



Chapter 3

Legal, Policy and Administrative Framework

DISCLAIMER

This disclaimer applies to and governs the disclosure and use of this Environmental Impact Statement (“EIS”), and by reading, using or relying on any part(s) of the EIS you accept this disclaimer in full.

This Environmental Impact Statement, including the Executive Summary, and all chapters of and attachments and appendices to it and all drawings, plans, models, designs, specifications, reports, photographs, surveys, calculations and other data and information in any format contained and/or referenced in it, is together with this disclaimer referred to as the “EIS”.

Purpose of EIS

The EIS has been prepared by, for and on behalf of Wafi Mining Limited and Newcrest PNG 2 Limited (together the “**WGJV Participants**”), being the participants in the Wafi-Golpu Joint Venture (“**WGJV**”) and the registered holders of exploration licences EL 440 and EL1105, for the sole purpose of an application (the “**Permit Application**”) by them for environmental approval under the Environment Act 2000 (the “**Act**”) for the proposed construction, operation and (ultimately) closure of an underground copper-gold mine and associated ore processing, concentrate transport and handling, power generation, water and tailings management, and related support facilities and services (the “**Project**”) in Morobe Province, Independent State of Papua New Guinea. The EIS was prepared with input from consultants engaged by the WGJV Participants and/or their related bodies corporate (“**Consultants**”).

The Permit Application is to be lodged with the Conservation and Environment Protection Authority (“**CEPA**”), Independent State of Papua New Guinea.

Ownership and Copyright

The EIS is the sole property of the WGJV Participants, who reserve and assert all proprietary and copyright ©2018 interests.

Reliance and Use

The EIS is intended and will be made available to CEPA, for review by CEPA and other applicable agencies of the Government of the Independent State of Papua New Guinea (“**Authorised Agencies**”), for the purpose of considering and assessing the Permit Application in accordance with the Act (“**Authorised Purpose**”), and for no other purpose whatsoever.

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The EIS is meant to be read as a whole, and any part of it should not be read or relied upon out of context.

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The EIS is based in part on information not within the control of either the WGJV Participants or the Consultants. While the WGJV Participants and Consultants believe that the information contained in the EIS should be reliable under the conditions and subject to the limitations set forth in the EIS, they do not guarantee the accuracy of that information.

No Representations or Warranties

While the WGJV Participants, their Related Bodies Corporate and Consultants believe that the information (including any opinions, forecasts or projections) contained in the EIS should be reliable under the conditions and subject to the limitations set out therein, and provide such information in good faith, they make no warranty, guarantee or promise, express or implied, that any of the information will be correct, accurate, complete or up to date, nor that such information will remain unchanged after the date of issue of the EIS to CEPA, nor that any forecasts or projections will be realised. Actual outcomes may vary materially and adversely from projected outcomes.

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- published or disclosed in whole or in part, including being made available to the general public in accordance with section 55 of the Act. All publications and disclosures are subject to this disclaimer.

Development of Project subject to Approvals, Further Studies and Market and Operating Conditions

Any future development of the Project is subject to further studies, completion of statutory processes, receipt of all necessary or desirable Papua New Guinea Government and WGJV Participant approvals, and market and operating conditions.

Engineering design and other studies are continuing and aspects of the proposed Project design and timetable may change.

NEWCREST MINING LIMITED DISCLAIMER

Newcrest Mining Limited (“**Newcrest**”) is the ultimate holding company of Newcrest PNG 2 Limited and any reference below to “Newcrest” or the “Company” includes both Newcrest Mining Limited and Newcrest PNG 2 Limited.

Forward Looking Statements

The EIS includes forward looking statements. Forward looking statements can generally be identified by the use of words such as “may”, “will”, “expect”, “intend”, “plan”, “estimate”, “anticipate”, “continue”, “outlook” and “guidance”, or other similar words and may include, without limitation, statements regarding plans, strategies and objectives of management, anticipated production or construction commencement dates and expected costs or production outputs. The Company continues to distinguish between outlook and guidance. Guidance statements relate to the current financial year. Outlook statements relate to years subsequent to the current financial year.

Forward looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the Company’s actual results, performance and achievements to differ materially from statements in this EIS. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs and demand for production inputs, the speculative nature of exploration and project development, including the risks of obtaining necessary licences and permits and diminishing quantities or grades of reserves, political and social risks, changes to the regulatory framework within which the Company operates or may in the future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

Forward looking statements are based on the Company’s good faith assumptions as to the financial, market, regulatory and other relevant environments that will exist and affect the Company’s business and operations in the future.

The Company does not give any assurance that the assumptions will prove to be correct. There may be other factors that could cause actual results or events not to be as anticipated, and many events are beyond the reasonable control of the Company. Readers are cautioned not to place undue reliance on forward looking statements. Forward looking statements in the EIS speak only at the date of issue. Except as required by applicable laws or regulations, the Company does not undertake any obligation to publicly update or revise any of the forward looking statements or to advise of any change in assumptions on which any such statement is based.

Non-IFRS Financial Information

Newcrest results are reported under International Financial Reporting Standards (IFRS) including EBIT and EBITDA. The EIS also includes non-IFRS information including Underlying profit (profit after tax before significant items attributable to owners of the parent company), All-In Sustaining Cost (determined in accordance with the World Gold Council Guidance Note on Non-GAAP Metrics released June 2013), AISC Margin (realised gold price less AISC per ounce sold (where expressed as USD), or realised gold price less AISC per ounce sold divided by realised gold price (where expressed as a %), Interest Coverage Ratio (EBITDA/Interest payable for the relevant period), Free cash flow (cash flow from operating activities less cash flow related to investing activities), EBITDA margin (EBITDA expressed as a percentage of revenue) and EBIT margin (EBIT expressed as a percentage of revenue). These measures are used internally by Management to assess the performance of the business and make decisions on the allocation of resources and are included in the EIS to provide greater understanding of the underlying performance of Newcrest's operations. The non-IFRS information has not been subject to audit or review by Newcrest's external auditor and should be used in addition to IFRS information.

Ore Reserves and Mineral Resources Reporting Requirements

As an Australian Company with securities listed on the Australian Securities Exchange (ASX), Newcrest is subject to Australian disclosure requirements and standards, including the requirements of the Corporations Act 2001 and the ASX. Investors should note that it is a requirement of the ASX listing rules that the reporting of Ore Reserves and Mineral Resources in Australia comply with the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the JORC Code) and that Newcrest's Ore Reserve and Mineral Resource estimates comply with the JORC Code.

Competent Person's Statement

The information in the EIS that relates to Golpu Ore Reserves is based on information compiled by the Competent Person, Mr Pasqualino Manca, who is a member of The Australasian Institute of Mining and Metallurgy. Mr Pasqualino Manca, is a full-time employee of Newcrest Mining Limited or its relevant subsidiaries, holds options and/or shares in Newcrest Mining Limited and is entitled to participate in Newcrest's executive equity long term incentive plan, details of which are included in Newcrest's 2017 Remuneration Report. Ore Reserve growth is one of the performance measures under recent long term incentive plans. Mr Pasqualino Manca has sufficient experience which is relevant to the styles of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Pasqualino Manca consents to the inclusion of material of the matters based on his information in the form and context in which it appears.

HARMONY GOLD MINING COMPANY LIMITED DISCLAIMER

Harmony Gold Mining Company Limited ("Harmony") is the ultimate holding company of Wafi Mining Limited and any reference below to "Harmony" or the "Company" includes both Harmony Gold Mining Company Limited and Wafi Mining Limited.

Forward Looking Statements

These materials contain forward-looking statements within the meaning of the safe harbor provided by Section 21E of the Securities Exchange Act of 1934, as amended, and Section 27A of the Securities Act of 1933, as amended, with respect to our financial condition, results of operations, business strategies, operating efficiencies, competitive positions, growth opportunities for existing services, plans and objectives of

management, markets for stock and other matters. These include all statements other than statements of historical fact, including, without limitation, any statements preceded by, followed by, or that include the words "targets", "believes", "expects", "aims", "intends", "will", "may", "anticipates", "would", "should", "could", "estimates", "forecast", "predict", "continue" or similar expressions or the negative thereof.

These forward-looking statements, including, among others, those relating to our future business prospects, revenues and income, wherever they may occur in this EIS and the exhibits to this EIS, are essentially estimates reflecting the best judgment of our senior management and involve a number of risks and uncertainties that could cause actual results to differ materially from those suggested by the forward-looking statements. As a consequence, these forward-looking statements should be considered in light of various important factors, including those set forth in these materials. Important factors that could cause actual results to differ materially from estimates or projections contained in the forward-looking statements include, without limitation: overall economic and business conditions in South Africa, Papua New Guinea, Australia and elsewhere, estimates of future earnings, and the sensitivity of earnings to the gold and other metals prices, estimates of future gold and other metals production and sales, estimates of future cash costs, estimates of future cash flows, and the sensitivity of cash flows to the gold and other metals prices, statements regarding future debt repayments, estimates of future capital expenditures, the success of our business strategy, development activities and other initiatives, estimates of reserves statements regarding future exploration results and the replacement of reserves, the ability to achieve anticipated efficiencies and other cost savings in connection with past and future acquisitions, fluctuations in the market price of gold, the occurrence of hazards associated with underground and surface gold mining, the occurrence of labour disruptions, power cost increases as well as power stoppages, fluctuations and usage constraints, supply chain shortages and increases in the prices of production imports, availability, terms and deployment of capital, changes in government regulation, particularly mining rights and environmental regulation, fluctuations in exchange rates, the adequacy of the Group's insurance coverage and socio-economic or political instability in South Africa and Papua New Guinea and other countries in which we operate.

For a more detailed discussion of such risks and other factors (such as availability of credit or other sources of financing), see the Company's latest Integrated Annual Report and Form 20-F which is on file with the Securities and Exchange Commission, as well as the Company's other Securities and Exchange Commission filings. The Company undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this EIS or to reflect the occurrence of unanticipated events, except as required by law.

Competent Person's Statement

The Wafi-Golpu Joint Venture is an unincorporated joint venture between a wholly-owned subsidiary of Harmony Gold Mining Company Limited and a wholly-owned subsidiary of Newcrest Mining Limited.

The information in the EIS that relates to Golpu Ore Reserves is based on information compiled by the Competent Person, Mr Pasqualino Manca, who is a member of The Australasian Institute of Mining and Metallurgy. Mr Pasqualino Manca, is a full-time employee of Newcrest Mining Limited or its relevant subsidiaries, holds options and/or shares in Newcrest Mining Limited and is entitled to participate in Newcrest's executive equity long term incentive plan, details of which are included in Newcrest's 2017 Remuneration Report. Ore Reserve growth is one of the performance measures under recent long term incentive plans. Mr Pasqualino Manca has sufficient experience which is relevant to the styles of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the JORC Code 2012. Mr Pasqualino Manca consents to the inclusion of material of the matters based on his information in the form and context in which it appears.

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3. LEGAL, POLICY AND ADMINISTRATIVE FRAMEWORK

This chapter describes the key laws, regulations, policies, standards and guidelines relevant to the Project at the date of this report, including:

- The legislation and regulations of the Independent State of Papua New Guinea (State of PNG) that apply to the approval, and grant of tenure of the Project.
- The Wafi-Golpu Joint Venture's (WGJV) policies and standards under its Sustainable Business Management System.
- International guidelines and standards which have informed the development of WGJV's Sustainable Business Management System and, in turn, influenced Project design, environmental impact statement (EIS) preparation and Project execution.
- Assessment criteria used in the environmental, socioeconomic and cultural heritage impact assessment.
- Internationally recognised guidelines that inform the assessment of specific environmental, social and cultural heritage values.

Each of these is discussed further in the sections below.

3.1. Papua New Guinea Legislation and Regulations

The Project will at all times be subject to all applicable laws and regulations (as amended from time to time) of the State of PNG.

The key legislation governing the Project, and in particular the approval and grant of tenure for the Project, are:

- *Mining Act 1992*
- *Environment Act 2000*

A description of these two Acts and the principal approvals required by each is provided in sections 3.1.1 and 3.1.2.

In addition, other legislation and regulations applicable to the assessment of specific environmental, social and cultural heritage aspects of the Project are discussed in Section 3.1.3.

3.1.1. Mining Act 1992

The *Mining Act 1992* vests ownership of all minerals with the State of PNG and governs the exploration, development, processing and transport of minerals. The *Mining Act 1992* is administered by the Mineral Resources Authority (MRA).

The right to explore for, mine and sell minerals is conferred upon an applicant by the State of PNG through the grant of a tenement under the *Mining Act 1992*. Tenements are granted for a fixed term over a fixed area to persons or companies undertaking a specific activity or program (of exploration or mining) approved by the State of PNG.

The WGJV currently holds exploration licences issued under the Act. For the Project, the tenements required will include:

- Special mining lease
- Mining lease
- Mining easement
- Lease for mining purposes

Following consideration of the advice of the Mining Advisory Board, the Minister of Mining may grant the mining lease, mining easement and lease for mining purposes. The Head of State also considers the advice of the Board in the grant of the special mining lease.

Each entitles the holder to enter and occupy the land subject to conditions attached to the licence or lease.

The Golpu deposit is located within Exploration Licence (EL) 440, with a range of major surface facilities to be located on EL 1105. It is the intention of the WGJV Participants to secure tenements over all Project facilities, from the Mine Area, along the length of the Infrastructure Corridor, to the Coastal Area (see Figure 1.1).

The WGJV Participants applied for a special mining lease and ancillary tenements (including leases for mining purposes and mining easements) in late 2016, covering Project facilities as they were understood at the time. Amendments to these tenement applications were made in March 2018, where the location and/or nature of infrastructure has been refined through the Feasibility Study Update 2018. Additional applications will also be made where necessary. Table 3.1 lists tenement applications which have been lodged that remain relevant to the Project design, and the new applications which are intended to be lodged in accordance with the *Mining Act 1992*.

Table 3.1: Tenements required for the Project

Project facilities	Tenement Application
Block cave mine, Watut Declines Portal Terrace, Watut Waste Rock Dump, process plant terrace, Watut Process Plant, Nambonga Decline Portal Terrace, Miapilli Waste Rock Dump, Miapilli Clay Borrow Pit, water treatment facility, sedimentation dam, raw water dam, explosives magazine facilities, waste management facility, concrete batch plant, electrical substations, workshops and administration buildings, Fere Accommodation Facility	Special Mining Lease (SML) 10
<i>Lease for mining purposes applications</i>	
Finchif Construction Accommodation Facility and power generation facilities	Lease for Mining Purposes (LMP) 100
Port Facilities Area (including Concentrate Filtration Plant)	Lease for Mining Purposes (LMP) 104
Outfall Area	Lease for Mining Purposes (LMP) 105
<i>Mining easement applications</i>	
Infrastructure Corridor pipelines from the northern boundary of SML 10 to Lae and includes: <ul style="list-style-type: none"> Revised concentrate pipeline route from the northern boundary of SML 10 to the Port Facilities Area Terrestrial tailings pipeline from the northern boundary of SML 10 to Lae Fuel pipeline from Port Facilities Area (or from within Port Area, if third party supplier) to power generation facilities Power transmission lines from the power generation facilities to the northern boundary of SML 10 	Mining Easement (ME) 91
Mine Access Road	Mining Easement (ME) 92
Northern Access Road	Mining Easement (ME) 93
Wastewater discharge pipeline (for mine dewatering) to the Watut River and co-located raw water make-up pipeline	Mining Easement (ME) 94
Terrestrial tailings pipeline – Lae to Wagang	Mining Easement (ME) 96

Project facilities	Tenement Application
Component of Outfall System, specifically the seawater intake and deep sea tailings placement (DSTP) outfall pipelines	Mining Easement (ME) 97

The grant of SML 10 and related ancillary tenements remains subject to the completion of *Mining Act 1992* processes and those *Environment Act 2000* processes described below.

The holder of a tenement under the *Mining Act 1992* is liable to pay compensation, in respect of its entry or occupation of land the subject of the tenement for the purposes of exploration or mining or operations ancillary to mining, to the landholders of the land for all loss or damage suffered or foreseen to be suffered by them from the exploration or mining or ancillary operations (Section 154(1)).

3.1.2. Environment Act 2000

The *Environment Act 2000* regulates the impact of industry on the environment and defines the 'environment' as:

- a) ecosystems and their constituent parts including people and communities and including human-made or modified structures and areas; and
- b) all natural and physical resources; and
- c) amenity values; and
- d) the qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community; and
- e) the social, economic, aesthetic and cultural conditions which affect the matters stated in Paragraphs (a) to (d) of this definition or which are affected by those matters.

The *Environment Act 2000* sets out the requirement for proponents to obtain an environment permit for activities prescribed in the Environment (Prescribed Activities) Regulations 2002 that have the potential to cause environmental harm. The *Environment Act 2000* is administered by the Conservation and Environment Protection Authority (CEPA), previously the Department of Environment and Conservation (DEC).

Under the *Environment Act 2000*, activities are classified as Level 1, Level 2 or Level 3 based on their risk of causing environmental harm and each requires a different level of environmental and social assessment.

Level 3 activities, which include mining developments of the scale of the Project, are considered to have the highest risk of causing environmental harm. The grant of a Level 3 environment permit is subject to a comprehensive environmental impact assessment, presented in an EIS and reviewed by the CEPA in consultation with the public.

The key requirements of the EIS process under the *Environment Act 2000* include:

- Preparation and submission of an environmental inception report (EIR) (Section 52 of the *Environment Act 2000*). The *Environment Act 2000* is presently the subject of amendment under the *Environment (Amendment) Act 2014*, with certain aspects of the latter statute not yet (at the time of this report) having come into force.
- Preparation and submission of an EIS (Section 53 of the *Environment Act 2000*).
- A public review and referral phase (Sections 54 to 58 of the *Environment Act 2000*).
- In-principle approval of the proposed activities by the Minister for Environment, Conservation and Climate Change (Section 59 of the *Environment Act 2000*).

The content of an EIS is described in the Guideline for Conduct of Environmental Impact Assessment and Preparation of Environmental Impact Statement prepared by the former DEC (now the CEPA) (DEC, 2004). This includes documenting all environmental and social issues associated with the Project, together with the proponent's commitment to relevant management measures, monitoring and reporting.

Table 3.2 sets out the key steps in the process relating to the initiation and conduct of the environmental impact assessment process for Level 3 activities under the *Environment Act 2000*. The table shows how the Project fits into the various stages of the approvals process. This process is also presented as a flowchart in Figure 3.1.

Table 3.2: Environmental impact assessment process

Step	Project Status
Early consultation with CEPA on the activity prior to lodging an application	The Wafi-Golpu Joint Venture have consulted regularly with CEPA representatives regarding the Project.
Submission of Notice of Preparatory Works to carry out an activity (Section 48)	The notification for Level 3 activities relating to the Mine Area investigations was submitted to CEPA on 16 June 2015. A further notification for Level 3 activities relating to DSTP investigations was submitted to CEPA on 5 December 2016.
Submission of environment permit application (Section 60)	An environment permit application for the Level 3 works relating to the Mine Area investigations was submitted to the CEPA on 16 October 2015. A further environment permit application for additional Level 3 activities including DSTP will be submitted after submission of this EIS.
The preparation and submission of an EIR (Section 52)	An EIR relating to the Mine Area investigations was submitted to CEPA on 13 November 2015. On 10 December 2015, CEPA advised they were satisfied with the EIR that was submitted. Additionally, a revised EIR reflecting potential changes to the Project design including the investigation of DSTP was submitted to CEPA on 7 May 2017. On 18 June 2017, CEPA advised they were satisfied with the revised EIR that was submitted.
The preparation and submission of an EIS (Section 53)	This document.
A referral and review phase (Sections 54 to 58)	To take place subsequent to submission of the EIS to CEPA. The Director of CEPA requires the EIS to be made available for public review and submissions at this stage.
In-principle approval of the proposed activities by the Minister for Environment and Conservation	To be determined subsequent to review by CEPA of this EIS.
Issuing of an environment permit by the CEPA	To be determined subsequent to review by CEPA of this EIS.

Register intent to carry out preparatory work
(Section 48)
(replaced by submission of permit application Section 60)*

Managing Director determination of Level 3 activity (Section 62) or Level 2 National Significance (Sections 50 (2) and 62)

Managing Director advises that EIA is required
(Section 62)

Proponent submits Inception Report for review
(Section 52)
(formal approval by CEPA no longer required)*

Proponent prepares and submits Environmental Impact Statement (EIS)
(Section 53)

Managing Director receives EIS and determines assessment period
(Section 54)

Director undertakes Public Review
(Section 55)

Managing Director review of EIS
(Section 54)

Managing Director accepts or rejects EIS
(Section 56)

Managing Director makes recommendations to the Environment Council
(Section 57)

Environment Council Review and Recommendation to Minister
(Section 58)

Ministerial In-principle Approval
(Section 59)

CEPA drafts permit conditions
(Sections 65, 66 & 67)

Managing Director issues permit
(Sections 66 and 67)

LEGEND

- Regulator
- Proponent

* Under the Environment (Amendment) Act 2014

INDD Reference: 0520DD_10_GRA045.indd.2

3.1.3. Other Relevant Legislation and Regulations

Table 3.3 provides a summary of the State of PNG Acts and regulations not described above, that are applicable to the Project from an environmental, socioeconomic and cultural heritage perspective.

Table 3.3: Relevant legislation and regulations

Title	Description
<i>Fauna (Protection and Control) Act 1966</i>	Provides for the protection, control, harvesting and destruction of fauna.
<i>National Water Supply and Sanitation Act 2016</i>	Provides for the licencing of water supply and sewerage services.
<i>Natural Cultural Property (Preservation) Act 1965 and National Cultural Property (Preservation) Regulations 1965</i>	Requires cultural heritage not be wilfully destroyed, damaged or defaced; consent for the export or removal of cultural heritage from PNG; and reporting to the National Museum and Art Gallery of particular cultural heritage finds.
<i>National Museum and Art Gallery Act 1992</i>	Establishes the National Museum and Art Gallery (NMAG) as the principal government institution responsible for preserving PNG's cultural heritage.
<i>National Cultural Commission Act 1994</i>	Preserving, protecting, developing, promoting and (for approved aspects) marketing the traditional and contemporary cultures of PNG; and establishing and overseeing three National Cultural Institutions
<i>War Surplus Materials Act 1952</i>	Provides for the protection of relics derived from the World War II, along with the protection of historical period properties in the context of buildings, structures, monuments, burial places, shipwrecks and other materials of historical significance to PNG.
<i>Cemeteries Act 1955</i>	Controls and regulates cemeteries and burials, it requires authority to be obtained prior to the exhumation of any burials, which includes burials on private grounds. A number of burials have been recorded within, and in proximity to, the Project Area.
<i>Marine Pollution (Ships & Installations) Act 2013</i>	Provides for the prevention and control of pollution of the sea by oil and other substances.
Environment (Permits) Regulation 2002	Details the procedures for applications for, processing of, appeals against, and compliance with, environment permits.
Environment (Prescribed Activities) Regulation 2002	Details prescribed activities and their associated level of assessment. The Project involves Level 3 activities necessitating preparation of an EIS.
Environment (Water Quality Criteria) Regulation 2002	Provides enforceable water quality standards for a mixing zone boundary downstream of effluent discharge.
Public Health (Drinking Water) Regulation 1984	Provides enforceable standards for drinking water quality.

Other State of PNG Acts and regulations will be relevant to varying degrees. The most pertinent of these more general acts and regulations cover commercial, professional, land ownership and health issues, and include:

- Central Banking Act and Central Bank (Foreign Exchange and Gold) Regulation
- *Coroners Act 1953* and Coroners Regulation 1955
- *Criminal Code Act 1974*
- *Customs Act 1951*
- *Explosives Act 1953* and Explosives Regulation 1956
- *Fire Service Act 1962* and Fire Service Regulation 1966
- *Goods and Services Tax Act 2003*
- *Employment Act 1978*
- *Employment of Non-Citizens Act 2007*
- *Income Tax Act 1959*
- *Industrial Safety, Health and Welfare Act 1961* and Industrial Safety, Health and Welfare Regulation 1965
- *Inflammable Liquid Act 1953* and Inflammable Liquid Regulation 1968
- *Investment Promotion Act 1992*
- *Land Act 1996*
- *Land Registration Act 1981*
- *Land Disputes Settlement Act 1975* and Land Disputes Settlement Regulation 1975
- *Maritime Zones Act 2015*
- *Migration Act 1978*
- *Plant Disease and Control Act 1953* and Plant Disease and Control Regulation 1956

During planning of the Project other applicable legislation will be determined in consultation with the relevant authorities.

3.2. Wafi-Golpu Joint Venture Policies and Standards

3.2.1. Sustainable Business Management System

Project activities are guided by policies and standards compiled by the WGJV Participants for the Project, which form the WGJV Sustainable Business Management System. In formulating this system, the WGJV Participants were informed by related policies and standards of their respective corporate groups, which were revised and amalgamated as considered appropriate.

Further details regarding the Sustainable Business Management System are provided in Chapter 23, Integrated Management System.

The Sustainable Business Management System provides an approach to embrace opportunities and manage risks associated with the Project's economic, environmental and social footprints. Environmental, social and cultural heritage studies undertaken for the Project have been guided by this system.

The Sustainable Business Management System manages business systems under eight key sustainability principles:

- Governance, leadership and culture
- Enterprise risk management
- Health and safety
- People
- Environment
- Social performance
- Operational management, improvement and innovation
- Sustainable business growth

The principles are supported by 41 operational standards described in further detail in Chapter 23, Integrated Management System.

3.2.2. Environmental and Social Management Framework

The WGJV has developed an integrated management system which includes an Environmental and Social Management Framework. The WGJV has developed this framework having regard to:

- Corporate policies, standards and systems
- Environmental, socioeconomic and cultural heritage risks and opportunities as identified through the preparation of the Feasibility Study, Feasibility Study Update and this EIS
- Other Project planning activities required by the State of PNG to support WGJV's application for a special mining lease.

This framework will be implemented through various management plans including the Project Environmental Management Plan (Attachment 3), Social Management Plan (Attachment 4), Cultural Heritage Management Plan (Attachment 5) and the Land Access Management Plan. Further details are provided in Chapter 23, Integrated Management System.

3.2.3. Other Relevant Policies and Standards

The Project is also compatible with a number of State of PNG policies and standards that are described in Chapter 2, Viability and Purpose of the Project.

3.3. International Guidelines and Standards

A number of international guidelines and standards have informed the development of WGJV's environmental and social policy and standards and, in turn, have influenced Project design and the preparation of this EIS, including environmental, social and cultural heritage studies. These standards include:

- International Council on Mining and Metals (ICMM) Sustainable Development Framework (ICMM, 2015) comprising ten sustainable development principles and six position statements which encompass ethical business practices, partnering for development, human rights and the rights of Indigenous People. Newcrest Mining Limited (Newcrest), the parent company of one of the WGJV Participants, is a signatory to 'Enduring Value – the Australian Mining Industry Framework for Sustainable Development', which adopts the ICMM Framework for Sustainable Development.

- Voluntary Principles on Security and Human Rights (Voluntary Principles) (Voluntary Principles, 2015). The Voluntary Principles are a multi-stakeholder initiative involving governments, companies and non-government organisations that promote the implementation of a set of principles that guide oil, gas and mining companies when engaging with public or private security for their operations in a manner that respects human rights. Newcrest is a participant in the Voluntary Principles Initiative and the WGJV conducts business in a manner that seeks to align with the Voluntary Principles.
- The International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (IFC, 2012). For example, the WGJV Resettlement Policy Framework is consistent with IFC performance standard 5.
- Equator Principles III (Equator Principles, 2006). The Equator Principles are ten principles adopted by signatory financial institutions to ensure large infrastructure and resource projects are executed in a manner that is both environmentally and socially responsible. The Equator Principles require the application of appropriate environmental and social standards, which for non-designated countries are deemed to be the International Finance Corporation (IFC) Performance Standards.

In addition to the standards described above, specific management guidelines that have been referred to include:

- General Environmental, Health, and Safety Guidelines (IFC, 2007a) (which are referred to by the IFC Performance Standards)
- Industry Sector Guidelines – Mining (IFC, 2007b) (IFC, 2007a) (which are referred to by the IFC Performance Standards)
- Cumulative Impact Assessment and Management: Guidance for the Private Sector in Emerging Markets (IFC, 2013)
- Good Practice Note: Addressing the Social Dimensions of Private Sector Projects (IFC, 2003)
- Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (IFC, 2007c)
- Projects and People: A Handbook for Addressing Project-Induced In-Migration (IFC, 2009)

3.4. Assessment Criteria Used in the Environmental, Socioeconomic and Cultural Heritage Impact Assessment

The diverse array of environmental, social and cultural heritage values assessed in this EIS have referenced, in the first instance, the applicable laws, policies and standards of the State of PNG. Where these did not exist, or were silent on the subject issues, other relevant policies and standards were considered. The assessment criteria used for this EIS are outlined below.

3.4.1. Air Quality

The State of PNG's environment regulations do not specify air quality criteria. Therefore, criteria adopted for guidance in the air quality assessment have been obtained from a number of sources including:

- World Health Organisation (WHO) Air Quality Guidelines (WHO, 2006; WHO, 2000)
- United States Environment Protection Agency standards (USEPA, 2012)
- European Commission ambient air quality standards (EC, 2008)
- Australian guideline for air pollutants (NSW EPA, 2016)

- Institute of Air Quality Management dust management guideline (IAQM, 2014)

Priority has been given to the WHO guidelines. Where guidelines are not set by WHO (e.g., 1-hour average sulphur dioxide and total suspended particulates), guidelines established by the United States Environment Protection Agency have been considered. Where guidelines are not available from either WHO or the United States Environment Protection Agency (i.e., deposited dust), Australian guidelines have been applied and lastly, for a risk assessment of potential impacts of dust from demolition or construction, the United Kingdom IAQM guideline was used.

3.4.2. Noise

The State of PNG's environment regulations do not specify noise level criteria. Therefore, criteria adopted for guidance in the noise quality assessment have been obtained from a number of sources including:

- IFC Environmental, Health, and Safety Guidelines (IFC, 2007a)
- WHO guideline for community noise (WHO, 1999)
- Australian guideline for industrial noise (NSW DECC, 2009)

The criteria presented in these guidelines are based on previous studies and experience, statistical analysis of community reaction to various levels of noise, and/or studies undertaken elsewhere around the world.

3.4.3. Terrestrial Ecology

The terrestrial ecology assessments were carried out with consideration of:

- The International Union for Conservation of Nature (IUCN) Red List (IUCN, 2018), which assesses conservation status of species on a global scale.
- *Papua New Guinea Fauna (Protection and Control) Act 1966*, which lists some fauna as protected or restricted for trade.
- Appendix I of Convention on International Trade Endangered Species of Wild Fauna and Flora (CITES), which lists as species threatened with extinction which are, or may be, affected by trade (CITES, 2017).

3.4.4. Surface Water and Freshwater Aquatic Ecology

The *Environment Act 2000* regulates discharges to the environment through the conditions on an environment permit. These include compliance with legally enforceable water quality standards at a specified downstream compliance point. These standards (for fresh and marine receiving waters) are contained in the Schedule to the Environment (Water Quality Criteria) Regulation 2002. Environment permits also contain conditions for the abstraction of surface water.

In addition to the State of PNG water quality standards, water quality guidelines referred to in the water quality assessments include the following:

- Guidelines for Protection of Freshwater Aquatic Life Detailed in the Environmental Code of Practice for PNG's Mining Industry (OEC, 2000)
- Australia and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (ANZECC/ARMCANZ) Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000)
- Guidelines for Drinking Water Quality (WHO, 2011)

Specific State of PNG guidelines for the discharge of sewage effluent do not exist. The Level 3 environment permit may stipulate water quality criteria for the discharge of treated sewage effluent.

3.4.5. Marine Ecology

The PNG Environment (Water Quality Criteria) Regulation 2002, in particular Table 1 of the Schedule – Water Quality Criteria for Aquatic Life Protection (Seawater), prescribes water quality criteria for the protection of marine aquatic life and stipulates that, unless otherwise permitted under the regulations or the terms and conditions of an environment permit, discharge is not allowed into marine water where that discharge would cause a lowering of water quality below the prescribed criteria.

Criteria from the ANZECC/ARMCANZ Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000), including the revision to the guideline for silver (Simpson et al., 2013), were also considered in the water quality and sediment quality aspects of the marine ecology impact assessment.

The conservation status of various species under the IUCN Red List (2018), along with consideration of features of high biodiversity significance including habitat types, as defined under IFC Performance Standard 6 (IFC, 2012), were also considered in the marine ecology impact assessment.

In 2010, DEC, in collaboration with MRA, commissioned the Scottish Association for Marine Sciences to prepare a set of Draft General Guidelines for DSTP in PNG (SAMS, 2010). These guidelines have been referenced in the PNG Government's Terms of Reference for an EIS for DSTP projects. The completion of data collection and modelling for DSTP related studies was undertaken in accordance with the Draft General Guidelines for DSTP in PNG, to the maximum practicable extent.

3.4.6. Socioeconomic

As described above, the *Environment Act 2000* definition of the environment includes people and communities.

The method adopted to prepare the socioeconomic impact assessment (SEIA) in support of this EIS has been primarily informed by the IFC Good Practice Note: Addressing the social dimensions of private sector projects (IFC, 2003) and the International Association for Impact Assessment publication, *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects* (Vanclay, et al., 2015). The assessment has also had regard to the IFC Performance Standards (IFC, 2012), ICMM Sustainable Development Framework (ICMM, 2015), Voluntary Principles on Security and Human Rights (Voluntary Principles, 2015) and the policies and standards of WGJV's Sustainable Business Management System (refer to Chapter 23, Integrated Management System).

3.4.7. Cultural Heritage

The statutory framework protecting cultural heritage in PNG comprises a number of Acts, each addressing a different aspect of heritage protection as set out in Table 3.3. The EIS assessment method, including identification and assessment of significance of cultural heritage values in the Project Area, was guided by the Burra Charter (Australia ICOMOS, 2013a), an internationally recognised charter prepared by the Australian Chapter of the International Council on Monuments and Sites (ICOMOS) which is a global, non-government organisation which works for the conservation and protection of heritage places (ICOMOS, 2017). The work of ICOMOS is based on the principles enshrined in the 1964

International Charter for the Conservation and Restoration of Monuments and Sites (Venice Charter, 1964).

The Burra Charter emphasises that the policy for managing a place must be based on an understanding of its cultural significance. The Charter defines significance as ‘aesthetic, historical, scientific, social or spiritual value for past, present or future generations.’ The charter further notes that: ‘Cultural significance is embodied in the place itself, its fabric, setting, use, associations, meanings, records, related places and related objects.’ Places, it notes, ‘may have a range of values for different individuals or groups’ (Australia ICOMOS, 2013a). The Practice Note to the Burra Charter, ‘Understanding and assessing cultural significance’ (Australia ICOMOS, 2013b) further defines what constitutes aesthetic, historic, scientific, social and spiritual values.

3.5. Other Assessment Guidelines

3.5.1. Natural Hazards and Major Incidents

The Environmental Code of Practice for the Mining Industry (OEC, 2000) recommends the development of contingency plans to manage the risks of unexpected incidents, such as natural phenomena or equipment failures.

In addition, WGJV’s Enterprise Risk Management Policy covers the identification and control of risks associated with exploration and mining activities. The Hazard and Risk Management Standard (RSK01) details directives to identify hazards and risks and implement control measures.

Chapter 21, Unplanned Events (Natural Hazards and Accident Events) provides a risk-based assessment of unplanned events (natural hazards and accident events) and WGJV’s in-principle design controls to address them.

3.5.2. Mine Closure

The guiding principles of mine closure planning within PNG are described in the draft Mining Rehabilitation and Closure Policy prepared by the MRA and the Department of Mineral Policy and Geohazards Management (MRA/DMPGM, 2016). These remain non-binding until formal approval by the National Executive Council and are intended to come into effect upon passage of the proposed amendments to the *Mining Act 1992*.

The Environmental Code of Practice for the Mining Industry (OEC, 2000) provides guidance for environmental management relevant to aspects of mine closure such as (but not limited to) building removal, management of mineral wastes and safety around underground workings.

A Conceptual Closure and Rehabilitation Plan has been prepared for the Project in accordance with the regulatory framework and is provided in Attachment 2. This plan also considered a range of standards and guidelines relevant to mine rehabilitation and closure. These include:

- EHS Guidelines - Mining (IFC, 2007b)
- Planning for Integrated Mine Closure: Toolkit (ICMM, 2008)
- Strategic Framework for Mine Closure (ANZMEC and MCA, 2000)
- Mine Closure, Leading Practice Sustainable Development Program for the Mining Industry (DITR, 2016a)
- Mine Rehabilitation, Leading Practice Sustainable Development Program for the Mining Industry (DITR, 2016b)

- Preventing Acid and Metalliferous Drainage, Leading Practice Sustainable Development Program for the Mining Industry (DITR, 2016c)
- Stewardship, Leading Practice Sustainable Development Program for the Mining Industry (DITR, 2006)
- The Global Acid Rock Drainage Guide (GARD Guide), Rev 1 (International Network for Acid Prevention, 2014)

3.6. References

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