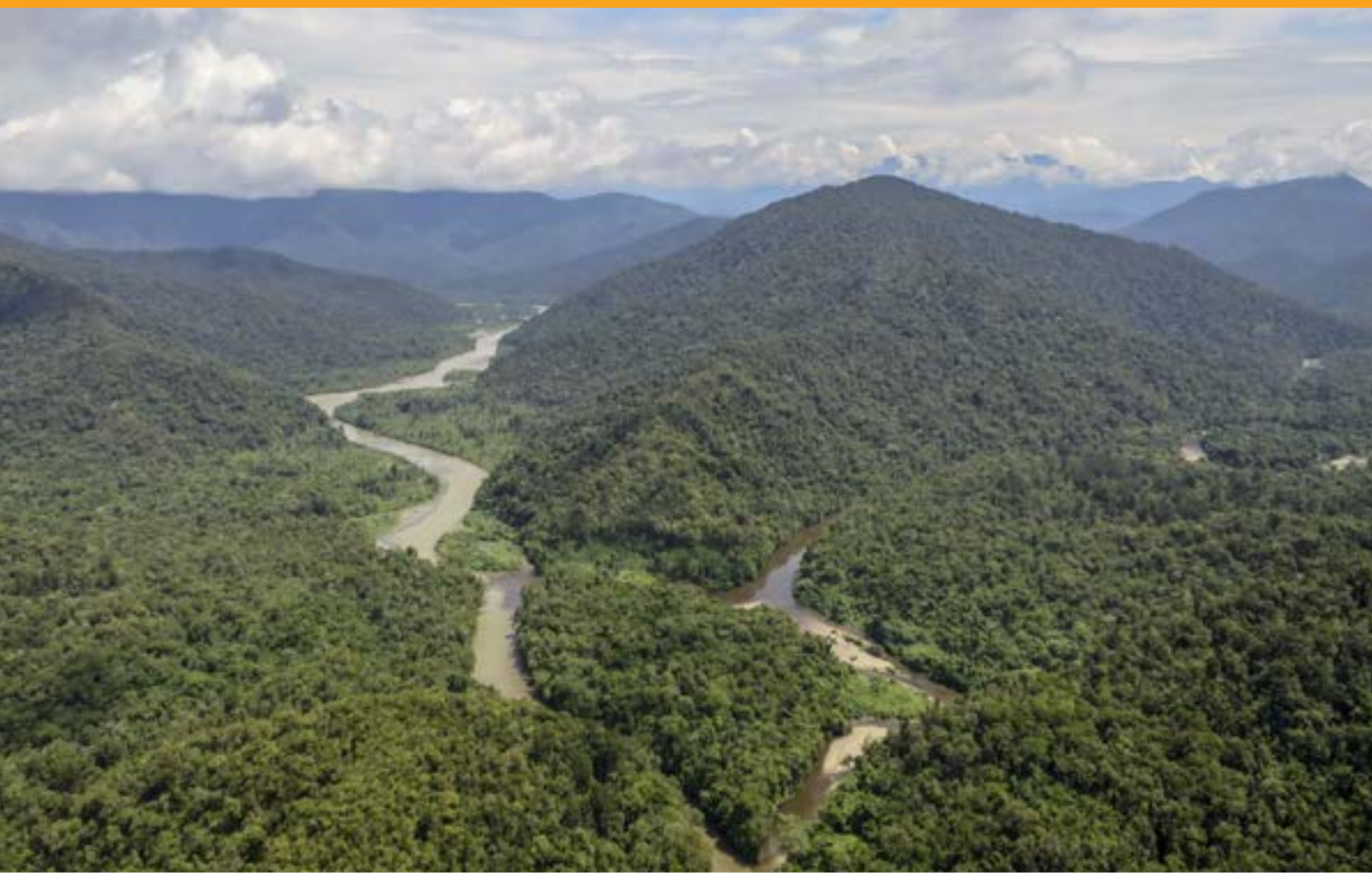
FRIEDA RIVER

Frieda River Limited
Sepik Development Project
Environmental Impact Statement
Chapter 3 – Policy, Legal and Administrative Framework

SDP-6-G-00-01-T-084-005



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3. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

This chapter describes the PNG legislation relevant to the Project. It discusses international agreements, standards, principles and guidelines that the Project proponent, the Frieda River Joint Venture, will reference as well as the PanAust Group Sustainability Policy and Management Standards, and commitments.

The Project's compatibility in relation to the PNG Constitution, Vision 2050 and national development plans is addressed in Chapter 2.

The Independent State of Papua New Guinea promotes the development of its mineral resources through various policies to manage investment and impacts. This is supported by a legislative and policy framework to ensure that approved developments assess, reduce and manage residual social and environmental impacts such that they are as low as practicable.

It is a government priority and constitutional requirement to ensure that the people of PNG benefit from the development of their resources, and that it is achieved in a sustainable, environmentally responsible and socially acceptable manner.

3.1 PNG Legislative Framework

The assessment, approval and development of the Project is primarily regulated by the *Mining Act 1992* (Mining Act) and the *Environment Act 2000* (Environment Act). Other important legislation includes the *Lands Act 1996* (Lands Act) and the *Roads Maintenance Act 1971* (Roads Maintenance Act). These pieces of legislation are described below.

3.1.1 Mining Act 1992

The Mining Act is the principal policy and regulatory document governing the mining approvals process in PNG and is administered by the Minerals Resources Authority (MRA). The Act vests ownership of all minerals with the State and governs the exploration, development, processing and transport of minerals, as stated in Sections 5 and 6 of the Act, respectively:

> All minerals existing on, in or below the surface of any land in Papua New Guinea … are the property of the State.
>
> …all land in the State…is available for exploration and mining and the grant of tenements over it.

Rights to explore for, mine and sell mineral resources are granted in the form of tenements.

The six types of tenement available under the Act are:

- Exploration Licence (EL).
- Mining Lease (ML).
- Special Mining Lease (SML).
- Alluvial Mining Lease (AML).
- Lease for Mining Purposes (LMP).
- Mining Easement (ME).

Tenements, with the exception of a SML, are granted by the Minister for Mining allowing the exploration or development to occur for a fixed term over a fixed area to persons or companies

approved by the State. A SML, intended for use in major projects, is granted by the Governor General upon the advice of the National Executive Council.

The primary statutory decisions required for the Project relate to the Mining Act and associated regulations, and the need to obtain the appropriate leases. The Project will also require approval under the Environment Act, as described below. Due to the scale and the capital expenditure associated with its development, the FRCGP will operate under an SML, with associated tenements, including a ML, LMPs and MEs, being required for the FRHEP, airstrip and river port and other mine-related infrastructure.

Permitting requirements include:

- Application for a SML containing survey requirements and a Proposal for Development which typically includes:
  - Feasibility Study.
  - Landownership Study.
  - Resettlement Plan.
  - Business Development and Supply and Procurement Plan.
  - Employment and Training Plan.
- Negotiation of a Mining Development Contract between the State and Proponent.
- Applications for ML, LMPs and MEs as required.
- Mining Warden's hearings for all tenements applied for.
- Negotiation of a Compensation Agreement with landowners and Resettlement Compensation Agreement with villages to be resettled.
- Participation in a Development Forum (DF) with all levels of Government and landowners to negotiate and agree how the responsibilities and benefits of the FRCGP will be distributed.
- Signing of a memorandum of agreement with all participants in the DF which sets out the matters agreed at the DF.

A SML application for the Project was registered by the MRA on 24 June 2016. Subject to approval by the joint venture participants, a proposal for development will be submitted to MRA to support an amendment to the SML9 application.

3.1.2 Environment Act 2000

The principal legislation for regulating the environmental effects of projects in PNG is the Environment Act. In February 2014, the PNG Government passed an Act to set up the Conservation and Environment Protection Authority (CEPA). The CEPA replaced the Department of Environment and Conservation (DEC) as the government agency responsible for administering the Environment Act. On 1 December 2014, the *Conservation and Environment Protection Authority Act 2014* (CEPA Act) came into force.

Another statute, the *Environment (Amendment) Act 2014* (Environment (Amendment) Act), will amend the Environment Act but is yet to fully come into force. Part 1 of the Environment (Amendment) Act outlines the proposed changes to the Environmental Impact Assessment (EIA) process that will take place once it comes into force.

The following sections describe the EIA process for this Project.

Environmental Impact Assessment

Under the Environment Act, the preparation of an environmental impact assessment is a three-step process involving:

- Registration of intention to undertake preparatory work on Level 2 and Level 3 activities (Section 48 of the Act). The Environment (Amendment) Act proposes to repeal Section 48 and this step would no longer be part of the EIA process. In future, the EIA process will be triggered when a proponent submits an application for an environment permit, under Section 60 of the Act.
- Submission of an environmental inception report (EIR) (Section 52 of the Act). This is a scoping document that is developed through consultation between the proponent and the Managing Director of CEPA[1]. The proposed changes (i.e., repeal and replacement of Section 52 of the Environment Act) remove the requirement for CEPA to provide comment on the EIR and for the Managing Director to formally approve it.
- Submission of an EIS (Section 53 of the Act).

On 20 December 2017, a Notification of Preparatory Work, environment permit application and EIR were submitted to CEPA for the current Project concept. The EIR was approved by CEPA on 14 February 2018.

This EIS addresses the issues set out in the final EIR and substantially complies with CEPA's information guideline for conduct of environmental impact assessment and preparation of EIS (DEC, 2004b). The guideline requires the EIS to assess potential environmental and social impacts of the Project and to describe how the proponent intends to avoid, manage or mitigate those impacts.

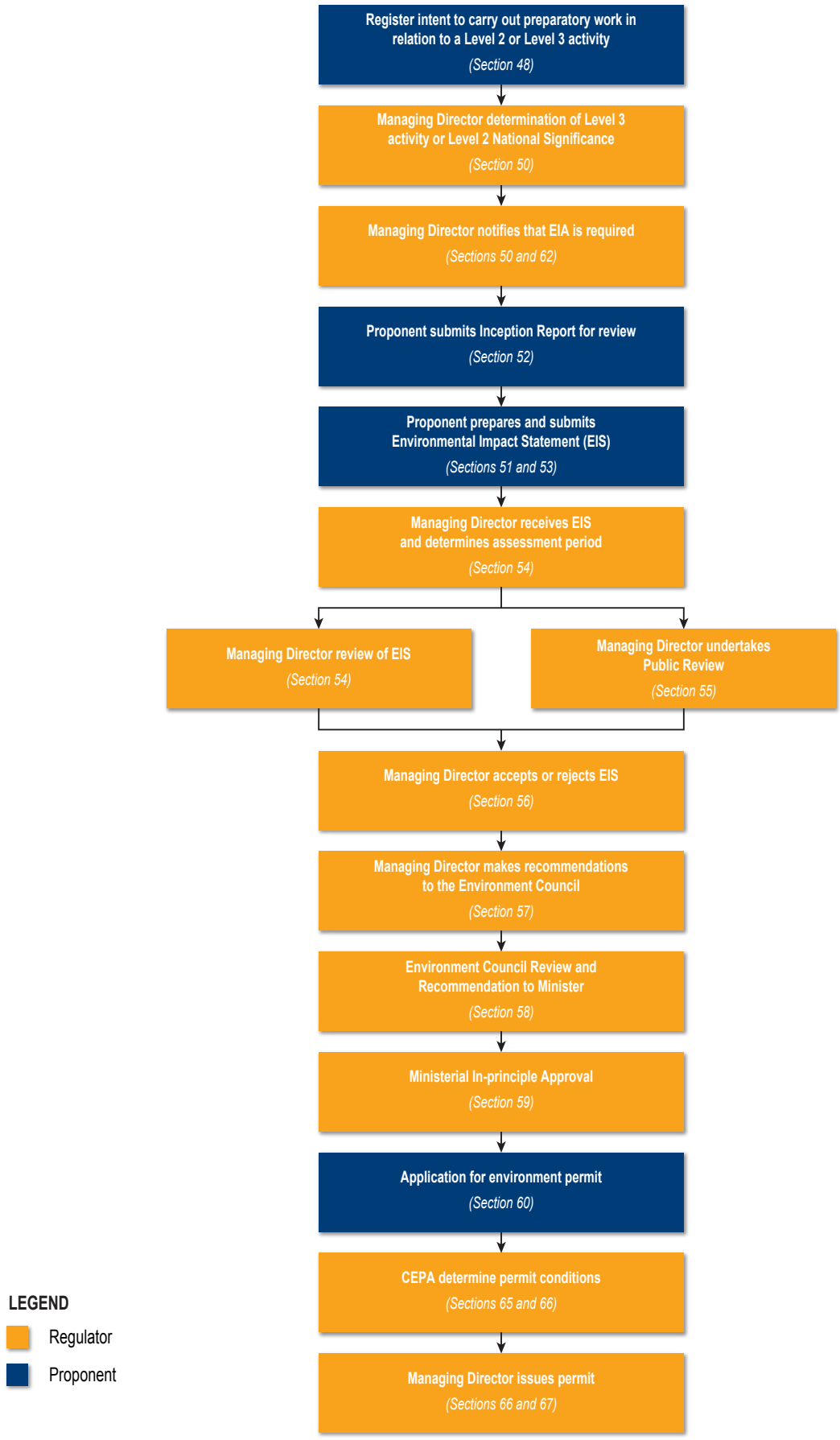
Approval Process

Figure 3.1 shows the EIS approval process for this Project stipulated by Section 51 of the Environment Act.

Under Section 53 of the Act, the proponent is required to submit an EIS that addresses the issues set out in the EIR. The CEPA Managing Director will make a preliminary assessment (Section 54 of the Act) after the EIS is submitted and before making it available for public review (Section 55 of the Act). CEPA's Managing Director will accept the EIS following public review if he or she is satisfied that (Section 56 of the Act):

> (a) an environmental impact statement contains an adequate description of the nature and extent of physical and social environmental impacts which are likely to result from the carrying out of a proposed activity; and
>
> (b) all reasonable steps will be taken to minimise environmental harm which may result from the carrying out of the activity; and
>
> (c) the activity will be carried out in a manner which is consistent with all relevant Environment Policies and the Regulation.

[1] With the commencement of the CEPA Act, the Managing Director of CEPA took over the roles and responsibilities allocated to the "Director of Environment' in the Environment Act. At that time, Section 15 of the Environment Act was amended to state that "The Director of Environment for the purposes of this Act is the Managing Director of the Conservation and Environment Protection Authority".



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coffey A TETRA TECH COMPANY	Date: 30.08.2018 Project: 754-ENAUABTF11575B File Name: 11575_11_F03.01_GRA	Frieda River Limited Sepik Development Project	FRIEDA RIVER	Environmental approvals process for the Project	Figure No: 3.1

The Managing Director's assessment report and any public submissions will also be referred to the Environment Council, a multi-disciplinary panel of experts appointed under Section 57 of the Act.

The Environment Council has 90 days to decide whether it is satisfied with the EIS. If the Environment Council is not satisfied, the EIS is returned to the proponent for revision and resubmission. If the Environment Council is satisfied, it will advise the Minister for Environment and Conservation to approve the proposed activity in principle (Section 59 of the Act). After the Minister has issued approval in principle for the Project, CEPA will then finalise the conditions of the Environment Permit and issue the permit under Section 66 and Section 67 of the Act.

Environment Permit and Management

Sections 65, 66 and 67 of the Environment Act provide criteria for granting, setting and issue of conditions of permits, respectively. Under Section 66, these conditions may include:

- Installation of plant or equipment within a certain time (Section 66(1)(a)).
- Taking certain action to minimise the risk of environmental harm (Section 66(1)(b)).
- Installation of monitoring equipment (Section 66(1)(c)).
- Preparation and implementation of an environmental management program (Section 66(1)(d)).
- Provision of reports specified by the Managing Director (Section 66(1)(e)).
- Environmental improvement plan (Section 66(1)(f)).
- Audits (Section 66(1)(g)).
- Emergency response (Section 66(1)(h)).
- Provision of information required by the Managing Director (Section 66(1)(i)).
- Environmental bond (Section 66(1)(j)).
- Baseline studies (Section 66(1)(k)).
- Rehabilitation (Section 66(1)(l)).

Part VII of the Act provides for permits for the use of water resources in PNG including dams, diversions, discharges of wastes and/or contaminants.

Chapter 12 describes the proposed environmental management framework for the Project.

3.1.3 Land Act 1996

The Land Act is the principal legislation regulating matters relating to State-owned land and land held under customary tenure in PNG, including acquisition of land (both voluntary and compulsory).

Specifically, the Land Act provides for the:

- Declaration of land that does not appear to be customary land to be State land.
- Acquisition of land by the State, including customary land, freehold land, land held under a State lease, and foreshore.
- Granting of leases by customary landowners to the State.
- Reservation of land for specified purposes.
- Declaration of an area of land as an aerodrome.
- Granting of leases over State land.

The FRHEP is likely to operate under tenements issued under the Mining Act and on a State Lease. The SPGP, Vanimo Ocean Port, and Vanimo to Hotmin public road are likely to require

State Leases. To facilitate this, the State will be required to use the provisions of the Land Act to acquire an interest in the underlying land from customary landowners.

The Land Act prohibits customary landowners from transferring (i.e., selling) customary land, except to other citizens and in accordance with custom. It does not prohibit the acquisition of customary land by the State.

The State can use the compulsory acquisition process under the Land Act only when the land is required for a 'public purpose' (as defined in the Land Act). The defined public purposes include for the purposes of or connected with the generation or supply of electricity, a road and a port or harbour. The State is required to compensate landowners for any compulsory acquisition of land.

3.1.4 Roads Maintenance Act 1971

The Roads Maintenance Act contains the provisions for the classification of public roads. Section 10 of the Act sets out the process for the classification of a road as a major highway, trunk road or feeder road in the National Gazette. Section 11 allows for the setting of minimum maintenance requirements for any road classified under the Act.

The upgraded Vanimo to Green River Road and the constructed road from Green River to Hotmin will become a public road (see Chapter 5). The road is expected to be classified under Section 10 of the Roads Maintenance Act.

3.2 Other Legislation and Regulations

3.2.1 Existing Legislation and Regulations

Table 3.1 lists additional PNG environmental acts and regulations that are applicable to the Project and the Project's implementation.

Table 3.1 Other environmental legislation and regulations

Acts	
Conservation and Environment Protection Authority Act 2014	Provides for: • Conservation and protection of the environment in accordance with the Fourth National Goal and Directive Principle (National Resources and Environment) of the Constitution. • Establishment of the CEPA. • Repeal of the National Parks Act.
Conservation Areas Act 1978 (Chapter 362)	Makes provisions for the designation of land as conservation areas and the management of these areas.
Fauna (Protection and Control) Act 1966 (Chapter 154)	Makes provisions for the protection, control, harvesting and destruction of fauna.
International Trade (Fauna and Flora) Act 1979 (Chapter 391)	Regulates the export of species listed under the Convention on International Trade in Endangered Species of Wild Fauna and Flora.
National Cultural Property (Preservation) Act 1965 (Chapter 156)	Provides for the preservation and protection of objects of cultural or historical importance to PNG.
Climate Change (Management) Act 2015	Provides a regulatory framework to promote climate and manage compatible development through climate change mitigation and adaptation activities.

Table 3.1 Other environmental legislation and regulations (cont'd)

Acts (cont'd)	
Marine Pollution (Ships and Installations) Act 2013 (including Ships and Installations Regulations Act 2013, Liability and Cost Recovery Act 2013, Ballast Water Control Act 2013, Sea Dumping Act 2013, Preparedness and Response Act 2013)	Provides for: • Prevention and control of marine pollution from any vessel and any offshore installation in PNG waters. • Liability, insurance, the recovery of costs and the payment of compensation relating to pollution damage in, on or to PNG waters incorporating PNG laws. • Prevention, reduction and control the introduction of harmful aquatic organisms and pathogens to PNG waters via ships ballast and water sediments. • Prevention and control of marine pollution from the dumping and incineration of wastes and other matter in PNG waters. • Working with neighbouring countries to provide for the effective response to and control of spills of oil or chemicals from vessels.
Mining (Safety) Act 1977 (Division 5)	Details the approval requirements for construction of a dam exceeding 3,000,000 litres for the purposes connected with any mine or mining operations (e.g., the ISF).
Regulations	
Environment (Council's Procedure) Regulation 2002	Details the procedures of the Environment Council which will provide advice to the Minister on the EIS.
Environment (Permits) Regulation 2002	Details the procedures for applications for, processing of, appeals against, and compliance with, environmental permits.
Environment (Prescribed Activities) Regulation 2002	Details prescribed activities. The Project involves Level 3 activities requiring an EIS.
Environment (Water Quality Criteria) Regulation 2002	Provides enforceable water quality standards for a mixing zone boundary downstream of effluent discharge.
Environment (Fees and Charges) Regulation 2002	Details the fees and charges set by CEPA.
Public Health (Drinking Water) Regulation 1984	Provides enforceable standards for drinking water quality.

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

- *Explosives Act 1953.*
- *Fire Service Act 1962* and Fire Service Regulation 1966.
- *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.
- *Land Disputes Settlement Act 1975.*
- *Plant Disease and Control Act 1953.*

- Plant Disease and Control Regulation 1956.
- Quarantine Regulation 1956.

Other applicable legislation will be determined in consultation with the relevant authorities during Project planning.

3.2.2 New Organic Law on Provincial and Local Level Governments 1995

The *New Organic Law on Provincial and Local Level Governments 1995* (New Organic Law) was a result of the National Government's reform program to address the lack of government services reaching rural populations. The law called for the decentralisation of administrative and political powers to the local level governments.

Provincial and district development planning is a requirement of the New Organic Law. Section 33A and Subsection 3B require all provincial and local level governments to have a five-year rolling plan to provide clarity and accountability to investment decisions.

The *Local-level Governments Administration Act 1997* is an act to implement the New Organic Law and provides for the establishment of Special Purposes Authorities which have been used in the administration of benefit streams from major resource development projects.

3.3 International Environmental Agreements

Table 3.2 summarises the international agreements including treaties, conventions and protocols relevant to the Project and its implementation, and to which the Independent State of Papua New Guinea is a signatory.

Table 3.2 Applicable international agreements to which PNG is a signatory

Title	Comment
International Plant Protection Convention (1976)	Promotes international cooperation to control pests and diseases of plants and plant products.
Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (SPREP) (1990)	Protection, development and management of the South Pacific marine and coastal environment.
Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal Adopted by the Conference of the Plenipotentiaries on 22 March (Basel Convention) (1989)	A major multilateral agreement, relating to transboundary movement in, and responsible management of, hazardous and other wastes.
Vienna Convention for the Protection of the Ozone Layer (the Vienna Convention) (1993)	Protection of the ozone layer.
Kyoto Protocol to United Nations Framework Convention on Climate Change (1997)	Has as its objective the reduction of negative changes to the earth's climate with a particular focus on greenhouse gases. Places onus on industrialised countries (Annex 1 countries) to reduce emissions. Developing countries such as PNG are exempt from the reduction requirement.
Convention on Biological Diversity (1993)	Preserving and sustaining biological diversity.
International Convention for the Prevention of Pollution from Ships (MARPOL) (1973)	Requires member states to minimise the risk of marine pollution from ships.

Table 3.2 Applicable international agreements to which PNG is a signatory (cont'd)

Title	Comment
United Nations Convention on the Law of the Sea (UNCLOS) (1982)	Multilateral agreement on the law of the sea, in particular the protection and preservation of the marine environment.
Convention to Ban the Importation into Forum Island Countries of Hazardous Wastes and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes Within the South Pacific (Waigani Convention) (1995)	Proscription of international trade in hazardous waste and notification procedures, monitoring mechanisms and cooperative authorities.
Paris Agreement under the United Nations Framework Convention on Climate Change (adopted in December 2015, entered into force in 2016)	The Paris Agreement aims to keep global temperature rise this century well below 2 degrees Celsius above pre-industrial levels. It aims to increase the ability of countries to deal with the impacts of climate change by mobilising financial resources, new technology and enhanced capacity-building to strengthen the global response to the threat of climate change. PNG acceded to the Paris Agreement on 21 September 2016.

3.4 Social Impact Assessment Requirements

Consideration of social and economic impacts is an integral part of the assessment of the Project under the Environment Act and the Mining Act.

Section 51 of the Environment Act requires the likely social impacts of the proposed activity to be described in the EIS in accordance with issues identified in the EIR. Two CEPA guidelines apply:

- Guideline for the conduct of environmental impact assessment and preparation of environmental impact statement, Section 6 (DEC, 2004b).
- Draft Social Impact Assessment guideline (OEC, 2004).

The draft Social Impact Assessment guideline states that a social impact statement should form part of the EIS. It should include, but not be limited to, demographic information, information on existing infrastructure, public health issues and social services availability, and present economic status of the Project area.

This EIS addresses the Social Impact Assessment guideline requirements by way of a social impact assessment. The scope and findings of this study are detailed in Chapter 9 and Appendix 13.

3.5 Relevant International Standards and Corporate Policy and Standards

FRL is committed to high standards of environmental performance, community cooperation and the principles of sustainable development. The environmental and socio-economic assessments for the Project have been developed to comply with PanAust's corporate policy and standards, and to align with relevant international standards.

PanAust measures its sustainability performance against international standards and commissions independent audits to evaluate its performance.

3.5.1 International Standards and Guidelines

PanAust aligns its business with the following external standards, systems and principles:

- The International Council on Mining and Metals (ICMM) Sustainable Development Framework. This framework comprises ten sustainable development principles and six position statements.
- The Minerals Council of Australia's 'Enduring Value – the Australian Mining Industry Framework for Sustainable Development' (MCA, 2015). This framework incorporates global industrial sustainability initiatives and provides guidance on the ICMM Sustainable Development Framework. PanAust is an associate member[2] of the Minerals Council of Australia and a signatory to its 'Enduring Value'.
- The Australian Minerals Industry Framework for Sustainable Development (MCA, 2015). The framework commits companies to uphold fundamental human rights and respect cultures, customs and values in their dealings with people affected by their activities. As an associate member of the Minerals Council of Australia, PanAust is committed to applying operational standards globally that are consistent with Australian operational standards, while accommodating variations as a result of cultural, geographical or environmental circumstances.

  'Enduring Value' is aligned with the ICMMs' principles and position statements including:

  – Principles for climate change policy design (2011).
  – Mining: Partnerships for Development Position Statement (2010).
  – Indigenous Peoples and Mining Position Statement (2013).
  – Mining and Protected Areas Position Statement (2003).
- Projects in the developing world are frequently assessed within the context of the Equator Principles (EPFI, 2013) which were developed in 2003 as an international banking industry framework to determine the environmental and social risks of project financing and are commonly referred to as 'World Bank guidelines'. The ten Equator Principles aid financial institutions in assessing the environmental and social impacts, along with the management of impacts and risks, associated with projects that they fund.
- The International Finance Corporation (IFC) of the World Bank Group has developed eight performance standards on environmental and social sustainability (IFC, 2012). If a project complies with the IFC performance standards, then financial institutions can consider funding of the project to be consistent with the Equator Principles. FRL has used the requirements of the performance standards to guide Project planning.
- The Global Reporting Initiative (GRI) sustainability reporting framework and guidelines. PanAust reports the GRI indicators that are material to its business as determined through its risk management and materiality determination process, and feedback from stakeholders.
- The Voluntary Principles on Security and Human Rights which is a set of principles designed to guide companies in maintaining the safety and security of their operations within a framework that encourages respect for human rights. PanAust has been a member company of the Voluntary Principles on Security and Human Rights since 2013.

[2] PanAust's operations are in Laos. Full MCA membership requires a company to have operating assets in Australia which precludes PanAust from seeking full membership.

3.5.2 Corporate Policy and Standards

PanAust has a corporate policy and standards related to environmentally and socially responsible project development. These encourage culturally appropriate communication and respect for communities within which PanAust operates.

PanAust's Vision and Values, and Sustainability Policy, outline the company's commitment to preserving and enhancing the environmental, social, technical and financial elements of the business.

PanAust Vision and Values

PanAust's vision is to be a growth-oriented mining company determined to excel. It will outperform its competitors through:

- Growth by discovery, acquisition, development and operations that consistently meet performance targets.
- Optimising returns on capital.
- Adherence to core values.

PanAust's values include:

- High performance outcomes in all business activities.
- Respect for people.
- Integrity in all of its dealings with employees, communities, government, suppliers and shareholders.
- Excellence in communications with all stakeholders but especially with its employees.
- Recruitment of high-calibre people, recognising the key to its success will be leaders who earn the authority of their position by gaining the respect of their team.
- Alignment of employees to company objectives through good leadership and systems that drive the right behaviour.

In addition to its vision and values, PanAust operates under a code of conduct known as 'The PanAust Way' (PanAust, 2017). The code builds on PanAust's values and provides a guide for how employees behave, make decisions, and interact with colleagues and external stakeholders.

PanAust has a set of operational safety standards and a set of 'cardinal rules' which outline behaviours relating to health and safety for achieving a 'zero harm' workplace.

PanAust Sustainability Policy

PanAust is part of an industry that has an important role to play in improving the standard of living of current and future generations through meeting the global demand for copper and precious metals in a responsible way. The PanAust Sustainability Policy (Figure 3.2) describes the company's aim to ensure the businesses' activities are financially profitable, technically appropriate, environmentally sound and socially responsible.

PanAust Sustainability Management Standards

The Sustainability Management Standards provide a basis from which to drive continuous improvement towards leading industry practice in sustainability and to establish performance requirements and auditable criteria which can be measured. Fourteen Sustainability Management

SUSTAINABILITY POLICY

PanAust is part of an industry that has an important role to play in improving the standard of living of current and future generations through meeting the global demand for copper and precious metals in a responsible way. PanAust recognises that sustainable business development is essential for our ongoing success. We strive to ensure that our activities are financially profitable, technically appropriate, environmentally sound and socially responsible. As a minimum, we will meet applicable legal requirements in our host countries, the PanAust Sustainability Standards and other Company commitments such as the Mineral Council of Australia's Enduring Value Framework, the International Council on Mining and Metals Sustainable Development Framework, the Voluntary Principles on Security and Human Rights and consistency with the Universal Declaration of Human Rights.

Consistent with our Vision and Values PanAust is committed to:

- Preventing workplace injuries and ill health (zero harm objective).
- Recognising and respecting the culture, heritage values and environment in which we operate of local communities and indigenous peoples.
- Preventing or minimising pollution by promoting efficient use of natural resources; reusing and recycling waste; minimising release of contaminated emissions to air, land and water; and progressively rehabilitating land.
- Providing a positive and lasting impact on our local communities by improving their socio-economic wellbeing through employment and training opportunities, and supporting local business development and health initiatives that will benefit the community beyond the life of mine.
- Applying ethical business practices and corporate governance standards as an integral part of our business planning and decision making.

We seek to continually improve our sustainability management and performance by:

- Applying systematic approaches to identifying, understanding, prioritising and managing material sustainability risks and opportunities associated with our activities throughout the entire project lifecycle, including closure.
- Setting and reviewing performance improvement objectives and targets and measuring and reporting performance against these targets.
- Promoting a proactive and positive safety culture of awareness and understanding of sustainability issues based on personal accountability for self and others.
- Continuously building core competences across the company to manage and mitigate material sustainability risks and opportunities for the business.
- Engaging in fair, honest and transparent dealings with key stakeholders, in particular our employees, local communities, governments, shareholders, business partners and customers through open two way communication to understand and consider each others' needs and concerns.
- Verifying our progress through internal and external auditing.
- Including sustainability performance in appraisal of staff and contractors.
- Providing oversight of sustainability processes and issues through our Executive Governance Committee.
- Reporting publically on our sustainability performance.

Adrian Bell
General Manager HR and Risk Management

Dr Fred Hess
Managing Director

29.06.2016

This policy will be communicated to all people working for and on behalf of PanAust Limited and its subsidiaries (collectively, the "PanAust Group") and will be made available to all stakeholders through PanAust's website. This policy will be periodically reviewed to ensure it remains relevant and appropriate to PanAust's business.

Source: PanAust Sustainability Policy, 2016.

Standards relating to leadership, risk management, health and safety, training, environment, stakeholder engagement and community have been developed by PanAust to ensure consistent sustainability-related outcomes across the business.

Other standards and procedures relevant to PanAust's operations include:

- Enterprise Risk Management Procedure for assessment and management of risks. This document supports PanAust's Risk Management Policy.
- Incident Procedure Classification, Notification, Investigation and Reporting to outline terminology used in classification of incidents and to detail the minimum requirements for internal investigation and reporting.
- Contractor Safety Management Standard to evaluate and manage contractors and subcontractors in accordance with PanAust's safety policies, standards and procedures.

3.6 Environmental Guidelines Adopted for the Project

FRL will align the Project with identified guidelines for various environmental aspects of the development. Relevant external guidelines have been identified for adoption where guidelines have not been developed in PNG. The environmental aspects for which guidelines exist include:

- Ambient water quality.
- Drinking water quality.
- Treated effluent to surface water.
- Sewage effluent.
- Air quality.
- Noise pollution.

3.6.1 Ambient Water Quality

Discharges to water in PNG are regulated through environment permits under the Environment Act.

Should an environment permit for the Project be granted, the operation will need to comply with a number of conditions, one of which will be the prescribed water quality standards at the downstream limit of a site-specific mixing zone. One or more mixing zones may be required for the Project. These legally enforceable water quality standards (for fresh and marine receiving waters) are contained in Schedule 1 of the Environment (Water Quality Criteria) Regulation 2002. The environment permit will also contain conditions allowing the abstraction of surface water for use in the Project.

Notwithstanding the statutory need to meet the requirements of Schedule 1 of the Environment (Water Quality Criteria) Regulation 2002, additional standards and guidelines considered in this EIS include:

- Guidelines for protection of freshwater aquatic life detailed in PNG mining industry's environmental code of practice (OEC, 2000).
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Australian and New Zealand Environment and Conservation Council, and the Agricultural and Resource Management Council of Australia and New Zealand (ANZECC/ARMCANZ, 2000).

The PNG water quality criteria do not include criteria for total suspended solids. Extensive baseline monitoring (Section 7.2.3) shows that background concentrations are highly variable as

a result of highly variable rainfall and the frequent occurrence of land slips. Modelling (Section 8.5.4) shows that median total suspended solid (TSS) concentrations are likely to significantly increase in Ubai Creek and Uba Creek during construction before reducing during operations, while TSS concentrations will significantly increase and remain high in the Ok Binai catchment following construction of the Ok Binai waste dump. The potential for the Project to adopt site-specific TSS guidelines will be negotiated with CEPA.

During operations, average metals concentrations in the ISF and the Frieda and Sepik rivers are predicted to be within the criteria in Schedule 1 of the PNG Environment (Water Quality Criteria) Regulation 2002 during all flow conditions (Section 8.5.5). A compliance point is proposed to be located in the Frieda River (upstream of the existing Paupe village) at which point water quality shall comply with the Schedule 1 criteria as a regulatory requirement, subject to negotiation with CEPA. Further details are provided in Section 8.5.1 and 8.5.5.

A marine mixing zone with a (conservative) radius of 100 m from the concentrate thickener filtrate water discharge point is proposed in Dakriro Bay, adjacent to the concentrate export facility in Vanimo. The Schedule 1 of the PNG Environment (Water Quality Criteria) ambient marine water quality standards will be met at the mixing zone boundary.

3.6.2 Drinking Water Quality

Schedule 2 of the Public Health (Drinking Water) Regulation 1984 describes enforceable standards for drinking water quality. These standards were adopted from the World Health Organisation's 1971 international standards for drinking water (WHO, 1971).

FRL's Project-specific requirement is that water intended for human consumption and use shall be treated (if required) to meet the most stringent of the PNG standards and World Health Organization guidelines for drinking water quality (WHO, 2017).

3.6.3 Treated Effluent to Surface Water

The IFC, Environmental, Health and Safety Guidelines for Mining (IFC, 2007a) provides water quality guidelines for discharge of effluent from open-pit mining and milling operations. The specified limits are applicable to effluent discharged to receiving waters from tailing impoundments, mine drainage, sedimentation basins, sewage systems, and stormwater drainage. These levels should be achieved (without dilution) at least 95% of the time that the plant or unit is operating, to be calculated as a proportion of annual operating hours. These guidelines also state that discharges to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria outside a scientifically established mixing zone (IFC, 2007d).

The Project will meet these guidelines for discharges from the FRHEP and the Vanimo Ocean Port.

3.6.4 Sewage Effluent

Specific PNG guidelines for the discharge of sewage effluent do not exist, although sewage treatment plant effluent water quality requirements may be specified in an environment permit, which is required under the Environment Act.

In the absence of PNG guidelines, FRL's Project-specific requirement is that the final effluent quality for secondary treatment of sewage will be in accordance with the IFC's general EHS guidelines (IFC, 2007a) and, following tertiary treatment, will meet specifications based on Queensland Class A recycled water guidelines (EPA Qld, 2005).

3.6.5 Air Quality

In the absence of PNG ambient air quality legislation, air quality criteria were developed for the Project primarily from a combination of World Health Organisation, United States Environmental Protection Agency and Australian criteria. IFC guidelines (IFC, 2007b) have been used where relevant.

3.6.6 Noise

Criteria were developed for the Project from a combination of World Health Organisation, IFC and Australian guidelines in the absence of local regulations dictating ambient noise limits.

3.6.7 Other Key Standards

Table 3.3 summarises other key standards and guidelines used in the EIS and appendices.

Table 3.3 Key additional standards and guidelines used in the EIS and appendices

Technical Study	Additional Standards/Guidelines
Stakeholder Engagement (EIS, Chapter 4)	IFC stakeholder engagement: a good practice handbook for companies doing business in emerging markets (IFC, 2007c).
	IFC performance standards on social and environmental sustainability (IFC, 2012).
Frieda River Hydroelectric Project Selection Phase Study (Appendix 2a)	Australian National Committee on Large Dams (ANCOLD) guidelines for: • Design of Dams for Earthquakes (ANCOLD, 1998). • Tailings Dams – Planning, Design, Construction, Operation and Closure (ANCOLD, 2012b). • Selection of Acceptable Flood Capacity for Dams (ANCOLD, 2000). • Consequence Categories for Dams (ANCOLD, 2012a). • Environmental Management of Dams (ANCOLD, 2001). • Dam Safety Management (ANCOLD, 2003a). • Risk Assessment (ANCOLD, 2003b). International Commission on Large Dams (ICOLD) guidelines for: • Dam Safety Management: Operational Phases of the Dam Life Cycle (ICOLD, 2015a). • Dam Surveillance Guide (ICOLD, 2015b). • Integrated Flood Risk Management (ICOLD, 2010c). • Tropical Residual Soils as Dam Foundation and Fill Material (ICOLD, 2009c). • Cutoffs for Large Dams (ICOLD, 2009a). • Sedimentation and Sustainable Sue of Reservoirs and River Systems (ICOLD, 2009b). • Concrete Face Rockfill Dams – Concepts of Design and Construction (ICOLD, 2010a). • Mathematical Modelling of Sediment Transport and Deposition in Reservoirs (ICOLD, 2007). • Improving Tailings Dams safety (ICOLD, 2011). • Geomembrane Sealing Systems for Dams (ICOLD, 2010b). • Dam Foundations. Geologic considerations. Investigation methods. Treatment. Monitoring (ICOLD, 2005a). • Risk Assessment in Dam Safety Management. A reconnaissance of Benefits. Methods and Current Applications (ICOLD, 2005b). • Dams and Floods – Guidelines and Case Examples (ICOLD, 2003). • Seismic design and evaluation of structures appurtenant to dams (ICOLD, 2002a).

Table 3.3 Key additional standards and guidelines used in the EIS and appendices (cont'd)

Technical Study	Additional Standards/Guidelines
Frieda River Hydroelectric Project Selection Phase Study (Appendix 2a) (cont'd)	• Reservoir landslides: investigation and management – Guidelines and case histories (ICOLD, 2002b). • Design features of dams to resist seismic ground motion (ICOLD, 2001a). • Tailings dams risk of dangerous occurrences – Lessons learnt from practical experiences (ICOLD, 2001b). • Dam Break flood analysis – Review and recommendations (ICOLD, 1998). • A guide to Tailings Dams and impoundments - Design, construction, use and rehabilitation (ICOLD, 1996). • Tailings Dams and Seismicity - Review and Recommendations (ICOLD, 1995). • Embankment dams - Granular filters and drains (ICOLD, 1994). • Rock materials for rock fill dams - Review and recommendations (ICOLD, 1993). • Selection of design flood - Current methods (ICOLD, 1992a). • Bituminous cores for fill dams (ICOLD, 1992b). • Watertight geomembranes for dams - State of the art (ICOLD, 1991). • Selecting seismic parameters for large dams - Guidelines (ICOLD, 1989). • Dam Safety Guidelines (ICOLD, 1987). • River control during dam construction (ICOLD, 1986a). • Geotextiles as filters and transitions in fill dams (ICOLD, 1986b). • Quality control for fill dams (ICOLD, 1986c). Canadian Dam Association guidelines: • Dam Safety Guidelines (CDA, 2013). • Application of Dam Safety Guidelines to Mining Dams (CDA, 2014). International Finance Corporation guideline: • Environment, Health and Safety Guidelines for Mining (IFC, 2007a). United States Army Corp of Engineers (USACE) engineering documents: • Earthquake Design and Evaluation for Civil Works Projects (USACE, 2016). • Engineering and Design for Civil Works Projects (USACE, 1999a). • Stability Analysis of Concrete Structures (USACE, 2005). • Strength Design for Reinforced Concrete Hydraulic Structures (USACE, 2003a). • Design of Hydraulic Steel Structures (USACE, 2014). • Structural Design and Evaluation of Outlet Works (USACE, 2003b). • Response Spectra and Seismic Analysis for Concrete Hydraulic Structures (USACE, 1999b). • Earthquake Design and Evaluation of Concrete Hydraulic Structures (USACE, 2007). American Society of Mechanical Engineers guidelines: • Process Pressure Piping (ASME, 2016).

Table 3.3 Key additional standards and guidelines used in the EIS and appendices (cont'd)

Technical Study	Additional Standards/Guidelines
Frieda River Copper Gold Project Conceptual Mine Closure Plan (Appendix 3a)	International Council on Mining and Metals planning for integrated mine closure (ICMM, 2008).
	Enduring Value – The Australian Minerals Industry Framework for Sustainable Development (MCA, 2015).
	Australian and New Zealand strategic framework for mine closure (ANZMEC & MCA, 2000).
	Leading practice sustainable development management guidelines: • Mine closure (DIIS, 2016c). • Mine rehabilitation (DIIS, 2016d). • Tailings management (DIIS, 2016). • Preventing acid and metalliferous drainage (DIIS, 2016e). • Leading practice sustainable development in mining (DRET, 2011). • Biodiversity management (DIIS, 2016a). • Stewardship (DITR, 2006). • Community engagement and development (DIIS, 2016b).
Aquatic Biology and Surface Water Quality (Appendix 7a) Terrestrial Biodiversity (Appendices 8a, 8b and 8c)	International Union for Conservation of Nature red list of threatened species (IUCN, 2016).
Noise (Appendix 10)	IFC environmental health and safety guidelines for noise (IFC, 2007b).
	WHO guidelines for community noise (WHO, 1999)
	British Standard 7385 for the evaluation and measurement for vibration in buildings (BS, 1993)
	Australian Standard 2187 for the storage and use of explosives. (AS, 2006).
Air Quality (Appendix 11)	Australian emission estimation technique manual for mining (DSEWPC, 2012).
	IPCC good practice guidance for land use, land-use change and forestry (IPCC, 2003).
	Approved methods for the modelling and assessment of air pollutants in New South Wales (NSW EPA, 2017).
	USEPA. Appendix W to Part 51 - Guideline on air quality models (US EPA, 2003).
	US national ambient air quality standards (US EPA, 2010a).
	IFC environmental health and safety guidelines for air emissions and ambient air quality (IFC, 2007a).
	IFC performance standards on social and environmental sustainability, and associated guidance notes (IFC, 2012).
	Western Australian guidance for separation distances between industrial and sensitive land uses (WA EPA, 2005)
	WHO air quality guidelines for Europe (WHO, 2000).
	WHO's global update on air quality guideline for particulate matter, ozone, nitrogen dioxide and sulphur dioxide (WHO, 2005).

Table 3.3 Key additional standards and guidelines used in the EIS and appendices (cont'd)

Technical Study	Additional Standards/Guidelines
Nearshore Marine Characterisation (Appendix 12a)	Australia and New Zealand guidelines for fresh and marine water quality (ANZECC/ARMCANZ, 2000).
	IUCN red list of threatened species (IUCN, 2016).
Social Impact Assessment (Appendix 13)	IFC good practice note: addressing the social dimensions of private sector projects (IFC, 2003).
	Enduring Value – The Australian Minerals Industry Framework for Sustainable Development (MCA, 2015).
	Equator Principles benchmark for determining, assessing and managing social and environmental risk in Project financing (EPFI, 2013).
	IFC performance standards on environmental and social sustainability (IFC, 2012a).