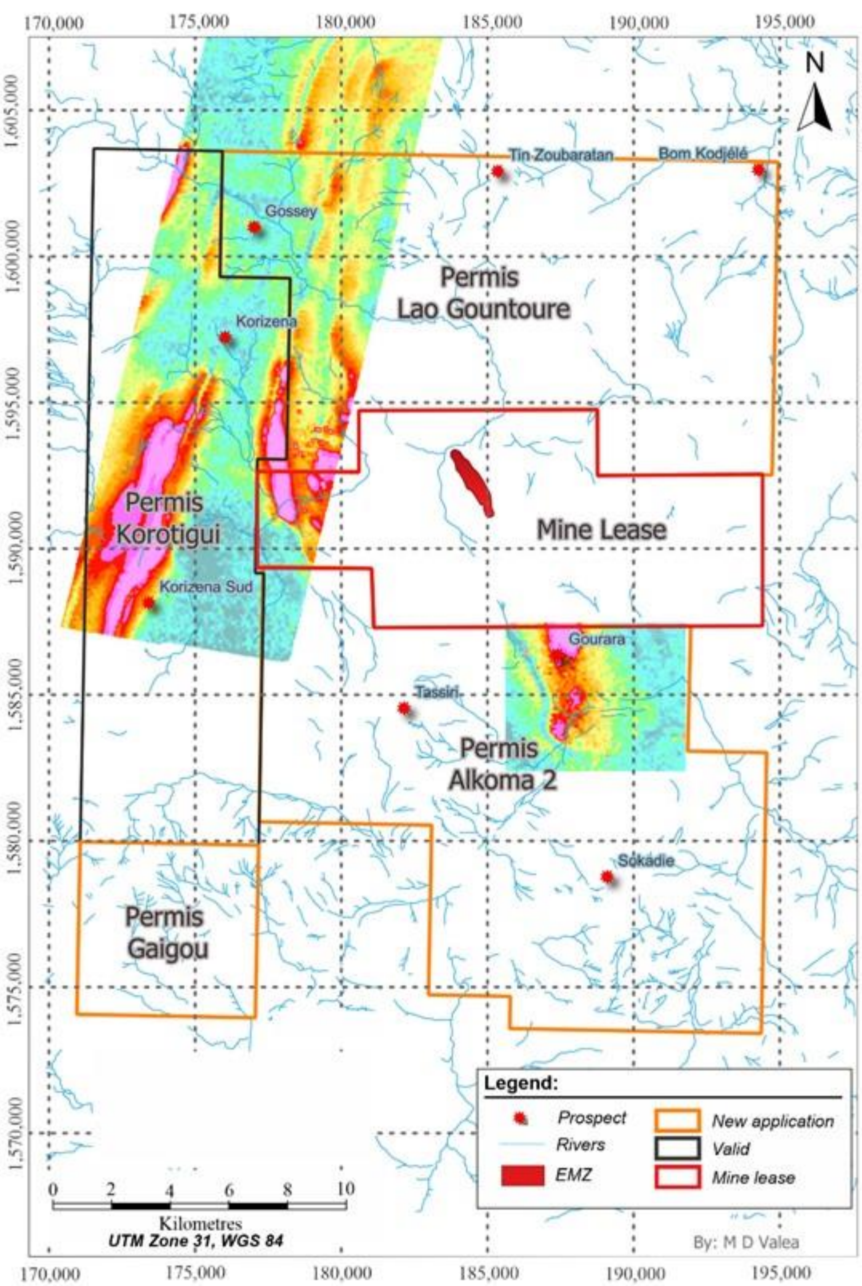
9.3.2 Gossey

The Gossey deposit remains open along strike and at depth.

9.3.3 Prospects

Regional exploration has identified the areas that retain exploration potential are summarized in the following sub-sections and shown in Figure 9-1and Figure 9-4. Two of the prospects on those figures, Tin Zouberatan and Korizena Sud, are no longer considered to be prospective.

Figure 9-4: VTEM Survey Area for the Gossey-Korizéna and Gourara Blocks



Note: Permit Boundaries Shown Current as of 2015

Source: IAMGOLD, 2023.

9.3.3.1 Bom Kodjélé

The prospect is located approximately 20 km north of Essakane Mine site. The lithologies consist of volcaniclastic rocks and diorite intrusions. Gold mineralization, in association with pyrite, arsenopyrite are associated with quartz–fuchsite veins along the thrust-faulted eastern limb of a fold. Although the area is prospective, no additional work is planned for security reasons.

9.3.3.2 Korizena

The Korizéna prospect is situated approximately 10 km west of the EMZ deposit and is the southern continuation of the Gossey deposit. The Korizéna prospect has a similar geological setting to that of Gossey. Mineralization is associated with the north–northeast-striking Markoye structure, and consists of disseminated pyrite and arsenopyrite in quartz–carbonate veins hosted in coarse-grained sandstones.

9.3.3.3 Gourara

The Gourara prospect is 5 km southeast of the Essakane Mine. The general lithologies are a suite of north–northwest-trending interbedded turbidites, sandstones siltstones and argillite, intruded by a series of porphyritic gabbro and diorite mafic to intermediate intrusive rocks. Alteration includes chloritization, carbonatization, silicification and sericitization.

Gold mineralization is preferentially associated with the sedimentary rocks, and along the contacts between the sediments and intrusive rocks. Mineralization occurs in quartz ± carbonate tension gash veins forming stockworks.

9.3.3.4 Tassiri

The prospect, situated 8 km southwest of the Essakane Mine, is hosted in homogeneous, bedded, northeasterly-oriented and locally folded turbidite sequences comprising coarse-grained sandstone and fine-grained siltstone that have been intruded by diorite dykes, and later faults and fractures. A west–northwest-oriented sinistral thrust fault cross-cuts the entire Tassiri prospect area, and the earlier faults, veins, and dykes. Gold mineralization is controlled by this reactivated thrust, which transects the anticlinal fold hinge. Mineralization consists of pyrite and arsenopyrite are associated with quartz veins along the hinge and the northern limb of the anticline.

9.3.3.5 Sokadie

Sokadie is located 13 km south of the Essakane Mine. Quartz veins occur in a sheared volcaniclastic unit between undeformed andesite and microdiorite, and metasediments. The shear zone strikes east–west, and dips to the south. The deposit setting is interpreted to be a dextral strike-slip shear zone with pull-aparts. Gold is associated with quartz veining on the contacts of rock units with contrasting competencies, and with brittle fractures in folded sediments.

9.4 QP Comments on "Item 9: Exploration"

Exploration activities are appropriate to the deposit type and known mineralization styles and resulted in the identification of the currently-mined EMZ deposit, the Gossey deposit, and the mined-out Falagountou and Wafaka deposits.

Exploration activities provided representative samples given the early-stage geochemical and trenching methods employed, and there are no factors known to the QP from these programs that may have resulted in sample biases.

In the EMZ and Gossey areas, the early-stage geochemical and geophysical data are superseded by drill data, and in the case of the EMZ deposit, by mine production information.

The EMZ and Gossey deposit areas remain open along strike and at depth.

The area retains exploration potential, with five prospects warranting additional exploration activity. Security concerns continue to affect exploration activities on certain of the prospects.

10 DRILLING

10.1 Introduction

A total of 29,601 drill holes (855,045 m) has been completed in the period 1995–2023 in the Essakane and Gossey–Korizena areas. Drilling completed in the mined-out Falagountou and Wafaka deposits is not included in the Project total. This drilling comprises 1,326 core (338 915 m), 2,514 RC (312,858 m), 44 RC holes with core tail holes (12,507 m), and 25,717 aircore (190,765 m) drill holes. Holes were completed for exploration, infill, Mineral Resource and Mineral Reserve estimation, geotechnical, hydrological, condemnation and metallurgical purposes.

A Project-wide drill summary table is provided as Table 10-1. A Project-scale drill collar location map is included as Figure 10-1.

The database close-out date for resource estimation for Essakane is March 1, 2023. Within this database are:

- Essakane (includes Essakane Nord, Gourouol and Lao): 987 core, and 1,880 RC holes with core tails (511,569 m).

The database close-out date for resource estimation for Gossey is May 10, 2018. Within this database are:

- Gossey: 60 core, and 672 RC holes with core tails (94,802 m).

The drilling in the Essakane–Lao area is shown in more detail in Figure 10-2, and for the Gossey deposit area in Figure 10-3.

Trench, aircore and RAB drill data are not used in estimation support.

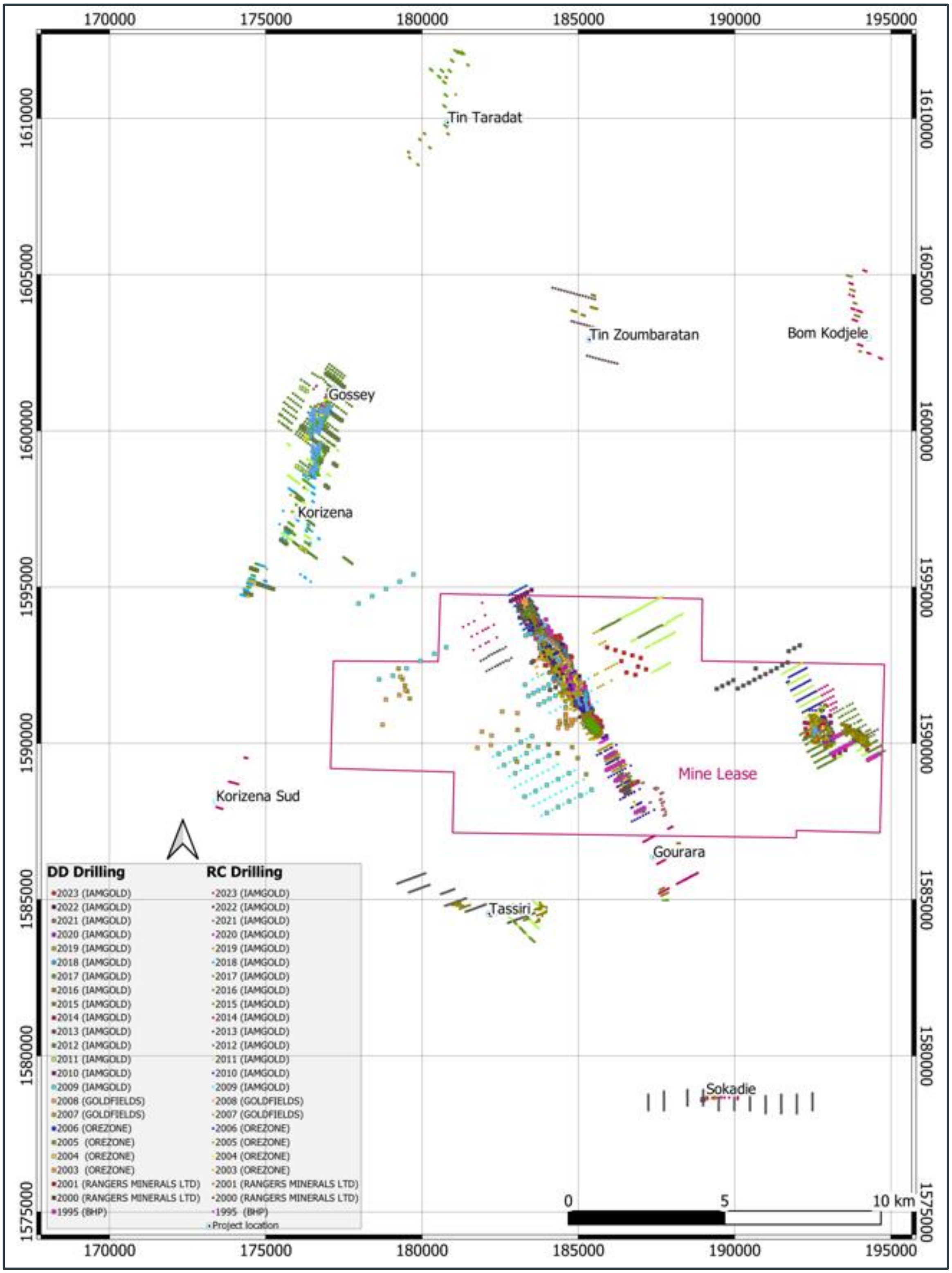
Table 10-1: Drill Summary Table

Operator	Year	Prospect/ Deposit	Purpose	Aircore		RC			Core		RC/ Core		Totals
				Holes	Metres	Holes	Metres	Holes	Metres	Holes	Metres	Holes	Metres
BHP	1995	Essakane	Exploration	—	—	120	7,404	9	1,511	—	—	129	8,915
		Gossey	Exploration	—	—	11	545	0	—	—	—	11	545
	Subtotal			—	—	*131*	*7,949*	*9*	*1,511*	—	—	*140*	*9,460*
Ranger	2000	Essakane	Exploration	—	—	52	3,952	1	69	2	222	55	4,243
	2001	Essakane	Exploration	—	—	179	17,380	1	113	11	1,728	191	19,221
	Subtotal			—	—	*231*	*21,332*	*2*	*182*	*13*	*1,950*	*246*	*23,464*
Orezone	2002			—	—	—	—	—	—	—	—	—	—
	2003	Essakane	Delineation	—	—	176	12,126	2	288	6	724	184	13,138
		Gossey	Exploration	—	—	81	5,907	—	—	—	—	81	5,907
		Korizéna	Exploration	—	—	7	505	—	—	—	—	7	505
	2004	Essakane	Delineation	—	—	227	20,310	4	819	48	8,818	279	29,947
	2005	Essakane	Delineation	—	—	459	46,030	84	13,200	184	29,980	727	89,210
Orezone/ Goldfields	2006	Essakane	Delineation	—	—	176	14,411	75	13,105	73	16,675	324	44,191
		Gossey	Exploration	—	—	—	—	4	680	—	—	4	680
	2007	Korizéna	Exploration	—	—	12	909	—	—	—	—	12	909
	2007	Essakane	Delineation	—	—	17	1,043	30	3,264	—	—	47	4,307
	Subtotal			—	—	*1,155*	*101,241*	*199*	*31,356*	*311*	*56,197*	*1,665*	*188,794*

Operator	**Year**	**Prospect/ Deposit**	**Purpose**	**Aircore**		**RC**			**Core**		**RC/ Core**		**Totals**
				Holes	**Metres**	**Holes**	**Metres**	**Holes**	**Metres**	**Holes**	**Metres**	**Holes**	**Metres**
IAMGOLD	2008	Essakane	Delineation	—	—	38	2,822	70	10,992	—	—	108	13,814
	2009	Essakane	Exploration, infill, expansion	—	—	39	4,481	10	2,209	—	—	49	6690
	2010	Essakane	Exploration, infill, expansion	2,225	12,464.47	230	32,220	150	38,849	3	1,032	2,608	84,565
	2011	Essakane	Exploration, infill, expansion	4,799	28,884.4	180	23,053	188	63,760	—	—	5,167	115,697
		Gossey	Delineation	—	—	9	1,072	10	2,508	—	—	19	3,580
		Korizéna	Delineation	—	—	48	5,723	12	2,846	—	—	60	85,69
	2012	Essakane	Exploration, infill, expansion	9,401	35,245.45	307	40,040	119	50,008	—	—	9827	125,293
		Gossey	Delineation/step-out	—	—	200	37,053	40	8,934	—	—	240	45,987
			Exploration	—	—	89	13,065	27	6,367	—	—	116	19,432
	2013	Essakane	Exploration/ Infill/	2,975	37,523	275	37,828	139	34,931	—	—	3,389	110,282
			Expansion										
	2014	Essakane	Exploration/ Infill/	3,296	29,112.85	148	14,280	153	33,296	—	—	3,597	76,689
			Expansion										

Operator	Year	Prospect/ Deposit	Purpose	Aircore		RC			Core		RC/ Core		Totals
				Holes	Metres	Holes	Metres	Holes	Metres	Holes	Metres	Holes	Metres
	2015	Essakane	Exploration/ Infill/ Expansion	1,886	13,953.1	191	22,476	29	7,236	25	5,843	2,131	49,508
	2016	Essakane	Exploration/ Infill/ Expansion	292	10,996	274	30,286	6	861	—	—	572	42,143
	2017	Essakane	Exploration/ Infill/ Expansion	191	9,560	68	4,910	133	27,693	1	128	393	42,291
		Gossey	Delineation	—	—	124	15,254	—	—	—	—	124	15,254
	2018	Essakane	Exploration/ Infill/ Expansion	—	—	69	11,228	38	10,089	15	5,504	122	26,821
		Gossey	Delineation	—	—	191	14,284	—	—	—	—	191	14,284
	2019	Essakane	Infill/ expansion	—	—	—	—	45	10,186	—	—	45	10,186
	2020	Essakane	Infill/ expansion	—	—	22	2,245	—	—	—	—	22	2,245
	2021	Essakane	Exploration/ Infill/ Expansion	652	13,026	—	—	16	3,967	—	—	668	16,993
	2022	Essakane	Infill/ expansion	—	—	5	230	65	12,206	—	—	70	12,436
	2023 (September 30)	Essakane	Infill/expansion	—	—	7	308	76	11,977	—	—	83	12,285
	Subtotal			*25,717*	*190,765*	*2,514*	*312,858*	*1,326*	*338,915*	*44*	*12,507*	*29,601*	*855,045*

Figure 10-1: Project Drill Collar Location Plan



Note: Figure prepared by IAMGOLD, 2023.

Figure 10-2: Essakane–Lao Drill Hole Locations

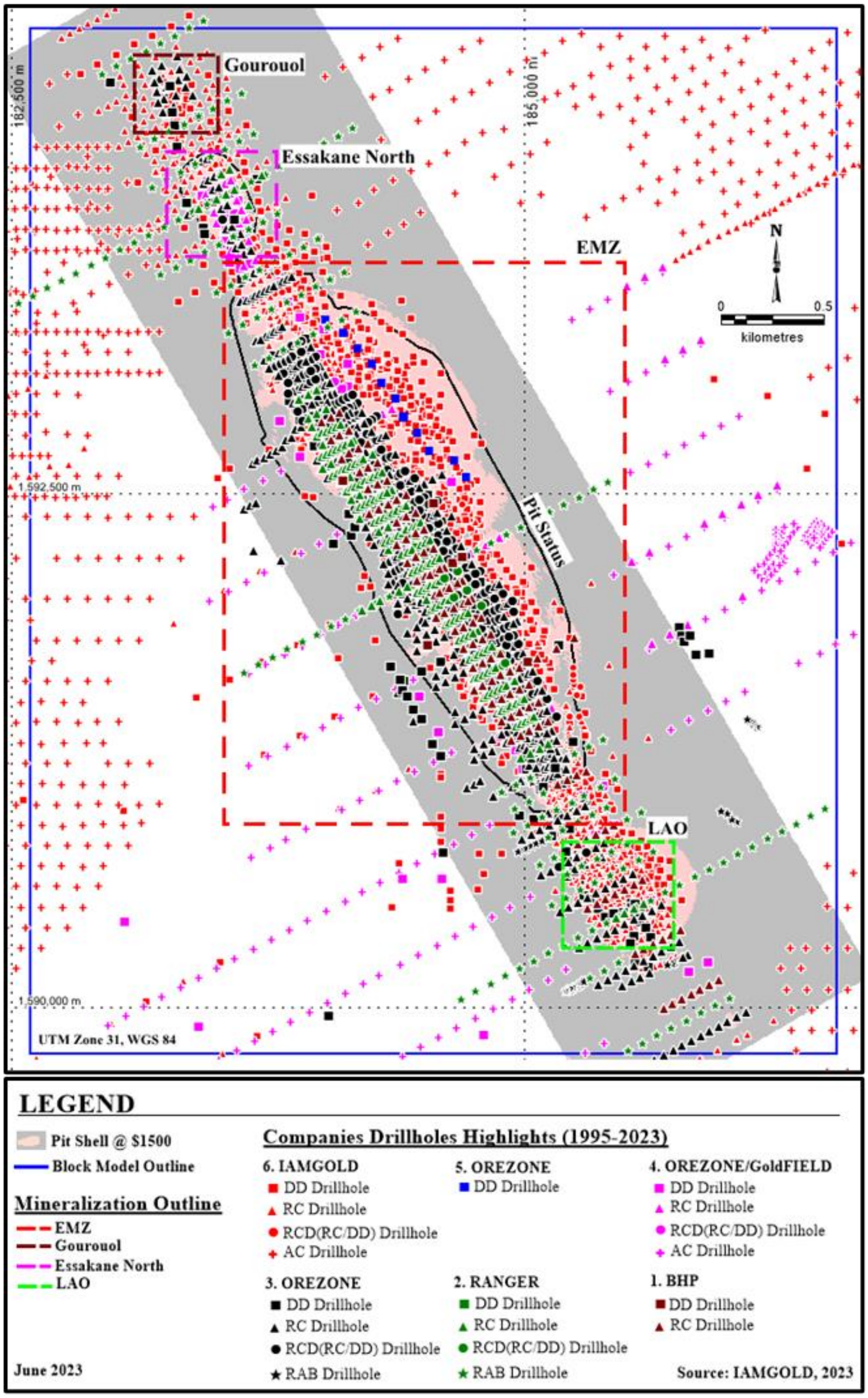
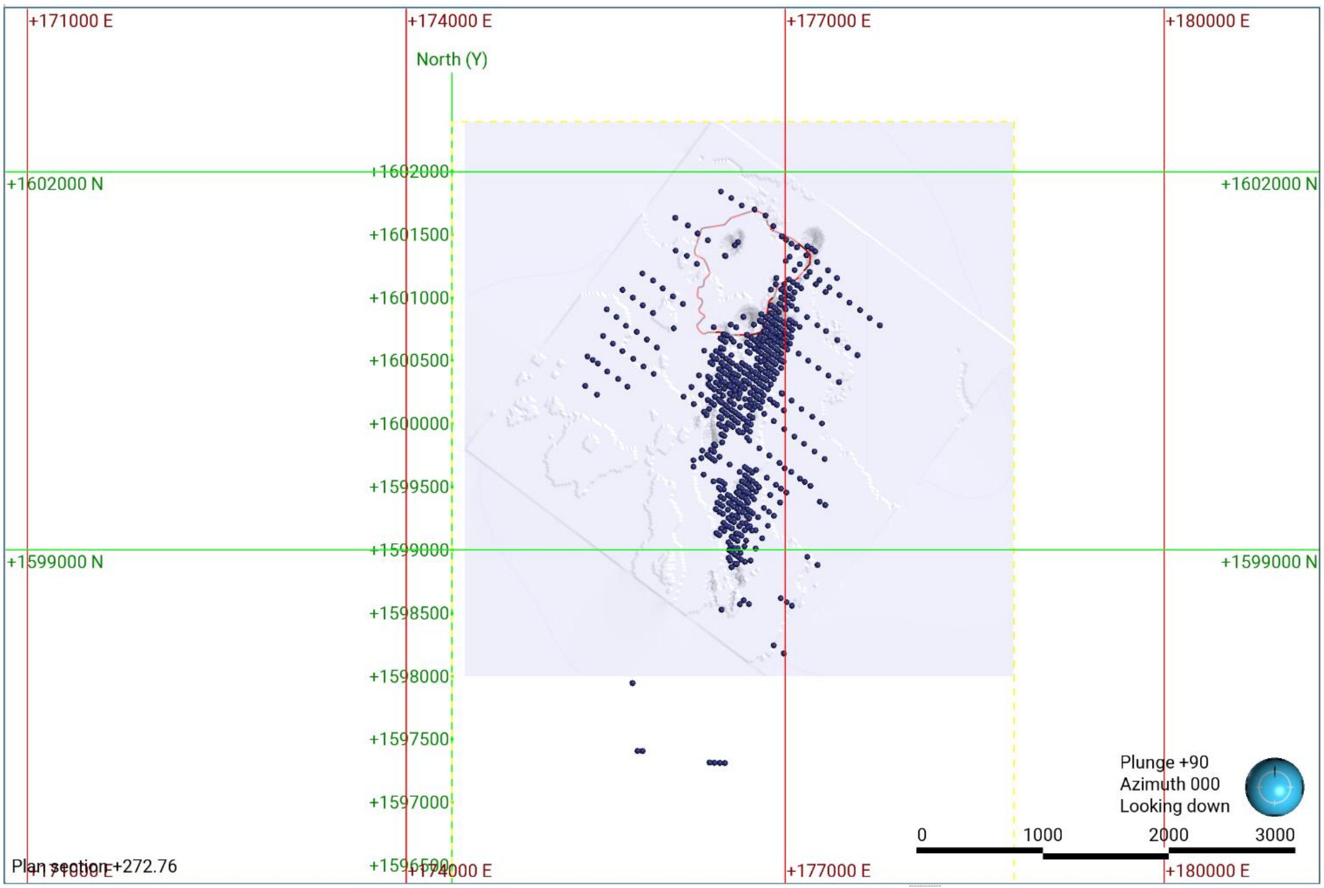


Figure 10-3: Gossey Drill Collar Location Plan



Note: Figure prepared by IAMGOLD, 2023. North is to top of figure as shown in grid northings.

10.2 <u>Drill Methods</u>

Where known, the following drill rigs and contractors were used:

- Drill contractors: Boart Longyear, Major Drilling, POZITIV Drilling SARL, West African Drilling Services;
- Rig types: track-mounted Cat-Max rig, multipurpose PDMP 450 drill rig, Atlas Copco T3WRC drill rig.

10.2.1 <u>Essakane</u>

Since 2010, RC drilling has been carried out using 140 mm (5½ in.) diameter holes with 5 m sample intervals to a depth of 150 m or until the water table is intersected.

Core holes were drilled at Essakane using PQ (85 mm core diameter) HQ (63.5 mm) and NQ (47.6 mm) sizes. The majority of the drilling was completed using HQ core. A portion of the core drilling includes the top of the drill hole completed using RC methods prior to switching to core for the remainder of the drill hole. HQ core is drilled 10 m past the saprolite horizon and then reduced to NQ. The geologist may request that the hole be drilled HQ over a longer distance if hole deviation is an issue. In the broken areas of the EMZ pit, the first 6–12 m of the drill holes are drilled at PQ, then reduced to HQ size. Hexagonal core barrels and extended shells are often used to further reduce deviation. Core orientation is carried out using a downhole spear with wireline attachment. Efforts to properly core drill from surface through the upper saprolite often failed over the EMZ deposit due to loss of drilling fluid, caving of holes, or the washout of saprolite by entrained quartz fragments plugging the bit. All drill holes on the EMZ deposit are cased with either hard polyvinyl chloride (PVC) plastic or steel tubing which have to be pulled after downhole tests have been taken.

10.2.2 Gossey

IAMGOLD's RC holes at Gossey were completed using a 140 mm (5½ in.) drill bit.

Core drilling consisted of HQ and NQ. The reduction from HQ to NQ size was typically undertaken after the drill had passed through the saprolite horizon and the broken area.

10.3 Logging Procedures

10.3.1 Pre-IAMGOLD

There is no information available to IAMGOLD as to logging procedures for RAB or aircore drilling. RC drill hole chips were photographed, and logged for lithology, alteration, weathering, mineralization, oxidation, veining, and hardness. A reference sample of each 1 m sample was retained. Core holes were logged for lithology, alteration, weathering, mineralization, oxidation, structures, veins, and hardness. Core was typically photographed.

10.3.2 IAMGOLD

Aircore and RAB holes were logged for lithology, weathering, and regolith type.

RC drill hole chips were photographed, and directly logged into a Toughbook logging computer for lithology, alteration, weathering, mineralization, oxidation, veining, and hardness.

Core was logged by Essakane geologists with information recorded onto standard log sheets. The information captured are lithotype, alteration, weathering, mineralization, oxidation, structures, veins, hardness, and deformation. All core is photographed.

10.4 Recovery

10.4.1 Pre-IAMGOLD

Recovery in the pre-IAMGOLD programs was typically acceptable to very good. Areas of lower recovery were typically associated with saprolite, saprock or fault zones.

10.4.2 IAMGOLD

The overall recovery averages 98%, with the exception of the Lao zone, where the recovery average was 96%. The differences are attributed to the EMZ holes being drilled inside the pit and commencing from fresh rock, whereas the Lao drill holes are drilled from the topographic surface.

10.5 Collar Surveys

10.5.1 Pre-IAMGOLD

Collars were typically surveyed using a global positioning system (GPS) instrument. During the Goldfields campaigns, the drill hole collars were picked up by surveyors using a total station instrument.

10.5.2 IAMGOLD

Drill hole collar positions are initially determined by a handheld GPS on local grid lines by the Essakane geotechnicians. After drilling, the collar position is picked up by the surveying department using a differential global positioning system (DGPS).

10.6 Downhole Surveys

10.6.1 Pre-IAMGOLD

Downhole surveys were performed using Eastman, Reflex EZ-Shot and gyroscopic instruments.

10.6.2 IAMGOLD

10.6.2.1 Essakane

RC hole downhole surveying was carried out using a portable winch installed on the drill. Downhole survey readings were taken at a downhole depth of 3 m below the casing or at 12 m (whichever was the shallower) and every 50 m thereafter.

Downhole surveying on core holes was initially carried out using either the Essakane Reflex EZ-TRAC XTF instrument or the drilling contractor's Reflex EZ-TRAC tool. Survey results were checked by Essakane technicians. Survey readings were taken at downhole depths of 3 m below the casing or at 12 m (whichever is the shallowest), and every 25 m thereafter. Since 2013, downhole surveys have been carried out using the drilling contractor's gyroscopic downhole survey tool that performs readings every 5 m.

10.6.2.2 Gossey

Downhole surveys were taken using a Reflex EZ-Shot at 5 m intervals. The data were subsequently filtered to remove any erroneous or suspicious data points.

10.7 Sample Length/True Thickness

In the EMZ area, the drill spacing is generally 50 x 50 m, with some local drilling at 25 m spacing. The EMZ eastern limb of the fold area is more densely drilled with a 25 x 25 m spacing and a wider spacing of 50 x 50 m on the western limb. The Lao area is currently drilled on a 25 x 25 m grid spacing. In the Gossey deposit area, the spacing is approximately 50 x 25 m.

The orientation of the drilling to the Essakane mineralization was shown in the cross-sections included as Figure 7-7 and Figure 7-8. On average, for holes drilled at a -60º inclination, the true width of the mineralization is about 90–95% of the downhole drilled length, but varies depending on local orientation of the mineralized zones and the drill hole orientation.

The orientation of the drilling to the Gossey mineralization was shown in the cross-sections included as Figure 7-11 and Figure 7-12. On average, for holes drilled at a -60º inclination, the true width of the mineralization is about 75–80% of the downhole drilled length, but varies depending on local orientation of the mineralized zones and the drill hole orientation.

10.8 Drilling Completed Since Database Close-out Date

Drilling completed at EMZ and Lao to June 30, 2023, after the March 1, 2023 database close-out date, included 43 core holes and seven advanced grade control RC holes for a total of 5,520 m.

Although the newer drill holes may change the grades locally, the QP considers that the new drilling should have no material effect on the overall tonnages and average grade of the current Mineral Resource estimate:

- In the QP's opinion, the new drilling will have no material impact on the Measured or Indicated Mineral Resources estimated in the area of new drilling;
- The Essakane drill holes targeted both outside and within the current area where Inferred Mineral Resources were estimated. In the QP's opinion, the new drilling in the Essakane area has the potential to support estimation of additional Inferred Mineral Resources as well as to potentially support upgrade of a portion of the current Inferred Mineral Resource estimate to higher-confidence categories.

10.9 QP Comment on Item 10 "Drilling"

Drilling and surveying were conducted in accordance with industry-standard practices. The drilling as performed provides suitable coverage of the zones of gold mineralization. Collar and down hole survey methods used provide support for reliable sample locations. Drilling methods provide acceptable core recovery. Logging procedures provide consistency in descriptions.

These data are considered to be suitable for Mineral Resource and Mineral Reserve estimation.

There are no drilling, drill sampling or drill recovery factors in the drill data that support the estimates that are known to the QP that could materially impact the accuracy and reliability of the results. Core recoveries are acceptable, and no significant broken zone that could negatively impact the resource estimate was identified.

11 SAMPLE PREPARATION, ANALYSES AND SECURITY

11.1 Sampling Methods

11.1.1 Pre-IAMGOLD

No information is available to IAMGOLD on the sampling procedures for the early geochemical, trenching, aircore and RAB programs.

RC samples were taken at 1 m intervals. BHP, Ranger and Orezone reduced the large 20–40 kg RC rig sample down to 3–5 kg with an 8:1 riffle splitter. Gold Fields used a single 1:1 stainless steel riffle splitter, unless the split was >15 kg.

Core sampling was typically on 1 m intervals.

11.1.2 IAMGOLD

Geochemical samples commonly consisted of 2–3 kg of sieved rejects collected over an approximate 5 m radius. Samples consisted of pisolites in erosional environments.

Trenches were sampled along the walls and the floor. Samples were generally 1 m long, and the resulting sample about 1 kg in weight.

Aircore samples are collected at 1 m intervals and reduced to a 5–7 kg sample using a 50:50 riffle splitter. A coarse reject sample is preserved for reference.

RC samples are collected over 1 m intervals, and are typically about 7 kg in mass. The RC sampling at Gossey was undertaken at 0.5 m intervals, collecting 10–20 kg of samples. The 0.5 m samples were then composited to make a 1 m interval. This was subsequently reduced in size through a 1-tier, 50:50 riffle splitter to produce a final split for the laboratory weighing approximately 5 kg, with a coarse reject preserved for reference. A reference chip tray was retained of the intervals.

Core sample lengths vary, from 1 m in HQ and PQ core, to 1.5 m in NQ core. Core is halved, and one half is sent for assaying when the drill hole is either outside the resource pit shell or selected by the geologist. Otherwise, the entire core sample is assayed.

11.2 Density Determinations

11.2.1 Essakane

Density data are collected at 25 m intervals, using the water displacement method, on 10–15 cm lengths of HQ core or 15–20 cm lengths of NQ core. All measurements were performed by the Essakane mine laboratory. A summary of the density data is presented in Table 11-1.

11.2.1 Gossey

Density data were collected using the water displacement method. Where material is classified as saprock or saprolite, the core interval measured is typically 15–20 cm in length. If the material is fresh, the sample interval may be 1 m for HQ size core and 1.5 m for NQ size core. RC chip density determinations were made on 1 kg of material after the sample had been split. All measurements were performed by the Essakane mine laboratory.

The database includes specific gravity measurement from 13,318 samples, of which 69% are derived from core, with the remaining 31% derived from RC drilling.

Table 11-2 summarizes the basic statistics obtained from these samples. Samples were subdivided by weathering profile and were analysed on this basis.

11.3 Analytical and Test Laboratories

Prior to IAMGOLD's Project interest, the following laboratories had been used:

- SGS Tarkwa Ghana, independent of IAMGOLD, accredited to ISO/IEC 17025:2017 for selected analytical techniques;
- SGS Essakane, independent, accredited to ISO/IEC 17025:2017 for selected analytical techniques;
- TransWorld Ghana (now Intertek Minerals Limited, Tarkwa Minerals Laboratory Branch), independent, accreditations at the time of use unknown.

IAMGOLD currently performs all sample preparation and analysis at the Mine. The Mine laboratory is not independent, and is not accredited.

Table 11-1: Essakane Density Measurements by Domain

Weathering	Lithology Code	Description	Count	Mean (g/cm³)	Minimum (g/cm³)	Average (g/cm³)	Maximum (g/cm³)	Density Applied In Block Model (g/cm³)
Saprolite	103	Hanging wall argillite	257	1.90	1.13	1.91	3.36	1.91
	223	Main arenite	838	1.82	1.07	1.80	2.95	1.80
	313	Footwall argillite	63	2.10	1.54	1.95	2.79	1.95
	1013	Turbidites	187	1.87	1.07	1.88	2.64	1.88
	1033	Upper intrusive	391	1.84	1.00	1.86	2.36	1.86
Transition	103	Hanging wall argillite	543	2.21	1.16	2.24	3.17	2.24
	223	Main arenite	898	2.28	1.25	2.32	3.24	2.32
	313	Footwall argillite	173	2.39	1.65	2.41	2.89	2.41
	1013	Turbidites	340	2.09	1.48	2.04	2.83	2.04
	1033	Upper intrusive	461	2.08	1.20	2.05	2.81	2.05
Fresh rock	103	Hanging wall argillite	1904	2.63	1.22	2.67	3.43	2.67
	223	Main arenite	6836	2.71	1.37	2.73	3.68	2.73
	313	Footwall argillite	5456	2.76	1.60	2.78	3.85	2.78
	413	Lower arenite	1923	2.78	1.96	2.78	3.75	2.78
	513	Deep argillite	537	2.79	2.48	2.80	3.07	2.80
	623	Argillite	270	2.73	2.31	2.73	2.92	2.73
	1013	Turbidites	1574	2.62	1.36	2.69	3.50	2.69
	1033	Upper intrusive	2548	2.59	1.57	2.65	3.70	2.65

Table 11-2: Gossey Deposit Statistics of Specific Gravity Samples

Weathering	Domain	Count	Mean (g/cm^3)	Minimum (g/cm^3)	Average (g/cm^3)	Maximum (g/cm^3)	Density Applied In Block Model (g/cm^3)
Regolith	MZ	3	1.94	1.93	1.93	2.00	1.94
	Regolith	53	2.45	1.71	2.50	2.88	2.45
SAP	Argillite	11	2.46	2.31	2.46	2.60	2.46
	Intrusive	96	2.46	1.83	2.48	3.09	2.46
	Intrusif_2	81	2.33	1.44	2.41	2.89	2.33
	MZ	153	2.47	1.50	2.54	2.94	2.47
	Regolith	5	2.58	2.43	2.57	2.68	2.58
	Sediments	572	2.40	1.55	2.45	3.14	2.40
TRANS	Argillite	26	2.56	2.09	2.58	3.04	2.56
	Intrusive	170	2.52	2.00	2.52	2.96	2.52
	Intrusif_2	145	2.55	1.81	2.57	3.14	2.55
	MZ	336	2.55	1.69	2.55	2.95	2.55
	Sediments	819	2.57	1.13	2.61	3.18	2.57
ROCK	Argillite	178	2.67	2.28	2.67	3.17	2.67
	Intrusive	1030	2.79	1.76	2.82	3.20	2.79
	Intrusif_2	1485	2.79	1.59	2.84	3.19	2.79
	MZ	1394	2.71	2.13	2.71	3.09	2.71
	Sediments	6780	2.70	0.89	2.71	3.19	2.70

Check assays for the IAMGOLD programs are performed at the following laboratories:

- ALS Ouagadougou, independent, accredited to ISO/IEC 17025:2017 for selected analytical techniques;
- SGS Ouagadougou, independent, accredited to ISO/IEC 17025:2017 for selected analytical techniques.

11.4 Sample Preparation

11.4.1 Pre-IAMGOLD

Sample preparation methods, where known, included:

- RC: crushed to 90% passing 425 µm in a vertical spindle Keegor mill and pulverized to 90% passing 75 µm;
- Core: crushed to 80% passing 2 mm and pulverized to 90% passing 75 µm.

11.4.2 IAMGOLD

Sample preparation includes:

- RC: dried and pulverized to 95% passing (P95) 500 µm in Keegor or LM-5 mills. Occasionally, when the sample is comprised of coarse particles, crushing is performed through a Terminator or Boyd Crusher prior to the pulverization stage. The sample is split in a rotary divider until two sub-samples weighing 1 kg each are obtained. One of the 1 kg sub-samples is pulverized to P95 500 µm;
- Core: crushed to P_{95} 2 mm in a Terminator or Boyd crusher. Samples are then split in 12 parts in a rotary splitter and a 1.2 kg sub-sample is pulverized to P95 105 µm using LM-5 mills.

11.5 Analysis

11.5.1 Pre-IAMGOLD

Orezone Resources used cyanide saturated 2 kg bulk leach extractable gold (BLEG) analysis.

In January 2006, Goldfields replaced Orezone Resources' 2 kg BLEG bottle roll process with a LeachWell rapid cyanide leach method on 1 kg sub-samples (the LWL69M method). Gold analysis was completed using atomic absorption spectroscopy (AAS) and fire assay of 1:10 tails.

11.5.2 IAMGOLD

RC samples are assayed by LeachWell rapid cyanide leach. Approximately 25% of the solid residues are re-assayed using fire assay whenever the LeachWell result is >0.3 g/t Au.

All samples are assayed for graphitic carbon (Cg), sulphur, and arsenic by inductively coupled plasma-mass spectrometry (ICP-MS) and ELTRA elemental analysers.

Core samples of 1 kg mass are assayed by LeachWell rapid cyanide leach, followed by fire assay of the tails when the grade is >5 g/t Au.

A 1 kg sub-sample is assayed by LeachWell rapid cyanide leach over 12 hours with an AAS finish. Initially, 10% of assays that returned >0.3 g/t Au had their solid residues re-assayed using fire assay. This percentage was raised to 25% in 2016. In addition, 5% of assays <0.3 g/t Au had their solid residues re-assayed using fire assay.

All samples are assayed for graphitic carbon, sulphur, and arsenic by ICP-MS and ELTRA elemental analysers.

11.6 Quality Assurance and Quality Control

11.6.1 Pre-IAMGOLD

The Gold Fields drill program included the insertion of standard reference materials (standards), blanks and duplicates in the sample stream.

Standards were sourced from Rocklabs, and selected on the basis of a range of gold grades and oxide or sulphide oxidation type. Oxide CRMs were inserted with upper and lower saprolite samples. Sulphide CRMs were inserted with fresh arenite and argillite samples. The insertion ratio was about 1:20. Results for every batch of standards reported by the assay laboratory were assessed by Gold Fields prior to upload of any assay data into the SQL database.

Coarse quartz blanks were inserted at a rate of 1:15 and generally were preparation blanks Additional quartz blank samples were inserted after samples containing visible gold.

Duplicates were inserted at a rate of 1:20 in 2007. The duplicates were taken as a second 1 kg split at the rotary splitting of minus 2 mm crushed material for core and RC samples. In the case of re-assays, the preparation duplicate was a second 1 kg sample split.

11.6.2 IAMGOLD

IAMGOLD has implemented an industry standard QA/QC program including the submission of standards, blanks, and duplicates and to the laboratory, and the results are reviewed regularly to ensure that appropriate and timely action is taken in the event of a QA/QC failure.

IAMGOLD has written procedures and protocols in place that include sampling from the drill rig to the laboratory, sample preparation at the Project site, laboratory sample preparation and analytical protocols, and interpretation of the resulting sampling and analytical data.

Standards were sourced from Rocklabs, and selected on the basis of a range of gold grades and oxide or sulphide oxidation type. The insertion rate is approximately 1:20. Results for every batch of standards, reported by the assay laboratory, are assessed by IAMGOLD's database manager prior to upload of any assay data into the SQL database. The average of the standard results for each batch is reported to the laboratory manager in a qualitative way by e-mail (trends showing over or underestimation; evidence for poor instrumental drift corrections; differences occurring at operator shift changes, etc.). Records of these assessments are stored in the Essakane database. When a standard fails (result is greater than three standard deviations of the certified value), the 10 samples before and after the failed sample (21 in total including the failed sample) are reanalyzed. Reviews of the standard performances show that the failure rate was within accepted industry norms. The standard results indicate acceptable laboratory accuracy for gold analyses and no significant bias.

Blanks used at Essakane consist of coarse granite sourced from the west of Burkina Faso. Blanks used for the Gossey program were of coarse sand. Blanks are inserted at an approximate rate of 1:20, and are primarily inserted within the expected mineralized interval. At Gossey, additional blanks were inserted before and after visibly-mineralised zones. Blanks are considered to have failed when the assay grade is >10 times the detection limit

(D.L = 0.001 g/t Au). Reviews of the blank performances show that the failure rate was within accepted industry norms. No significant contamination has been observed.

The field duplicates insertion rate is about 1:20. Duplicate results were assessed using a combination of field and pulp duplicate versus original scatter plots, log-log duplicate plots, and half absolute relative difference (HARD) plots. These reviews indicate acceptable precision of the gold analytical results at Essakane. As the Gossey deposit is characterized by high-nugget gold, field duplicate results are reflective of the higher gold variability between samples, and show less precision between analyses of the same sample.

11.7 Check Sampling

All crushing and pulverizing rejects from the IAMGOLD programs are returned to and stored at the Resource Development facility, where 20% of the reject samples are later selected for check assaying at SGS in Ouagadougou using the same analytical protocol.

Essakane check samples were selected based on the presence of arsenopyrite mineralization regardless of the original gold grade. It was found that choosing the check samples based on the on-site Mine laboratory assay results alone resulted in a selection bias (i.e., over a long term, check samples, on average, returned lower values than the Mine laboratory's results).

Check assay results were assessed using a combination of field and pulp duplicate versus original scatter plots, log-log duplicate plots, and half absolute relative difference (HARD) plots. These reviews indicated acceptable precision of the gold analytical results at Essakane and Gossey.

11.8 Databases

Data entered directly into a laptop using either an Excel spreadsheet (Gossey) or Maxwell GeoServices Pty Ltd.'s (Maxwell GeoServices) LogChief software (Essakane) and then transferred into the central database.

Data validation is carried out by the project or database geologist after all data entry for the drill hole has been completed. Another set of data validation (such as invalid from and to, out of range, or invalid type values) is run on the data once it has been imported into DataShed. A separate set of validation steps is followed for the assay data after it is imported into DataShed.

All paper copies of logs and assay certificates in PDF and Excel format are archived for future reference.

The drill hole log is transferred into the Geovia GEMS, Hexagon MinePlan, and Seequent Leapfrog Edge modelling database after it has been duly validated in DataShed, and all the assays have been received and checked.

11.9 Sample Security

11.9.1 Essakane

Following the IAMGOLD acquisition of Orezone Resources and Essakane in 2009, all drill samples were collected under direct supervision of the Mine staff from the drill rig and remained within the custody of the staff up to the moment the samples were delivered to the on-site Essakane laboratory.

Samples, including duplicates, were delivered from the drill rig to a secure storage area within the fenced Essakane core facility. Blanks and standards were inserted in the sample stream at the core facility.

Chain of custody procedures consisted of filling out sample submittal forms that are sent to the laboratory with sample shipments to make certain that all samples were received by the laboratory.

Sample security has relied upon the fact that the samples are always attended or locked in appropriate sample storage areas prior to dispatch to the sample preparation facility.

11.9.2 Gossey

Samples were transported periodically from the drilling site to the Essakane mine site, located 12 km to the south-east of the Gossey deposit under the supervision of IAMGOLD geologists and field technicians. The samples were stored in the laydown of the exploration department, where sample preparation and splitting occur.

11.10 QP Comment on Item 11 "Sample Preparation, Analyses and Security"

The QP is of the opinion that the sample preparation, analysis, quality control, and security procedures are sufficient to provide reliable gold data to support estimation of Mineral Resources and Mineral Reserves, and can be used in mine planning.

12 DATA VERIFICATION

12.1 Internal Verification

Internal data verification by IAMGOLD staff on data uploaded to the database typically includes checks on the following data tables. Information from the most recent verification completed in 2023 is summarized for each of the tables reviewed:

- Collar surveys: during 2023, a total of 2,867 drill holes supporting Mineral Resource estimation had collar data verified with no material errors noted;
- Downhole surveys: a total of 38,229 entries verified, with no material deviations noted. Each drill hole had at least one downhole survey record;
- Lithologies: lithology records totalling 34,827 entries from 2,587 drill holes were reviewed. A small number of errors, typically overlapping intervals, missing data, and duplicate entries were noted, and flagged for correction;
- Lithotype: lithotype records (lithology groupings used in resource modelling) totalling 27,804 entries from 2,819 drill holes were reviewed. A small number of errors, primarily missing data, and use of lithology rather than lithotype codes were noted, and flagged for correction;
- Density: density records totalling 25,363 entries from 1,256 drill holes were reviewed. Errors noted included omission of the oxidation/weathering intensity/type or use of rock codes for density samples that were not in the library of codes to be used. Such errors were flagged for correction;
- Analyses: Analytical records totalling 427,586 entries from 2,867 drill holes were reviewed.

The 2023 review provided a list of suggested steps to resolve future inconsistencies, key amongst which were simplifying and restricting the number of lithology and lithotype codes, and standardizing and reducing the number of codes used for oxidation when collecting density data.

12.2 External Verification

12.2.1 G-Mining Services Inc.

G-Mining Services Inc. (GMS) completed a review of selected data in 2018 and again in May 2022. Work completed included:

- Site visit in March 2018:
  - Drill core from the EMZ deposit was inspected, and IAMGOLD geologists presented all logging and sampling protocols. A tour of the open pit was undertaken to review mineralization and waste rock in the pit walls;
  - GMS personnel reviewed the artisanal workings at the Gossey deposit and the ongoing drilling to validate mineralization was present. . Cross-checks were made to compare the collar coordinates in the provided database against field observations by handheld GPS, and no major discrepancies were found.
- Visiting the Mine laboratory in March 2018 to oversee the sample preparation and assaying techniques. GMS concluded that the laboratory had acceptable practices and that the analytical data from the laboratory were acceptable to support Mineral Resource estimates;
- Checking 17% of the assays in the Essakane certificates (1,469 out of a total of 8,322) against the provided database, covering the period of September 2021 to April 2022. In addition, GMS selected 10% of the drill holes that intersect the remaining mineral resource (from drillholes completed before 2021) and checked the assay certificates against the gold values in the database. No material issues were identified as a result of these checks;
- Review of QA/QC data. GMS concluded that the QA/QC review supported the use of the analytical data in Mineral Resource estimation;
- Validation of drill and analytical data from the Gossey deposit, including:
  - Validation of total hole lengths and final sample depth data;
  - Verification for overlapping and missing intervals;
  - Check drill hole survey data for out of range or suspect downhole deviations;

- Visual check of spatial distribution of drill holes;
- Validation of lithology codes;
- Comparison of 49 analysis certificates with the drill database to ensure that assay data were appropriately imported into the database.

12.3 Verification by Qualified Persons

The QPs undertook the following data verification steps in there areas of Report responsibility and reached the conclusions summarized in each QP scope.

12.3.1 Mr. Francois J. Sawadogo, MAIG

Mr. Sawadogo works at the operations. His scope of personal inspection was outlined in Section 2.4.

Mr. Sawadogo performed a review of the geological setting, the geological interpretations, collected data, including examination of selected drill collar and downhole survey data for errors, examination of selected analytical data, QA/QC and reconciliation data, database upload and verification procedures, and checks on written protocols used to collect and review data.

As a result of the data verification, Mr. Sawadogo considers that the geological, drill, assay and QA/QC data are acceptable in use in Mineral Resource estimation.

12.3.2 Mr. Haithem Chattaoui, P.Eng.

Mr. Chattaoui works at IAMGOLD's Brossard offices. His scope of personal inspection was outlined in Section 2.4.

Mr. Chattaoui performed a review of the collected data, including examination of selected drill collar and downhole survey data for errors, examination of selected analytical data, QA/QC and reconciliation data, database upload and verification procedures, and checks on written protocols used to collect and review data.

He also reviewed the following: the exploratory data analysis results for the key payable and penalty elements in the block model; the geological interpretation used in the block models; domaining assumptions; selection of composite length in relation to the selective mining unit used in operations; interpolation criteria; confidence classifications; considerations used when assessing reasonable prospects of eventual economic extraction; and the resulting Mineral Resource tabulations.

As a result of the data verification, Mr. Chattaoui considers that the geological, drill, assay and QA/QC data are acceptable in use in Mineral Resource estimation. He also considers that the Mineral Resource estimate was appropriately constructed, is appropriately constrained within a reasonable mineable shape, and is sufficient to support Mineral Reserve estimation and mine planning.

12.3.3 Mr. Rémi Lapointe, ing

Mr. Lapointe has visited the operations on numerous occasions during 2022–2023. His most recent site visit was from 10–14 September 2023 (see Section 2.4).

Mr. Lapointe performed reviews of the available metallurgical testwork data supporting the metallurgical recoveries used in the LOM plan and amenability of the mineralization within the LOM plan to the current process facilities; reviewed equipment availabilities and utilization rates to assess validity of historical information to future production; assessed process plant consumable requirements for suitability for LOM plan purposes; and reviewed sustaining and operating cost predictions for the process plant in the LOM plan.

As a result of the data verification, Mr. Lapointe considers that the metallurgical recovery forecasts used in the Mineral Resource, Mineral Reserve and economic analysis supporting the Mineral Reserves are appropriate. The process portion of the LOM plan can be used to support the Mineral Reserve estimates.

12.3.4 Mr. Michel Dromacque, C.Eng.

Mr. Dromacque performed a number of reviews in support of the Mineral Reserves and cost assumptions that included: site infrastructure, actual operating cost and production capacity, open pit design parameters and pit stages; haul roads and accesses; pit shells and optimization parameters; equipment type and numbers, utilization rates and maintenance strategy; consumables cost actual and forecasted; sustaining capital and operating costs and sensitivity of costs to key input parameters. As a result of the data verification, Mr. Dromacque considers that Mineral Reserves are supported, and the mine plan is achievable. Based on the cost estimates reviewed, the economic analysis supports Mineral Reserves.

12.3.5 Mr. Denis Doucet, ing

Mr. Doucet performed a number of reviews with site corporate managers and IAMGOLD corporate management in support of the Mineral Reserves and cost assumptions that included: open pit design parameters and pit stages; haul roads and accesses; pit shells and optimization; equipment numbers and utilization rates; consumables costs; sustaining capital and operating costs; and sensitivity of costs to key input parameters.

In conjunction with the site General Manager and Health, Safety, and Environmental Representative Manager, Mr. Doucet undertook reviews of, and discussed aspects of the Project environmental approvals; sectorial approvals; environmental compliance and environmental issues; closure and reclamation planning and cost estimates for closure; social engagement with local stakeholders and communities with appropriate IAMGOLD staff.

He also reviewed with safety and operations considerations given the geopolitical setting of the operations with appropriate IAMGOLD staff. He participated in reviews and discussions with staff responsible for obtaining, maintaining, and renewing Project rights, including mineral tenure and surface rights.

As a result of the data verification, Mr. Doucet considers that Mineral Reserves are supported, and the mine plan is achievable. Based on the cost estimates reviewed, the economic analysis supports Mineral Reserves.

12.3.6 Mr. Franck Napon

Mr. Napon has participated in reviews of aspects of environmental and social performance, including environmental compliance, permitting status, and stakeholder, community, and government relations. He considers that the information on environmental, permitting, and social aspects of the operations is sufficient to support Mineral Resource and Mineral Reserve estimates for the Essakane Operations.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Introduction

Metallurgical testwork on the Essakane deposit has been conducted by a number of independent laboratories and third-party consultants over the Project life. These include the laboratories SGS Johannesburg, Kappes Cassidy Associates, McClelland Laboratories, SGS Johannesburg, Philips, SGS Lakefield Research Ltd, Auralia Metallurgy Pty Ltd., ALS Metallurgy, Orway Mineral Consultants (Orway), and third-party consultants GRD Minproc (Pty) Ltd., GMS, Crowe Metallurgical Consulting Inc., Enhance Mining Inc., and Soutex Inc. There is no international standard of accreditation provided for metallurgical testing laboratories or metallurgical testing techniques.

Work completed included mineralogy, comminution, leaching (carbon-in-leach (CIL), whole ore, intensive, diagnostic), preg-robbing, gravity concentration, static settling, and rheology testing, as well as examinations of the effects of grind size and the effects of surfactants on preg-robbing. This testwork showed that a conventional crushing, milling, gravity concentration, and CIL gold plant was suitable for the mineralization at Essakane.

No metallurgical testwork has been undertaken on the Gossey deposit.

13.2 Metallurgical Testwork (1990–2010)

Comminution tests included abrasion indices (Ai), crushing work index (Cwi), Bond rod mill work index (Rwi), JKTech drop weight comminution parameters (A*b), and unconfined compressive strength (UCS) tests. Results are summarized in Table 13-1.

Extensive leaching tests were conducted on the various ore types. A common characteristic of Essakane ore is slow leaching kinetics if the ore is subjected to cyanidation without removing the coarse gold particles in a gravity concentrate. While leaching is still ongoing, leach extraction reaches a plateau after 50 hours if coarse gold is present in the ore feed; however, this is reduced to <20 hours if coarse gold is removed prior to the leaching stage.

Table 13-1: Testwork Results

Ore Type	Depth in Deposit (m)	Abrasion Index (Ai)	Crushing Work Index (Cwi)	Bond Rod Index Rwi)	Bond Work Index (Bwi)	Breakage Parameter (A*b)	Unconfined Compressive Strength
Oxide	Above 78	0.036	10	8.8	8.7	80	47
Transition	78–118	0.200	15	10.4	9.6	55.2	47
Fresh (average)	110–210	0.183	21.6	15.4	13.2	35.9	204
Fresh (hard)	129–210	0.179	21.6	16.1	13.8	31.8	201

Gold recovered in the rougher concentrate varied from 40–90%, which is relatively high for gold deposits. Gravity concentration was considered necessary for the Essakane CIL plant based on the following factors:

- Due to the high nugget nature of coarse gold, gravity concentration would assist in reducing gold lock-up in the mills;
- Early removal of free gold particles would reduce the tendency for the particles to be flattened in the mill and to have impurities hammered into the gold surface with continued circulation via cyclone underflow;
- Coatings, which might inhibit cyanidation, can develop on gold particles undergoing prolonged recirculation in milling circuits;
- Larger gold particles, if not removed before entering the CIL circuit, may not have sufficient residence time to dissolve completely, thereby reducing overall recovery;
- The lower head grade in the CIL feed would reduce final solution losses;
- The ability to intensively cyanide leach certain gold-bearing heavier minerals such as pyrite or arsenopyrite can potentially increase overall gold recovery.

Optimization studies focusing on grind size and recovery versus operating costs concluded that the economical optimum grind size for fresh rock was a P80 (80% passing) minus 125 µm. The presence of activated carbon during leaching showed improved leaching kinetics and recoveries. This observation led to the use of a CIL circuit as opposed to a leach followed by a carbon-in-pulp circuit.

13.3 Metallurgical Testwork (2011 to 2015)

Comminution testwork in 2011 showed that fresh PQ drill core samples were harder than those used for the initial plant design.

Several gravity tests were conducted on the ore and confirmed a predicted gravity gold recovery of 45%. Leach tests were completed on the gravity tails and the run-of-mine ore. The results showed that a combined (gravity and leach) recovery of 92% should be expected with a 36-hour leach time. The estimated reagent consumptions are 0.4 kg/t for cyanide and 0.6 kg/t for lime after a planned leach time of 36 hours. Static settling tests included flocculant screening, feed percent solids optimization, and flocculant dosage optimization. A non-ionic flocculant was determined to be best suited for this operation with a feed dilution between 10% to 15% and a dosage rate of 40 g/t. Rheology testwork was done on simulated underflow samples. All the samples demonstrated Bingham plastic rheology behaviors. The samples at a higher pH gave similar or slightly higher shear stress values.

Metallurgical testing on drill core and samples from the Essakane CIL circuit was carried out in 2015 to further characterize the Essakane deposit, with an emphasis on fresh rock behavior. The metallurgical tests included gravity separation, CIL tests, preg-robbing validation tests, whole ore leach tests, intensive leach tests, and diagnostic leach tests, as well as investigations into the effects of grind size and the effects of surfactants on preg-robbing. The following conclusions resulted from this test program:

- The gravity component of the CIL plant is essential to maximize gold recovery and optimize the operation of the downstream CIL circuit. An average gravity recovery of 60% was achieved at the laboratory level. This is similar to the average value of 59% obtained in previous studies performed by SGS Lakefield;
- The optimization of carbon management to the CIL circuit is needed to minimize the effects of preg-robbing carbonaceous material;
- Gold extraction increases with grind fineness, however, with the increased grind fineness, more carbonaceous preg-robbing material is liberated and can prevent any observable increase in recovery;
- The use of surfactants or blinding agents at the supplier's recommended dosage did not improve gold recovery;

- Diagnostic leaching of CIL tails showed that only 10% of gold in the tailings is free milling, with the remainder being locked up in dolomite and labile sulphides or associated with sulphides, graphite, and silicates.

The June 2015 SGS Lakefield study indicated a risk for lower recoveries due to the amount of graphitic ore present in future planned mining zones.

13.4 Metallurgical Testwork (2016–Report effective date)

Work completed in the period 2016 to the Report effective date focused on aspects of increasing gold recovery, and optimizing plant performance.

13.4.1 MACH Pre-Oxidation Tests

ALS Metallurgy completed a set of tests in 2021 to determine if MACH reactor technology using pre-oxidation could improve direct leach and CIL performance. Testwork on what was referred to as the “Roche” composite included: head assays; gold-robbing index tests; MACH high shear reactor tests; and direct leach and CIL of the resulting MACH product.

The Roche bulk composite ore sample contained ~50% gravity-recoverable gold. The gravity tailings were strongly gold-robbing. The addition of activated carbon (CIL) overcame the gold-robbing nature of the ore and resulted in a major improvement in the overall gold recovery. MACH pre-treatment via high shear pre-oxidation in conjunction with CIL resulted in a reduction in residue grade of up to 0.07 g/t Au together with an improvement in ultimate CIL gold extraction.

Variability samples, more representative of plant feed, were recommended to be submitted for testing.

13.4.2 Stockpile Marginal Mineralization Tests

In 2021, Soutex Inc was retained to estimate whether marginal mineralized material (low-grade mineralization estimated to be under the plant cut-off grade) could be economically processed at the existing CIL plant.

Two series of laboratory tests were run on grab samples collected from the marginal mineralization stockpiles at the Essakane metallurgical laboratory from December 2021 to February 2022. The graphitic carbon concentration was also considered in sample selection to cover a range of carbon concentrations as this was known to have a significant impact on the gold recovery.

Gravity-recoverable gold tests showed that two of the stockpiles had gravity recoverable gold recoveries similar to that of the run-of-mine ore (73.6% and 72%, respectively versus 61.9–84.2%), whereas a third stockpile had a lower gravity recoverable gold recovery of 55%. When incorporating the plant's gravity circuit average efficiency, the expected gold recovery for the gravity circuit was estimated to be 39.1% for the marginal material. This value is lower than the gravity recovery observed when processing conventional ore; this is mainly due to the lower average gravity recoverable gold recoveries measured on the marginal samples.

Bottle roll tests were run on the same samples. The tests delivered results valid for the lower grades of the marginal mineralization stockpiles. Tests indicated 85% recovery (including gravity recovery) for a 0.35 g/t Au plant feed grade. The graphitic carbon concentration appeared to have a lesser influence on the solid losses for very low gold feed grades than it has for conventional ores, which was considered to be an upside for the Essakane CIL process.

A second laboratory test program was run from March 2022 to April 2022 to evaluate various scenarios that could impact production. Two scenarios were developed from the tests results to illustrate the impact of the changes in three key variables: throughput, feed size, and residence time in the CIL:

- Scenario 1:
    - Plant throughput increased by 10%;
    - F80 (for CIL feed) at 150 µm;
    - Reduction in residence time in the CIL by 10%;
- Scenario 2:
    - Plant throughput decreased by 10%;
    - F80 (for CIL feed) at 100 µm;
    - Increase of 10% in residence time at the CIL.

Tests demonstrated that for a feed grade of 0.394 g/t Au (the expected low-grade stockpile average gold grade), Scenario 1 led to a decrease in gold recovery of 1.65%. Scenario 2 would lead to a 1.39% increase in gold recovery.

A plant trial was run in December 2021 to monitor the plant performances while processing marginal material. A total of 287 kt of marginal ore was processed during the test. For 12 days, a blend of conventional ores and marginal mineralization was fed to the plant. The blend varied between approximately 30% marginal material to 100% material ore.

During the test, the gold feed grade was estimated at the higher limit of the marginal stockpile expected grades (<0.65 g/t Au). During the five days for which the plant was fed nearly exclusively with marginal ores, the plant gravity recovery was 53% and the overall recovery was estimated at 90%.

A second plant trial was run from September 26 to October 11, 2022 to evaluate the gold content of one of the marginal grade stockpiles. The test also provided the opportunity to monitor the plant performances when processing marginal material. A total of 527 kt of marginal mineralization was fed to the plant at an average daily feed grade of 0.86 g/t Au.

The gravity recoverable gold was evaluated on a composite sample at 49.2%. Previous laboratory tests on grab samples from the same stockpile already had indicated a similar gravity recoverable gold recovery of 55.

An arithmetic average gravity recovery of 46.5% was estimated. This is in line with the historic average (46.4% from Jan 2021 to June 2022), but was considered to be unlikely given the 49.2% gravity recoverable gold recovery measured on a sample during the same period. It was not possible to determine which was biased, the GRG test or the gravity recovery estimate.

Dissolution profiles and extended leach tests were run during the trial. These both demonstrated the leaching process was not finished at the end of the last tank, but the available gain for a longer leach is limited: the potential decrease in solid loss through extended dissolution was 0.0054 g/t Au. This aligned with bottle roll tests results completed in March–April 2022 where a longer leach was expected to improve the recovery.

The overall recovery during the test was 87.8%, which was in line with the expectations considering the graphitic carbon (0.15%) and sulfur (0.25%) concentrations observed during the test.

The testwork demonstrated that marginal mineralization appeared amenable for treatment in the existing plant. The gravity recovery circuit was expected to be less effective, but the overall recoveries were expected to be good, ranging from 80–90% depending on the gold and graphitic carbon concentration.

13.4.3 Gold Deportment in Tailings

The metallurgy department at the mine completed at gold deportment in tails study in early 2022 as part of an on-going effort of monitoring gold losses and improving performance within the Essakane leach plant. Techniques used included assaying; qualitative X-ray diffraction to identify and characterize gold minerals by grain size and association; scanning electron microscopy/ dispersive X-ray spectroscopy to determine gold grain compositions; and secondary ion mass spectrometry (SIMS and TOF-RIMS) to quantify the sub-microscopic gold and measure the concentration of gold sorbed onto carbon matter.

In decreasing order of abundance, rock minerals consisted of feldspars (39 wt%); quartz (28 wt%); mica/clays (23 wt%); and carbonates (8.5 wt%). Iron oxides were rare (<0.1 wt%). Pyrite and arsenopyrite were the principal sulphides. Carbonaceous matter was measured at 0.2%; this value is near the lower end of the historically-observed range.

Gold grains >0.5 µm were sub-categorised as 6% exposed gold (free and attached) and 26% enclosed gold (requires finer grinding to recover). Sub-microscopic gold (31%) was refractory, occurring in solid solution in arsenopyrite (primarily) and pyrite. Gold also occurred as surface bound gold, sorbed from solution onto carbonaceous-matter (37%).

Results indicated that this sample overall had one of the lowest gold-in-tailings grades of the materials tested to date. Gold of gravity-recoverable size contributed to about 2% of the tails grade, indicating the gravity circuit is appropriately optimized. Results of the CIL circuit also suggested it is appropriately optimized.

13.4.4 Graphite Impact on Gold Recovery

Enhance Mining Inc. completed a set of laboratory cyanidation tests to provide data for a cyanidation-adsorption model for the Essakane plant. The model as constructed could be used to account for the amount of preg-robbing occurring, gold losses in the circuit and gold losses in a particular reactor.

13.4.5 Aeration and Leaching Kinetics

In early 2022, aeration and leaching kinetic testwork was completed by Auralia Metallurgy. Composites were ground to 80% passing 125 µm and then run through a Knelson gravity separator to recover a gravity concentrate and to produce gravity tailing for leach testwork. Work completed included:

- Three CIL bottle roll cyanidation leach tests;
- Hyperjet cyanidation leach tests.

Increasing dissolved oxygen with oxygen addition did not have a significant impact on gold recovery in the bottle roll tests. None of the composites appeared to be oxygen consuming. Addition of lead nitrate resulted in all composites showing reduced recoveries.

Tests using a Hyperjet, from Hyperox Technologies, were completed to replicate the bottle roll tests with initial aeration through the Hyperjet and with NaCN added. One composite showed an increase in overall gold recovery with the Hyperjet. However, the tests did not show the addition of oxygen would improve overall gold recovery. The cyanide consumption increased significantly with oxygen addition to leach. Cyanide speciation could be used to help identify if the oxygen formed other cyanide complexes with increased oxidation.

13.5 Geometallurgy Program

The presence of sulphides (pyrite, arsenopyrite, and pyrrhotite) and graphite at moderate to high concentration, combined with variable hardness of the rock as the pit exploitation evolves, impacted the plant performance, and made forecasting challenging in terms of expected metal recoveries and costs.

To reduce the impacts associated with the ore variability, a geometallurgical project was launched in 2016 to enhance ore management through a better understanding of the geology.

The geometallurgy program is constantly evolving. Two carbon and sulphur analyzers were purchased and installed in the assay laboratory during 2020, and are used to analyze mill tails samples. Onsite testing of plant samples and grade control samples for graphitic carbon and sulphur analysis are now carried out on a regular basis in the assay laboratory. Good correlations are observed between graphitic carbon content and plant residues, hence, allowing for better control within the plant.

Since 2020, additional drilling and analyses have been carried out. Results received on 376 samples from this current phase are summarized below:

- Gold grade measured by fire assay provides, on average, higher concentration than LeachWell analysis, which is an upside for Essakane considering all resource models are based on LeachWell analysis;
- A trend of increasing graphitic carbon concentration with gold grade is observed;
- A trend of increasing sulfur content with gold grade is observed.

13.6 Recovery Estimates

The results of the metallurgical test programs indicate that the ore types tested are amenable to CIL methods. Laboratory tests and plant trials also showed good recoveries for marginal mineralization.

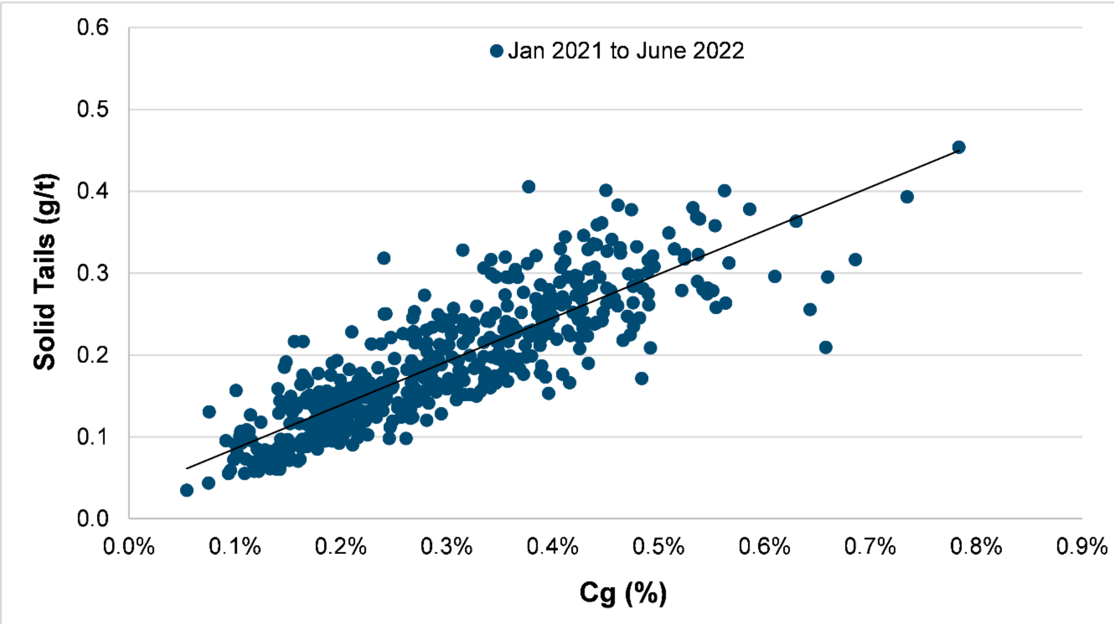
The average CIL gold recoveries used by weathering zone are based on SGS Lakefield testwork:

- Saprolite: 95.0%;
- Transition: 92.8%;
- Fresh rock: 91.9%.

The gold recoveries are, however, highly influenced by graphitic carbon concentrations. As a result the fresh rock recoveries used for Mineral Resource and Mineral Reserve estimation are slightly more conservative than the testwork result to allow for the impact of graphitic carbon.

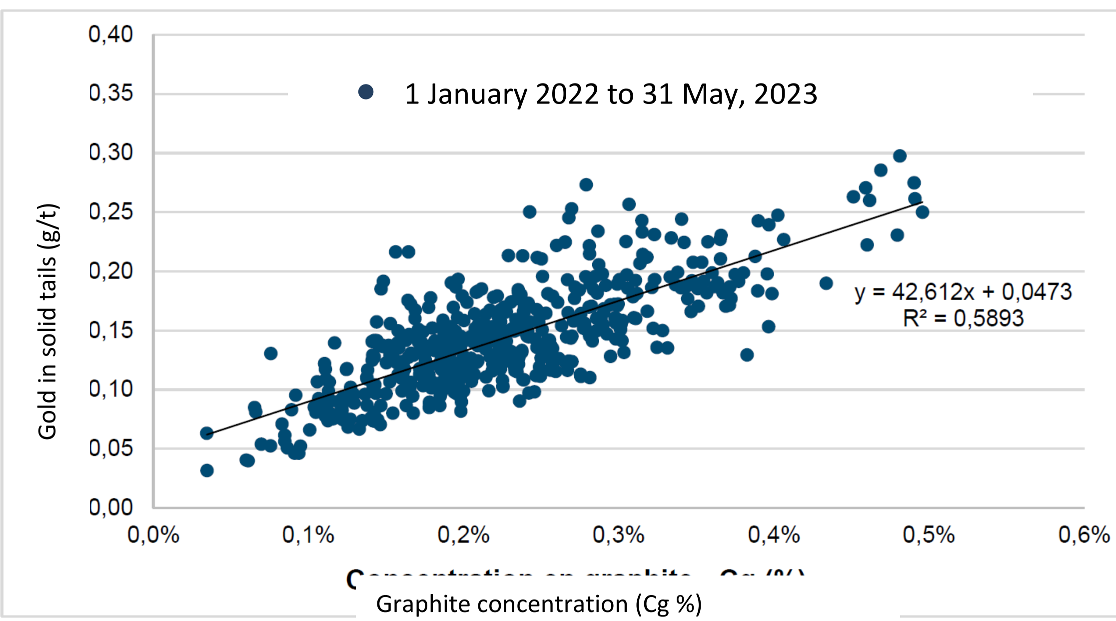
Onsite analysis of plant samples and grade control samples is performed by the on-site laboratory for graphitic carbon and sulphur. Good correlations were observed between graphitic carbon content and plant residues. Figure 13-1 shows this correlation for daily values for an 18-month period during from January 2021 to June 2022. Figure 13-2 shows recoveries from January 2022 to May 2023.

Figure 13-1: Recoveries, 2021–2022



Note: Figure prepared by IAMGOLD, 2022. Y-axis is gold grade; X-axis is graphitic carbon content.

Figure 13-2: Recoveries, 2022–2023



Note: Figure prepared by Soutex, 2023. Y-axis is gold grade; X-axis is graphitic carbon content. Numbering uses the French convention of a comma for the decimal place.

Ongoing reviews in 2023 continued to show that the gold content of the solid rejects from the plant is strongly correlated with graphite concentration. Models are providing acceptable performance in predicting metallurgical recoveries. The QP notes that the models are acceptable when used to predict plant performance, but cannot be used to predict recovery of the mining model blocks, which is based on LeachWell data.

For marginal ores, the gravity recovery circuit is expected to be less effective, but the overall recoveries are expected to be good, ranging from 80–90% depending on their gold grade and graphitic carbon concentration.

13.7 Metallurgical Variability

Samples selected for metallurgical testing during feasibility and development studies were representative of the various styles of mineralization within the different deposits of phase of exploitation. Samples were selected from a range of locations within the planned open pit phases.

During 2023, completed metallurgical testwork focused on phase 4 of the open pit, and characterization testwork on the mineralization within the fifth phase is underway. Sufficient samples were taken for testwork purposes. Tests were performed using sufficient sample mass for the tests undertaken.

Since 2020, graphitic carbon and sulfur have been included in the predictive model, and are used to forecast the metallurgical recoveries, based on a combination of ratios, ore type and the amount of graphitic carbon present.

13.8 Deleterious Elements

The major deleterious element is preg-robbing graphitic ore. To manage the preg-robbing effects, mill feed is blended to reduce the carbon grade. In areas of very high gold and graphite grades, plant reagents are adjusted for short batch campaigns. Other steps taken to mitigate the preg-robbing effects include installation of a Hyperjet in the process flow, to improve aeration, and the use of fresh water, rather than cyanide, in the gravity circuit. IAMGOLD continues to examine options in relation to reducing the preg-robbing effects in the gravity circuit in particular.

14 MINERAL RESOURCE ESTIMATES

14.1 Essakane

14.1.1 Introduction

The EMZ Mineral Resource estimate (including Lao and Gourouol) is based on 1,880 RC and 987 core holes, for a total of 427,586 assays and 511,569 m drilled.

Modelling and interpolation were completed using Leapfrog Edge version 2023.1.0.

Following a data review, 27 assays were excluded from estimation support as the assay results of >100 g/t Au or >125 g/t Au indicated a value above the level of detection for the analytical method in the assay certificates, and no re-assay had been completed to provide actual assay values.

14.1.2 Models

Estimation is based on a structural and a grade shell model. Median density values were assigned using a combined weathering profile and lithological model.

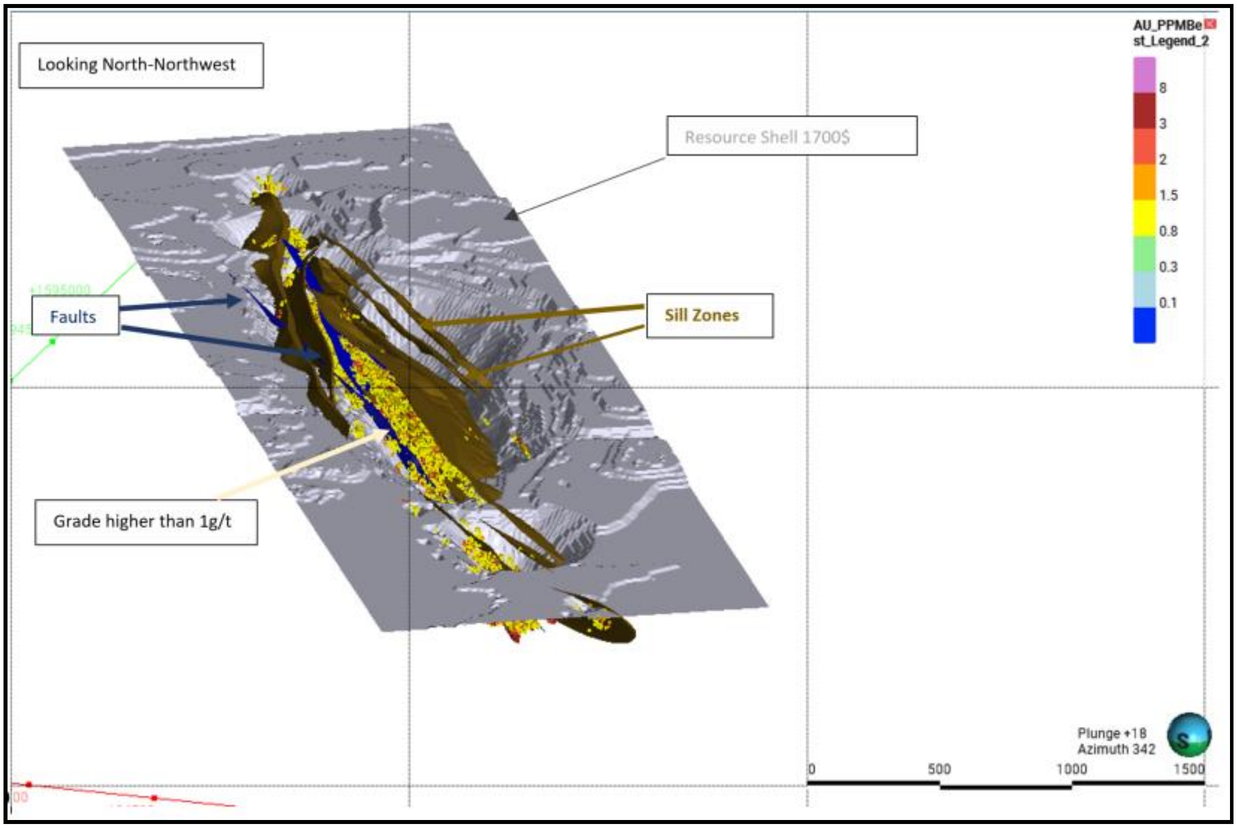
14.1.2.1 Structural Model

The structural model is based on:

- Sill zones modelled as logged in the drill core, as this provided a reasonable indicator for mineralization distribution;
- Fault models, using on a combination of drill data and pit mapping; used to assess mineralization continuity.

Figure 14-1 shows the resulting structural model.

Figure 14-1: Structural Model Plan View



Note: Figure prepared by IAMGOLD, 2023.

14.1.2.2 Grade Shell

Three grade shells were constructed:

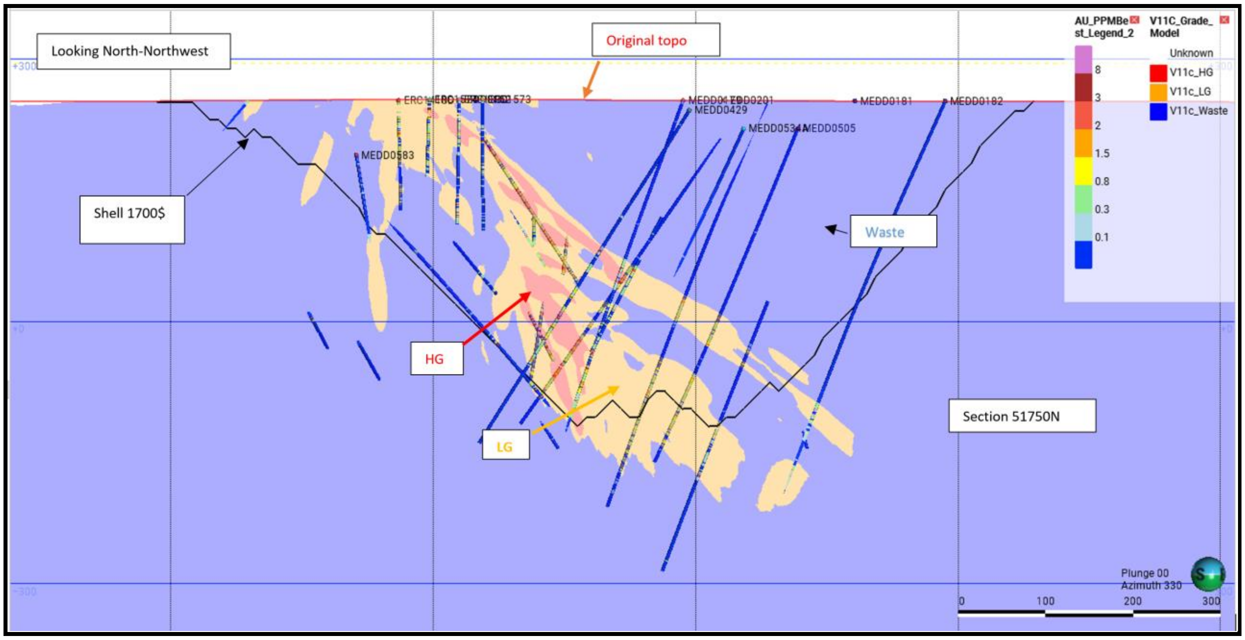
- High-grade shell: 5 m composites grading ≥1 g/t Au;
- Low-grade shell: 5 m composites grading ≥0.15 g/t to <1 g/t Au;
- Waste: all areas with grades <0.15 g/t Au.

Figure 14-2 shows the resulting grade shell models.

14.1.2.3 Surface Topography

The block model is constrained by the original pre-mining topography, generated using standard LiDAR flyover methods.

Figure 14-2: Cross-Section Showing Grade Shell Models



Note: Figure prepared by IAMGOLD, 2023. HG = high grade; LG = low grade

14.1.3 Assay Capping

Assay data were reviewed to determine if caps were required, using a combination of exploratory data analysis, and histogram and log probability plots. Table 14-1 summarizes the results of the exploratory data analysis. Plots showing the data are provided in Figure 14-3 to Figure 14-5.

Caps were applied to each of the high-grade, low-grade, and waste shells prior to compositing:

- High-grade shell: capped at 100 g/t Au; 25 samples capped, metal reduction of 3%;
- Low-grade shell: capped at 100 g/t Au; 25 samples capped, metal reduction of 2%;
- Waste: capped at 10 g/t Au; 25 samples capped, metal reduction of 3%.

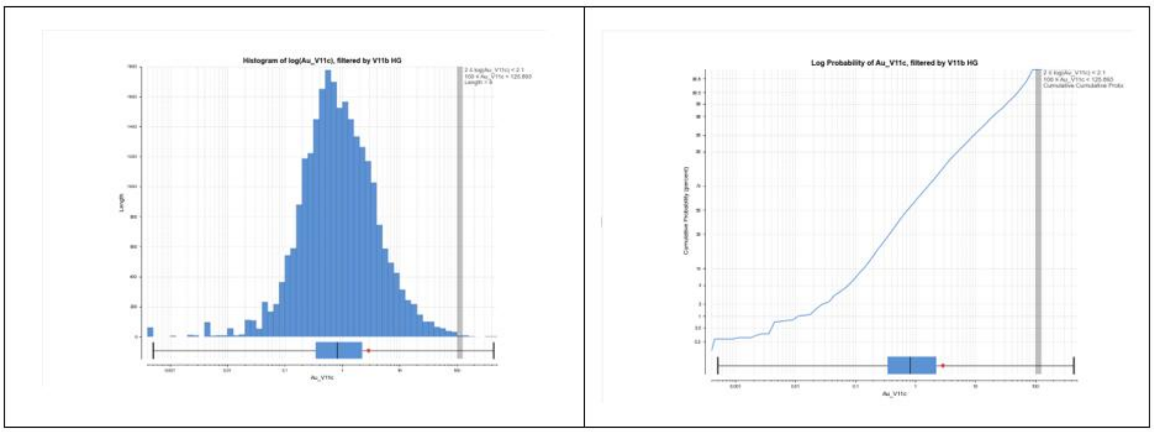
Estimation used a combination of soft (with ranges) and hard boundaries between the domains.

Table 14-1: Exploratory Data Analysis

Domain	Count	Uncapped Gold Assays			Total of Capped Values	Capped Gold Assays			Metal Loss (%)
		Max (g/t Au)	Mean (g/t Au)	Co-efficient of Variation		Max (g/t Au)	Mean (g/t Au)	Co-efficient of Variation	
HG	23,410	430.00	2.86	3.36	25	100	2.77	2.67	3
LG	145,348	387.00	0.75	5.11	25	100	0.73	4.36	2
Waste	258,179	48.26	0.04	7.29	25	10	0.04	4.82	3

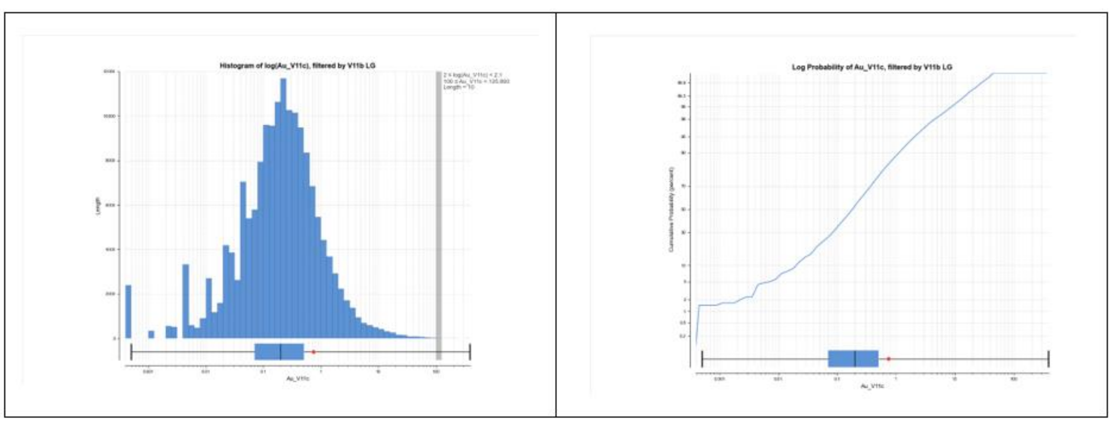
Statistics weighting: length-weighted

Figure 14-3: High-Grade Domain



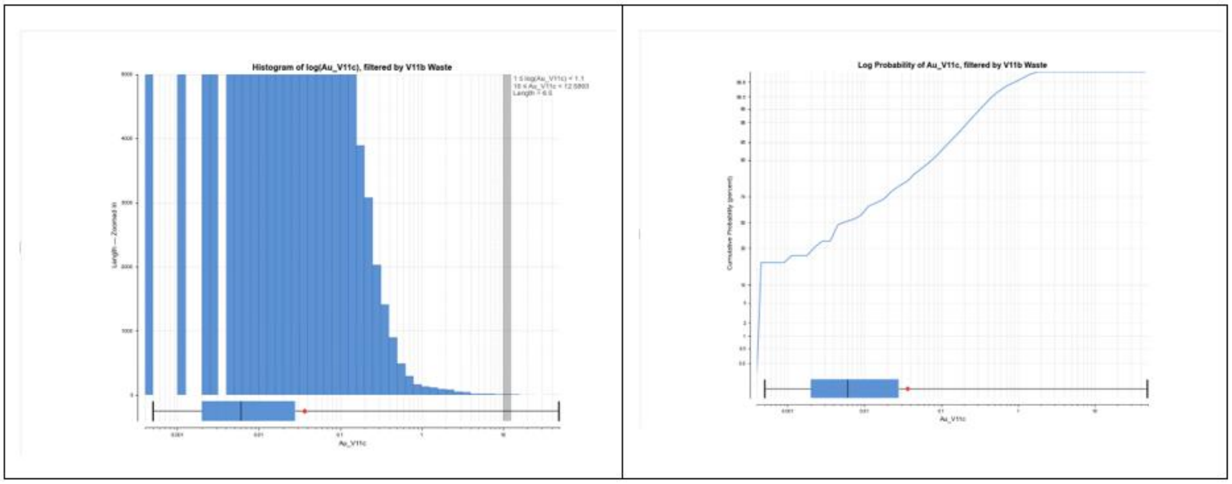
Note: Figure prepared by IAMGOLD, 2023.

Figure 14-4: Low-Grade Domain



Note: Figure prepared by IAMGOLD, 2023.

Figure 14-5: Waste Domain



Note: Figure prepared by IAMGOLD, 2023.

14.1.4 Compositing

The capped assays within each domain were composited to achieve a uniform sample support. Considering the current bench height of the mining operation (10 m benches), the variance of the assay population, and the drill hole spacing, it was decided to composite the data with a regular 5 m run-length (down hole) within the limits of each interpreted domain using the capped gold value of the original assay samples.

Residual values of <1 m were added to the previous composite.

The composite statistics are provided in Table 14-2.

14.1.5 Density

The resource database contains a total of 23,858 density measurements within the estimation domains with values ranging from 1.0–3.58 t/m^3. The average density value of each lithology, in each weathering profile, was used as the default value in the block model to avoid the influence of any outliers present in the dataset. Modelled value are summarized in Figure 14-6.

Table 14-2: Essakane, Lao, and Gourouol Composite Statistics

Domain	Count	Composites		
		Max (g/t Au)	Mean (g/t Au)	Co-efficient of Variation
HG	5,787	70.7	2.77	1.46
LG	36,632	54.12	0.73	2.44
Waste	62,570	4.08	0.04	2.74

Statistics weighting: Length-weighted

Figure 14-6: Density Values

[Weathering Model] = '1'	→ if	[02_2023_Model Litho] = '103'	→	1.92
		[02_2023_Model Litho] = '1013'	→	1.88
		[02_2023_Model Litho] = '1033'	→	1.84
		[02_2023_Model Litho] = '223'	→	1.80
		[02_2023_Model Litho] = '313'	→	1.82
		[02_2023_Model Litho] = '413'	→	1.80
		[02_2023_Model Litho] = '513'	→	1.82
		[02_2023_Model Litho] = '623'	→	1.80
		otherwise	→	1.80
[Weathering Model] = '2'	→ if	[02_2023_Model Litho] = '103'	→	2.19
		[02_2023_Model Litho] = '1013'	→	2.02
		[02_2023_Model Litho] = '1033'	→	2.06
		[02_2023_Model Litho] = '223'	→	2.32
		[02_2023_Model Litho] = '313'	→	2.35
		[02_2023_Model Litho] = '413'	→	2.32
		[02_2023_Model Litho] = '513'	→	2.35
		[02_2023_Model Litho] = '623'	→	2.32
		otherwise	→	2.32
[Weathering Model] = '3'	→ if	[02_2023_Model Litho] = '103'	→	2.67
		[02_2023_Model Litho] = '1013'	→	2.69
		[02_2023_Model Litho] = '1033'	→	2.66
		[02_2023_Model Litho] = '223'	→	2.73
		[02_2023_Model Litho] = '313'	→	2.78
		[02_2023_Model Litho] = '413'	→	2.78
		[02_2023_Model Litho] = '513'	→	2.80
		[02_2023_Model Litho] = '623'	→	2.73
		otherwise	→	2.80
otherwise	→			2.80

Note: Figure prepared by IAMGOLD, 2023. Weathering model 1 = saprolite, weathering model 2 = transition, weathering model 3 = fresh rock.

14.1.6 Variography

Variogram model were interpreted for gold within the low-grade domain in the east side of the deposit where the mineralisation is not folded, then applied across the deposit following a dynamic ellipsoids. The major range was determined at 53 m, the semi-major range was 82 m, and the nugget effect was 0.6.

An example variogram is provided in Figure 14-7.

14.1.7 Block Modelling

A single block model was constructed for the Essakane deposit, including Lao and Gourouol. The block dimensions of 10 x 10 x 10 m are based on the existing drilling pattern (25 x 25 m or 25 x 50 m in some areas), mine planning considerations (10 m benches), current material selectivity, and the deposit characteristics.

14.1.8 Estimation Methodology

Gold grades within the mineralized and waste domains were estimated by ordinary kriging (OK) using 5 m composites.

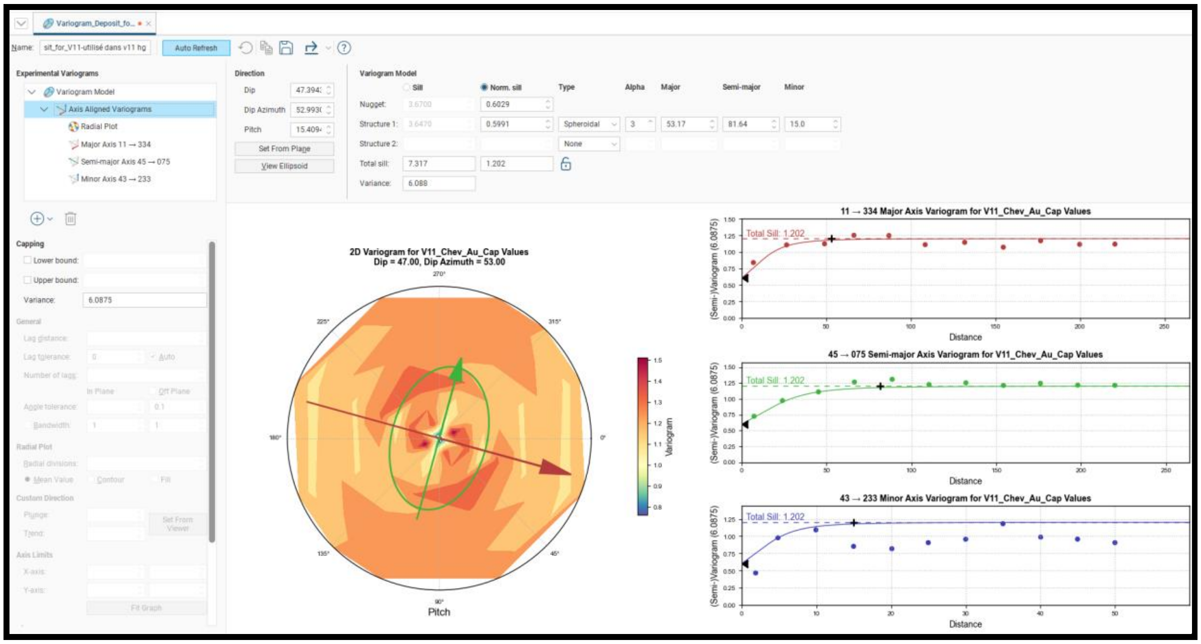
Blocks were interpolated based on individual profiles for each estimation domain using dynamic ellipsoids and a combination of hard and soft boundaries that were domain dependent.

The direction of the dynamic ellipsoids is controlled by the structural model, lithology contacts, and mineralisation continuity.

A high-grade restriction approach was used to limit the influence of high-grade values in the high-grade and low-grade domains.

A three-pass strategy was used to estimate gold grades into the block model. Parameters are listed in Table 14-3.

Figure 14-7: Example Variogram, Essakane



Note: Figure prepared by IAMGOLD, 2023.

Table 14-3: Interpolation Parameters

Domain	General		Ellipsoid Ranges			Number of Samples		Outlier Restrictions			Drill Hole Limit
	Pass	Dynamic Ellipsoid	Max	Inter	Min	Min	Max	Method	Distance	Threshold	Max Samples per Hole
HG	Pass 1	Yes	40	40	15	7	12	Clamp	25	10	3
	Pass 2	Yes	60	60	20	4	12	Clamp	25	10	3
	Pass 3	Yes	120	120	25	2	12	Clamp	12.5	30	2
LG	Pass 1	Yes	40	40	20	9	20	Clamp	50	50	4
	Pass 2	Yes	60	60	20	4	12	Clamp	25	30	3
	Pass 3	Yes	120	120	25	2	12	Clamp	12.5	30	3
Waste	Pass 1	Yes	40	40	15	7	12	None	N/A	N/A	3
	Pass 2	Yes	60	60	20	4	12	None	N/A	N/A	3
	Pass 3	Yes	120	120	25	2	12	None	N/A	N/A	2

Note: HG = high grade; LG = low grade; Inter = intermediate; Min = minimum, Max = maximum

14.1.9 Confidence Classification

The classification of interpolated blocks was undertaken by considering the following criteria:

- Distance between sample points (drilling density);
- Confidence in the geological interpretation;
- Continuity of the geologic structures and the continuity of the grade within these structures;
- Statistics of the data population;
- Quality of assay data.

Mineral Resources are classified based on the average distance between the composites used to estimate a block grade,

No Measured Mineral Resources were classified other than for stockpiles (see Section 14.2).

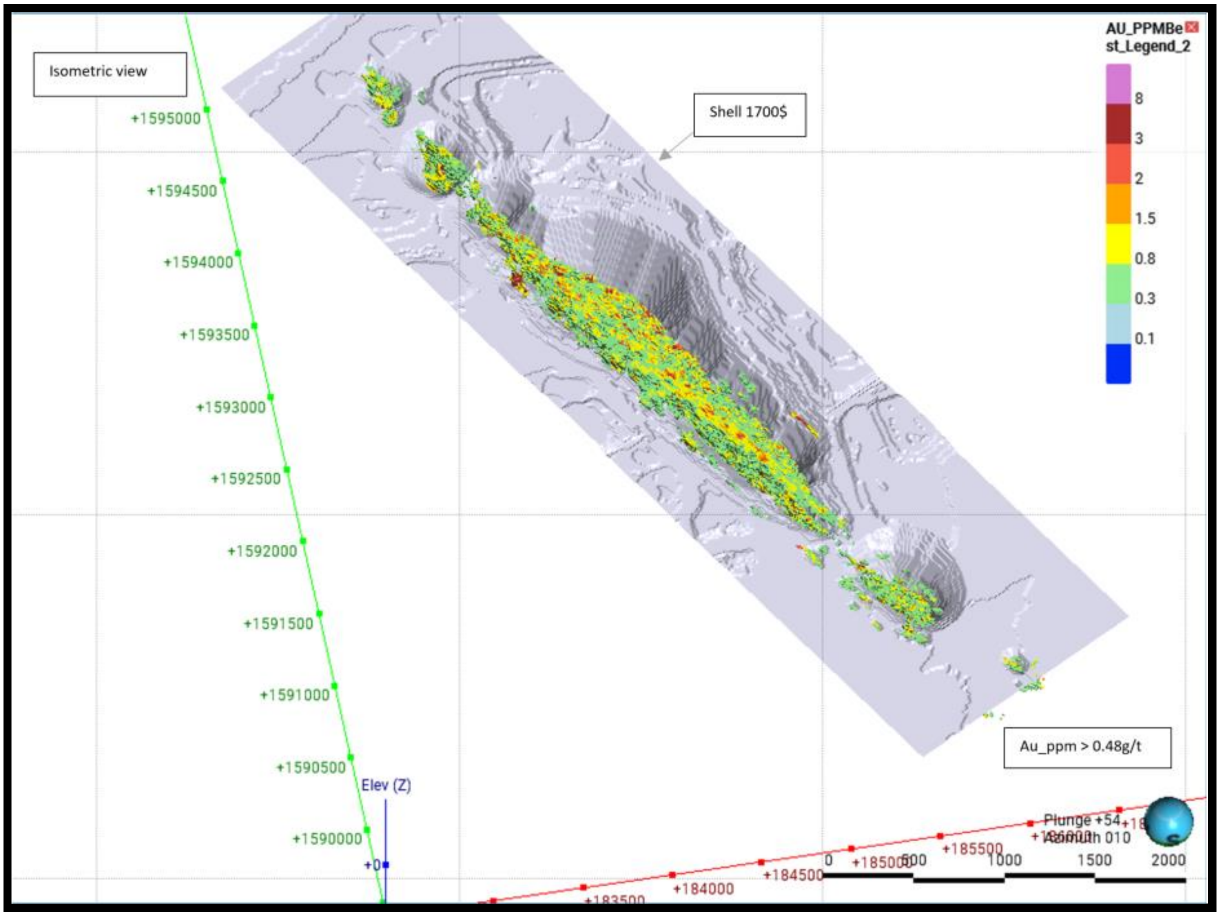
Indicated Mineral Resources were classified for those blocks where average distance between composites used to interpolate a block is ≤30 m.

Inferred Mineral Resources were classified for those blocks where the average distance between composites used to interpolate a block is ≤60 m.

Manual reclassification was undertaken to remove isolated blocks of one confidence category from within areas primarily classified as another category.

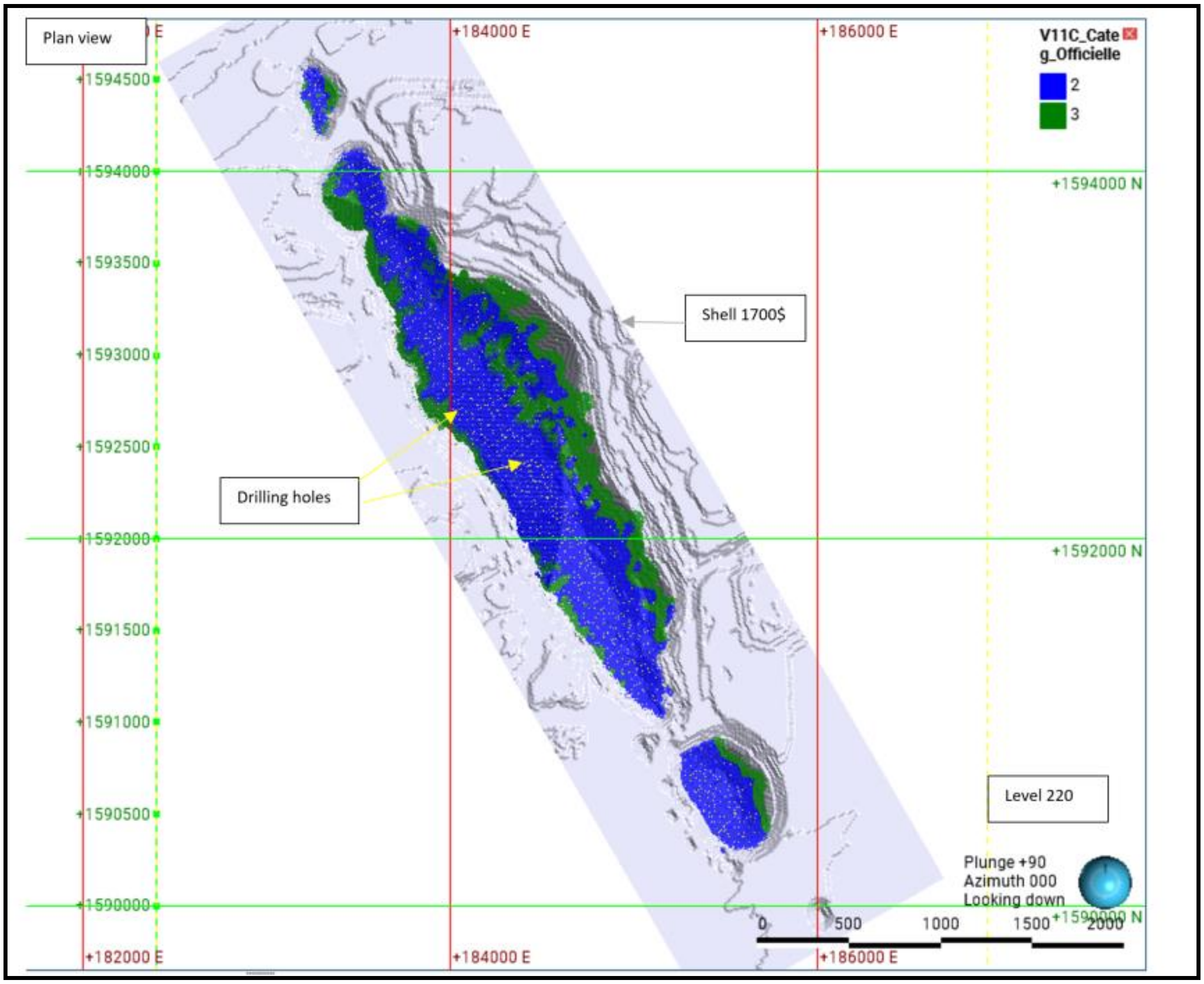
Gold grade distributions are illustrated in plan view in Figure 14-8. The resource confidence categories are shown in plan and section view in Figure 14-9 and Figure 14-10, respectively.

Figure 14-8: Gold Grade Distribution



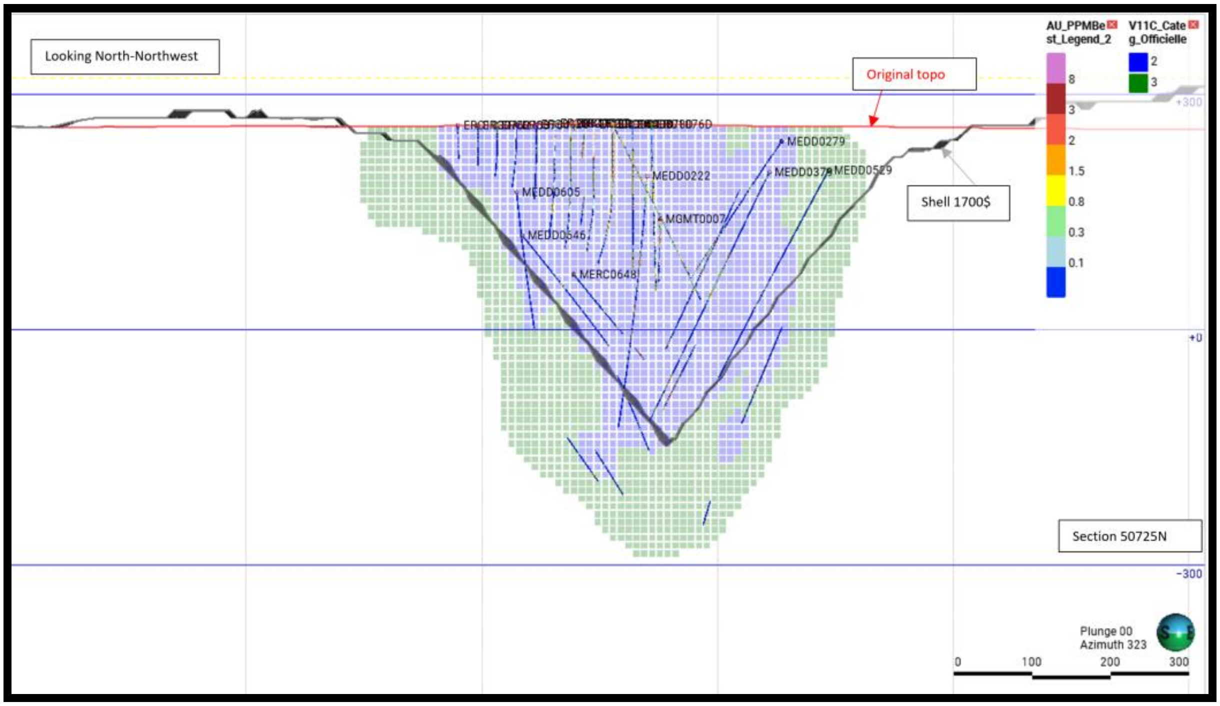
Note: Figure prepared by IAMGOLD, 2023. Estimation area shown within US$1,700/oz Au pit shell. North is toward the top of figure as shown in grid northings.

Figure 14-9: Resource Confidence Classification



Note: Figure prepared by IAMGOLD, 2023. 2 = Indicated, 3 = Inferred. North is toward the top of figure as shown in grid northings.

Figure 14-10: Cross-Section, Resource Confidence Classification



Note: Figure prepared by IAMGOLD, 2023. 2 = Indicated, 3 = Inferred.

14.1.10 Block Model Validation

The process included visual checks on plan and section, statistical validation, comparison of estimations undertaken using different interpolation methods, including inverse distance weighting to the second power (ID2) and nearest-neighbour (NN), swath plots, and reconciliation.

No significant biases or issues were noted from the validation steps.

The current mineral resource model was compared with the grade control model and previous production, and showed acceptable performance.

14.1.11 Reconciliation

To assess the performance of the long-term (Mineral Resource) model against both the short-term (grade-control) model and actual production, a reconciliation exercise was performed.

During normal operations, Essakane performs tight-spaced RC grade control drilling several weeks in advance of mining; the short-term model is considered the "ground truth" and is compared with the mineral resource model. Direct comparisons with production records prove complex at Essakane due to various factors such as stockpile movements, multiple sources of ore, and the effect of analyzing gold using LeachWell versus fire assay methods.

Given these complexities, the current Mineral Resource model showed acceptable performance when compared with the grade control model.

14.1.12 Reasonable Prospects of Eventual Economic Extraction

14.1.12.1 Constraining Pit Shell

Conceptual mining parameters used to calculate block values in Whittle for the Essakane deposit are presented in Table 14-4 and Table 14-5. A gold price of US$1,700/oz was used in the conceptual pit shell that was used to constrain the Mineral Resource estimate.

14.1.12.2 Cut-off Grades

Cut-off grades were calculated using a US$1,700 gold price and budget site costs for 2024–2028.

A cut-off grade for saprolite material was calculated at 0.34 g/t Au, and a transitional material cut-off grade was calculated at 0.41 g/t Au.

The CIL cut-off grade for fresh rock was calculated at 0.48 g/t Au.

14.2 Stockpiles

The stockpile tonnage estimate is based on Wenco truck counts that are reconciled on a monthly basis with drone surveys of the stockpiles.

Grade is assigned to the stockpiles from the grades of the material mined from the short-term grade model.

Stockpile material is reported above 0.34 g/t Au for saprolite, 0.41 g/t Au for transition and 0.48 g/t Au for fresh rock.

Table 14-4: Input Parameters, Constraining Pit Shell, Essakane

Economic Parameters	Units	Value
Gold price	US$/oz	1,700
Long term oil price	US$/bbl	65
CFA exchange rate	CFA/USD	575
Transport and refining cost	US$/oz	2.5
Site diesel price	US$/l	1.79
Site heavy fuel oil (HFO) price	US$/l	1.16
Power cost	US$/kWh	0.19
Royalty (6.5%)	US$/oz	110
Community fund (1%)	US$/oz	17
Cost of selling (Cs)	US$/oz	127
Discount rate	%	6

Table 14-5: Cost Assumptions, Constraining Pit Shell, Essakane

Mineralization Based Costs		Essakane Main Zone, Lao and Gourouol		
Rock Type	Units	CIL		
		Saprolite	Transition	Fresh Rock
Metallurgical recovery	(%)	95	93	90.07
Processing rate	(Mt/a)	15	13.09	12.29
Mining dilution	%	12	12	12
Total mineralization based cost	(US$/t treated)	16.49	19.48	21.71
Total reference mining cost (waste)	(US$/t mined)	3.02	3.92	4.61
Break even cut-of grade	g/t	0.34	0.41	0.48
Incremental bench cost	(US$/t per vert. m)	0.0041	0.0041	0.0041
Reference elevation	(m)	260	260	260

14.3 Gossey

14.3.1 Introduction

The Gossey database includes 732 holes (60 core and 672 RC holes) for a total of 94,802 m.

Modelling was completed using Leapfrog Edge, and Leapfrog Geo version 2023.1.1 software.

Some data were removed from estimation support:

- Results of >100 g/t Au (signifying above the level of detection for the analytical method) in assay certificates, where no re-assay had been completed to provide actual assay values. Two assay intervals were identified with this issue;
- Instances where downhole contamination was identified. Two assay intervals were identified with this issue.

14.3.2 Geological Model

Weathering, lithology, and mineralization solids were generated based on grouped lithology codes.

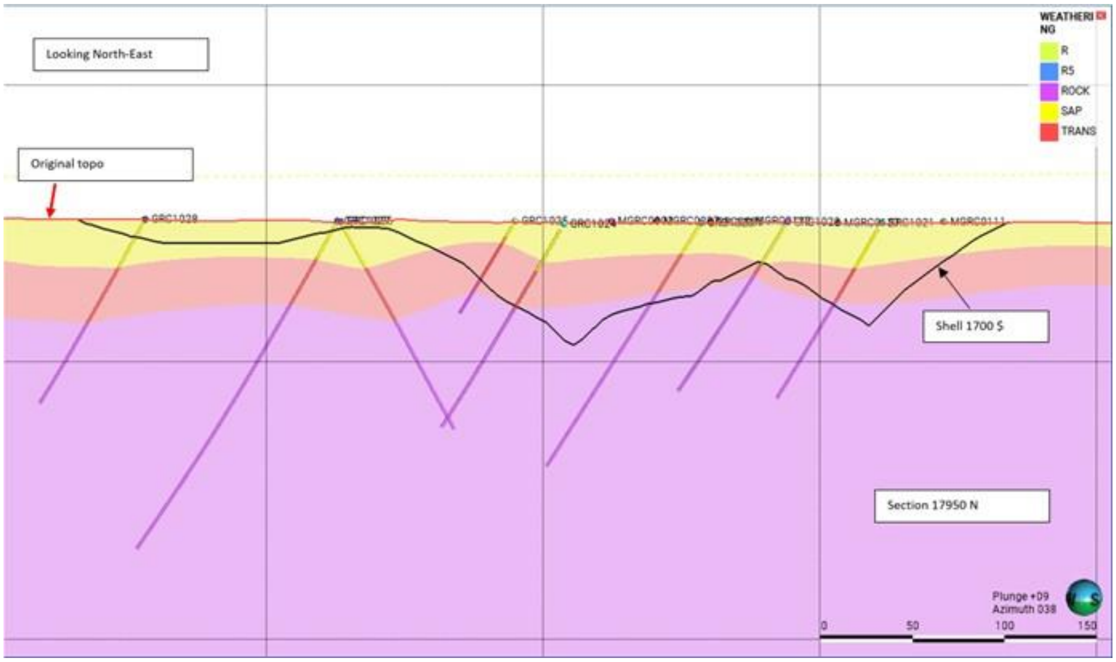
14.3.2.1 Weathering Model

Three surfaces were generated for the base of regolith, saprolite and transition. Weathering codes were determined by the site geologists from hardness tests and visual assessment to produce a consistent input for modelling. These wireframes, combined with the lithology model, were used for the density model. An example of the modelled surfaces is shown in Figure 14-11.

14.3.2.2 Grade Model

Grade shells were constructed using economic composites >0.1 g/t Au, with a numeric script generated in Leapfrog software. The wireframes are controlled by 17 mineralisation trends, based on the lithology, gold grade and arsenic grade continuities.

Figure 14-11: Cross-Section Gossey Weathering Profile Model



Note: Figure prepared by IAMGOLD, 2023. Section 17750 N looking northeast

Two grade shells were defined:

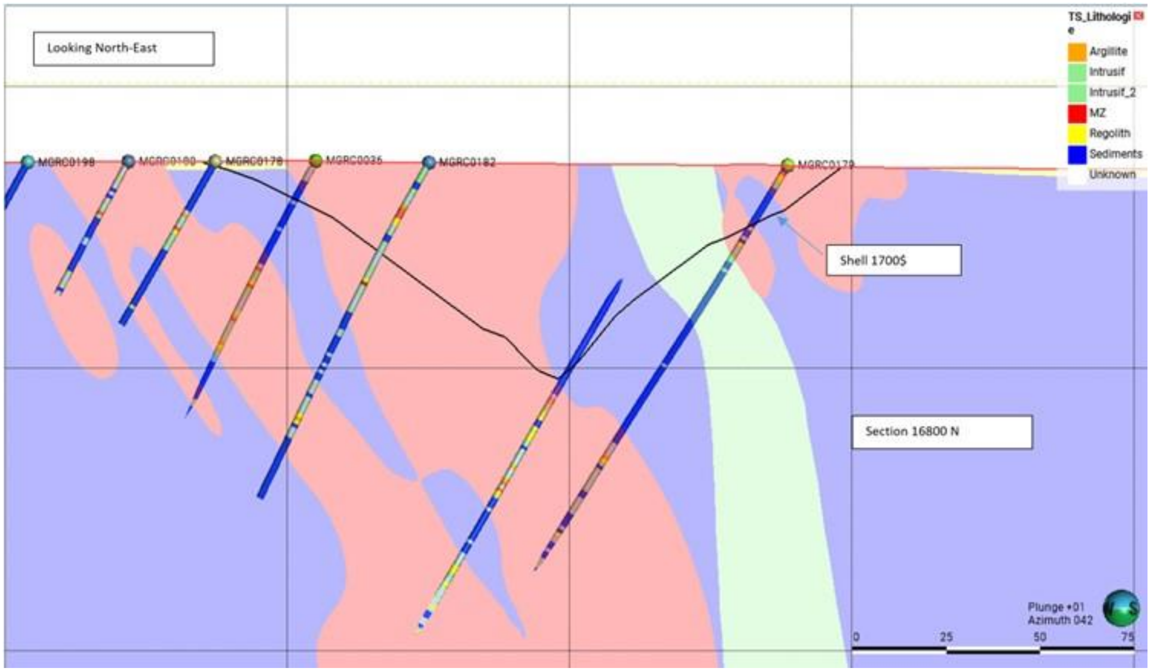
- Mineralized Zone (MZ shell) : constructed using 5 m composites grading ≥0.1 g/t Au;
- Waste: outside the MZ.

An example cross-section showing the gold shell is provided in Figure 14-12.

14.3.2.3 Surface Topography

A 2023 light detection and ranging (LiDAR) topography surface was resized as a surface elevation grid using Leapfrog.

Figure 14-12: Cross-Section Gossey Grade Shell and Gold Assays



Note: Figure prepared by IAMGOLD, 2023. Section 16,800N looking northeast

14.3.3 Assay Capping

Statistics of the raw gold assays by grade shell were computed in Leapfrog software. Statistics were studied for assays grouped by grade shell domains (Table 14-6). To limit the influence of outlier gold values during the grade interpolation process, grade capping of gold assays was undertaken before compositing the original assay lengths. A specific grade capping was applied to the raw assays for each domain based on histogram and log probability plots:

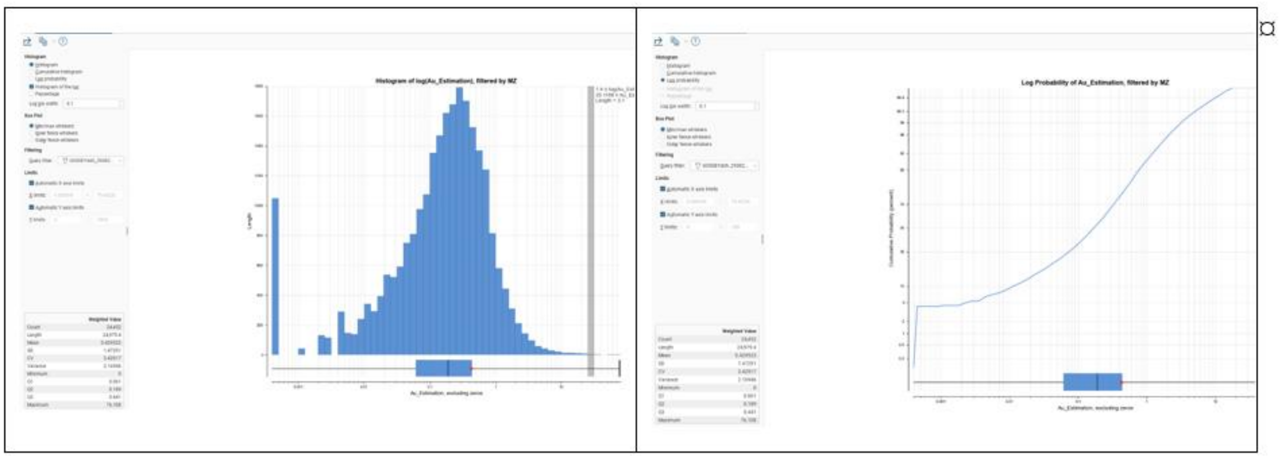
- MZ: capped at 25 g/t Au; 11 samples capped, metal reduction of 3%; Figure 14-13;
- Waste: capped at 7 g/t Au; six samples capped, metal reduction of 4%; Figure 14-14.

Table 14-6: Grade Statistics

Domain	Count	Uncapped Gold Assays			Total of Capped Values	Capped Gold Assays			Metal Loss (%)
		Max (g/t) Au	Mean (g/t Au)	Co-efficient of Variation		Max (g/t Au)	Mean (g/t Au)	Co-efficient of Variation	
MZ	24,452	76.11	0.43	3.43	11	25.00	0.42	2.59	3
Waste	64,788	54.26	0.02	11.13	6	7.00	0.02	5.69	4

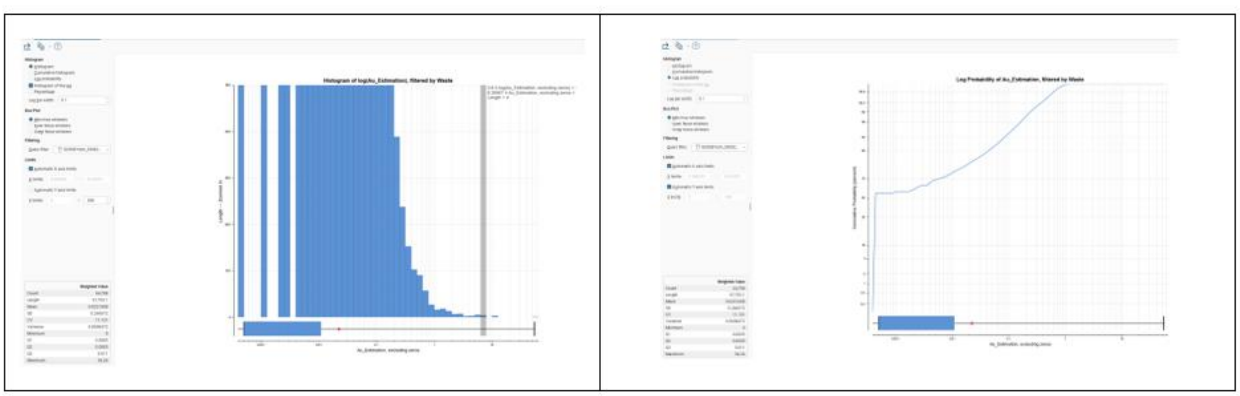
Statistics weighting: length-weighted

Figure 14-13: MZ Domain



Note: Figure prepared by IAMGOLD, 2023.

Figure 14-14: Waste Domain



Note: Figure prepared by IAMGOLD, 2023.

14.3.4 Compositing

Composite length was determined based on assay length. The capped raw-assays were composited into 3 m lengths for estimation purposes within each of the mineralization domains (grade shells). Residual values of <0.75 m were added to the previous composite.

The composite statistics are provided in Table 14-7**Error! Not a valid bookmark self-reference.**.

14.3.5 Density

The assignment of bulk density was undertaken as an average value within each of the four weathering profiles (regolith, saprolite, transition, and fresh rock), combined with lithologies. Final values are shown in Figure 14-15.

14.3.6 Variography

Variography was performed for the MZ domain, and was used to confirm the confidence in defining search ellipsoid ranges. Search ellipsoid ranges represent approximately 75% of the variogram ranges. The variogram parameters are provided in Table 14-8, and an example variogram in Figure 14-16.

14.3.7 Block Modelling

A single block model was constructed for Gossey. The block model covers an area large enough to manage the pit shells produced by Whittle and mine planning purposes.

The single block model was rotated 37° clockwise from north around the origin to align with drill sections. The selected block size has dimensions of 10 x 5 x 5 m.

Table 14-7: Gossey Composite Statistics

Domain	Count	Composites		
		Max (g/t Au)	Mean (g/t Au)	Co-efficient of Variation
MZ	8 792	14.90	0.42	1.71
Waste	23 124	5.67	0.02	4.26

Statistics weighting: length-weighted

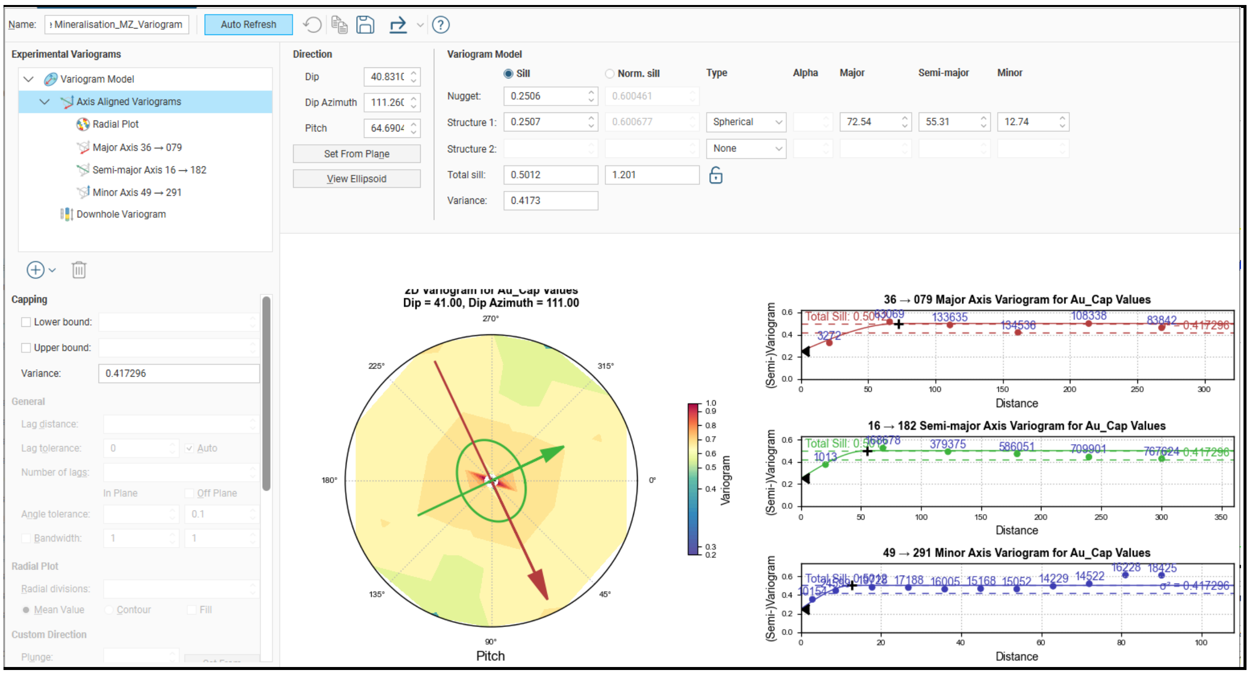
Figure 14-15: Density Values

Note: Figure prepared by IAMGOLD, 2023.

Table 14-8: Variogram Parameters, MZ Domain

Variogram Name	Variance	Nugget	Normalised Nugget	Sill	Normalised Sill	Structure	Major	Semi-major	Minor	Dip	Dip Azi.	Pitch
MZ_Variogram	0.42	0.25	0.60	0.25	0.60	Spherical	72.54	55.31	12.74	40.83	111.26	64.69

Figure 14-16: Example Variogram, MZ Domain, Gossey



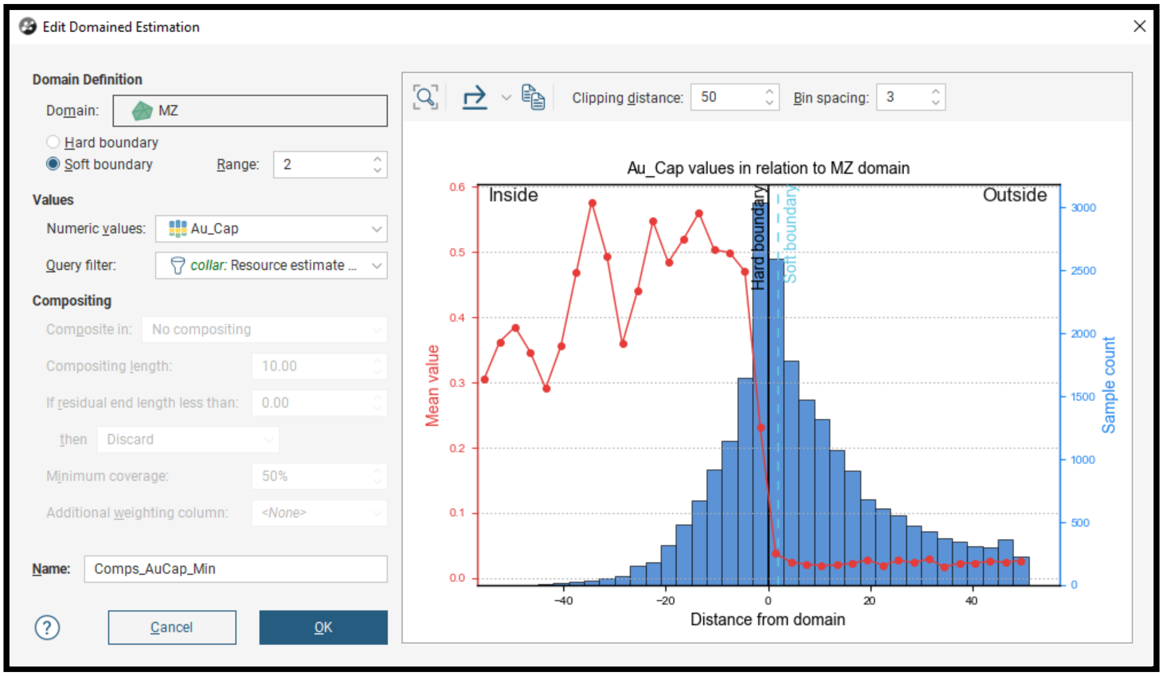
Note: Figure prepared by IAMGOLD, 2023.

14.3.8 Estimation Methodology

The interpolation technique selected for the estimation of gold grades at the Gossey deposit is inverse distance weighting to the third power (ID3). Variable search ellipsoids based on the same mineralised trends used for the modelling were used in estimation.

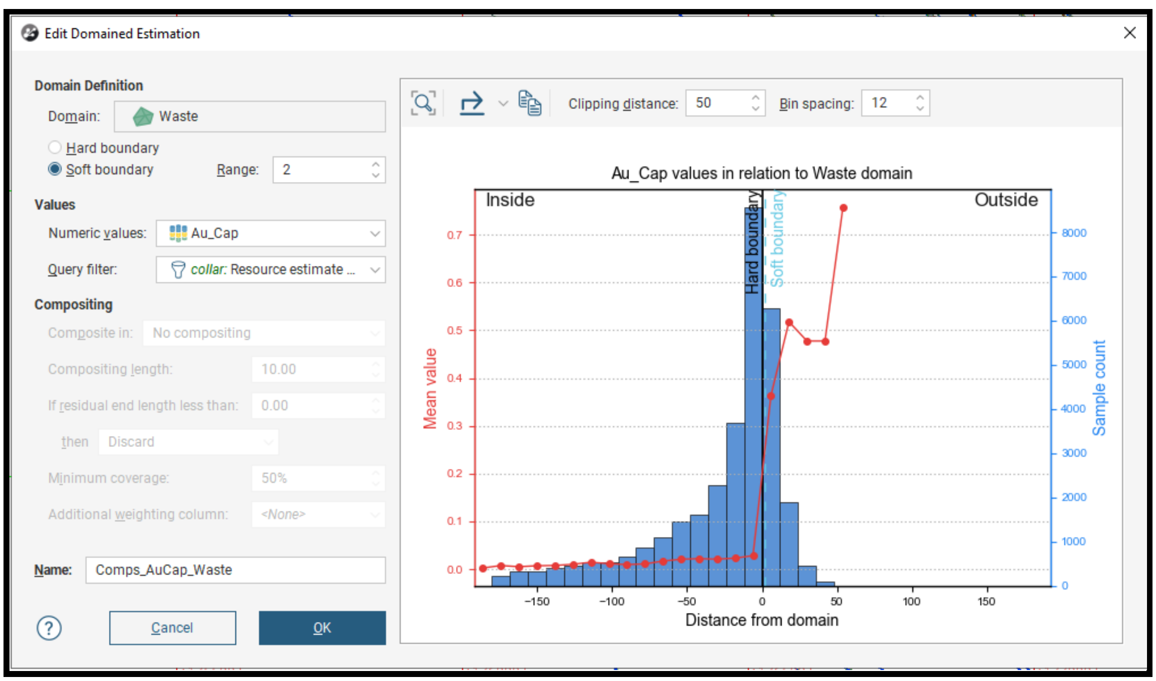
Mineralized domains were considered as semi-soft boundaries, with a range of two composites, through each interpolation step. Example plots are provided in Figure 14-17 and Figure 14-18 for the MZ and Waste domains, respectively.

Figure 14-17: MZ Domain



Note: Figure prepared by IAMGOLD, 2023.

Figure 14-18: Waste Domain



Note: Figure prepared by IAMGOLD, 2023.

Search ellipsoid ranges were determined based on drill hole spacing. The ranges were confirmed as 75% of the variogram range.

Three interpolation passes were used iteratively in estimation for MZ and one pass for the Waste domain. The sample selection methodology for each pass is summarized in Table 14-9.

14.3.9 Model Validation

Multiple validations were completed on the block model to ensure that was a good representation of the assays. The validation process included visual checks and swath plots.

The block model is considered to be a reasonable representation of assays gold grades used in the estimation. Global statistical validations show the degree of smoothing is within acceptable limits and no significant over/under-estimation of gold grades has occurred. Local validations show acceptable correlation of blocks and assays gold grades. No excessive extrapolation of grades was observed.

14.3.10 Confidence Classification

The classification of interpolated blocks was undertaken by considering the following criteria:

- Distance between sample points (drilling density);
- Confidence in the geological interpretation;
- Continuity of the geologic structures and the continuity of the grade within these structures;
- Statistics of the data population;
- Quality of assay data.

Table 14-9: Search Parameters

General			Ellipsoid Ranges			Variable Orientation	Number of Samples		Outlier Restrictions			Drill Hole Limit Max Samples per Drill Hole
Interpolant Name	Domain	Numeric Values	Max	Inter	Min		Min	Max	Method	Distance	Threshold	
Waste	Waste	Au_Cap	250	160	36	Yes	7	15	Clamp	25	2	3
Pass_1	MZ	Au_Cap	50	40	9	Yes	9	12	None	N/A	N/A	3
Pass_2	MZ	Au_Cap	75	60	12	Yes	4	20	Clamp	50	10	3
Pass_3	MZ	Au_Cap	100	80	12	Yes	3	20	Clamp	50	5	3

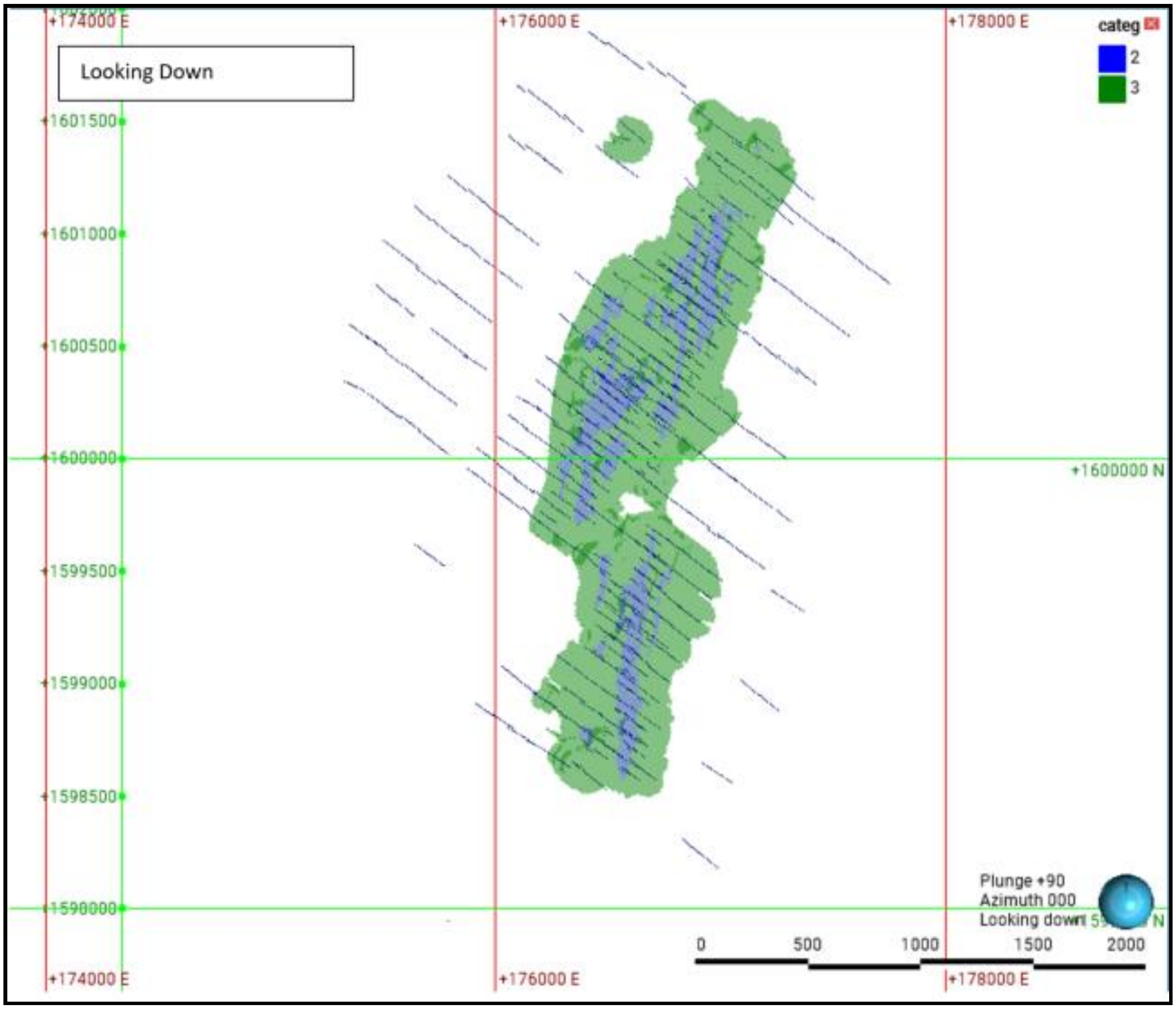
The resulting resource confidence classification criteria were:

- No Measured Mineral Resources were classified;
- Indicated: at least three drill holes within 50 m spacing, minimum three drill holes used in interpolation done in Pass1 or Pass2 inside the MZ domain;
- Inferred: at least three drill holes within 100 m spacing and at least two drill holes used in interpolation.

Manual reclassification was undertaken to remove isolated blocks of one confidence category from within areas primarily classified as another category.

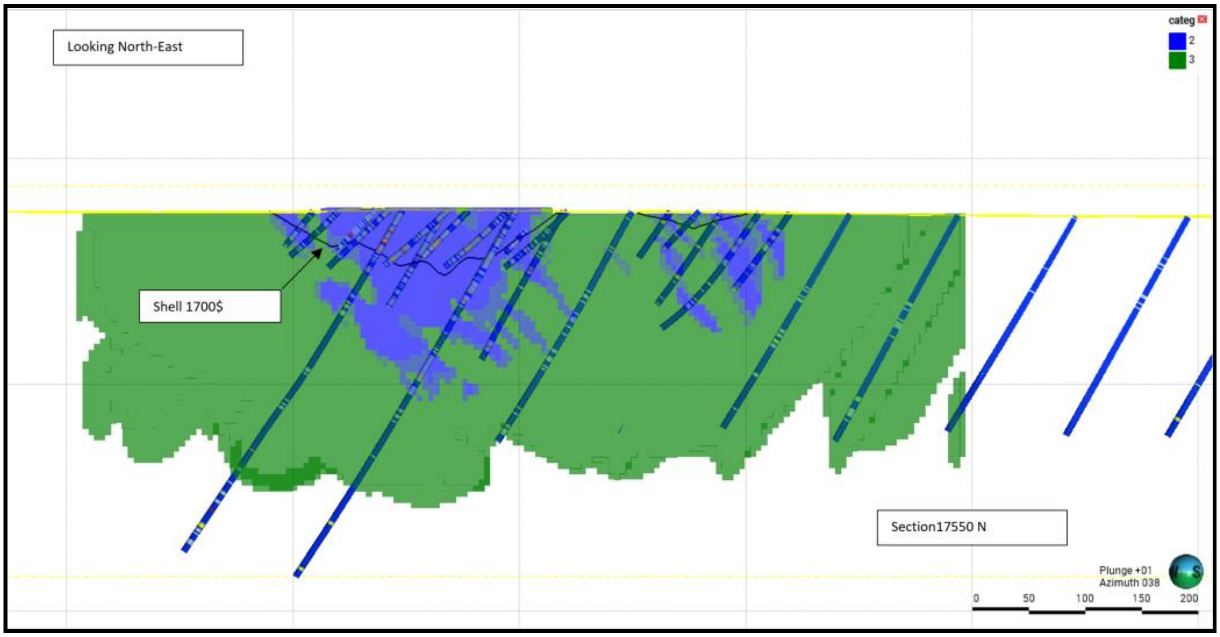
Figure 14-19 and Figure 14-20 show the distribution of the resource confidence categories in plan and section view, respectively. Indicated Mineral Resources are concentrated in the southern, central, and northern mineralized domains, where the drill holes density is the highest. Inferred Mineral Resources are peripheral to Indicated Mineral Resources.

Figure 14-19: Mineral Resource Confidence Classification



Note: Figure prepared by IAMGOLD, 2023. 2 = Indicated, 3 = Inferred.

Figure 14-20: Cross-Section, Mineral Resource Confidence Classification



Note: Figure prepared by IAMGOLD, 2023. 2 = Indicated, 3 = Inferred.

14.3.11 Reasonable Prospects of Eventual Economic Extraction

14.3.11.1 Constraining Pit Shell

An open pit mining method was selected for the purposes of assessing reasonable prospects of eventual economic extraction based on the geology/geometry, tonnage, and grade of the deposit. The deposit model was constrained using Lerchs-Grossmann algorithm. Input assumptions are presented in Table 14-10 and Table 14-11.

14.3.11.2 Cut-off Grades

Cut-off grades were estimated on the basis of an assumed CIL plant throughput of 12.29 Mt/a in fresh rock. The cut-off grades, by rock type, are summarized in Table 14-12. The gold grade distribution inside the constraining US$1,700 pit shell is shown in Figure 14-21.

Table 14-10: Gossey Conceptual Constraining Pit Parameters

Economic Parameters	Units	Value
Gold price	US$/oz	1,700
Long term oil price	US$/bbl	65
CFA exchange rate	CFA/USD	575
Transport and refining cost	US$/oz	2.5
Site diesel price	US$/l	1.79
Site heavy fuel oil (HFO) price	US$/l	1.16
Power cost	US$/kWh	0.19
Royalty (6.5%)	US$/oz	110
Community fund (1%)	US$/oz	17
Cost of selling (Cs)	US$/oz	127
Discount rate	%	6

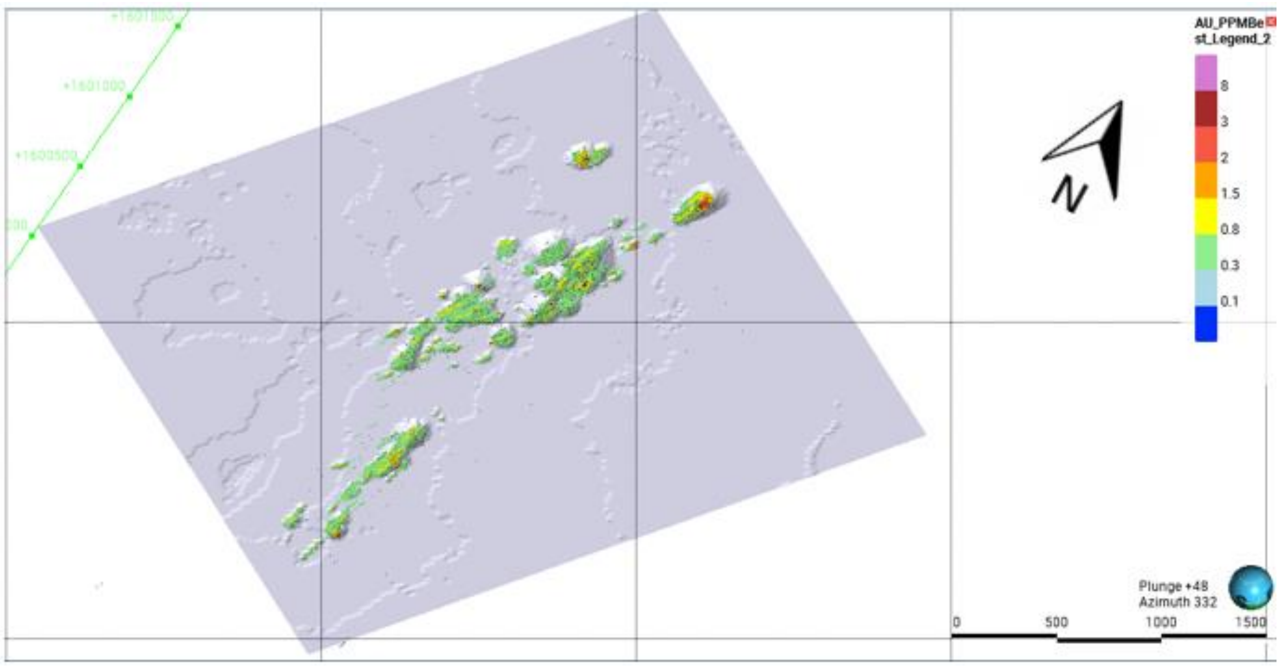
Table 14-11: Gossey Conceptual Constraining Cost Assumptions

Mineralization Based Costs		Gossey		
Rock Type	Units	CIL		
		Saprolite/Regolith	Transition	Fresh Rock
Metallurgical recovery	(%)	95	93	92
Processing rate	(Mt/a)	15	13.09	12.29
Mining dilution	%	12	12	12
Total mineralization based cost	(US$/t treated)	18.49	21.48	23.71
Total reference mining cost (waste)	(US$/t mined)	3.02	3.92	4.61
Break even cut-of grade	g/t	0.38	0.45	0.51
Incremental bench cost	(US$/t per vert. m)	0.0041	0.0041	0.0041
Reference elevation	(m)	280	280	280
Geotechnical parameters	deg	30	35	46

Table 14-12: Summary of Gossey Cut-Off Grades at US$1,700/oz Au

Cut-off Grade	Saprolite	Transition	Fresh Rock
g/t Au	0.38	0.45	0.51

Figure 14-21: Gold Grade Distribution

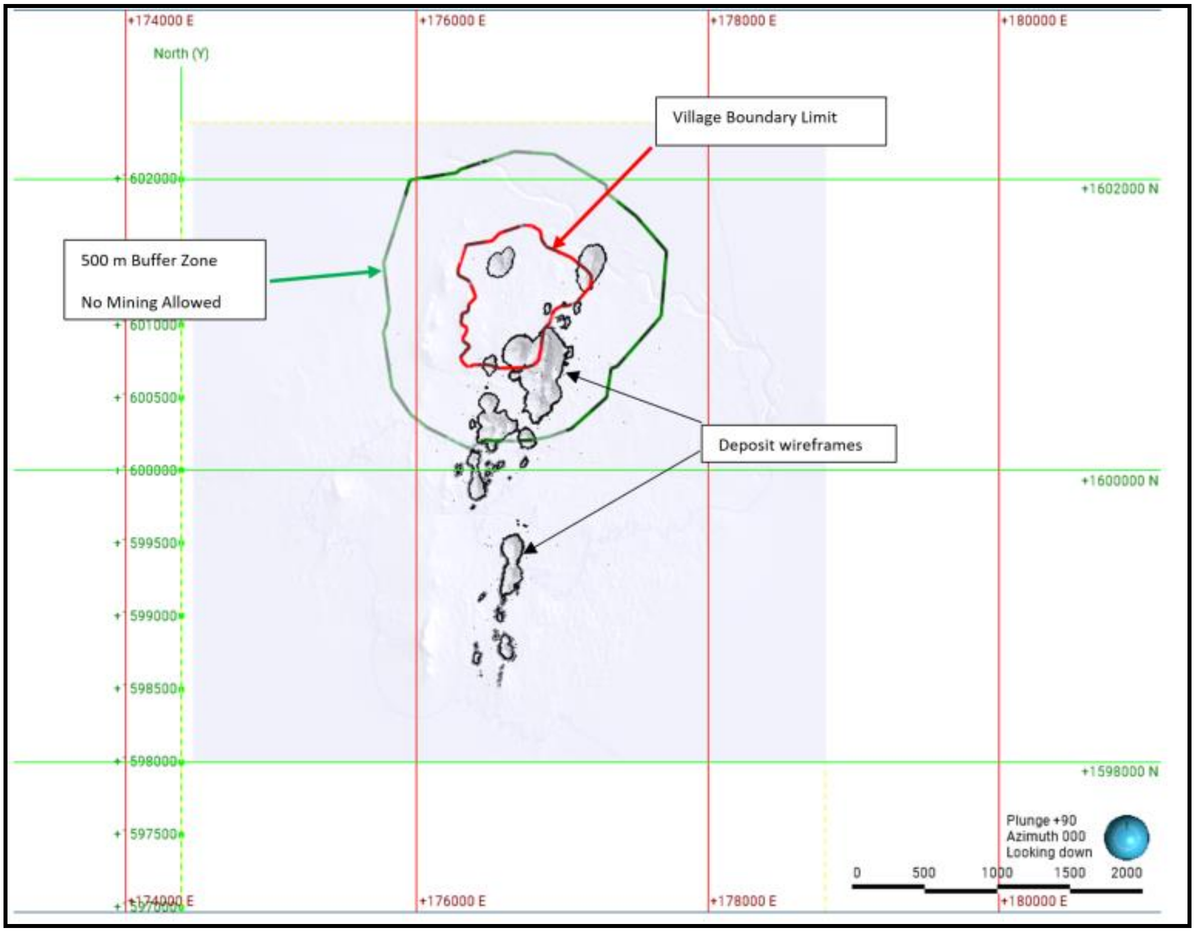


Note: Figure prepared by IAMGOLD, 2023. Figure oriented to the northeast–southwest. Green grid co-ordinates are northings, showing direction of north.

14.3.11.3 Gossey Village

A portion of the Mineral Resource estimate is under the footprint of the Gossey village (refer to Figure 14-22). Future development of some portions of the deposit may require either the development of a resettlement program, similar to the one that was completed previously at Essakane; or the consideration of a mining buffer zone to restrict mining activities proximal to the village. Figure 14-22 shows the deposit area that would be affected if a buffer zone around the Gossey Village were imposed on the estimate; in this instance a 500 m buffer is shown.

Figure 14-22: Gossey Village Buffer Zone and Deposit Wireframes



Note: Figure prepared by IAMGOLD, 2023. North is to top of figure as shown in grid northings.

14.4 Mineral Resource Statement

Mineral Resources are reported with an effective date of September 30, 2023, using the Mineral Resource definitions set out in the 2014 CIM Definition Standards, and are reported either in situ or within stockpiled material, inclusive of those Mineral Resources converted to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Mineral Resources are reported on a 100% basis. IAMGOLD has a 90% Project interest and the Government of Burkina Faso has a 10% interest.

14.4.1 Mineral Resource Estimates, Essakane

Indicated and Inferred Mineral Resources estimated for the Essakane deposit, including the EMZ, Gourouol and Lao zones, are provided in Table 14-13 and are reported insitu. Measured Mineral Resources are contained within stockpiles, and are reported in place.

The Qualified Person for the estimate is Mr. Haithem Chattaoui, P.Eng., an IAMGOLD employee.

14.4.2 Mineral Resource Estimates, Stockpiles

Mineral Resources estimated in stockpiles are provided in Table 14-14 and are reported as in place stockpiled material. All Mineral Resources within the stockpiles have been classified as Measured. The Measured Mineral Resources in Table 14-14 are not additive to those Measured Mineral Resources reported in Table 14-13.

The Qualified Person for the estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.

14.4.3 Mineral Resource Estimates, Gossey

Indicated and Inferred Mineral Resources estimated for the Gossey deposit are provided in Table 14-15, and are reported insitu.

The Qualified Person for the estimate is Mr. Haithem Chattaoui, P.Eng, an IAMGOLD employee.

14.5 Factors that May Affect the Mineral Resource Estimate

Areas of uncertainty that may materially impact the Mineral Resource estimates include:

- Changes to long-term gold price assumptions;
- Fluctuations in commodity price and exchange rates;
- Changes to the current regulatory regime;
- Fluctuations in operating cost assumptions;
- Changes to environmental, permitting, and social license assumptions;
- Changes in local interpretations of mineralization geometry and continuity of mineralized zones;

Table 14-13: Essakane Mineral Resource Statement

Resource Confidence Category	Saprolite			Transition			Fresh Rock			Total		
	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)
Measured	—	—	—	5,508	0.54	95	15,472	0.67	335	20,981	0.64	429
Indicated	1,096	0.54	19	2,753	0.78	69	64,782	1.44	3,001	68,631	1.40	3,088
Total M+I Resources	***1,096***	***0.54***	***19***	***8,261***	***0.62***	***164***	***80,254***	***1.29***	***3,336***	***89,612***	***1.22***	***3,517***
Inferred	449	0.68	10	454	0.81	12	7,619	1.55	380	8,521	1.47	402

Notes:

1. Measured Mineral Resources are reported in place as stockpiles. Indicated and Inferred Mineral Resources are insitu. All Mineral Resources have an effective date of September 30, 2023. The Qualified Person for the insitu estimate is Mr. Haithem Chattaoui P.Eng, an IAMGOLD employee. The Qualified Person for the stockpile estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.
2. Mineral Resources are reported using the 2014 CIM Definition Standards on a 100% basis. IAMGOLD has a 90% project interest and the Government of Burkina Faso has a 10% interest.
3. Mineral Resources are reported inclusive of those Mineral Resources converted to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources are reported assuming a gold price of US$1,700. Mineral Resources are confined within a conceptual pit shell that uses the following input assumptions: conventional open pit mining methods; process through a carbon-in-leach (CIL) plant; variable metallurgical recoveries based on weathering zones (95% in saprolite, 93% in transition material and an average of 90.07% in fresh rock); variable processing rates based on weathering zones (15 Mt/a in saprolite, 13.09 Mt/a in transition material and 12.29 Mt/a in fresh rock); no allowance for mining dilution; mineralization based costs that vary by weathering zone (US$16.49/t treated in saprolite, US$19.48/t treated in transition material and US$21.71/t treated in fresh rock); allocations for waste rock and incremental bench cost; overall pit slope angles that vary by weathering zone are the same used for operation and a 6.5% royalty. Mineral Resources are reported at variable cut-off grades that vary by weathering zone (0.34 g/t Au for saprolite, 0.41 g/t Au for transition material and 0.48 g/t Au for fresh rock).
5. Table numbers have been rounded. Totals may not sum due to rounding.
6. The Measured Mineral Resources in Table 14-14 are not additive to this table.

Table 14-14: Mineral Resources in Stockpiles

Resource Confidence Classification	Material Type	Stockpiles	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Measured	Transition	Low-grade	5,508	0.54	95
	Fresh Rock	Marginal-grade	892	0.51	15
		Low-grade	9,813	0.65	207
		Medium-grade	4,466	0.71	102
		Run-of-mine pad	27	1.68	1
		Primary crusher	274	1.14	10
	Total Stockpile		***20,981***	***0.64***	***429***

Notes:

1. Measured Mineral Resources in stockpiles are reported as in place stockpiled material with an effective date of September 30, 2023. The Qualified Person for the estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.
2. Mineral Resources are reported using the 2014 CIM Definition Standards on a 100% basis. IAMGOLD has a 90% project interest and the Government of Burkina Faso has a 10% interest.
3. Mineral Resources are reported inclusive of those Mineral Resources converted to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources in stockpiles are reported assuming a gold price of US$1,700/oz Au, and above a cut-off grade of 0.34 g/t Au for saprolite, 0.41 g/t Au for transition and 0.48 g/t Au for fresh rock.
5. Table numbers have been rounded. Totals may not sum due to rounding.
6. The Measured Mineral Resources in this table are not additive to the Measured Mineral Resources in Table 14-13.

Table 14-15: Gossey Mineral Resources Statement

Resource Confidence Category	Saprolite /Regolith			Transition			Fresh Rock			Total		
	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)	Tonnage (000 t)	Grade (g/t Au)	Au (000 oz)
Indicated	3,512	0.73	83	2,856	0.92	85	1,286	1.33	56	***7,654***	***0.90***	***223***
Inferred	832	0.86	23	439	1.06	15	242	1.59	13	***1,513***	***1.04***	***50***

Notes:

1. Mineral Resources are reported insitu with an effective date of September 30, 2023. The Qualified Person for the estimate is Mr. Haithem Chattaoui P.Eng,, an IAMGOLD employee.
2. Mineral Resources are reported using the 2014 CIM Definition Standards on a 100% basis. IAMGOLD has a 90% project interest and the Government of Burkina Faso has a 10% interest.
3. Mineral Resources are reported inclusive of those Mineral Resources converted to Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
4. Mineral Resources are confined within a conceptual pit shell that uses the following input assumptions: conventional open pit mining methods; process through a carbon-in-leach (CIL) plant; variable metallurgical recoveries based on weathering zones (95% in saprolite, 93% in transition, and 92% in fresh rock); variable processing rates based on weathering zones (15 Mt/a in saprolite, 13.09 Mt/a in transition material and 12.29 Mt/a in fresh rock); no allowance for mining dilution; mineralization based costs that vary by weathering zone (US$18.49/t treated in saprolite, US$21.48/t treated in transition material and US$23.71/t treated in fresh rock); allocations for waste rock and incremental bench costs; and overall pit slope parameters that vary by weathering zone (30° in saprolite, 35°in transition material and 46° in fresh rock). Mineral Resources are reported at variable cut-off grades that vary by weathering zone (0.38 g/t Au for saprolite, 0.45 g/t Au for transition material and 0.51 g/t Au for fresh rock)
5. No constraints were placed on the estimate due to proximity to Gossey village.
6. Table numbers have been rounded. Totals may not sum due to rounding.

- Changes to geological shape and continuity assumptions;
- Changes to metallurgical recovery assumptions;
- Geotechnical and design parameter changes impacting dilution and mining recovery factors;
- Potential for lower mill recovery in new mining areas or from long-term stockpiles;
- Changes to environmental, permitting, and social license assumptions.

Metallurgical recovery assumptions for Gossey were based on the Essakane deposit as an analogue, and assumed the use of a CIL plant. No metallurgical testwork has been performed on Gossey mineralization.

A portion of the Mineral Resource estimate for the Gossey deposit is under the footprint of the Gossey village (refer to Figure 14-22). Future development of some portions of the deposit may require either the development of a re-location program, similar to the one that was completed previously at Essakane; or the consideration of a mining buffer zone to restrict mining activities proximal to the village.

The Lao Gountouré 2 and Alkoma 2 permits reached the end of the last period of renewability in November, 2018, and were granted a special three-year renewal. In 2021, IAMGOLD applied for these same tenure areas under a new permit. The grant process is delayed, but the application is still under consideration by the authorities. IAMGOLD believes there is a reasonable basis for the application to be granted. If the new application is not granted, IAMGOLD will not hold any tenure over the Gossey deposit, and thus the Mineral Resource estimate will become invalid as the company will not hold the underlying mineral concession rights.

The political and security environment remains volatile in the Sahel region of Burkina Faso, particularly in the area where Project is located. The country experienced military coups in January 2022 and in September 2022.

14.6 QP Comment on Item 14 "Mineral Resource Estimates"

The QP is of the opinion that Mineral Resources were estimated using industry-accepted practices, and conform to the 2014 CIM Definition Standards.

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

15 MINERAL RESERVE ESTIMATES

15.1 Introduction

Probable Mineral Reserves are reported for the EMZ and Gourouol zones, and have been converted from Indicated Mineral Resources. Proven Mineral Reserves are reported for stockpiled material, are based on grade control data, and have been converted from Measured Mineral Resources. Marginal stockpiles have not been converted to Mineral Reserves, and are not included in the current LOM plan.

Mine designs supporting the Mineral Reserves were based on life-of-mine plans assuming open pit mining methods. Inferred Mineral Resources within the mine designs were converted to waste.

15.2 Pit Optimization

IAMGOLD uses a standard optimization approach to determine pit shells for the Essakane Operations. Optimisations are completed in Whittle Four-X software (Whittle). The software accounts for the estimated revenues and costs associated with each mining block while respecting slope angles.

Optimisation inputs were developed based on the latest financial information available developed for the 2024 Essakane budget process (R1 – September 2023), accounting for mining, processing, general and administrative (G&A), sustaining capital, and capital costs.

Slope angles by sector were developed based on the 2023 geotechnical parameters. The slope angles used for the optimisation include geotechnical berms and the access ramp.

The selection of the final pit limits was based on a combination of quantitative and qualitative factors, such as minimum mining width, proximity to site infrastructure, discounted cash flows, total contained ounces, and strip ratio.

A series of engineered designs were developed based on the selected shell. Operational and geotechnical parameters such as berms, haul roads, and minimum mining widths were incorporated into the designs.

15.3 Optimization Inputs

Input parameters used in the constraining pit shells are summarized in Table 15-1 and Table 15-2.

The forecast long-term gold price assumption used in estimating Mineral Reserves is US$1,400/oz.

The CIL plant metallurgical recovery assumptions for all deposits are fixed at 95% for saprolite and 93% for transition material. Fresh rock has a metallurgical recovery of 90.07 % on average; however, recoveries vary depending on the mill feed grade. The process recovery formula was developed in 2023 by Soutex, a third-party consultant.

The mine operating costs were estimated based on a diesel fuel price of $1.79/L. Both the mine and mill operating costs include sustaining capital and capital maintenance items.

Cut-off grades are estimated based on a long-term sustainable CIL plant throughput of 12.25 Mt/a in fresh rock equivalent power draw, using a US$1,400/oz Au price. Cut-offs range from 0.41–0.57 g/t Au.

15.4 Ore Loss and Dilution

The Mineral Reserve estimate includes mining dilution based on rock type, the shape of the ore zone, and the geological dilution included in the initial resource model. The dilution calculation is a two-step approach based on scripts:

- The first step simulates material movement due to blasting by transferring material from block to surrounding blocks;
- The second step evaluates at the block position within the orebody and the dilute grade of neighbouring blocks to determine whether each block is ore or waste. This allows single blocks or zones of non-mineable material to be removed from the Mineral Reserve estimates. Waste blocks that cannot be selectively removed from zones of ore are sent to the process plant.

Dilution, in relation to the ore type, was incorporated into the pit optimization and mine planning process (Table 15-3). Mining loss is determined using the same process as dilution, and is summarized in Table 15-3.

15.5 Mineral Reserve Statement

Mineral Reserves are reported with an effective date of September 30, 2023 using the Mineral Reserve definitions set out in the 2014 CIM Definition Standards, and are reported at the point of delivery to the process plant.

The Qualified Person for the estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.

Mineral Reserves are summarized in Table 15-4.

Factors that may affect the Mineral Reserve estimate include:

- Changes to long-term gold price assumptions;
- Fluctuations in commodity price and exchange rates;
- Changes to the current regulatory regime;
- Fluctuations in operating cost assumptions;
- Changes to environmental, permitting, and social license assumptions;
- Changes in local interpretations of mineralization geometry and continuity of mineralized zones;
- Changes to geological shape and continuity assumptions;
- Changes to metallurgical recovery assumptions;
- Geotechnical and design parameter changes impacting dilution and mining recovery factors;
- Potential for lower mill recovery in new mining areas or from long-term stockpiles.

Table 15-1: Pit Optimization Economic Assumptions

Economic Parameters	Units	Value
Gold price	US$/oz	1,400
Long term oil price	US$/bbl	65
CFA exchange rate	CFA/USD	575
Transport and refining cost	US$/oz	2.5
Site diesel price	US$/l	1.79
Site heavy fuel oil (HFO) price	US$/l	1.16
Power cost	US$/kWh	0.19
Royalty (5%)	US$/oz	70
Community fund (1%)	US$/oz	14
Cost of selling (Cs)	US$/oz	86.50
Discount rate	%	6

Table 15-2: Summary of Pit Optimization Parameters

Rock Type	Units	CIL		
		Saprolite	Transition	Fresh Rock
Metallurgical recovery	(%)	95.00	93.00	90.26
Processing rate	(Mt/a)	15	13.09	12.29
Mining dilution	%	12	12	12
Total ore based cost	(US$/t treated)	16.49	19.48	21.71
Break even cut-off grade	(g/t Au)	0.41	0.50	0.57
Total reference mining cost (waste)	(US$/t mined)	3.02	3.92	4.61
Incremental bench cost	(US$/t per vertical metre)	0.0041	0.0041	0.0041
Reference elevation	(m)	260	260	260

Table 15-3: Dilution and Mine Loss

Deposit	Dilution (%)	Mine Loss (%)
EMZ	12	1
Lao	7	4
Gourouol	9	2

Notes: Dilution is the percentage of material added to the Measured and Indicated Mineral Resource estimate during conversion of Mineral Resources to Mineral Reserves. Ore loss is the percentage of gold loss assigned to the Measured and Indicated Mineral Resource estimate during conversion of Mineral Resources to Mineral Reserves.

Table 15-4: Mineral Reserve Estimate

Category	Tonnage (000 t)	Grade (g/t Au)	Contained Metal (000 oz Au)
Proven Mineral Reserves (open pit)	—	—	—
Proven Mineral Reserves (stockpile)	20,089	0.64	413
Probable Mineral Reserves(open pit)	45,440	1.32	1,934
Total Proven and Probable	65,529	1.11	2,348

Notes:

1. Mineral Reserves are reported for the Essakane Main Pit, Lao, and Gourouol Satellite areas at the point of delivery to the process plant with an effective date of 30 September, 2023. The Qualified Person for the estimate is Mr. Michel Dromacque, C.Eng., an IAMGOLD employee.
2. Mineral Reserves are reported using the 2014 CIM Definition Standards on a 100% basis. IAMGOLD has a 90% project interest and the Government of Burkina Faso has a 10% interest.
3. Mineral Reserves are reported assuming a gold price of US$1,400/oz. Mineral Reserves are confined within a an open pit shell that uses the following input assumptions: conventional open pit mining methods; process through a carbon-in-leach (CIL) plant; average CIL recovery of 90.26%; process average throughput rate of 12.29 Mt/a; mining dilution of 7–12%; ore loss of 1–4%; inclusion of 5% mining royalty at US$1,400/oz Au; mining cost: US$4.76/t mined, processing cost: US$16.22/t milled (inclusive of power), G&A cost: US$5.71/t milled; bench face slope angles that vary by geotechnical zone (50–85°); and variable cut-off grades ranging from 0.41–0.57 g/t Au.
4. Mineral reserves are based on topographic surveyed surfaces at September 30, 2023.
5. Numbers have been rounded. Totals may not sum due to rounding.

The political and security environment remains volatile in the Sahel region of Burkina Faso, particularly in the area where Project is located. The country experienced military coups in January 2022 and September 2022.

The continued deteriorating security situation in Burkina Faso may increase the cost of bringing employees, contractors, supplies, and inventory to the mine over those costs assumed in the Mineral Reserve estimates and the economic analysis supporting those Mineral Reserves.

15.6 QP Comment on Item 15 "Mineral Reserve Estimates"

The QP is of the opinion that Mineral Reserves were estimated using industry-accepted practices, and conform to the 2014 CIM Definition Standards.

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

16 MINING METHODS

16.1 Introduction

Mining is carried out using a conventional drill, blast, load, and haul surface mining method with an Owner fleet. Equipment is conventional for open pit operations.

16.2 Geotechnical Considerations

Slope designs have been based on an extensive geotechnical drilling program that defined the domains of the pit. In addition to the weathering domains, sectors were developed based on structural rock mass characteristics.

The design parameters were developed by third-party consultants, SRK Consulting (Canada) Inc. (SRK). During 2023, some modifications to the original design bench face angle were made on the east pit wall of the Essakane main zone.

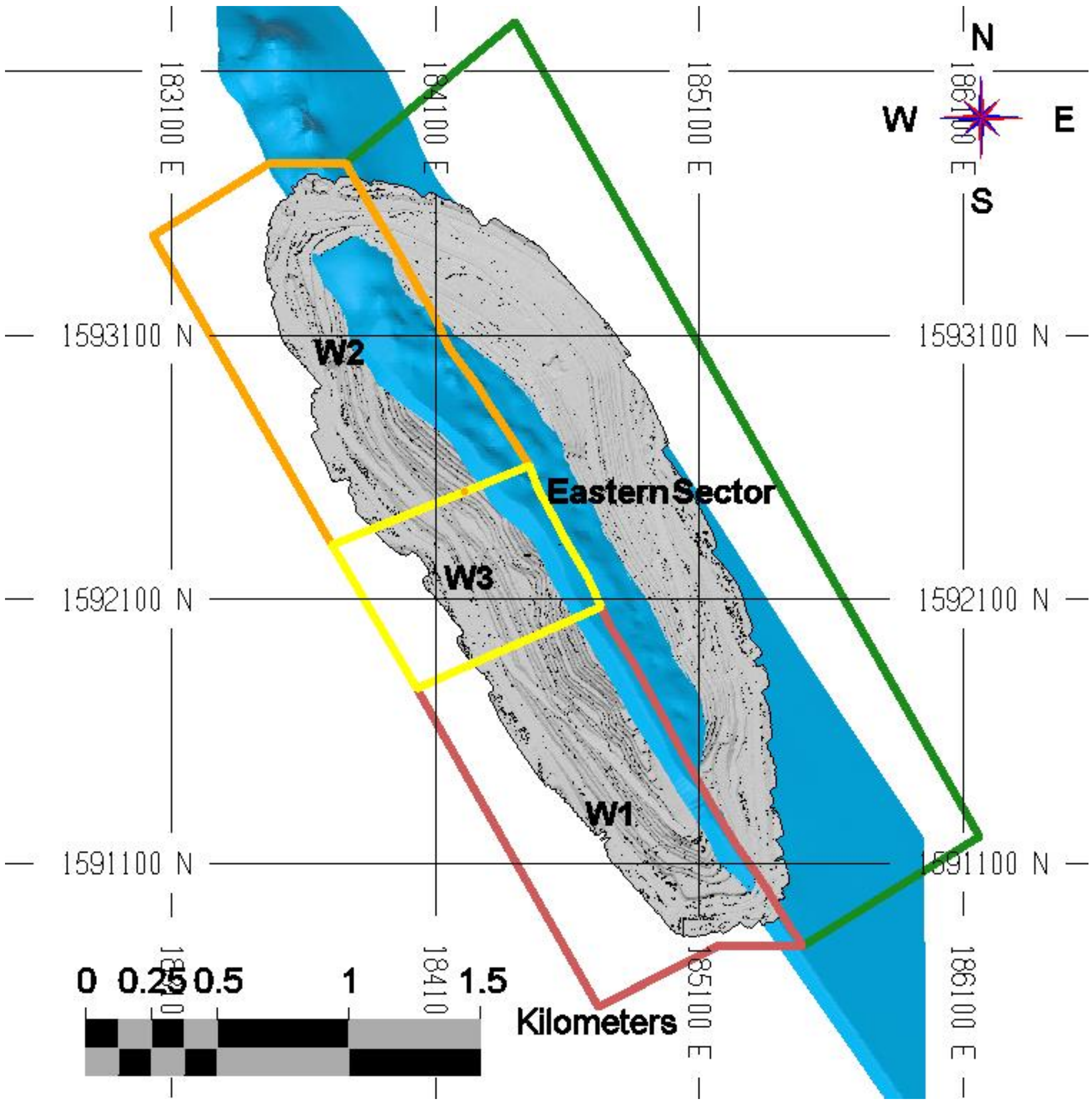
Figure 16-1 presents the main geotechnical sectors (W1, W2, W3, Eastern, and Lao/Gourouol) together with the fine turbidity domain developed by SRK. The combination of the weathering, geotechnical sector and the fine turbidity domain is the main driver for pit slope design difference in certain area. The geotechnical design parameters for the life-of-mine (LOM) pits for EMZ, Lao, and Gourouol are summarized in Table 16-1.

In 2023 IAMGOLD completed six geotechnical holes (1,000 m) that covered the Essakane main zone to provide additional geotechnical information at depth.

Pit slope parameters are continuously revaluated as mining progresses and new data becomes available. Geotechnical controls include an annual internal geotechnical audit and continuous geotechnical support from SRK, who provides the design hydro-geotechnical recommendations.

Industry-standard instrumentation for wall stability monitoring is in place. These include a Reutech movement and surveying radar (MSR) and Leica robotic total station instruments.

Figure 16-1: Geotechnical Sectors



Note: Figure prepared by IAMGOLD, 2023.

Table 16-1: Pit Geotechnical Design Parameters

Parameters	Unit	Sap	Trans	Rock							
				W1	W2		W3	East			Lao/ Gourouol
Domain		12/22/32/42	13/23/33/43	14	24	25	34	44	45	46	60–90
Bench height	m	10	10	20	20	20	20	20	20	20	20
Berm width	m	7.6	9.2–9.6	11.5	14.5	11.5	11.5	12.5	12.5	13.0	12.5
Bench face angle	deg	50	70–80	80	80	80	80	80	85	85	80
Geotechnical berm width	m	20	20	20	20	20	20	20	20	20	20
Maximum stack height	m	—	—	120	120	120	120	120	120	120	120

16.3 Hydrological Considerations

The Essakane Operations are located in an area of the Sahel region with relatively low ground water presence. Ground water management in the pits uses sump and pump methods to dewater benches immediately below mining activities.

During the rainy seasons, stormwater run-off outside the EMZ pit is diverted via diversion ditches to collection basins and depleted mining areas.

Water runoff from the ore stockpiles and waste rock storage facilities (WRSFs) is collected in ditches and diverted to catchment basins and depleted pits for storage. This run-off is reused for fresh water needs of the processing and mining needs such as drilling and dust control. The Essakane Operations are a zero-discharge site.

Within the EMZ pit, run-off and seepage are diverted into lower mined out phases and/or to designated local sumps. Water from these sumps is collected in designated reservoirs and later used for drilling, in-pit and haul road dust suppression, and the CIL plant process requirements.

16.4 Operations

16.4.1 Mine Designs

The mine geotechnical design follows the parameters outlined in Section 16.2.

Pit haul roads are designed to industry standards and are 30 m wide to permit safe operation of two-way traffic haulage. For phase bottom benches where the grades are high and the mining duration is short, haul road widths can be reduced to 25 m for one-way traffic.

The pit haul road design grade is 10%.

Waste rock facility and stockpile roads are maintained to have widths of 30 m and grades of 6%.

Waste material is deposited in the designated WRSFs, which are located east of the EMZ pit (Figure 16-2).

Various ore stockpiles, sorted by rock type (saprolite, transition, or fresh rock) and grade are located to the west of the EMZ pit, just north of the primary crusher (Figure 16-3).

Marginal stockpiles are not included in the current LOM plan.

16.4.2 Operations

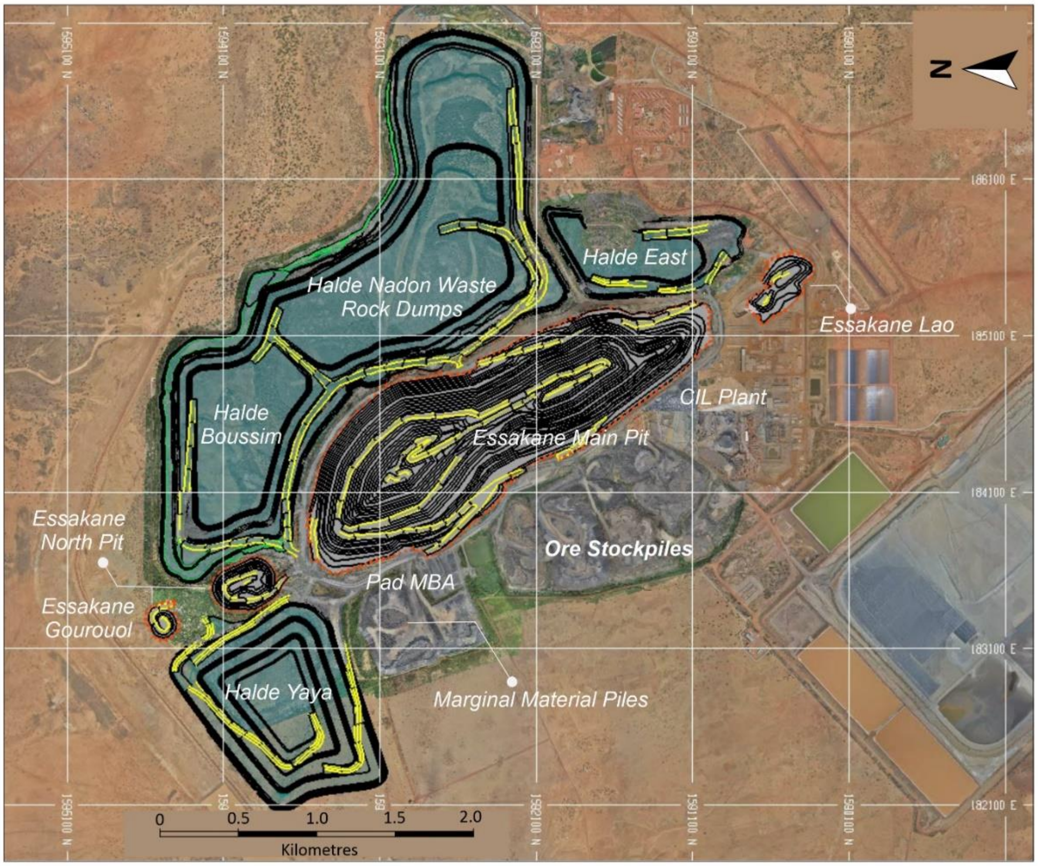
Ore and waste material is drilled and blasted.

Ore is loaded onto rigid dump trucks and either tipped directly into the crusher or deposited on one of the stockpiles depending on the material grade.

Waste material is loaded onto rigid dump trucks and deposited on one of the WRSFs, depending on the mining face location.

The mine operates using 10 m benches in all material. In hard rock areas 20 m benches are used in design but the final bench height is reached mining two 10-m benches. Presplit drilling is completed using 20 m long drill holes.

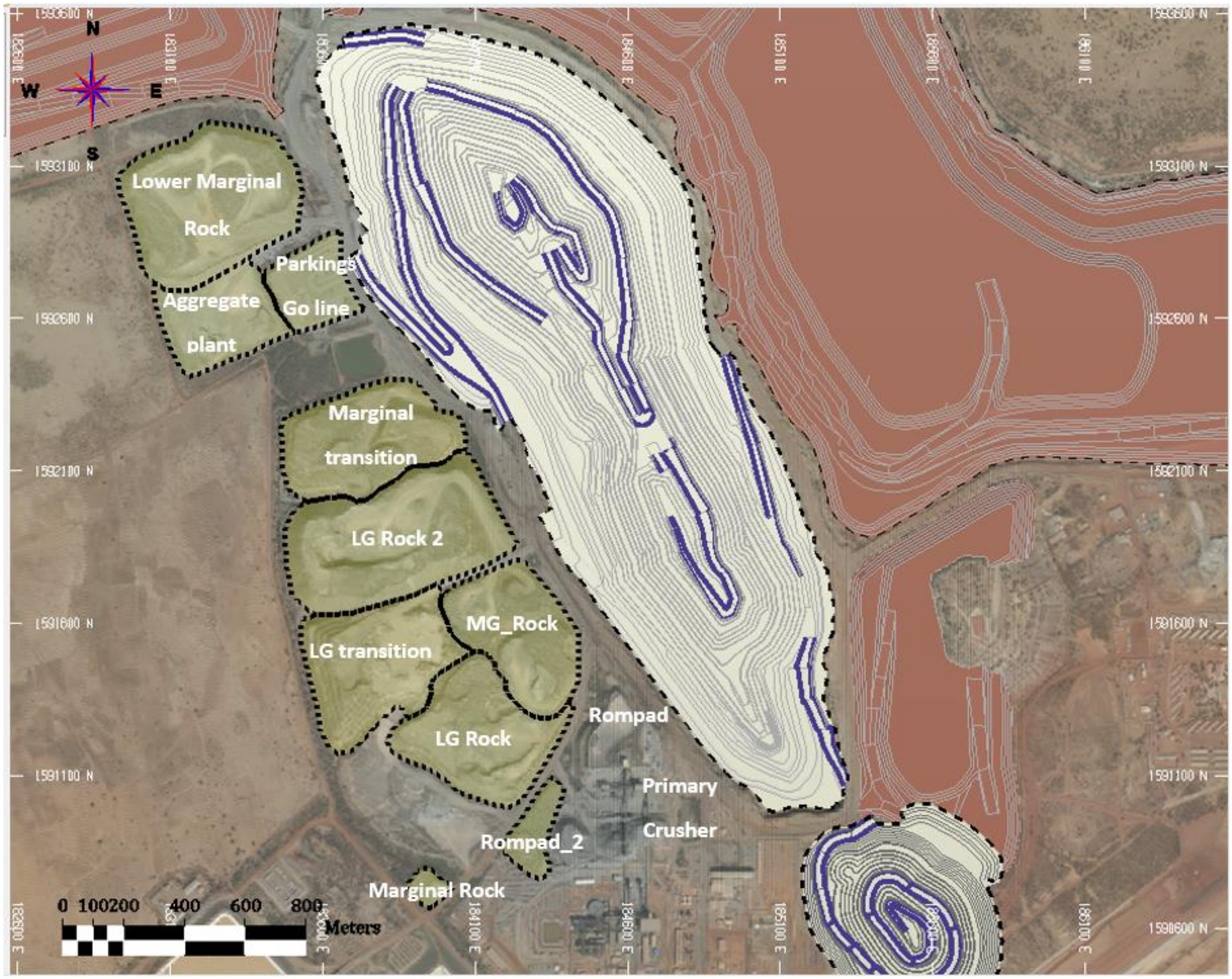
Figure 16-2: WRSF Locations



Note: Phase Pit Designs Shown in Orange

Source: IAMGOLD, 2023.

Figure 16-3: Stockpile Locations



Note: Figure prepared by IAMGOLD, 2023.

16.4.3 Infrastructure

Mining infrastructure includes a mine office complex (mine offices, change houses, and canteens), equipment workshop, with overhead cranes integrated with the main warehouse, and external wash bays, blasting and explosives compound including magazines, diesel storage and dispensing facility, and a drill core storage facility.

16.5 Life-Of-Mine Plan

The LOM schedule and production rate have been established, assuming use of the Essakane processing plant to its full capacity while respecting annual mining rate constraints, phase drop down rates and the existing mining fleet capacity.

The LOM plan is based on the completion of five different mining phases:

- EMZ: three phases, Phases 5, 6, 7. Represents 87% of the gold to be mined in the LOM plan. Phase 5 is the current north phase of the EMZ pit, and the main source of ore at the Report effective date. Phase 6 is the final push back for the south part of the EMZ pit. Phase 7 is the final push back for the north part of the EMZ pit, and represents an extension of Phase 5 on the eastern wall of the EMZ pit;
- Gourouol: located north of the EMZ pit;
- Lao: located south of the EMZ pit, and accounts for 12% of the gold to be mined in the LOM plan.

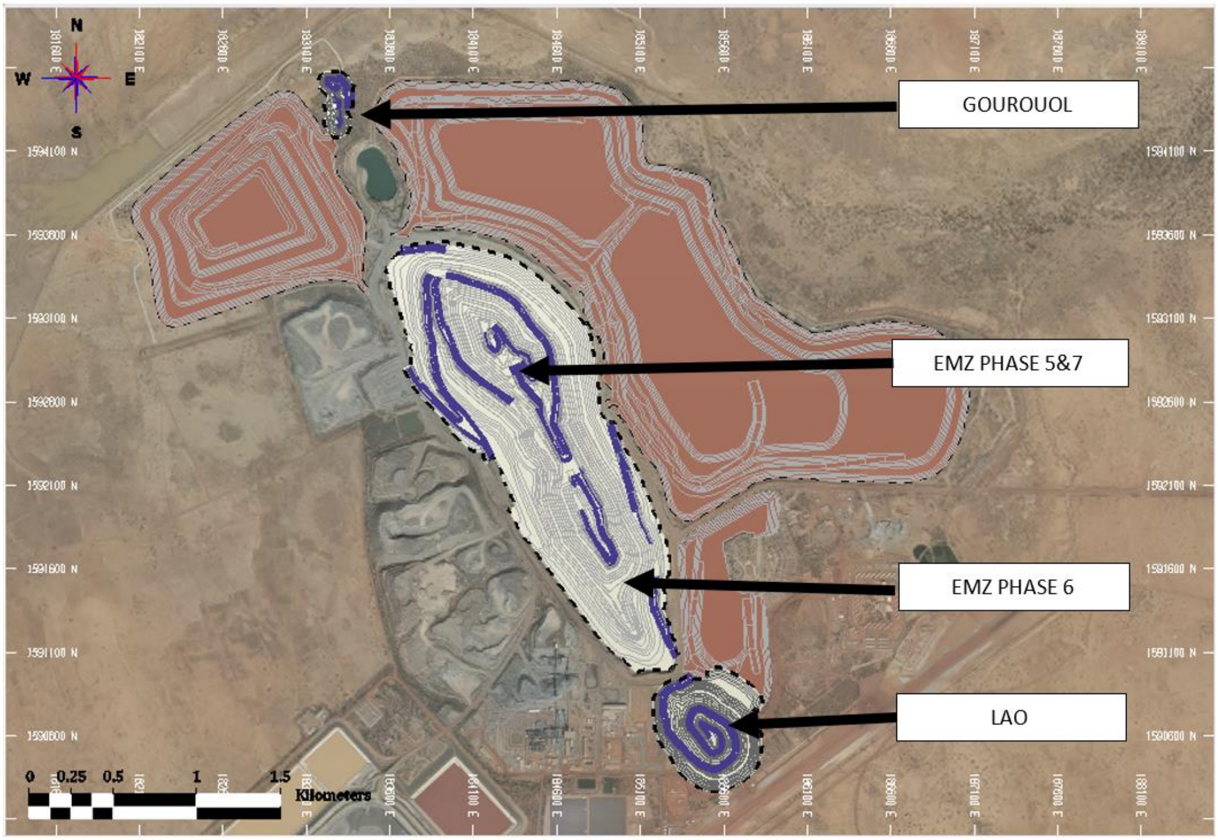
A final pit and phase layout plan is included as Figure 16-4. The locations of each phase are provided in Figure 16-5 to Figure 16-9.

The 2024 LOM plan (on a 100% ownership basis) envisages a five-year operational mine life from 2024 to 2028 averaging 400,200 oz Au/year with a total production of 2.001 Moz Au from 2024 to 2028. 2023 figures are based on actual production figures for the period January to September 30, 2023, with the LOM plan forecast starting in the fourth quarter of 2023.

The LOMP was completed on a monthly basis for 2023 and 2024, a quarterly basis for 2025 and 2026, and an annual basis from 2027 to 2028. The overall results of the schedule are presented on an annual basis. Figure 16-10 and Figure 16-11 show the forecast tonnes and ounces, respectively, by year and phase. The production forecast in the LOM plan is provided in Table 16-2.

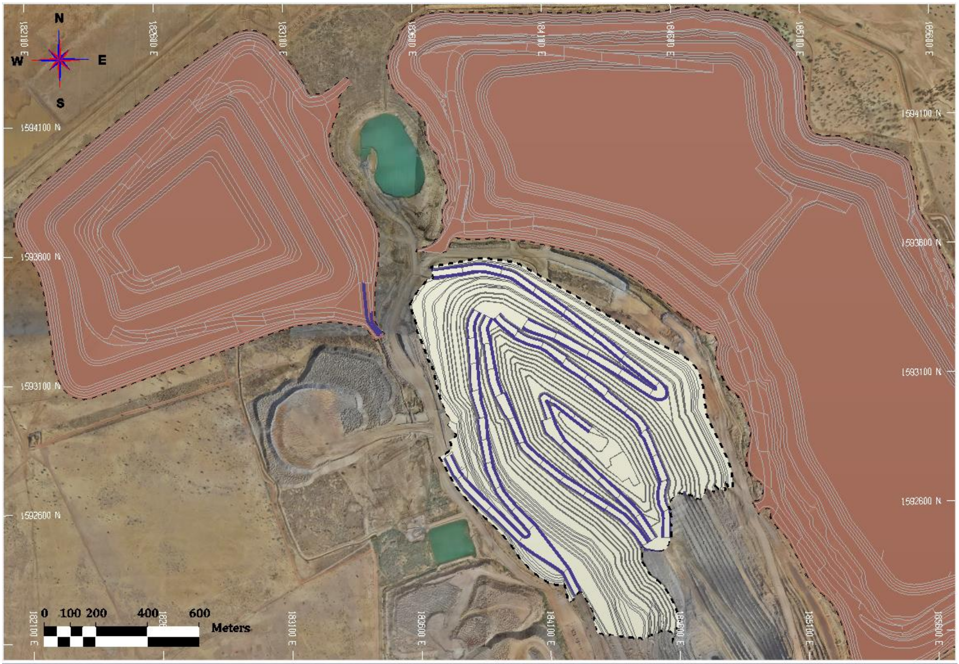
The process plant has a process rate limit of 12.29 Mt/a of hard rock equivalent. The 2024 LOM plan assumes a processing throughput capacity of 13.05 Mt/a. This is achieved by ensuring a minimum of 1.1 Mt/a tonne of softer transition and saprolite ore is fed to the plant.

Figure 16-4: Final Pit Layout Plan



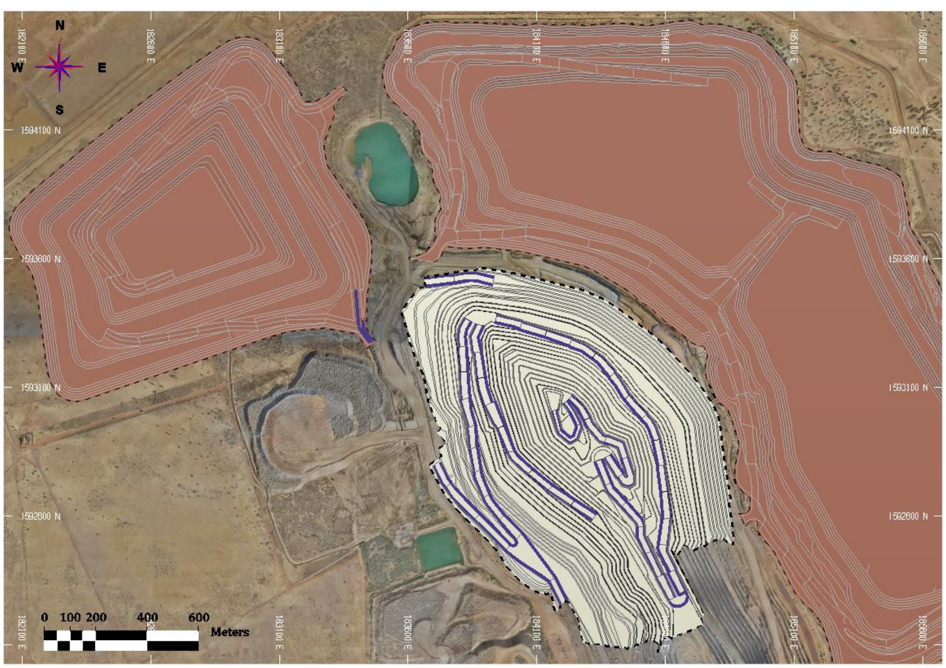
Note: Figure prepared by IAMGOLD, 2023.

Figure 16-5: EMZ Pit, Phase 5



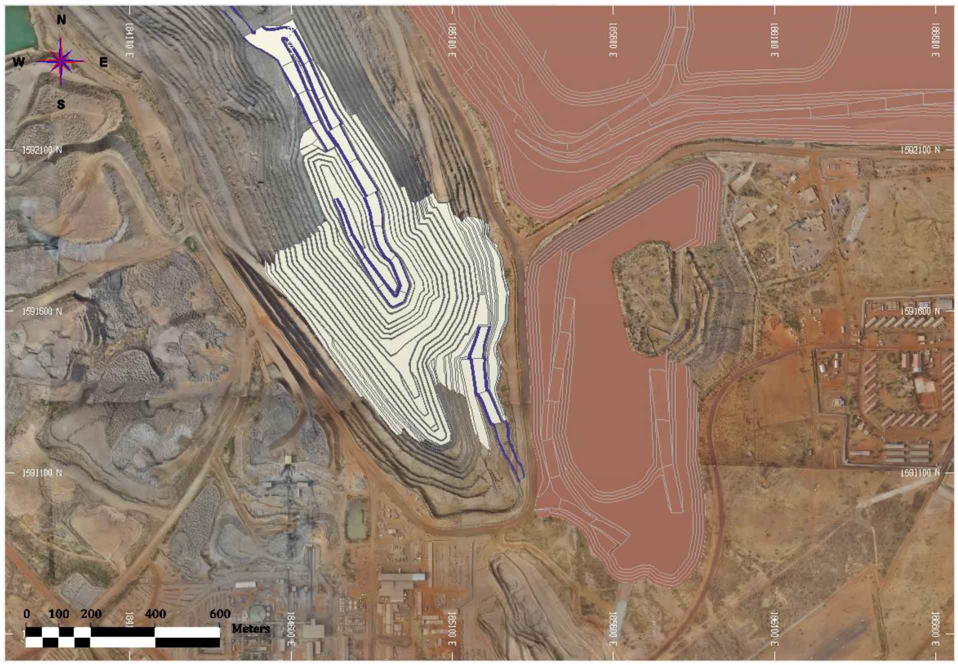
Note: Figure prepared by IAMGOLD, 2023.

Figure 16-6: EMZ Pit, Phase 7



Note: Figure prepared by IAMGOLD, 2023.

Figure 16-7: EMZ Pit, Phase 6

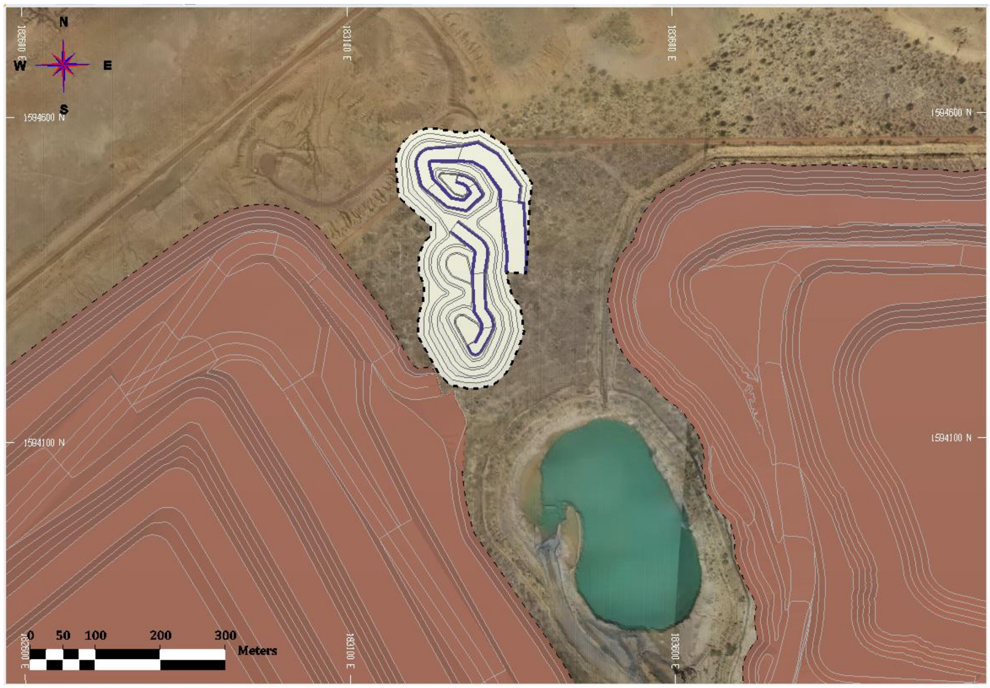


Note: Figure prepared by IAMGOLD, 2023.

Figure 16-8: Lao Pit

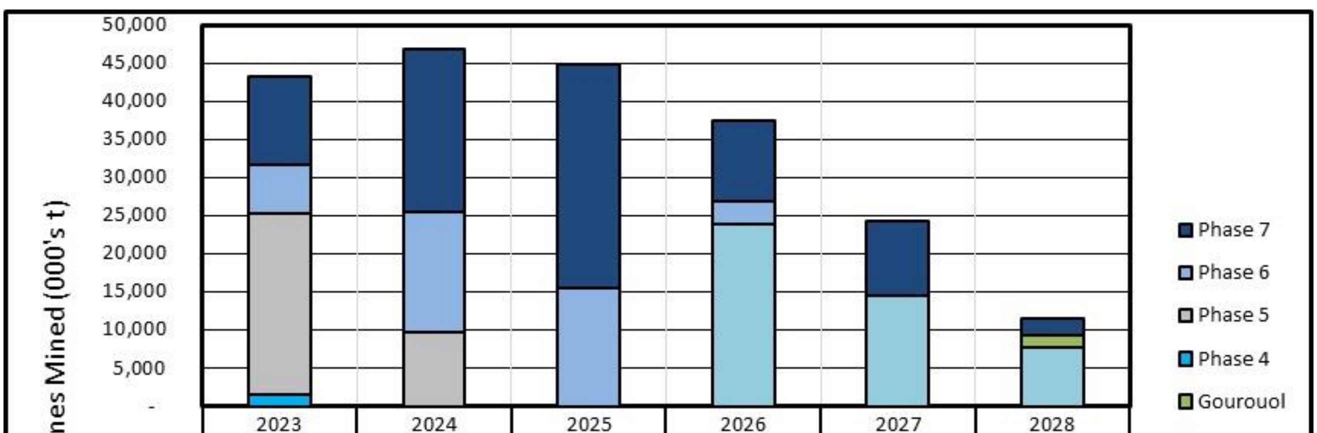
Note: Figure prepared by IAMGOLD, 2023.

Figure 16-9: Gourouol Pit



Note: Figure prepared by IAMGOLD, 2023.

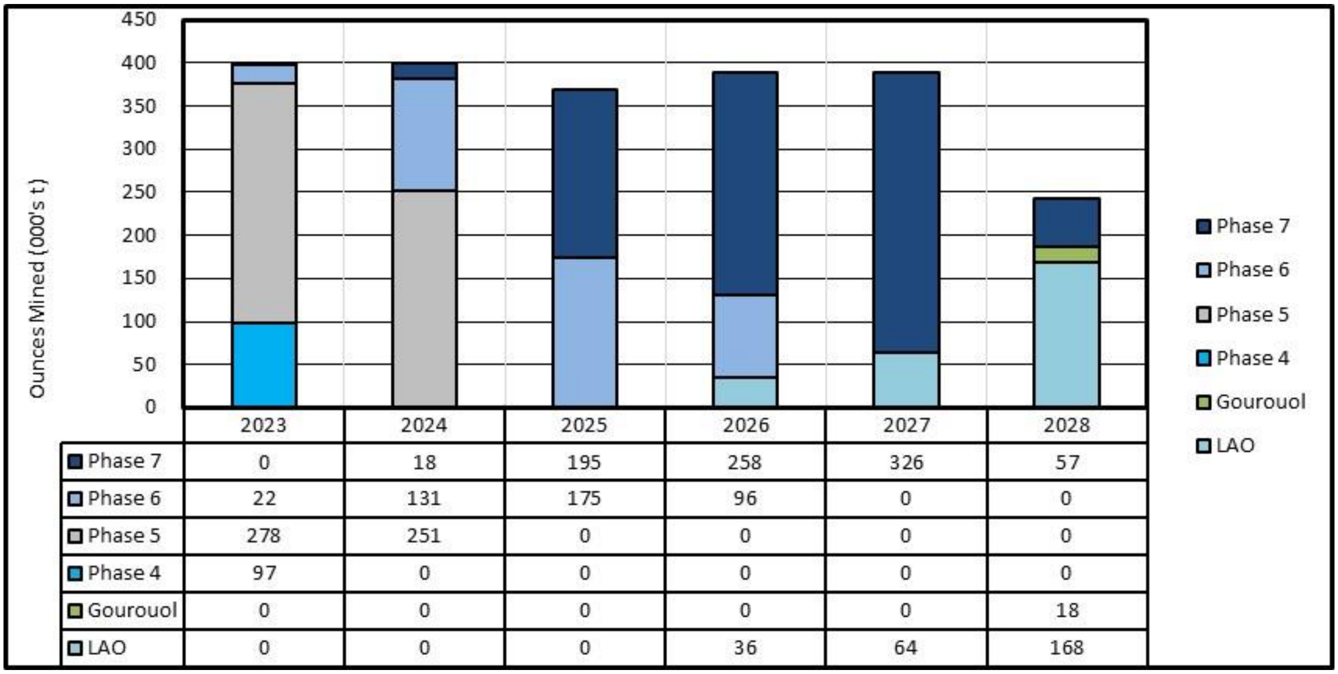
Figure 16-10: Forecast Tonnes Mined By Year And Phase



	2023	2024	2025	2026	2027	2028
Phase 7	11,652	21,296	29,303	10,473	9,801	2,159
Phase 6	6,474	15,919	15,491	2,997	-	-
Phase 5	23,807	9,615	-	-	-	-
Phase 4	1,405	-	-	-	-	-
Gourouol	-	-	-	-	-	1,610
LAO	-	-	-	23,880	14,456	7,644

Note: Figure prepared by IAMGOLD, 2023.

Figure 16-11: Forecast Ounces Mined By Year And Phase



Note: Figure prepared by IAMGOLD, 2023.

Table 16-2: LOM Plan

Item	Units	2023	2024	2025	2026	2027	2028
Ore mined	000 t	9,490	10,087	9,070	8,725	8,507	5,785
Grade mined	g/t Au	1.30	1.23	1.27	1.39	1.42	1.30
Waste mined	000 t	33,848	36,743	35,724	28,625	15,750	5,628
Total mined	000 t	43,338	46,830	44,794	37,350	24,257	11,414
Ore milled	000 t	11,213	12,733	13,072	13,011	13,055	10,525
Mill grade	g/t Au	1.23	1.10	1.10	1.12	1.12	1.08
Recovery	%	90.3	90.0	90.2	90.5	90.5	90.0
Forecast gold produced	***000 oz***	***401***	***406***	***417***	***424***	***425***	***329***

Note: 2023 production is based on actual production to 30 September, 2023, and forecast production for October to December, 2023.

Mining production rate starts at a rate of 47 Mt/a in 2024 and decreases each year with the last mining year being in 2028. As the mining rate reduces, the mining equipment will be removed from operation (starting in 2026) with the older equipment taken out of operation first.

The LOM plan assumes a maximum annual vertical rate of mining advance of 10 benches (100 m). Typically, this rate is applied in the waste push back part of each mining phase, and the mining rate is reduced once the ore zone is reached to avoid unnecessary stockpiling.

Waste stripping activities for phase 6 will be completed in Q2 2024. Waste stripping for phase 7 will occur from 2023 through 2025.

16.6 Grade Control

To improve the definition for the ore zones, the preferred method for grade control is through RC drilling in all phases. RC grade control drilling is planned on a grid pattern of 10 x 5 m using inclined holes according to the parameters presented in Table 16-3. Blast hole sampling is used for grade control in areas where RC grade control drilling is not completed or when additional information is required by the geologists. A fleet of four Atlas Copco Roc L8 rigs are used for RC drilling. The drill contractor is FTE Drilling.

16.7 Production Drilling and Blasting

A fleet of seven Atlas Copco Epiroc Pit Viper 235 drill rigs are used for the 229 mm (9.0 inch) production blast holes supplemented with four smaller diameter (6.0 inch) Sandvik D45KS rigs for flexibility and drilling in tighter areas. All blasting activities on site are executed by a third-party supplier, MAXAM. Holes are loaded with bulk explosive matrix and initiated with electronic detonators. Table 16-4 summarizes the main drill and blast parameters used at Essakane.

Material displacement during blasting is a critical issue at the Essakane Operations. Blast movement measurement technologies are systematically used when blasting mineralized areas in order to measure vertical and horizontal displacement which allows for the adjustment of the post blast ore packets.

Table 16-3: Grade Control Drill Parameters

RC parameters	Units	Sap	Trans	Rock
Hole inclination	Deg	60	60	60
Hole diameter	In	5.5	5.5	5.5
Hole diameter	m	0.14	0.14	0.14
Burden	m	10	10	10
Spacing	m	5	5	5
Bench height	m	10	10	10
Hole length	m	22–44	22–44	22–44

Table 16-4: Drill-and-Blast Parameters

Parameter	Units	Sap		Trans		Rock	
Type		Ore	Waste	Ore	Waste	Ore	Waste
Bench height	m	10	10	10	10	10	10
Burden	m	6.70	7.00	6.00	6.20	4.80	5.80
Spacing	m	7.70	8.00	6.90	7.10	5.60	6.70
Subdrill	m	0.80	1.20	1.20	1.00	0.90	1.00
Stemming length	m	4.70	5.00	4.50	4.50	3.50	4.40
Power factor	kg/t	0.26	0.24	0.30	0.28	0.50	0.29

Presplitting of selective areas of the pit walls is carried out based on the recommendations from the ground control department. Presplit drilling is accomplished by two Atlas Copco Epiroc L8 drill rigs, managed by FTE Drilling. Four inch (10.6 cm) holes are drilled over two benches and spaced about 1.8 m apart.

16.8 Equipment

The mine loading fleet consist of two Komatsu PC3000 shovels, two Komatsu PC2000 excavators, and two Terex RH120 shovels, supported by a fleet of five Caterpillar (CAT) 993-wheel loaders. The loaders are being used for run-of-mine stockpile reclaim as well as primary loading units.

The hauling fleet consists of 34 CAT 785 haul trucks and five CAT 777 haul trucks.

Dust control is accomplished by four CAT 777 water trucks.

Ancillary equipment includes fuel and water trucks, mobile light plants, utility vehicles, and service trucks.

There are currently no plans for additional production equipment for the remainder of the LOM, and the fleet numbers will be progressively reduced for the remainder of the LOM.

The primary mine production equipment fleet for the LOM to 2028 is shown in Table 16-5.

Table 16-5: Current Primary Mine Equipment Fleet

Type	Model	Number
Shovels	Komatsu PC3000	2
	O&K Terex RH120	2
Excavators	Komatsu PC2000	2
	Caterpillar 395	2
	Caterpillar 390	3
	Caterpillar 349	4
Loader	Caterpillar 993	5
Trucks	Caterpillar 777D	5
	Caterpillar 785C	26
	Caterpillar 785D	8
Drill rigs	Atlas Copco PV-235	7
	Sandvik DK45	4
Dozers	Bulldozer D9R	5
	Bulldozer D10T	3
	Wheel dozer 824	2
	Wheel dozer 834	1
Grader	Grader Cat 16M	5
Water trucks	Caterpillar 777	4
Tow haul	Caterpillar 777	1

17 RECOVERY METHODS

17.1 Introduction

The metallurgical testing presented in Section 13 and information in the various feasibility studies provided the data to finalize the process design criteria and the Essakane mill flowsheet.

Ore is currently processed using two stages of crushing, semi-autogenous grinding (SAG), ball mill grinding, pebble crusher grinding (SABC), gravity concentration, and a CIL gold plant.

The 2008 feasibility study proposed a process plant throughput rate of 7.5 Mt/a. During construction, some debottlenecking improvements were made to the design, resulting in a revised nameplate capacity of 9.0 Mt/a based on processing 100% saprolite ore. This first phase is referred to as line A. Due to additional operational improvements, plant throughput has increased beyond the constructed design capacity.

Fresh rock CIL plant feed gradually increased from 2012 onwards. To maintain gold production levels, with increasing proportions of fresh rock in the CIL plant feed, an expansion was completed in 2014, referred to as line B. The objective was to double the fresh rock processing capacity from 5.4 Mt/a on a 100% fresh rock basis to 10.8 Mt/a. The expansion consisted of the addition of a secondary crushing circuit and a second process line (grinding, gravity concentration, and leach-CIL) in the CIL plant and included:

- One secondary crusher of 750 kW;
- One SAG mill of 7 MW;
- One ball mill of 7 MW;
- Two pebble crushers, one on Line A and one on Line B;
- Two gravity concentrators;
- One leach and seven CIL tanks.

The process plant expansion was commissioned in February 2014, and effectively doubled the fresh rock processing capacity.

In 2019, the targeted plant capacity was revised, based on the total specific energy requirements for 11.7 Mt/a of fresh rock, such that that >11.7 Mt/a total ore can be processed, if the required total specific energy for the ore blend (saprolite, transition, and fresh frock) is less than or equal to the required total specific energy for 11.7 Mt/a of fresh rock.

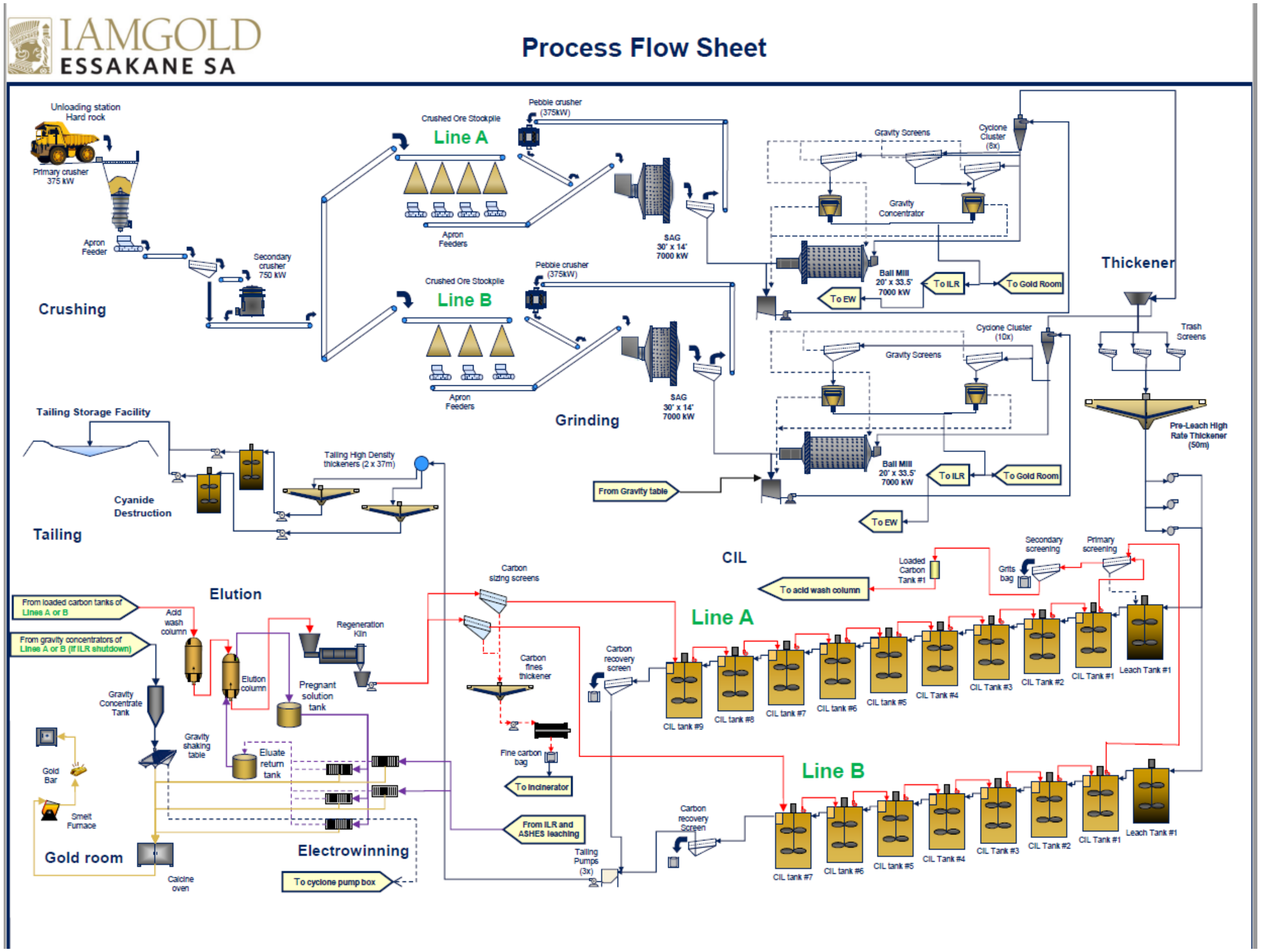
The following modifications were completed:

- Upgraded the secondary crusher from a MP1000 to a MP1250 model to increase the secondary crusher circuit capacity;
- Installed a new primary screen with a higher capacity;
- Replaced the gravity scalping screens to improve screening efficiency, using double deck technology with the first deck at a 5 mm deck aperture and second deck at a 2 mm aperture;
- Modified the Line A and Line B pebble crushing: reviewed pebble discharge belt conveyor capacity and modified the pebble crusher to operate in by-pass mode;
- Modified the Line A and Line B cyclone underflow distribution system: modified the transfer boxes, piping configuration and completed modifications to improve flow distribution from the cyclone underflow to the mill feed hopper and the gravity scalping screens.

17.2 Flowsheet

The current flow sheet is shown in Figure 17-1.

Figure 17-1: Mineral Processing Flowsheet for the CIL Plant



Note: Figure prepared by IAMGOLD, 2023.

The process flow sheet consists of the following:

- Crushing;
- Grinding;
- Pre-leach thickening;
- Gravity concentration and intensive cyanidation;
- Leach and CIL;
- Tailings thickening plant;
- Tailings disposal;
- Acid wash and elution;
- Fine carbon incineration;
- Carbon regeneration;
- Electrowinning and refining; ;
- Reagents make-up and distribution;
- Water storage;
- Air services and plant water service.

17.3 Plant Design

Ore is crushed in a gyratory crusher and in a cone crusher. The crushing circuit is set at a processing rate of 1,912 t/h. The primary crusher product is screened by a double deck vibrating primary screen with the oversize reporting to a secondary cone crusher.

The mill consists of a primary crusher which feeds two 9.1 m. dia. by 4.3 m. effective grinding length (EGL) SAG mills with 7,000 kW motors each. The crushed ore is stockpiled on Line A or Line B apron feeders. Ore is reclaimed with apron feeders and feeds SAG mills on each line. The pebbles from the SAG mills are diverted to their respective pebble crusher in closed circuit. The ore passing through the SAG mill discharge screen feeds a pack of cyclones. Cyclone underflow is directed to a 6.1 m. dia. by 10.2 m EGL ball mill that has a 7,000 kW motor. The ball mill returns slurry to the cyclone feed pumpbox. The grinding circuit product is a particle size distribution with a P80 of 125 µm. Lime is added to the SAG mill to control pH.

A portion of cyclone underflow goes to centrifugal gravity concentrators (two on each line). The product is leached in an inline leach reactor. The pregnant solution obtained from the intensive leach reactor is processed by two dedicated electrowinning cells and the sludge recovered is filtered, dried, and smelted together with the sludge recovered from the elution circuit. Although testwork suggests that as much as 75% of the gold can be recovered by gravity, the gravity circuit is currently recovering 45% of the gold in the mill feed.

Cyclone overflow is sent to a 50 m pre-leach thickener and thickened to approximately 50% solids. The thickened ore feeds two parallel lines, A and B, for cyanidation. The CIL A train consists of ten 16.560 m dia. by 19.560 m tall tanks. The CIL B train consists of eight tanks which are also 16.560 m dia. by 19.560 m tall. The first tank of each train is considered a “leach” tank which indicates that it does not contain carbon.

The leach tank for each train receives fresh slurry that has residual cyanide. Oxygen is added to the leach tanks to pre-aerate the slurry. Due to residual cyanide in the recycled grinding water, the gold starts to dissolve in the grinding circuit and continues in the leach tank. Cyanide is added to the CIL1 tank to recover gold. The CIL tanks contained activated carbon the recover the gold from solution.

Once loaded with gold, the carbon is screened, acid washed, and eluted. The pregnant solution is sent to the gold room for electrowinning, drying, and finally, smelting into doré bars.

Eluted carbon is regenerated in a kiln and reused in the CIL circuit. Carbon fines generated from the circuit are recovered in bags for further gold recovery.

Plant tails are thickened and stored in the tailings pond. The water is reclaimed to the plant.

17.4 Energy, Water, and Process Materials Requirements

17.4.1 Reagents and Consumables

The process uses the following consumables:

- Grinding balls (120 mm);

- Grinding balls (75 mm);
- Grinding balls (50 mm);
- Sodium cyanide;
- Lime;
- Caustic soda;
- Activated carbon;
- Borax;
- Soda ash;
- Silica;
- Nitrates;
- Flocculant;
- Leach aid;
- Hydrochloric acid;
- Anti-scalant.

17.4.2 Plant Services

There are two air systems:

- Plant air: used for instrument and services;
- Process air: used in the base of the CIL tanks.

An oxygen plant (15 t/day capacity) supplies oxygen to the first leaching tanks.

Natural gas is used for operation of the burners for the strip solution heater and carbon regeneration kiln. Natural gas is also used in the laboratory for the operation of the furnaces for pyro-analysis and for fine carbon treatment.

17.4.3 Water

Each process line has its own process water circuit, with three pumps, two in operation and one on stand-by. The pre-leach and tailing thickeners overflow return to the process water tank.

Water used in transferring tailings from the process plant to the TSF are recycled to the process plant after the solids are deposited in the TSF.

The main water source in the wet season is the Gourouol River.

There are three water storage ponds that can provide additional process water; one contains recycled water from the TSF and water from pit dewatering activities, and the remaining two contain fresh water. The ponds fill to capacity in the wet season and are drawn down in the dry season.

A water management plan is in place to optimize water use and reduce consumption from the Gourouol River.

17.4.4 Power

Power is sourced from a combination of generators and a solar plant (see Section 18.6). The total average consumption is around 40 MW, and the process plant uses about 35 MW.

The power demand for the plant is limited at 100% due to the hard rock. The average power consumption for grinding is 6.0 kWh/t for saprolite, 10.0 kWh/t for transition, and 17.5 kWh/t for hard rock.

18 PROJECT INFRASTRUCTURE

18.1 Introduction

Essakane is an operating mine that has been active since 2010. Onsite infrastructure that supports the Essakane Operations includes:

- Three open pits (one current (EMZ) and two mined-out (Falagountou and Wafaka));
- Stockpiles;
- Waste rock storage facilities;
- Process plant;
- Tailings storage facility;
- Water management facilities, including diversion channels, water storage ponds, and potable water treatment;
- Accommodations camp;
- Airport;
- Power generation facilities, including a solar plant;
- Mine office complex (mine and administrative offices, change houses, and canteens);
- Equipment workshops;
- Wash-down bays;
- Warehouse and lay-down yard;
- Blasting and explosives compound;
- Roads;
- Security gatehouse;
- Communications facilities;
- Diesel storage and dispensing facility;
- Core storage facility.

The infrastructure is sufficient for the LOM plan. The planned extension of the Lao pit will require relocation of some existing facilities/buildings.

An infrastructure layout plan for the Essakane deposit was provided in Figure 4-2.

There is no current infrastructure at the Gossey deposit. The Mineral Resource estimate assumes that existing Essakane infrastructure would be used to support any future mining operation at Gossey. Future infill drill programs could require construction of access roads, drill pads, and security fencing.

18.2 Roads and Logistics

The site access routes are discussed in Section 5.2.

The operations are primarily accessed through the main gatehouse. Materials and supplies such as food for the accommodations camp are brought into the site using national and regional roads. Service roads are used for internal travel within the operations, and for security patrols.

Personnel are brought to site by air. Air may be used for emergency supplies.

18.3 Communication System and IT

The site is served by a radiocommunications system. There are two global system for mobile communications (GSM) operators on site. A frequency-hopping (FH) microwave link and a very small aperture terminal (VSAT) system are in place and support large file transfers and Internet connectivity.

18.4 Fuel Oil Storage

The on-site fuel oil storage capacity consists of four 500 m^3 light fuel oil (LFO) tanks, two 3,000 m^3 LFO tanks, installed in November 202, providing 43 days of capacity to the mining flee. Four tanks of 2,500 m^3 heavy fuel oil (HFO) provide providing 45 days of capacity for the power plant.

18.5 Gourouol River Deviation

A 5 km deviation of the Gourouol River was undertaken to protect the EMZ pit from flooding during seasonal rains. No further modifications are required for the LOM design.

18.6 Power Generation and Distribution

The current power plant was developed in two phases between 2010 and 2014. The first phase consisted of five Wärtsilä 12V32 generator units, each capable of producing 5,256 kW, for a total installed power of 26,280 kW. The second phase consisted of an additional six units, supplying 25,000 kVA of additional power.

A photovoltaic (PV) solar plant was constructed in 2018, and connected to the existing thermal powerhouse grid. The solar plant has an installed power of 14.92 peak megawatts direct current capacity (MWp DC) and a delivery capacity of 11.46 MW alternating current. It consists of nearly 130,000 panels separated into three different fields, each field connected to two inverters and injecting power to the grid through a transformer. The addition of this plant is estimated to reduce mine-related carbon dioxide emissions by an estimated 18,000 t/year.

There are six LFO generators that can provide supplemental power to the original plant, and are used for emergency power.

The power supplies are sufficient for the LOM plan. IAMGOLD are studying potential installation of battery systems to potentially reduce carbon dioxide emissions and improve the outputs of the existing generator configurations.

18.7 Potable Water and Treatment Facilities

Water is currently extracted from underground using borehole pumps feeding into a buried HDPE ring main which, in turn, feeds into a potable water storage tank located within the plant boundary. The water is filtered and chlorinated prior to entry into a tank that is specially lined to ensure that the water is potable. An upgrade is currently underway, consisting of replacement of existing tanks, and installation of two additional tanks to increase water storage by about 400 m^3. The planned completion date is Q3 2024.

Sewage treatment facilities are sized to the camp and operations levels. A new wastewater treatment system is under construction, with a planned completion date of Q3 2024.

18.8 Stockpiles

As part of material management and feed optimization plan, three material classes are stockpiled around the plant area based on their gold grade:

- Short-term ore stockpile (ROM pads): consists of the overflow of ex-pit planned feed-grade material;
- Long-term ore stockpile: lower-grade ore to be used during future processing or during gaps in the supply of ex-pit material;
- Sub-cut-off stockpile: Material that has the potential to be mill feed with higher gold prices or more favorable economic conditions.

These stockpile classes are further segregated according to ore types and blending requirements.

The long-term stockpiles are designed at to be stacked angle of repose on lifts of 7 m, with a 10 m berm.

18.9 Waste Rock Storage

The WRSFs are discussed in Section 20.5.

18.10 Tailings Storage

The tailings storage facility is discussed in Section 20.6.

18.11 Water Management

Water management is discussed in Section 20.7.

18.12 Camps and Accommodation

There is a 2,020 person capacity accommodation camp at the mine site. The camp site includes full dining, laundry, and recreational facilities. Personnel are transferred by shuttle from the camp to the mine.

19 MARKET STUDIES AND CONTRACTS

19.1 Market Studies

No market studies are currently relevant as Essakane is an operating mine producing a readily saleable commodity in the form of doré.

The doré bars are shipped offsite to a refiner who refines the doré into bullion. The bullion is then sold directly on the open market to gold trading institutions at prevailing market prices.

19.2 Commodity Price Projections

Commodity prices used in Mineral Resource and Mineral Reserve estimates are set by IAMGOLD corporately. The current gold price provided for Mineral Reserve estimation is $1,400/oz, and $1,700/oz for Mineral Resource estimation.

19.3 Contracts

The operations produce gold doré bars, which are shipped to major refineries. Existing refining agreements include terms and conditions that are consistent with standard industry practices. Refining charges include treatment and transport.

The largest in-place contracts other than for product sales cover items such as light fuel oil, heavy fuel oil, explosive supply and management, mobile fleet parts, mill liners, lubricants, process plant reagents, grinding media, RC drilling, air transport and off-road tires. Contracts are negotiated and renewed as needed. Contract terms are typical of similar contracts in Burkina Faso and in accordance with in-country regulations.

19.4 QP Comment on Item 19 "Market Studies and Contracts"

The doré produced by the mine is readily marketable. Metal prices are set corporately for Mineral Resource and Mineral Reserve estimation, and the gold price used for Mineral Resources and Mineral Reserves in this Report was $1,700/oz and $1,400/oz respectively.

The QP has reviewed commodity pricing assumptions, marketing assumptions and the current major contract areas, and considers the information acceptable for use in estimating Mineral Reserves and in the economic analysis that supports the Mineral Reserves.

20 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACTS

20.1 Baseline and Supporting Studies

Baseline and supporting environmental studies were completed to assess both pre-existing and ongoing site environmental conditions, as well as to support decision-making processes during operations start-up. Characterization studies were completed for climate, air quality, hydrology and surface water quality, hydrogeology, flora, fauna, soils, overburden, agriculture and land use, and the socioeconomic environment.

20.2 Environmental Considerations and Monitoring Programs

The Environmental Code (Law No. 006-2013/AN of April 2, 2013) of Burkina Faso stipulates that an Environmental Impact Statement or an Environmental and Social Impact Assessment, including public enquiry and a mitigation and/or an enhancement plan of negative or positive impacts, be completed prior to the construction of a project that is likely to impact the environment. This requirement is supported by the associated Environmental Decree (Decree No. 2015-1187/PRES-TRANS/PM/MERH/MATD/MME/MS/MARHASA/MRA/MICA/MHU/MIDT/MCT) which outlines the scope, content, and administrative procedures for the Environmental and Social Impact Assessment.

An Environmental and Social Management Plan was developed as part of the Environmental and Social Impact Assessment to address aspects of operations. This include site monitoring, and emergency management are part of the Environmental and Social Management Plan. Other specific plans were developed to address significant environmental aspects:

- Waste management plan;
- Biodiversity management plan;
- Water management plan;
- Waste rock management plan;
- Dust management;
- Vibration and noise levels management plan.

20.2.1 Site Monitoring

A comprehensive monitoring program is in place at the mine, as well as in the neighbouring villages. This program encompasses water quality monitoring (potable water, groundwater, domestic waste water, surface water, and community well water), air quality (dust and greenhouse gas emission), soil, biodiversity (fauna and flora), noise, vibration, weather, and follow up and assessment of the community investment program (for example, health, education, potable water access, agriculture, and animal husbandry).

20.2.2 Water Monitoring

A water quality monitoring program for surface water, groundwater, industrial water, potable water, and domestic wastewater is in place. Additionally, the quantity of water resources is monitored, for example, river flow, water table level, and water meters. Water management structures, including the TSF and water retention ponds are regularly inspected.

20.3 Mine Closure Requirements and Costs

A preliminary closure plan will be conducted prior to mine closure. This step will involve a complete review of the plan to validate the base information and to verify the status of progressive rehabilitation. At that time, consultations with stakeholders will be organized in order to identify their concerns and interests. The preliminary closure plan will include a risk analysis as well as a social impact analysis and will define the closure and monitoring activities. The preliminary closure plan should take approximately two years to complete.

A final closure plan must be completed after the preliminary closure plan and must be approved by the relevant authorities. Following stakeholder consultation, the final closure plan will define the terms and conditions of all rehabilitation activities, including planning, costs, objectives, objective criteria, environmental monitoring, reporting, community legacy, and land use and site restoration conditions.

A conceptual rehabilitation and closure plan was developed in 2009, updated in 2013, and again in 2018. Asset retirement costs are updated annually, and the final closure cost is updated whenever the mining development plan is amended. A progressive mining rehabilitation process commenced in 2011, shortly after the start of production.

Essakane S.A. opened an account in which funds are deposited in escrow as part of the Mining Environment Preservation and Rehabilitation Fund (Order No. 2007-845/PRES/PM/MCE/MEF of December 26, 2007).

The closure cost estimate used in the economic analysis is US$104.3 million, incurred from 2024–2036. About US$96.8 million will be expended after 2028, when most closure activities will occur. As at December 31, 2023, IAMGOLD forecasts approximately $50.2 million will have been placed an escrow account with respect to funding its closure obligations.

20.4 Permitting

20.4.1 Essakane Initial Permitting

An Environmental and Social Impact Assessment was conducted by Knight Piésold Consulting and submitted to the government on August 8, 2007. This study included an Environmental and Social Management Plan for the Mine. The Environmental and Social Impact Assessment was completed following a public consultation, from October 3 to November 2, 2007, with key stakeholders, as prescribed under Burkinabé law. Following this process, on November 30, 2007, the Mine was approved by the Burkina Faso authorities (Order No. 2007-083/MECV/CAB) and the mining permit over a 100.2 km² area (Order No. 2008-203/PRES/PM/MCE/MEF/MECV) was granted to Essakane S.A.

On September 25, 2008, following changes made during construction, an addendum to the Environmental and Social Impact Assessment was submitted to the Burkina Faso authorities. This addendum was approved on November 3, 2008. There was no change to the Environmental and Social Management Plan as a result of this addendum.

One of the specific permits that was required before the start of operations is that relating to the use of explosives (Order No. 2009-258/MCE/SG/DGMGC authorizing the operation of a temporary explosives depot at Essakane).

20.4.2 Essakane Expansion Permitting

A mine expansion study was initiated in 2011. The expansion project consisted of the following:

- Increasing the overall processing capacity from 9.0 Mt/a to 10.8 Mt/a by duplicating the grinding and leaching circuits, in order to adjust to increasingly harder rock and maintain throughput;
- Increasing the total ore and waste mining capacity from 32 Mt/a to 56.5 Mt/a to feed the plant;
- Extending the LOM to 2027.

Based on conclusive studies, amendments to the mining plan took place from February 2012 to June 2014.

As part of the mine expansion work (from February 2012 to June 2013), a new addendum to the Environmental and Social Impact Assessment and the 2008 addendum was prepared in February 2012 (the February 2012 addendum). The February 2012 addendum covered the expansion phase of the EMZ pit and CIL plant infrastructure, a new satellite pit east of the Mine, and the Gourouol River diversion. The Environmental and Social Impact Assessment and 2008 addendum already covered an important part of the impacts related to the expansion, including the river diversion.

The February 2012 addendum, which is an appendix to the Environmental and Social Impact Assessment approved in 2007, was prepared to analyze the environmental and social impacts of the mine expansion project. It includes, in Chapter 6, an updated Environmental and Social Management Plan incorporating the necessary adjustments to the initial Environmental and Social Management Plan to include the expansion changes and to consolidate, in one document, all of IAMGOLD's social and environmental commitments. An environmental impact assessment was conducted for the river diversion.

These documents were validated on December 5 and 6, 2013 by the Comité Technique d'Evaluation Environnementale (COTEVE- Environmental Assessment Technical Committee), a body created by the government and comprised of experts from various professional communities (non-government organizations, general population, administration, researchers, universities, and institutes). Following the COTEVE meeting, a second public consultation took place from April 17 to May 5, 2013, in the communes of Gorom-Gorom (Oudalan Province) and Falagountou (Seno Province). The amendment was subsequently approved by Order No. 2014-170/MEDD/CAB.

20.4.3 Gossey Project Permitting

Communications with local communities were initiated in 2018 during the geological investigation campaign. In light of the growing influx of people who came to settle in the Gossey Project area to benefit from a possible resettlement action plan, the mayor of the commune of Gorom-Gorom issued a decree fixing the deadline for settlement as May 10, 2018. Beyond this date, no new installation will be included in the inventory of affected property and people. The inventory of properties and people began immediately after the announcement of the deadline. The Gossey Project area was surveyed almost entirely, but the inventory was then suspended, and local communities were informed that the Project was postponed.

No study has been completed at the Report effective date as to the potential environmental and social impacts of a mining operation at Gossey. Current activities are restricted to securing access to allow additional drilling of the deposit.

20.5 Waste Rock Storage Facilities

Storage areas for waste rock were planned and designed to reduce haulage distances between pit ramp exits and areas. Areas were selected following consultation with neighbouring populations in order to minimize the impact on these populations (proximity to houses, cemeteries, and other archaeological sites, etc.). Finally, the areas were selected with the goal of minimizing the impact on water resources and on the environment.

Geochemical studies demonstrated that the waste is non-potentially acid generating (NPAG); however, certain types of rock are potentially arsenic leaching. Based on the precautionary principle, a runoff water quality monitoring program is in place. Ditches were excavated to collect runoff water and direct it to the ponds.

Progressive rehabilitation of the WRSFs commenced in 2011. The closure plan includes control of leachable rocks.

SRK carried out a geotechnical and stability assessment for the proposed ultimate WRSF designs (Saunders, 2018). WRSFs are designed with 30 m high lifts, separated by berms ranging from 15–20 m. The overall slope angles range from 15–26°.

Two-dimensional limit equilibrium analyses were carried out using the Rocscience program SLIDE (v7.0) (Rocscience, 2017). Deterministic factor of safety values were determined for shallow, surface, and deep-seated, foundation failure mechanisms through the proposed WRSFs. The results indicate that the proposed WRSF slopes are expected to exhibit acceptable design factors of safety with respect to the analyzed shallow and deep-seated stability, both during construction (i.e., short term) and in the longer term. Shallow-seated instabilities are expected during the construction of the WRSFs, and the materials along the face may slump to an angle of repose for waste rock materials. These shallower instabilities can be managed through regular geotechnical inspections and monitoring.

20.6 Tailings Storage Facility

The TSF was originally designed by Golder Associates Ltd. (Golder). Inner dams and impervious cells were designed by SNC-Lavalin (Golder, 2008b).

The site footprint is 462 ha, delimited by 30 m high and 10 m crest wide perimeter dams, and with internal raise dams and lined cells. The TSF currently has a storage capacity of 203 Mt. A final dam raise will be completed in 2024–2026, which will increase the capacity to 219.3 Mt, sufficient for the remaining LOM needs.

To ensure the infrastructure's stability, daily, monthly, and yearly inspections are carried out. Geochemical studies have shown that tailings are NPAG; however, the tailings leach arsenic and contain process water with cyanide. Tailings water confinement is ensured by deposition in lined cells and by a perimeter hydraulic barrier with more than 40 pumping wells.

A program for environmental monitoring (ground water quality, fauna, and dam stability inspection) and progressive rehabilitation of the tailings site is in place, at and around, the tailings site.

A tailings site steering committee meets bi-annually and an Independent Tailings Review Board meets annually. Both review the operational monitoring of the tailings site, the tailings management system and provide guidance to improve environmental performance. A governmental technical committee also review the tailing management facility environmental performance on a regular basis.

20.7 Water Management

20.7.1 Water Supply

To supply the mining camp with potable water, five wells were drilled outside the site. Due to the relatively high hardness of the well water, a reverse osmosis treatment plant was installed. All other domestic water is only treated by chlorination.

For industrial water needs, part of the water is recycled from the TSF. Tailings are thickened to a density of 60% solids before they are discharged into the TSF. Water recovered from thickeners, and excess water in the tailings cells, is reused in the process plant. Runoff water from the TSF is also pumped to the process plant during the wet season.

Water from the Gourouol River is used to supplement recycled water.

As there is no continuous access to fresh water for the processing plant, bulk water storage basins are in place. During the rainy season, these bulk water storage structures are recharged to store water in sufficient quantity to secure supply to the plant and for dust control in the mining areas. The source of the water is the recharging point, or the off channel reservoir, with a surge capacity installed adjacent to the Gourouol River at 5.4 km from the bulk water storage basins. A dike was raised from the south bank of the Gourouol riverbed by 1.5 m creating an off channel reservoir. The water flows by gravity from the river into the off channel reservoir, from which water is pumped to three bulk water storage ponds adjacent to the TSF. The three bulk water storage basins have capacities of 1.55 Mm^3, 1.55 Mm^3, and 2.50 Mm^3 for a total of 5.65 Mm^3 of water storage.

Additional inflows to the bulk water storage ponds include contact water collected in the Warren basin, the north satellite pit, and the Gourouol pond (once it is constructed). Inflows to the Essakane pit (north and south mining zones) are pumped via transfer stations to either Warren basin or the Gourouol pond. Pumping systems direct water collected in both facilities to the bulk water storage ponds. Waste rock runoff from the Nadon WRSF is collected in the north satellite pit and a series of small ponds, the Nadon north, south, and east ponds. The Nadon ponds are left to evaporate or used for dust suppression as needed. The north satellite pit is dewatered to the bulk water storage ponds as a priority to reduce slope stability concerns.

20.7.2 Water Management

The water management plan includes pit dewatering, waste rock runoff capture, diversion systems, and storage ponds. Water is classified into three categories:

- Non-contact water: runoff from undisturbed areas, including flow in the Gourouol River;
- Contact water: runoff from WRSFs and open pits, which may contain high suspended solids concentrations and arsenic;
- Process water: water mixed in the process plant and recovered from the TSF thickeners and dewatering pumps.

As part of the storm water management plans, diversion and drainage channels route storm water to the depleted satellite pits that serve as storage basins for mine and process plant fresh water needs. The stored water reduces the site's reliance on the Gourouol River.

Key objectives for water management are as follows:

- Provide a reliable water supply to the process plant;
- Facilitate mining of the deposits by limiting inflows to the open pit and by timely removal of precipitation inflows;
- Reduce slope stability risks by routing and storing water away from sensitive pit walls;
- Divert clean water away from the mine site, where possible, and capture contact water;
- Apply strong and transparent water governance;
- Proactively manage water quantity and quality to reduce socio-environmental impacts;
- Ensure that all employees have access to drinking water, appropriate sanitation facilities, and occupational hygiene;
- Collaborate with third parties for the responsible and sustainable use of water;
- Integrate water management into long-term planning, including rehabilitation and closure planning.

A combination of channels and berms strategically capture and divert contact water via gravity to control ponds, thus avoiding any effluent.

20.8 Social and Community Considerations

20.8.1 Community Resettlement Plans

Essakane S.A. implemented two resettlement plans consistent with Burkinabé laws and best practices recommended by international organizations (Performance Standard 5 of the International Finance Corporation). The first plan started in 2008 (13,000 individuals and 2,981 households affected) and the second plan started in 2012 (3,208 individuals and 555 households affected). In both instances, a consultation process was carried out through the implementation of an Advisory Committee that included representatives from the affected villages and hamlets (High Commissioners, mayors and prefects, and technical service representatives) and representatives from three non-governmental organizations (The Organization for Community Capacity Building for Development (ORCADE), Burkinabé Movement on Human and Peoples' Rights (MBDHP), and the League for the Defence of Justice and Liberty (LIDEJEL)).

In both instances, memorandums of understanding were signed, and resettlement follow up committees (CSR) comprising key representatives of affected villages and administrative authorities were created. The CSR committees meet every month to follow up on the progress of the two Resettlement Action Plans.

For the negotiation of the second resettlement plan, approximately 500 meetings (formal and informal) took place between June 2012 and December 2013, which led to a consensual framework (12 agreements) through what was qualified by all as a participatory and transparent approach. Additionally, in both instances, public consultations were carried out by the Ministry of Environment.

20.8.2 Social and Community Assessment

As part of the two population resettlement plans (2008 and 2012), Essakane Consultation Committees were implemented to negotiate with the affected populations in order to reach agreements as part of the memorandums of understanding. Resettlement Monitoring Committees were introduced to ensure full enforcement of the agreements.

As part of the community engagement plan, a Communication Committee, information centres, and a community visit program were implemented . Accordingly, community information and consultation programs, community visits from mine representatives and mine management, and participation in concerted action frameworks at a regional and provincial levels were planned and implemented. Additionally, grievance management mechanisms (grievance reception and processing) to ensure upward and downward communication were defined and implemented.

A Communication Committee of the Essakane Gold Mine, comprising representatives from the population, the administration, and the mine (over a hundred participants), meet each quarter to review concerns of the communities and the completion status on community investments and engagement.

As part of the community investment plan, socio-educational infrastructures are being built (wells, medical centres, schools, etc.). Programs to fight malaria and HIV/AIDS and increase road safety awareness were developed for the benefit of neighbouring populations.

Rural development activities (agriculture, animal husbandry, etc.) are primarily undertaken as part of the livelihood restoration program. Since 2014, a community investment program has been financing community projects through communal development plans.

A program of village forests, tree nurseries, and school tree projects has also been developed to promote environmental protection.

A Community Management Program encompasses all engagement actions and community development projects of the community relation development department. Key performance indicators of the Community Management Program are reviewed on a quarterly basis.

20.8.3 Security

The political and security environment remains volatile in the Sahel region of Burkina Faso, particularly in the area where Project is located. The country experienced military coups in January 2022 and September 2022. Terrorist-related incidents continue unabated in the country, the immediate region of the Essakane mine and, more broadly, the Sahel region of West Africa.

IAMGOLD continues to take proactive measures to ensure the safety and security of in-country personnel and is constantly adjusting its protocols and the activity levels at the site according to the security environment.

Monitoring of community development projects financed by the mine has become more difficult due to the security situation. Alternatives have been put in place to ensure adequate monitoring of projects through telephone communications with local communities and the use of community focal points. IAMGOLD has launched a food donation program, amongst other initiatives, to strengthen the resilience of local communities in the face of the increasing number of displaced people in the greater mine area.

21 CAPITAL AND OPERATING COSTS

21.1 Introduction

The LOM plan assumes Owner-operated mining with mining and processing extending through 2028.

As Essakane is an operating mine, the costs are primarily based on actual operating and capital costs. Costs related to 2023 are shown as full-year costs, based on latest forecasts, with costs to September 2023 as actual, and the remaining three months of 2023 as forecast.

21.2 Capital Costs

21.2.1 LOM Capital Expenditures

Capital costs include capitalized waste stripping, equipment overhaul costs, equipment capital spares, resource development, mill equipment, mining equipment refurbishment, and tailings dam capital expenditures.

Capital expenditures are based on detailed estimates, including vendor quotes and existing contracts rates for services. The capitalized waste stripping costs are based on the detailed LOM plan operating costs.

Planned capital spending expenditures over the remaining LOM (2023–2028) total US$502.7 million, or US$209.30/oz Au sold, including capitalized waste stripping.

The capitalized waste stripping is the largest capital element estimated at US$287 million or US$119.50/oz sold over the LOM and represents 57% of the LOM capital. In 2023, the total capital cost, including capitalized waste stripping, is US$125.6 million or US$313.30/oz Au sold.

Non-sustaining total capital is estimated at US$49.3 million, and is primarily associated with a relocation action plan for the Essakane village and community, known as the RAP1 project.

21.2.2 Sustaining Capital Expenditures

The total planned sustaining capital expenditures for the LOM, excluding capitalized waste stripping (cash portion) but including resource development, is US$166.4 million. In 2023, planned sustaining capital expenditures, excluding CWS are US$57.9 million.

The sustaining capital costs are primarily related to the following items:

- Acquisition of mobile equipment capital spares for US$54.1 million;
- TSF expansion material for US$29.7 million;
- Mill equipment purchase for US$16.8 million;
- Power plant maintenance for US$12.7 million;
- Other capital includes security, health and safety, information technology, and water management investment.

21.2.3 Capital Cost Estimate

The LOM capital cost estimate is summarized in Table 21-1.

21.3 Operating Costs

The mine operating costs are estimated based on mine plan physical quantities, realistic equipment productivity assumptions, overall equipment efficiency, and updated consumables prices.

Average operating costs over the LOM (2023–2028) are estimated at US$35.40/t milled including capitalized waste stripping, or US$32.49/t milled net of capitalized waste stripping (excluding capitalized waste stripping and stockpile movements, with capitalized waste stripping being transferred to sustaining capital).

Table 21-1: Capital Cost Estimate Summary (US$ million)

	2023	2024	2025	2026	2027	2028	Total
Sustaining Capital							
Capital waste stripping	65.9	101.9	41.0	66.1	12.0	0.0	***287.0***
Resource development	4.4	2.0	0.0	0.0	0.0	0.0	***6.4***
TSF	11.7	9.5	4.6	3.9	0.0	0.0	***29.7***
Infrastructure	1.9	3.6	5.4	0.2	0.1	0.0	***11.2***
Process plant	9.0	3.6	2.5	1.1	0.6	0.0	***16.8***
Mining capital spare	12.2	12.2	17.5	8.0	4.2	0.0	***54.1***
Power plant	3.4	3.4	1.2	2.2	2.5	0.0	***12.7***
Other capital	15.4	14.1	4.3	1.2	0.3	0.1	***35.4***
Total Sustaining Capital	***123.8***	***150.4***	***76.5***	***82.7***	***19.8***	***0.2***	***453.4***
Non-Sustaining Capital							
RAP1	1.4	4.0	12.0	11.5	10.0	10.0	***48.9***
Other capital	0.4	—	—	—	—	—	***0.4***
Total Capital Expenditure	***125.6***	***154.4***	***88.5***	***94.2***	***29.8***	***10.2***	***502.7***

Note: Figures have been rounded. Totals may not sum due to rounding.

21.3.1 Mining Costs

Average gross mine operating costs over the LOM are estimated at US$4.76/t mined, or $10.56/t processed, net of capitalized waste stripping and stockpile movement (excluding the capitalized waste stripping with this amount being transferred to sustaining capital). The mining unit costs vary per year based on the mining depth and the impacts of fixed costs on the final year when production is significantly reduced.

Mine operating costs include costs related to labour, mobile fleet operation, fixed facilities, fuel, explosive, other consumables, operations support, and mine G&A.

21.3.2 Milling Costs

The average LOM milling cost is estimated at US$16.22/t milled including power. Milling costs vary per material type (saprolite, transitional or rock) as the power and reagent consumption differ.

Process operating costs include costs related to labour, reagents and consumables, power, support operations, plant and infrastructure maintenance, and process G&A.

21.3.3 General and Administrative

The average LOM site G&A cost is US$5.71/t milled. The G&A cost is linked to the amount of mining and processing activity per year.

G&A costs include costs related to labour, general administration, security, health and safety, finance, IT and communications, community relation, camp, transport, environment, and warehousing.

21.4 Capital and Operating Cost Summary

The LOM forecast capital and operating costs, based on the LOM production schedule, are provided in Table 21-2.

21.5 Closure Costs

The LOM includes total costs of US$104.3 million for asset retirement obligations between 2024 and 2036. Of this total, US$96.8 million is projected to be expended after 2028 when the majority of the closure activities will be incurred.

Table 21-2: Annual Capital and Operating Cost Expenditures Over LOM Mine Schedule

	Units	2023	2024	2025	2026	2027	2028	Total
Operating Costs								
Mining cost (including capitalized waste stripping and stockpiles)	US$M	218.3	236.9	213.4	162.3	109.2	52.2	***992.3***
Process cost	US$M	207.8	224.9	208.5	199.8	191.9	161.5	***1,194.3***
G&A cost	US$M	87.9	86.0	76.9	68.1	53.8	47.6	***420.4***
Total	***US$M***	***514.1***	***547.8***	***498.9***	***430.2***	***354.9***	***261.2***	***2,607.0***
Mining unit cost (including capitalized waste stripping and stockpiles)	US$/t mined	4.96	5.06	4.76	4.35	4.50	4.57	***4.76***
Mining unit cost (net of capitalized waste stripping and stockpiles)	US$/t processed	12.84	12.15	14.99	7.47	6.99	8.95	***10.56***
Process unit cost	US$/t processed	18.48	17.66	15.95	15.35	14.70	15.34	***16.22***
G&A unit cost	US$/t processed	7.82	6.76	5.88	5.24	4.12	4.52	***5.71***
Total unit cost (net of capitalized waste stripping and stockpiles)	***US$/t processed***	***39.14***	***36.56***	***36.83***	***28.07***	***25.81***	***28.81***	***32.49***
Total unit cost (including capitalized waste stripping and stockpiles)	***US$/t processed***	***45.72***	***43.02***	***38.16***	***33.06***	***27.18***	***24.82***	***35.40***
Capital Costs								
Total sustaining capital	US$M	123.8	150.4	76.5	82.7	19.8	0.2	***453.4***
Non-sustaining capital	US$M	1.8	4	12	11.5	10	10	***49.3***
Total capital expenditure	***US$M***	***125.6***	***154.4***	***88.5***	***94.2***	***29.8***	***10.2***	***502.7***

Notes:

1. 2023 metrics based on actual year to date up to September 30, 2023, with remaining three months of 2023 as forecast in mine plan.
2. Mining cost including capitalized waste stripping and stockpiles is the mining cost which includes capitalized waste stripping and stockpile movement costs.
3. Mining (net of capitalized waste stripping and stockpiles) is the mining cost excluding capitalized waste stripping and stockpile movements, with capitalized waste stripping being transferred to sustaining capital.

22 ECONOMIC ANALYSIS

IAMGOLD is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration is supported by overall site positive cash flows and net present value assessments. Considerations of internal rate of return and payback are not relevant as the mine is operating.

23 ADJACENT PROPERTIES

This section is not relevant to this Report.

24 OTHER RELEVANT DATA AND INFORMATION

This section is not relevant to this Report.

25 INTERPRETATION AND CONCLUSIONS

25.1 Introduction

The QPs note the following interpretations and conclusions in their respective areas of expertise, based on the review of data available for this Report.

25.2 Project Setting

The Project is located in Burkina Faso, in the Sahel region, and the mine has been in operation since May 2009. Mining operations are conducted year-round. Weather conditions have had minimal impacts on the mining operations thus far, however, proper planning is required to ensure an adequate water supply during the dry season.

Materials and supplies such as food for the accommodations camp are brought into the site via road. Service roads are used for internal travel within the operations, and for security patrols. Personnel are brought to site by air, and air may be used for provision of emergency supplies.

There are no significant topographic or physiographic issues that would affect the operations. There are no major commercial activities in the Mine area and economic activity is confined to subsistence farming and artisanal mining.

25.3 Ownership

IAMGOLD, through its wholly-owned subsidiary Essakane S.A., owns 90% of the Project, with the government of Burkina Faso holding the remaining 10%.

25.4 Mineral Tenure, Surface Rights, Water Rights, Royalties and Agreements

Information from IAMGOLD's in-house experts support that the mining tenure held is valid and sufficient to support a declaration of Mineral Resources and Mineral Reserves. The exploitation permit was in good standing at the Report effective date.

The Lao Gountouré 2 and Alkoma 2 permits reached the end of the last period of renewability in November 2018. Following an exception request, the permits was then granted for a special period of three years. IAMGOLD applied for these same tenure areas under a new permit on November 26, 2021. The grant process is delayed, but the application is still under consideration by the authorities. As the prior permit holder, IAMGOLD believes there is a reasonable basis for the tenure applications to be granted.

The Burkina Faso Mining Code includes a 1% levy on the annual turnover of mining companies in Burkina Faso to serve local community development, a corporate tax rate of 17.5%, and a priority dividend representing 10% of distributable income payable to the State of Burkina Faso.

The royalty rates are set by a governmental decree, and the most recent decree was signed on October 27, 2023. The rate varies between 3% and 7%, depending on the gold price at the London Metal exchange.

IAMGOLD holds sufficient surface rights to allow mining activities in the Mine area. No surface rights are currently held in the Gossey deposit area.

Water is sourced, depending on end use, from a combination of groundwater wells, recycling of process water, the Gourouol River, and from water storage basins.

25.5 Geology and Mineralization

The deposit types within the Project area are considered to be examples of greenstone-hosted orogenic gold deposits.

The geological understanding of the settings, lithologies, and structural and alteration controls on mineralization in the different zones is sufficient to support estimation of Mineral Resources and Mineral Reserves. The geological knowledge of the area is also considered sufficiently acceptable to reliably inform mine planning.

The mineralization style and setting are well understood and can support declaration of Mineral Resources and Mineral Reserves.

The Essakane and Gossey deposits remain open along strike and at depth.

25.6 History and Exploration

The exploration programs completed to date are appropriate for the style of the deposits within the Project area.

25.7 Drilling, and Sampling

Sampling methods, sample preparation, analysis and security conducted prior to IAMGOLD's interest in the operations were in accordance with exploration practices and industry standards at the time the information was collected.

Current IAMGOLD sampling methods are acceptable for Mineral Resource and Mineral Reserve estimation. Sample preparation, analysis, and security for the IAMGOLD programs are currently performed in accordance with exploration best practices and industry standards.

The quantity and quality of the lithological, geotechnical, collar and down-hole survey data collected during the exploration and delineation drilling programs are sufficient to support Mineral Resource and Mineral Reserve estimation. The collected sample data adequately reflect deposit dimensions, true widths of mineralization, and the style of the deposits. Sampling is representative of the gold grades in the deposits, reflecting areas of higher and lower grades.

Density measurements are considered to provide acceptable density values for use in Mineral Resource and Mineral Reserve estimation.

The IAMGOLD QA/QC programs adequately address issues of precision, accuracy, and contamination. QA/QC submission rates meet industry-accepted standards.

The sample preparation, analysis, quality control, and security procedures are sufficient to provide reliable data to support estimation of Mineral Resource and Mineral Reserve.

25.8 Data Verification

Verification indicates that the supporting data are suitable for use in Mineral Resource and Mineral Reserve estimation and in mine planning. Data are suitable for inclusion in the economic analysis that supports the Mineral Reserves.

25.9 Metallurgical Testwork

Industry-standard studies were performed as part of process development and initial mill design. Subsequent production experience and focused investigations guided mill alterations and process changes. Testwork programs, both internal and external, continue to be performed to support current operations and potential improvements. From time to time, this may lead to requirements to adjust cut-off grades, modify the process flowsheet, or change reagent additions and plant parameters to meet concentrate quality, production, and economic targets.

Samples selected for testing were representative of the various types and styles of mineralization in the Essakane deposit. Sufficient samples were taken so that tests were performed on sufficient sample mass.

Recovery factors estimated are based on appropriate metallurgical testwork, and are appropriate to the mineralization types and the selected process route. Gold recoveries are highly influenced by graphitic carbon concentrations. Since 2020, graphitic carbon and sulfur have been included in the predictive model, and are used to forecast the metallurgical recoveries, based on a combination of ratios, ore type and the amount of graphitic carbon present.

The mill throughput and associated recovery factors are considered appropriate to support mineral resource and mineral reserve estimation, and mine planning.

The major deleterious element is preg-robbing graphitic ore. To manage the preg-robbing effects, mill feed is blended to reduce the carbon grade. In areas of very high gold and graphite grades, plant reagents are adjusted for short batch campaigns. IAMGOLD continues to examine options in relation to reducing the preg-robbing effects in the gravity circuit in particular.

There has been no metallurgical testwork completed on the Gossey deposit.

25.10 Mineral Resource Estimates

Mineral Resources are reported using the 2014 CIM Definition Standards, and assume open pit mining methods.

Indicated and Inferred Mineral Resources were classified for Essakane. A gold price of US$1,700/oz and budget site costs for 2024–2028 were used in the conceptual pit shell that was used to constrain the Mineral Resource estimate. A cut-off grade for saprolite material was calculated at 0.34 g/t Au, a transitional material cut-off grade was calculated at 0.41 g/t Au, and the cut-off grade used for fresh rock was 0.48 g/t Au.

Measured Mineral Resources are only reported for material in stockpiles. The stockpile tonnage estimate is based on Wenco truck counts that are reconciled on a monthly basis with drone surveys of the stockpiles. Grade is assigned to the stockpiles from the grades of the material mined from the short-term grade model.

Indicated and Inferred Mineral Resources were classified for Gossey. A gold price of US$1,700/oz and budget site costs for the Essakane operations from 2024–2028 were used in the conceptual pit shell that was used to constrain the Mineral Resource estimate. A cut-off grade for saprolite material was calculated at 0.38 g/t Au, a transitional material cut-off grade was calculated at 0.45 g/t Au, and the cut-off grade used for fresh rock was 0.51 g/t Au.

Metallurgical recovery assumptions for Gossey were based on the Essakane deposit as an analogue, and assumed the use of a CIL plant. No metallurgical testwork has been performed on Gossey mineralization.

Factors that may affect the Mineral Resource estimate include: changes to long-term gold price assumptions; fluctuations in commodity price and exchange rates; changes to the current regulatory regime; fluctuations in operating cost assumptions; changes to environmental, permitting and social license assumptions; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological shape and continuity assumptions; changes to metallurgical recovery assumptions; geotechnical and design parameter changes impacting dilution and mining recovery factors; and potential for lower mill recovery in new mining areas or from long-term stockpiles.

25.11 Mineral Reserve Estimates

Probable Mineral Reserves are reported for the EMZ, Lao, and Gourouol zones, and have been converted from Indicated Mineral Resources.

Proven Mineral Reserves are reported for stockpiled material, are based on grade control data, and have been converted from Measured Mineral Resources. No marginal stockpiles are used in the LOM plan or have been converted to Mineral Reserves.

Mine designs supporting the Mineral Reserves were based on the operating mine life-of-mine plans assuming open pit mining methods. Inferred Mineral Resources within the mine designs were converted to waste. A series of engineered designs were developed based on the selected shell. Mine loss and dilution were considered in the pit optimizations.

Mineral Reserves are reported above cut-off grades that range from 0.41–0.57 g/t Au.

Factors that may affect the Mineral Reserve estimates include: changes to long-term gold price assumptions; fluctuations in commodity price and exchange rate; changes to the current regulatory regime; fluctuations in operating cost assumptions; changes to environmental, permitting and social license assumptions; changes in local interpretations of mineralization geometry and continuity of mineralized zones; changes to geological shape and continuity assumptions; changes to metallurgical recovery assumptions; geotechnical and design parameter changes impacting dilution and mining recovery factors; and the potential for lower mill recovery in new mining areas or from long-term stockpiles.

25.12 Mining Methods

Mining is carried out using a conventional drill, blast, load, and haul surface mining method with an Owner fleet. Equipment is conventional for open pit operations.

Slope designs are based on a combination of geotechnical designs and operational experience, with input from SRK.

Ground water management in the pits uses sump and pump methods to dewater benches immediately below mining activities. Non-contact water is diverted around the operations. Contact water is captured and used in mining and processing operations.

The mine life is forecast from 2023 to 2028. Mining will occur from three remaining pit phases in the EMZ pit, and from the Lao and Gourouol satellite pits. The LOM plan provides an overall production of 2.0 Moz and an annual average gold production of more than 400,200 oz from 2024 to 2028. Production rates will decline toward closure in 2028, based on the current LOM plan.

25.13 Recovery Methods

The process plant design was based on a combination of metallurgical testwork, previous study designs, and previous operating experience. The design is conventional to the gold industry and has no novel parameters.

The plant will produce variations in recovery due to the day-to-day changes in ore type or combinations of ore type being processed. These variations are expected to trend to the forecast recovery value for monthly or longer reporting periods.

25.14 Infrastructure

Infrastructure required for operations is constructed and operational. The infrastructure is sufficient for the LOM plan. The planned extension of the Lao pit will require relocation of some existing facilities/buildings.

The existing infrastructure, staff availability, existing power, water, and communications facilities, and the methods whereby goods are transported to the mines are all in place and well-established, and can support the estimation of Mineral Resources and Mineral Reserves.

There is no current infrastructure at the Gossey deposit. The Mineral Resource estimate assumes that existing Essakane infrastructure would be used to support any future mining operation at Gossey. Future infill drill programs could require construction of access roads, drill pads, and security fencing.

25.15 Market Studies

No market studies are currently relevant as Essakane is an operating mine producing a readily-saleable commodity in the form of doré. The doré bars are shipped offsite to a refiner who refines the doré into bullion. The bullion is then sold directly on the open market to gold trading institutions at prevailing market prices.

Commodity prices used in Mineral Resource and Mineral Reserve estimates are set by IAMGOLD corporately. The current gold price provided for Mineral Reserve estimation is $1,400/oz, and $1,700/oz for Mineral Resource estimation.

. Existing refining agreements include terms and conditions that are consistent with standard industry practices. Refining charges include treatment and transport.

The largest in-place contracts are negotiated and renewed as needed. Contract terms are typical of similar contracts in Burkina Faso and in accordance with in-country regulations.

25.16 Environmental, Permitting and Social Considerations

Baseline and supporting environmental studies were completed to assess both pre-existing and ongoing site environmental conditions, as well as to support decision-making processes during operations start-up.

An Environmental and Social Management Plan was developed as part of the Environmental and Social Impact Assessment to address aspects of operations. Other specific plans were developed to address significant environmental aspects.

A comprehensive monitoring program is in place at the mine, as well as in the neighbouring villages.

A conceptual rehabilitation and closure plan was developed in 2009, updated in 2013 and again in 2018. A preliminary closure plan will be conducted prior to mine closure. A final closure plan must be completed after the preliminary closure plan and must be approved by the relevant authorities.

The LOM includes total closure costs of US$104.3 million for asset retirement obligations between 2024 and 2036. As at December 31, 2023, IAMGOLD forecasts approximately $50.2 million will have been placed an escrow account with respect to funding its closure obligations.

IAMGOLD holds all necessary permits for mine operations at Essakane, and for the LOM plan.

No study has been completed at the Report effective date as to the potential environmental and social impacts of a mining operation at Gossey. Current activities are restricted to securing access to allow additional drilling of the deposit.

There is sufficient capacity in the TSF for the LOM plan once the final dam raise is completed in 2024–2026.

The water management plan includes pit dewatering, waste rock runoff capture, diversion systems, and storage ponds. The stored water reduces the site's reliance on the Gourouol River.

Essakane S.A. implemented two resettlement plans consistent with Burkinabé laws and best practices recommended by international organizations (Performance Standard 5 of the International Finance Corporation). In both instances, memorandums of understanding were signed, and resettlement follow up committees (CSR) comprising key representatives of affected villages and administrative authorities were created. The CSR committees meet every month to follow up on the progress of the two Resettlement Action Plans.

A Community Management Program encompasses all engagement actions and community development projects of the community relation development department. Key performance indicators of the Community Management Program are reviewed on a quarterly basis.

IAMGOLD continues to take proactive measures to ensure the safety and security of in-country personnel and is constantly adjusting its protocols and the activity levels at the site according to the security environment. More information on security-related risks is provided in Section 25.20.

25.17 Capital Cost Estimates

Planned capital spending expenditures over the remaining LOM (2023–2028) totals US502.7 million, or US$209.30/oz Au sold, including capitalized waste stripping.

25.18 Operating Cost Estimates

Average operating costs over the LOM (2023–2028) are estimated at US$35.40/t milled including capitalized waste stripping, or US$32.49/t milled net of capitalized waste stripping (excluding capitalized waste stripping and stockpile movements, with capitalized waste stripping being transferred to sustaining capital). The total LOM operating cost estimate is US$2,607 million.

25.19 Economic Analysis

IAMGOLD is using the provision for producing issuers, whereby producing issuers may exclude the information required under Item 22 for technical reports on properties currently in production and where no material production expansion is planned.

Mineral Reserve declaration is supported by overall site positive cash flows and net present value assessments. Considerations of internal rate of return and payback are not relevant as the mine is operating.

25.20 Risks and Opportunities

25.20.1 Risks

Risks identified include:

- The political and security environment remains volatile in the Sahel region of Burkina Faso, particularly in the area where Project is located. The country experienced military coups in January 2022 and September 2022. Terrorist-related incidents continue unabated in the country, the immediate region of the Essakane mine and, more broadly, the West African region;

- The security situation in Burkina Faso and its neighboring countries continues to apply pressures to supply chains and continued security incidents and concerns could have a material adverse impact on future operating performance;
- The continued deteriorating security situation in Burkina Faso may increase the cost of bringing employees, contractors, supplies, and inventory to the mine over those costs assumed in the Mineral Reserve estimates and the economic analysis supporting those Mineral Reserves.
- The Lao Gountouré 2 and Alkoma 2 permits reached the end of the last period of renewability in November, 2018, and were granted a special three-year renewal. In 2021, IAMGOLD applied for these same tenure areas under a new permit. The grant process is delayed, but the application is still under consideration by the authorities. IAMGOLD believes there is a reasonable basis for the application to be granted. If the new application is not granted, IAMGOLD will not hold any tenure over the Gossey deposit, and thus the Mineral Resource estimate will become invalid as the company will not hold the underlying mineral concession rights.

25.20.2 Opportunities

Opportunities identified include:

- Conversion of some or all of the Measured and Indicated Mineral Resources (that have not been converted to Mineral Reserves) to Mineral Reserves, with appropriate supporting studies;
- Upgrade of some or all of the Inferred Mineral Resources to higher-confidence categories, such that such some or all of this material could be used in Mineral Reserve estimation;
- While there is a history of silver in doré payments (lowering operating costs as a by-product credit), silver is not estimated in the Mineral Resources or Mineral Reserves, and therefore not included in cost estimates. Payments for silver in doré represent a minor upside to the Project;

- There are marginal material stockpiles at the Mine site, which are not currently included in the Mineral Resources estimates. IAMGOLD are planning a sampling program to verify the grade in the stockpile. If the sampling is positive, and a review inputs suggests the material has reasonable prospects for eventual economic extraction, it represents upside for the Mineral Resource estimate, and, potentially, with completion of applicable mining studies, some or all of those estimated Mineral Resources could be converted to Mineral Reserves.

25.21 Conclusions

An economic analysis was performed in support of estimation of Mineral Reserves; this indicated a positive cash flow using the assumptions and parameters detailed in this Report.

26 RECOMMENDATIONS

As the Essakane Operations are an operating mine, the QPs have no meaningful recommendations to make.

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