



## Chapter 23

### Integrated Management System

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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.

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### 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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## 23. INTEGRATED MANAGEMENT SYSTEM

The preceding chapters of this environmental impact statement (EIS) have identified the potential environmental, socioeconomic and cultural heritage impacts of the Wafi-Golpu Project (the Project) and described the predicted residual impacts, and other risks, such as unplanned events which are discussed in Chapter 21, Unplanned Events (Natural Hazards and Accidental Events), assuming the effective application of proposed management measures.

The purpose of this chapter is to describe the integrated management system that the Wafi-Golpu Joint Venture (the WGJV) proposes to implement to manage the predicted environmental, socioeconomic and cultural heritage impacts, and other risks, of the Project.

### 23.1. Sustainable Business Management System

The WGJV Sustainable Business Management System (SBMS) provides policies and standards to guide the WGJV's long-term approach to sustainability. Figure 23.1 shows the policies and standards that currently comprise the SBMS which include:

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

### 23.2. Environmental and Social Management Framework

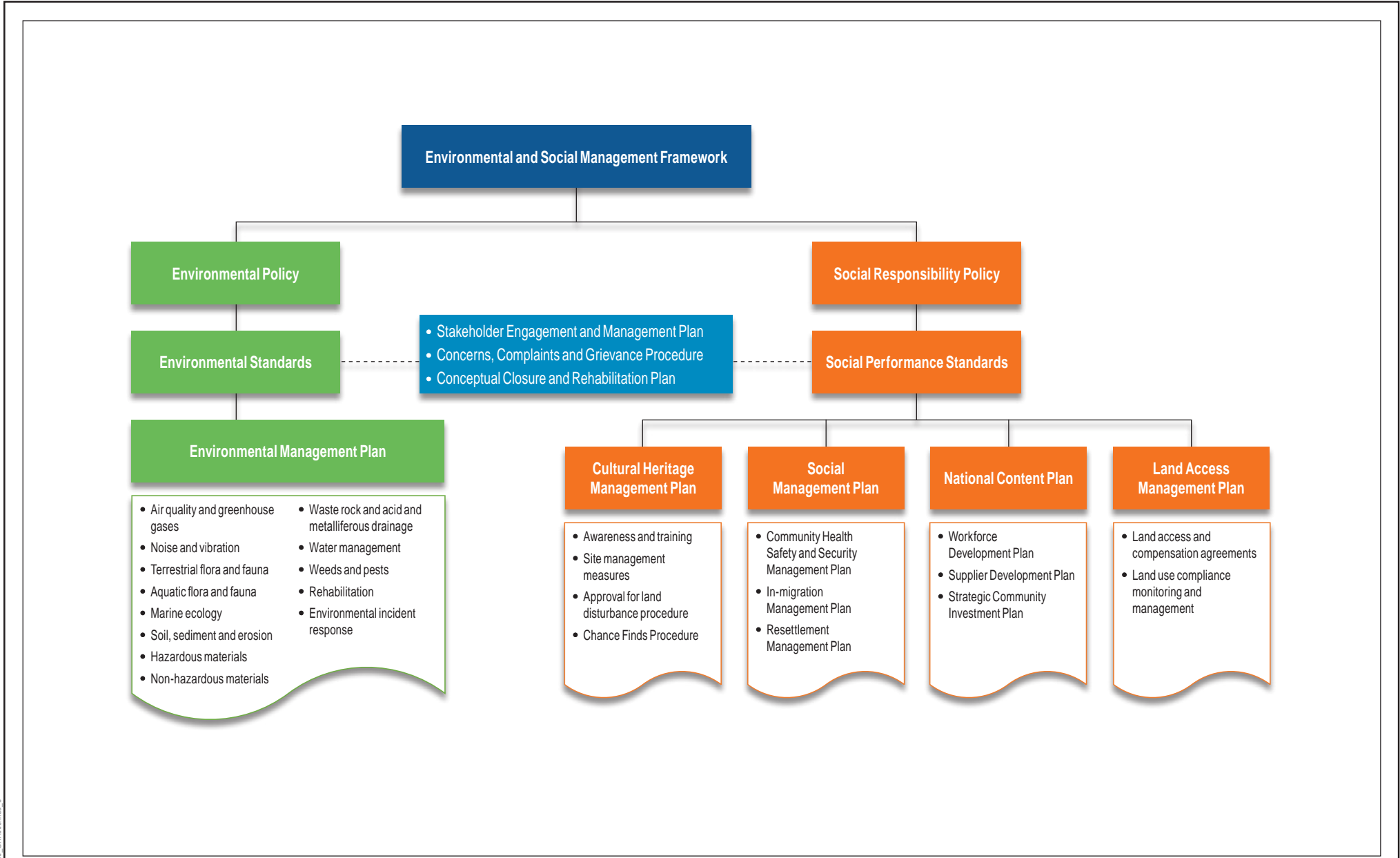
The WGJV Environmental and Social Management Framework (Figure 23.2) has been developed to guide the implementation of the environmental and social components of the SBMS. The Environmental and Social Management Framework comprises a number of management plans which relate to the management of predicted environmental, socioeconomic and cultural heritage impacts.

Potential environmental, socioeconomic and cultural heritage impacts will be addressed by implementing the proposed management measures presented in one or more of the plans shown in the Environmental and Social Management Framework; principally:

- Attachment 3, Environmental Management Plan (EMP) – Addresses construction and operations activities that directly affect an environmental aspect.
- Attachment 4, Social Management Plan (SMP) – Addresses matters that pertain to community health, safety and security, in-migration and resettlement.
- Attachment 5, Cultural Heritage Management Plan (CHMP) – Addresses matters that relate to an archaeological or historic site, or an oral tradition site that holds importance to a community.

## SUSTAINABLE BUSINESS VISION STATEMENT





In addition, measures to promote in-country opportunity will be pursued primarily through the National Content Plan. The National Content Plan sets out WGJV's approach to local employment and training (workforce development), local procurement (supplier development), and community development projects across the health, education, sustainable livelihoods, environment and other program areas (strategic community investment).

The Stakeholder Engagement and Management Plan will also play a fundamental role in the successful implementation of the preceding management plans through the maintenance of a constructive dialogue with potentially affected persons and communities throughout the life of the Project. This dialogue includes investigating and addressing complaints raised by stakeholders through the Concerns, Complaints and Grievance Procedure.

The Land Access Management Plan addresses land access and land use compliance and monitoring. This plan will be developed prior to construction activities commencing.

The Conceptual Closure and Rehabilitation Plan (Attachment 2) sets out proposed closure strategies after cessation of mining operations aimed at leaving, to the extent reasonably possible, a sustainable socioeconomic and physical environment. A Rehabilitation and Mine Closure Plan will be developed in the future to govern closure activities.

The WGJV Participants will regularly review the Environmental and Social Management Framework in accordance with the SBMS to determine its continuing relevance and effectiveness. Reviews will include assessing opportunities for improvement and the need for changes, including review of objectives, outcomes, targets and resources.

Further details of the Project EMP, SMP and CHMP are provided in the following sections.

### **23.2.1. Project Environmental Management Plan**

The purpose of the Project EMP (Attachment 3) is to provide a practical framework to assist the WGJV with the implementation of appropriate measures to manage the environmental impacts and risks identified for the Project.

The objectives of the Project EMP are to:

- Enable construction and operations activities to be undertaken in compliance with the requirements of the *Environment Act 2000*, the WGJV's environment permits and associated approval conditions for the Project, and other relevant legislation.
- Communicate to WGJV personnel and contractors the environmental legal obligations and minimum environmental standards required during construction and operations.
- Set out the responsibilities for environmental management during construction and operations so that responsibilities and reporting lines are clearly documented and understood.
- Provide environmental objectives to manage the potential for unpredicted environmental harm throughout the life of the Project.
- Set out monitoring, reporting and auditing programs to monitor the Project's environmental performance and verify the effectiveness of management measures.
- Provide guidance on completing corrective action(s) in a timely manner and advice on the appropriate documentation of action(s) taken.
- Provide procedures to be followed in response to environmental incidents that may occur during the life of the Project.



- Enable the management team to be kept fully and regularly informed on the environmental performance of the Project through monitoring programs and the efficacy of the Project EMP.

The Project EMP has been prepared in accordance with the WGJV Environment Policy, applicable WGJV standards, State of PNG legal requirements and international standards voluntarily adopted by the WGJV or otherwise used to provide guidance. The Project EMP is subject to endorsement by the Conservation and Environment Protection Authority (CEPA) under the environment permit prior to commencement of Project activities. The Project EMP will be updated by the WGJV periodically to reflect changes in the Project, or in response to the monitoring data, as required.

The following sections present an overview of the Project EMP including the scope and structure, the environmental aspects and content of the individual management plans.

#### **23.2.1.1. Scope**

The Project EMP includes management of Project activities for the construction and operation of the Project.

#### **23.2.1.2. Structure**

The Project EMP comprises three modules:

- Module 1 – Introduction and Overview
- Module 2 – Construction
- Module 3 – Operations

Module 1 comprises the following key sections:

- Introduction
- Environmental setting
- Regulatory framework
- Environmental management framework

Modules 2 and 3 each include detailed management plans for the following environmental aspects:

- Air quality and greenhouse gases – Considers point source and diffuse emissions to air, as well as greenhouse gases.
- Noise and vibration – Considers noise and vibration impacts.
- Terrestrial and aquatic flora and fauna – Considers impacts on terrestrial and aquatic ecology, including vegetation communities, and significant flora and fauna species and habitat.
- Marine ecology – Considers impacts on both the nearshore and deep-ocean marine ecology.
- Soils, sediment and erosion – Considers erosion and sediment control, spoil and acid sulphate soils (ASS) management.
- Hazardous materials – Considers the storage, handling, transport and disposal of hazardous fuels, chemicals and other wastes (including contaminated soils), and waste minimisation.
- Non-hazardous materials – Considers the storage, handling, transport and disposal of non-hazardous wastes including building refuse and putrescible waste from accommodation camps, and waste minimisation.

- Waste rock and acid and metalliferous drainage (AMD) – Considers management of the waste rock dump and measures to minimise or prevent generation of AMD. Monitoring and management of AMD, if detected, is included.
- Water management – Considers the impacts on the quality and quantity of surface and ground waters, and water supply and associated management for the Project.
- Weeds, pests and pathogens – Considers the introduction and management of weeds, pests and pathogens.
- Rehabilitation – Provides discussion of planned progressive rehabilitation throughout life of Project with reference to the Conceptual Closure and Rehabilitation Plan for the longer term rehabilitation strategy.
- Environmental incident response – Considers potential unplanned events (i.e., natural hazards and accidental events), and the more commonly anticipated environmental incidents.

This structure enables stakeholders to reference applicable sections of the Project EMP as necessary. For example, during the Operations phase, it is envisaged that WGJV personnel will predominantly use Modules 1 and 3, and may only refer to management measures in Module 2 if further construction and development works are required.

#### **23.2.1.3. Individual Management Plans**

The management plans for each environmental aspect in Modules 2 and 3 comprise the following:

- Introduction – Incorporates the potential environmental impacts of the Project and the activities that may cause those impacts.
- Statement of objectives – Concise statement of the environmental protection objectives.
- Management measures – Identifies proposed management measures to be implemented, including responsibilities and timing for implementation. The proposed management measures were identified in Chapter 14 (Physical and Biological Environment Impact Assessment), Chapter 15 (Freshwater Environment Impact Assessment), Chapter 16 (Nearshore Marine Environment Impact Assessment) and Chapter 17 (Offshore Marine Environment Impact Assessment). These proposed measures have been developed based on existing studies, experience gained during exploration of the Project and from other operations owned by related corporations of the WGJV Participants, as well as the assessment of impacts.
- Monitoring and reporting – Provides details of the regular monitoring and reporting of environmental performance.

#### **23.2.2. Project Social Management Plan**

The purpose of the Project SMP (Attachment 4) is to provide a practical framework to assist the WGJV with the implementation of appropriate measures to manage potential socioeconomic impacts, and in particular impacts that pertain to resettlement, in-migration and community health, safety and security.

The objectives of the Project SMP are to:

- Define a clear approach to the management of socioeconomic impacts related to the Project
- Outline action plans required to achieve effective management of socioeconomic impacts

To support an integrated approach to social and environmental management, the Project SMP operates in conjunction with the following plans:

- Cultural Heritage Management Plan
- National Content Plan
- Stakeholder Engagement and Management Plan
- Environmental Management Plan
- Land Access Management Plan (to be developed during the construction phase)

The Project SMP and sub-plans will be regularly reviewed and revised/updated. The SMP has been developed to a level commensurate with the level of Project planning at the time of lodgement of this EIS with CEPA. The Project SMP has been prepared in accordance with the WGJV Social Responsibility Policy, applicable WGJV standards and State of PNG legal requirements. International standards have also provided guidance.

The Project SMP encompasses three sub-plans:

- Community Health, Safety and Security Management Plan
- Resettlement Management Plan
- In-Migration Management Plan

A description of the three sub-plans to the Project SMP is provided below.

The State of PNG, and provincial and local level governments, have key roles in addressing a number of socioeconomic impacts. The WGJV will work with relevant government agencies to manage potential socioeconomic impacts.

The content of the Project SMP and sub-plans will continue to be developed in consultation with the State of PNG and other Project stakeholders prior to Project construction.

#### **23.2.2.1. Community Health, Safety and Security Management Plan**

The objective of the Community Health, Safety and Security Management Plan is to establish measures to effectively manage potential Project-related risks to community health, safety and security. The plan will apply to communities located in close proximity to the Project Area that are subject to potential social and biophysical impacts from Project activities.

The plan features three components: public health, physical safety and personal security, and will be populated with activities that support the management measures proposed in the socioeconomic impact assessment. Activities within the population health component in particular will build upon the health support activities implemented by the WGJV during the exploration phase of the Project. The State of PNG, provincial and local level governments also have fundamental roles with respect to population health, safety and security.

Further to the Community Health, Safety and Security Management Plan, WGJV's support for provincial health initiatives (such as regional infrastructure and service provision) is addressed through the WGJV's National Content Plan provisions for strategic community investments.

#### **23.2.2.2. Resettlement Management Plan**

The WGJV seeks to minimise the requirement for displacement of persons, and to manage any necessary displacement of persons on an equitable basis. Displacement refers to both 'physical displacement (relocation or loss of shelter) and economic displacement (loss of

assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use' (IFC, 2012).

The Resettlement Management Plan will guide the WGJV through all phases of the Project, including construction and development and mine operations, and will apply to all resettlement activities. It will comprise:

- The WGJV's Resettlement Policy Framework, which has considered PNG legislation
- Individual resettlement action plans where required

Resettlement planning is underway in consultation with potentially affected villages. This includes undertaking asset and social surveys.

As of the date of this EIS, it is not possible to provide a detailed Resettlement Management Plan for the Project, as individual relocation action plans have yet to be finalised. For example, while current planning indicates resettlement may be required for three villages in the Mine Area, and potentially some individual households along sections of the Infrastructure Corridor, this planning is subject to change to align with the final extent of tenement boundaries, which considers a range of long-term Project land access requirements. The final extent of tenement boundaries is also subject to discussion and agreement with the MRA and potentially impacted communities. Detailed investigations involving displaced villages or households (including the identification of preferred destinations for resettlement and other village and household preferences) must also be undertaken as part of the preparation of resettlement action plans.

As an initial guiding step, the WGJV has developed a Resettlement Policy Framework to guide its negotiations with villages and households and the preparation of resettlement action plans when tenement boundaries are finalised.

The Resettlement Policy Framework is consistent with the International Finance Corporation (IFC) Environmental and Social Sustainability Performance Standard 5. The standard requires a Resettlement Policy Framework to be prepared in cases where potential resettlement requirements are unknown due to the stage of project development.

### **23.2.2.3. In-Migration Management Plan**

The IFC (2009) defines project-induced in-migration as 'the movement of people into an area in anticipation of, or in response to economic opportunities associated with the development and/or operation of a new project'. This definition captures all project-induced in-migrants, regardless of whether they have family ties or social connections (e.g., wantoks) to people already residing in the area of a new project. While these connections may influence the manner in which people reside and the reception they receive from existing inhabitants, this definition does not diminish instances where additional people move to an area as a result of a project's presence.

The In-Migration Management Plan will be developed to manage Project-induced (i.e., Wafi-Golpu Project-induced) in-migration during construction and operation of the Project. The objectives of the In-Migration Management Plan are to:

- Minimise potential levels of Project-induced in-migration.
- Manage to the greatest extent practicable the impacts generated by in-migration which cannot be prevented.

Management measures will be developed in conjunction with communities that may be affected by in-migration, and with relevant levels of government. Management measures will include those that:

- Limit site access and land availability for informal settlement.
- Implement a workforce recruitment and management policy which includes preferential employment for local communities, as set out in the National Content Plan.
- Apply location-specific controls to discourage informal economic activity by in-migrants.
- Disseminate information to key stakeholders about potential socioeconomic impacts associated with in-migration, and engage with local authorities and landowners to actively monitor and discourage informal settlement.
- Provide information and education to communities, including in-migrants, on communicable diseases and health practices including sanitation and hygiene.

### **23.2.3. Project Cultural Heritage Management Plan**

The Project CHMP (Attachment 5) builds on the WGJV's objective to avoid (or if unavoidable, minimise) disturbance to or destruction of cultural heritage sites. Preparation of the plan has been guided by IFC Performance Standard 8: Cultural Heritage. The Project CHMP presents proposed management measures, including the requirement to:

- Provide cultural awareness training for Project employees and contractors.
- Obtain appropriate authorisation prior to ground disturbing activities.
- Maintain a Project database of all known cultural heritage sites.
- Engage suitably qualified people to undertake cultural heritage surveys or assessments.
- Engage with communities and the PNG National Museum and Art Gallery (NMAG) regarding the presence and management of cultural heritage as required.
- Implement the WGJV Chance Finds Procedure.

Specific management measures for cultural heritage sites located within the Project Area likely to be impacted by Project activities will be finalised in consultation with landowners and the NMAG and included in the Project CHMP prior to the commencement of construction.

## **23.3. Monitoring and Reporting**

A monitoring program is required to determine the success of the design, construction and operational measures to manage the predicted impacts.

The monitoring program will be reviewed on an ongoing basis in accordance with the SBMS and conditions of approval by the State of PNG. A summary of the program is discussed in the sections below.

### **23.3.1. Environmental Monitoring**

An environmental monitoring program will be implemented to monitor and measure, on a regular basis, the environmental performance of Project activities.

Monitoring will cover each environmental aspect detailed in the Project EMP, including:

- Air quality and greenhouse gas
- Noise and vibration

- Native vegetation clearance and rehabilitation
- Prevalence and control of weeds, pests and pathogens (terrestrial and aquatic)
- Aquatic and terrestrial flora and fauna
- Seepage from waste rock dumps (for early identification of AMD)
- Groundwater
- Discharges into watercourses
- Surface water and sediment quality in impacted and control catchments
- Discharges into the marine environment, particularly associated with deep sea tailings placement (DSTP)
- Solid waste management
- Any further monitoring required by environment permit conditions

Further details are provided in the Project EMP (Attachment 3).

In addition to monitoring, an inspection and audit regime will be implemented during the construction and operation of the Project. During construction activities, inspections and audits will focus on:

- The performance of construction sites and installed management devices such as erosion and sediment control devices
- Compliance of activities with the Project EMP
- Responses required to address incidents or complaints

An audit will be undertaken upon completion of construction, which will include a review of environmental requirements, records and incidents to determine any outstanding environmental protection measures yet to be finalised.

During the operations phase, a structured risk-based inspection and audit schedule will be developed for key operational infrastructure.

Both external and internal environmental audits will be performed periodically to identify opportunities for improvement to both the Environmental and Social Management Framework and operational performance.

### **23.3.2. Environmental Reporting**

The WGJV will prepare an environmental performance report at a frequency to be agreed with CEPA that provides information that may be required in any conditions of the environment permit that may be granted for the Project.

### **23.3.3. Socioeconomic Monitoring**

A monitoring program will be implemented to monitor the effectiveness of the Project SMP against socioeconomic performance indicators, and will include monitoring:

- Key social indicators including, but not limited to, those which inform the understanding of maternal and child health, general population health and nutrition, and school attendance
- Key economic indicators such as employment, agricultural business turnover, local business turnover and household income

Monitoring will be undertaken on a participatory basis with communities and in collaboration with government agencies. Performance indicators will be used to measure and track

performance against the effectiveness of management and control measures that will be described in the Project SMP.

#### **23.3.4. Socioeconomic Reporting**

The WGJV will prepare a social performance report that:

- Reviews the performance of the WGJV against the Project SMP
- Provides a summary of key socioeconomic issues experienced in the Project Area during the reporting period
- Provides a summary of the activities and outputs of social programs

#### **23.3.5. Cultural Heritage Monitoring**

As described in the Project CHMP (Attachment 5), regular archaeological and cultural heritage monitoring will be undertaken which includes:

- Confirming that the Project CHMP, including the site-specific management measures agreed with local communities and the NMAG, are implemented. This is to address both sites affected by Project infrastructure and resettlement activities.
- Routinely inspecting recorded archaeological and other cultural heritage sites in the Project Area to confirm they are managed as agreed.
- Ongoing liaison with local communities regarding cultural heritage issues, including receipt of complaints through the Concerns, Complaints and Grievance Procedure related to disturbance of oral tradition, historic and archaeological cultural heritage sites.
- Undertaking performance audits to evaluate the effectiveness of management measures.

Monitoring activities will be at their most intensive at any time when new ground disturbance occurs, irrespective of whether this is during the construction, operation or closure of the Project. This includes, for example, the establishment of roads and infrastructure, when the risk of physical disturbance of sites is highest.

#### **23.3.6. Cultural Heritage Reporting**

The WGJV will report to the Director of NMAG and the Managing Director of CEPA in accordance with relevant permit conditions and as per legislative requirements. Reporting to landowner communities will be as per the requirements of agreements with those communities and guided by IFC Performance Standard 8.

### **23.4. References**

IFC. 2009. Projects and People: A Handbook for Addressing Project-Induced In-Migration, International Finance Corporation, Washington DC.

IFC. 2012. IFC Performance Standards on Environmental and Social Sustainability. International Finance Corporation, Washington DC.