

# Vanuatu Aviation Investment Project (VAIP)

Environmental and Social Management Plan - Bauerfield International Airport (VLI)  
Incorporating the Resettlement Policy Framework (RPF)

## Vanuatu Aviation Investment Project (VAIP)

Environmental and Social Management Plan - Bauerfield International Airport (VLI)


Prepared by Pacific Aviation Investment Program (PAIP) Technical and Fiduciary Services Unit (TFSU)

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## Glossary and Abbreviations

°C	Degrees Celsius
ACM	Asbestos Containing Material
ADS-B	Auto Dependent Surveillance – Broadcast – a new, low-cost technology that allows for more efficient aircraft surveillance and consequent safer operations across the Pacific. ADS-B is being implemented by all PAIP participating countries.
AGL	Aeronautical Ground Lighting System
ATS	Air Traffic Services
APs	Affected Parties
ARAP	Abbreviated Resettlement Plan
ARFF	Airport Rescue and Fire Fighting
AVL	Airports Vanuatu Limited
AWS	Automatic Weather Station
CAAV	Civil Aviation Authority Vanuatu. This civil aviation authority sits under the Ministry of Infrastructure and Public Utilities. The CAAV discharges its duties and responsibilities in accordance with Civil Aviation laws of Vanuatu CAP 258 and the specific operating rules, satisfying the Vanuatu Government policy and International Civil Aviation Organization (ICAO) standards and requirement.
Category B	World Bank categorised projects with potential limited adverse social or environmental impacts that are few in number, site-specific, largely reversible, and readily addressed through mitigation measures.
CESMP	Contractors Environmental and Social Management Plan
COP	Codes of Practice
CVOR	Conventional VHF Omnidirectional Range
DEPC	Department of Environmental Protection and Conservation
DGMRW	Department of Geology, Mines and Rural Water
DME	Distance Measuring Equipment – A transponder-based radio navigation technology that measures slant range distance by timing the propagation delay of VHF or UHF radio signals.
DVOR	Doppler VHF Omnidirectional Range – a type of short-range radio navigation system for aircraft, enabling aircraft with a receiving unit to determine their position and stay on course by receiving radio signals transmitted by a network of fixed ground radio beacons.
EEZ	Exclusive Economic Zone
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
FOD	Foreign Object Debris

GDP	Gross Domestic Product
GEF	Global Environment Facility
GoV	Government of Vanuatu
HWD	Heavy Weight Deflectometer
HDD	Horizontal Directional Drilling
IA	Implementing agency
ICAO	International Civil Aviation Organisation
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
km	kilometre
L	Litres
LED	Light Emitting Diode
Localizers	A ground-based navigation aid that give lateral guidance to landing aircraft.
m/ m <sup>2</sup> / m <sup>3</sup>	Metre/ square metres (area)/ cubic metres (volume)
MALFFB	Ministry of Agriculture, Livestock, Forestry, Fisheries and Biosecurity
MFEM	Ministry of Finance and Economic Management.
MIPU	Ministry of Infrastructure and Public Utilities. The Public Works Department and Civil Aviation Authority Vanuatu site under this ministry sector.
MLNR	Ministry of Land and Natural Resources
MOWP	Method of Works Plan
Nakamal	Traditional meeting place in Vanuatu
NBV	National Bank of Vanuatu
NBCS	National Biodiversity Conservation Strategy
NDB	Non-Directional Beacon
NGO	Non-Governmental Organisation
OCTA	Office of the Chief Trade Adviser
PAD	Project Appraisal Document
PAIP	Pacific Aviation Investment Program
PESMP	Project Environmental and Social Management Plan
PIB	Public Information Bulletin
PID	Photoionization detector
PPE	Personal protection equipment
ppm	Parts per million
PVMC	Port Vila Municipal Council
PWD	Public Works Department
RAP	Resettlement Action Plan
RBV	Reserve Bank of Vanuatu

RPF	Resettlement Policy Framework
SON	Santo-Pekoa International Airport located in Luganville, Espiritu Santo.
SPREP	South Pacific Regional Environmental Program
Stakeholder	Project stakeholders are all people directly or indirectly, negatively or positively impacted by the project; that are important to make the project successful, or that may oppose the project or that have a vested interest.
TAH	Whitegrass Airport on Tanna
TFSU	Technical and Fiduciary Services Unit
TPH	Total petroleum hydrocarbons
TMP	Traffic Management Plan
TOR	Terms of Reference
UNELCO	The private water utilities company that serves a reticulated water supply to Port Vila.
USP	University of the South Pacific
VANGO	Vanuatu Association of Non-Governmental Organisations
VASANOC	Vanuatu Association of Sports and National Olympic Committee
VAIP	Vanuatu Aviation Investment Project
VEAN	Vanuatu Environment Advocacy Network
VPF	Vanuatu Police Force
VHF	Very high frequency
VLI	Bauerfield International Airport located in Port Vila, Efate
VSAT	Very small aperture terminal
VOCs	Volatile organic compounds
VPMU	Vanuatu Project Management Unit
WB	World Bank



## Executive Summary

The Pacific Aviation Investment Program (PAIP) is funded by the World Bank (WB), participating countries, and other donor partners with the development objective to: (i) improve the safety, security, efficiency, management and environmental sustainability of airports, and (ii) improve regional harmonization of aviation safety standards. As part of the regional PAIP, aimed primarily at improving airport safety and security across the Pacific, the Vanuatu Aviation Investment Project (VAIP) has been established. Through VAIP, the Government of Vanuatu (GoV) and the WB are working together to improve international airport infrastructure in Vanuatu. The participating airports in Vanuatu are:

- Bauerfield International Airport (VLI) located in Port Vila, Efate.
- Santo-Pekoa International Airport (SON) located in Luganville, Espiritu Santo.
- Whitegrass Airport (TAH) on Tanna.

VAIP will enable air transport infrastructure and operations of participating airports to meet International Civil Aviation Organisation (ICAO) standards, and as part of the technical assistance, will support development of an Aviation Sector Strategy and Airport Master Plan to improve sustainability of the airport and civil aviation of Vanuatu.

The overall VAIP program for each of the three candidate airports are anticipated to consist of the following primary tasks:

Bauerfield International Airport (VLI)	Santo-Pekoa International Airport (SON)	Whitegrass Airport (TAH)
<ul style="list-style-type: none"> <li>a) Temporary surface treatments</li> <li>b) Rehabilitation and overlays of pavement areas including associated drainage, and increase of capacity from Code C to Code E aircraft</li> <li>c) Widening of existing apron or construction of a new apron</li> <li>d) Replacement of approach lighting, upgrade of runway lighting and cabling.</li> <li>e) Installation of new air traffic control equipment.</li> <li>f) Installation of new air navigation aids.</li> <li>g) Installation of new weather monitoring equipment.</li> <li>h) Installation of new secure communications.</li> <li>i) Improved power supply.</li> <li>j) Evaluation of ARFF capacity.</li> <li>k) Installation of new security equipment.</li> </ul>	<ul style="list-style-type: none"> <li>a) Milling and overlay of pavements</li> <li>b) Repairs to cyclone damaged buildings</li> <li>c) Installation of new air traffic control equipment.</li> <li>d) Installation of new air navigation aids.</li> <li>e) Installation of new secure communications.</li> <li>f) Installation of new security equipment.</li> </ul>	<ul style="list-style-type: none"> <li>a) Resealing of pavements</li> <li>b) Repairs to cyclone damaged buildings</li> <li>c) Upgrade of runway lighting and cabling.</li> <li>d) Installation of new air navigation aids.</li> <li>e) Installation of new weather monitoring equipment.</li> <li>f) Installation of new secure communications.</li> <li>g) Improved power supply.</li> </ul>

VAIP is a Category B project under WB environmental and social screening guidelines and requires the development of a site specific Project Environmental and Social Management Plan (PESMP). Due to the nature of the project it is expected that environmental impacts will be site specific, few if any are irreversible, and mitigation measures can be readily designed and implemented. The PESMP is required to identify and assess environmental and social issues associated with the proposed activities, and develop mitigation and management measures consistent with World Bank requirements.

The PESMPs includes information on mitigation, monitoring, responsibilities and institutional capacity. Individual PESMPs have been prepared for the VLI, SON and TAH project sites. The majority of potential adverse impacts will occur during the construction phase of the VAIP. However given the scope and nature of the works, mitigation

measures should be able to alleviate or lessen any potential negative impacts. The key potential impacts that are being mitigated are:

- Sourcing of aggregate materials.
- Noise and vibration disturbances from night works, machinery and construction activities.
- Wastewater discharges.
- Construction camp establishment and dis-establishment.
- Solid waste generation.
- Soil erosion through vegetation clearing and excavation.
- Hazardous materials handling and storage.
- Air pollution from dust and equipment.
- Traffic disruption during construction activities.
- Transport of equipment and materials from the port and around Efate.
- Disposal of waste materials.
- Safety hazards for workers and users of the facilities where upgrades are occurring.
- Water demand management for freshwater resources.

The PESMPs are designed to address these issues through:

- Implementation of the PESMP through the more detailed Contractor's ESMP (CESMP) and associated codes of practice documents included in Appendix G.
- Regular supervision and monitoring of the implementation of the PESMP (refer PESMP monitoring plan).

## 1.0 Introduction

### 1.1 Background

The Pacific Aviation Investment Program (PAIP) is funded by the World Bank (WB), participating governments, and donor partners. It has the development objective to: (i) improve the safety, security, efficiency, management and environmental sustainability of airports, and (ii) improve regional harmonization of aviation safety standards. The Government of Vanuatu (GoV) and the WB are preparing a project to improve international airport infrastructure in Vanuatu and as such the Vanuatu Aviation Investment Project (VAIP) has been established as part of the PAIP. In addition to the original scope of works, the VAIP has also provided support to the GoV with emergency works at VLI in the form of assistance with emergency pavement repairs.

The Republic of Vanuatu is a small Pacific archipelago island nation located in the South Pacific Ocean and is approximately a two to three hour flight from ports in Australia and New Zealand. There are approximately 80 islands which comprise of 12,336 km<sup>2</sup> spread over 1,300 km. Efate is one of the largest islands and hosts the country's capital Port Vila and is home to a quarter of the country's population.

VLI, located just outside of Port Vila, is the main international airport within Vanuatu and is the primary access point for tourists and expatriate ni-Vanuatu people. VAIP was prepared in early 2015 as an Emergency Operation under paragraph 12 of OP/BP10.00 on the basis that immediate risk of complete pavement failure on 600 m of VLI runway had resulted in the cessation of most jet operations, resulting in a detrimental impact on the national economy which relies heavily on tourism. Among other essential works, the VAIP project seeks to address the poor condition of runway and apron areas and replace all approach lighting to secure the continuation of international flights. Following the cessation of international flights by several airlines, a first round of emergency repair works were completed in April 2016. These works comprised Surface Enrichment Spray Treatment (SEST) of the selected pavement surface to eliminate foreign object debris incidents as the surface stone was very loose in some areas. In addition to this, cold mix asphalt patches were applied to selected areas to remove and replace weak pavement areas and pavement upgrades are urgently needed before the temporary measures expire, resulting in more jet operation suspensions.

The primary beneficiaries of the VAIP are air travellers throughout the Pacific Islands, as well as the national and regional administrative bodies and personnel involved in air transport management, freight and passenger air service providers. The upgrade of the airport to cater for Code E aircraft and the construction of a new apron also brings direct benefits to disaster responses, by being able to handle larger aircraft more safely. An indirect benefit of this is the improvement of the ni-Vanuatu resilience to disasters. Other indirect beneficiaries are tourism-related services and seasonal labour markets.

In order to progress to the bidding of the proposed pavement and associated works at VLI, a project level Environmental and Social Management Plan (PESMP) is required to identify and assess environmental and social issues associated with the proposed activities, and develop mitigation and management measures consistent with WB requirements.

### 1.2 Environmental and Social Objectives and Scope

This phase of the VAIP project is to enable air transport infrastructure and operations of VLI to meet International Civil Aviation Organisation (ICAO) standards, and to improve sustainability of the airport and civil aviation of Vanuatu.

### 1.3 Environmental and Social Management Plan Objectives and Scope

VAIP is a Category B project under WB OP4.01 Environmental Assessment, and under the PAIP Environmental and Social Management Framework (ESMF) structure for safeguards instruments, a site specific PESMP is required. Due to the nature of the project it is expected that the majority of the environmental and social impacts will be site specific, few if any are irreversible, and mitigation measures can be readily designed and implemented.

The objective of the PESMP is to provide a framework for managing the airport upgrade works and Master Planning process in a manner that incorporates the principles of environment sustainability while minimising potential adverse effects on the local community and the environment.

To achieve this objective the PESMP outlines the mitigation measures required for avoiding or minimising the potential impacts of the works and provides a monitoring program to confirm effectiveness of the required mitigation measures. Roles and responsibilities are clearly defined for all stages of the project works and execution of project works. The PESMP also provides the details of how the community and stakeholders are to be engaged and the mechanisms for ongoing consultation and communication.

This PESMP is limited to the scope of works for VLI as described in Section 2 of this document and addresses impacts and mitigation measures identified at each stage of the project's execution, namely temporary emergency repair works, detailed design, construction, operation and strategic planning. This PESMP will be included in the bidding documents for construction contractors and form the basis of the Contractor's ESMP (CESMP). The mitigation measures identified in this PESMP form the minimum requirement for reducing impacts on the environment as a result of works associated with the project. The CESMP will be prepared by the contractor, approved by the Supervision Engineer and disclosed prior to commencing civil works.

### **1.3.1 Environmental Safeguards Document Hierarchy and Development**

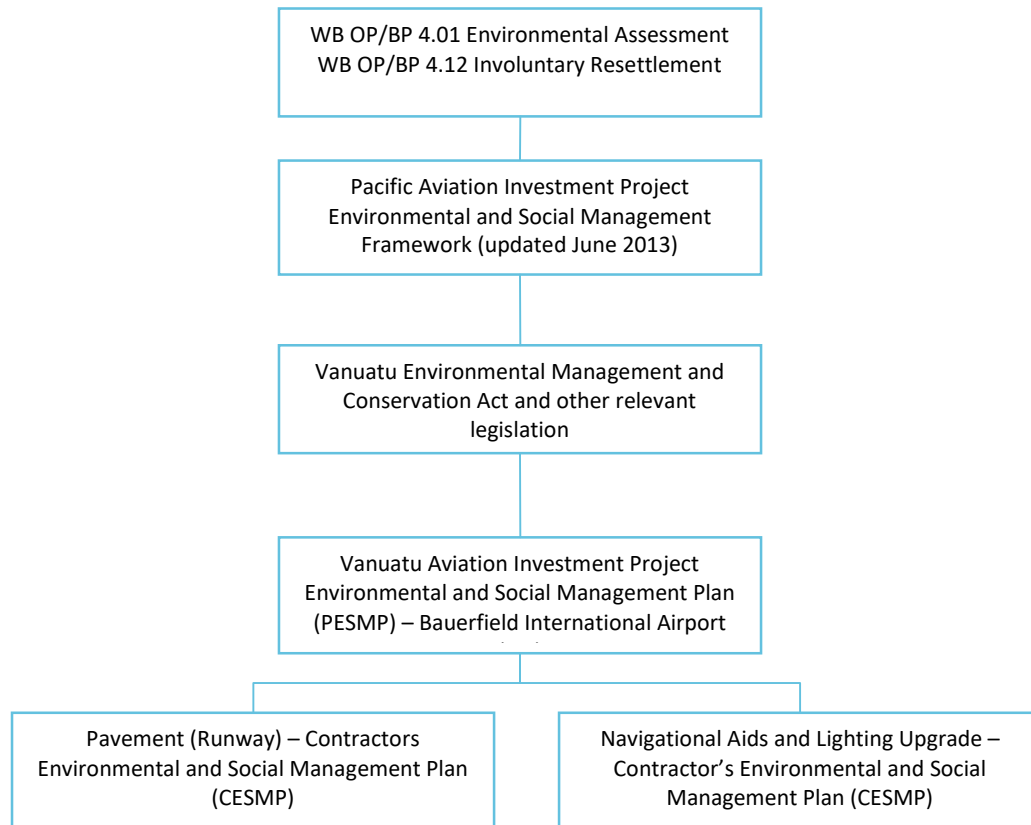
At its inception in 2011, PAIP had an ESMF which outlined the key steps and procedures in screening and assessment of environmental and social issues related to the PAIP (generally). The ESMF set out the principles, rules, guidelines and procedures to assess the environmental and social impacts. It contained measures and plans to reduce, mitigate and/or offset adverse impacts and enhance positive impacts, provisions for estimating and budgeting the costs of such measures, and information on the agency or agencies responsible for addressing project impacts. It defined roles and responsibilities, and provided guidance for the Implementing Agency (IA), Executing Agencies (EA) (respective country's ministries) and the respective countries Civil Aviation Authorities for developing the environmental and social safeguards documents in compliance with respective WB safeguards operational policies (namely OP/BP4.01, OP/BP4.12, OP/BP4.10) and respective country system environmental and social safeguards requirements. It has guided the preparation of this PESMP.

This PESMP is a dynamic document which will be updated as and when there are changes to the project which will impact on the public. At any one time there is only one PESMP which is considered current and applicable to the VLI subproject. As of October 2016, the current updated PESMP is revision E and this version supersedes all previously disclosed versions.

The diagram below shows the hierarchy of environmental and social safeguards instruments culminating in the development of the CESMP which specifically details how the contractor will implement the requirements of the PESMP and the higher level instruments, policies and country safeguards systems. Issues, impacts and mitigation measures identified in superseded PESMPs are incorporated into subsequent versions unless they have been addressed through design or other means, in which case this is identified in the PESMP. The Contractors are required to comply with this PESMP and use it to identify and guide what mitigation measures need to be implemented. The CESMP will document implementation and specific measures that will be used based on their construction methodology (if different from that identified in Section 2). The CESMP is, in turn, a dynamic document and must be updated as and when scope, design or circumstances change, cleared and disclosed as appropriate.

This PESMP Revision E will be included with the VLI temporary works, pavement (runway, taxiway and apron) and runway lighting and air navigational aids Contractor procurement bid documents for the VAIP.

**Figure 1 Environmental Safeguard Document Hierarchy**



## 1.4 PESMP Methodology

The methodology used to develop this version of the PESMP is as follows:

- Review the ESMF.
- Prepare for field survey and organise site visits, include specific requirements as identified in the ESMF.
- Conduct field survey using the ESMF and an environmental screening checklist as a basis for assessment.
- Liaise with Design and Supervision team regarding any findings which may influence detailed design.
- Update the VLI PESMP based on consultation outcomes and update with information obtained from the field survey and conceptual designs.
- Submit to Technical and Fiduciary Services Unit (TFSU), Vanuatu Project Management Unit (VPMU), GoV (Department of Environmental Protection and Conservation [DEPC]), Airports Vanuatu Limited (AVL) and the WB for review prior to consultation, update according to comments and feedback from all parties.
- Consultation in and around VLI with site specific Public Information Bulletin (PIB) available in hard copy conducted by a VPMU engaged consultant.
- Update PESMP for final detailed design of pavements and NAV AIDS
- Incorporate outcomes as required from consultation into final VLI PESMP to be included in bidding documents.
- Submit to TFSU, VPMU, GoV (DEPC), AVL and WB for final review.



## 2.0 VLI Airport Description of Works

### 2.1 VLI Upgrade Description of Works

#### 2.1.1 Overview of Works

The VAIP VLI program consists of investments almost entirely within the existing VLI airport boundary and includes the following primary tasks:

- a) Temporary surface treatments.
- b) Rehabilitation and upgrading of existing airport pavements.
- c) Widening of runway pavement to include new shoulder strips.
- d) Extension of the existing apron, or construction of new apron.
- e) Widening of existing taxiways.
- f) Upgrade of runway lighting and cabling.
- g) Replacement of runway approach lighting and cabling
- h) Installation of new air traffic control equipment.
- i) Installation of new air navigation aids.
- j) Installation of new weather monitoring equipment.
- k) Installation of new secure communications.
- l) Improved power supply.
- m) New ARFF station and fire tenders.
- n) Installation of new security equipment.

#### 2.1.2 Temporary Surface Treatments

Following the identification in August 2016 of a rapidly increasing rate of deterioration of the old and highly oxidised asphalt surfacing at Bauerfield International Airport, a further 350 tonne of cold mix asphalt was produced and shipped to Port Vila along with the necessary plant and equipment to implement additional repairs.

The repairs, identified in conjunction with AVL, the TFSU representative and Fulton Hogan, were implemented in September of 2016 and involved milling out and replacing 1700 sqm of failed asphalt surfacing with a cold mix asphalt repair product to a depth of 75mm.

The contract works include increasing AVL's capacity to respond to further asphalt related maintenance issues and providing ongoing inspections and monitoring.

#### 2.1.3 Runway Pavement Design

The land on which the airfield was positioned was part of a plantation owned by Henri Russet. The US Army established the airfield in 1942. The airfield was originally named Efate Field, Vila Field or McDonald Field but was later officially named Bauer Field after Lt-Col. Harold W. Bauer, an American World War II fighter pilot. The base was disestablished and abandoned in February 1946. Later the airfield was established as an international airport.

The VLI 11/29 Runway is 2.6 km in length and 45 m wide, the current surface is asphalt. Runway upgrade works were last completed in the late 1990's. The runway is past the end of its service life and has suffered severe structural failure. This has necessitated two sets of emergency repairs in 2016 to keep the airfield operational for jet aircraft.

Damages are particularly critical within the heavy trafficked areas of the runway (see Plan 751098.2000-010, Appendix A) and with the commencement of the main works, some 2000 metres will undergo complete rehabilitation and the balance an overlay. The runway pavement strength and certain geometric features are also

being upgraded to cater for Code E type aircraft to allow for GoV stated goal of increases in Vanuatu's international passenger movement over the next 20 years (see Section 2.4).

The runway will be milled to a depth of at least 100mm along the pavement length. A heavy tack coat will be applied to the existing coral base asphalt and a new AC20 base layer will be laid up to 300mm thick followed by the surface asphalt level of at least 50mm. The runway is also having new shoulder areas added along its length with a width of 7.5m on each side. The shoulders will have a 200mm basecourse and will be sealed with either asphalt or chip seal (see Plan 751098.2000-022).

The navigational approach lighting will be bid as a separate package to the paving works and therefore the design for these works described within this PESMP is subject to change pending final design approval.

The proposed runway pavement scope includes the following activities:

- Pavement upgrade to Code E compliance for the 11/29 Runway over its entire length.
- Upgrade and widening of the two turning node taxiways for Code E compliance.
- Introduction of new shoulder areas for the length of the runway
- All pavements will receive new markings.

The design scope for VLI is the rehabilitation and upgrading of the runway, taxiway and apron for a projected life of approximately 20 years depending on the volume of Code E aircraft traffic over that time.

The runway pavement works are anticipated to use local quarries for coronous materials, and imported basalt materials for surfacing. The scope of work associated with quarrying includes:

- Confirmation of the available existing permitted aggregate supply for sources within Vanuatu.
- Source additional aggregates from suitable overseas quarry, with appropriate biosecurity clearances.
- Maintenance of designated haul road routes for the aggregates from point of loading to VLI.

#### **2.1.4 Extension of the Apron**

The project will either: (i) extend the existing apron on eastern and western sides by an additional approximately 12,500 m<sup>2</sup>; or, (ii) construct a new apron within the existing boundary to support the development of a new terminal. Any work on the existing apron would include both inlay and overlay.

#### **2.1.5 Holding Bay**

The works will also include a turning bay expansion to cater for Code E aircraft at each threshold with holding bay at both thresholds enable a narrow-body jet to be able to hold clear of the runway without disrupting operations. Associated with the expansion of the turning node at threshold 11, the airfield boundary fence will be extended to match the existing boundary of the AVL airfield lease (See Plan 751098.2000-006, Appendix A).

#### **2.1.6 Additional Taxiways and Widening of Existing Taxiway**

To accommodate Code E aircraft, the existing taxiway will be widened and two turning nodes at the eastern and the western extremities of the runway will be upgraded.

#### **2.1.7 Upgrade of Runway Lighting and Cabling**

Current incandescent airfield lighting will be replaced with high intensity, energy efficient LED lighting at VLI.

#### **2.1.8 Replacement of Runway Approach Lighting and Cabling**

Cyclone Pam resulted in the total destruction of the runway approach lighting and their power supply, and is in urgent need of replacement. In addition to the replacement of the approach lighting, these works will also require the replacement and relocation of the Constant Current Regulators (CCRs) which powers and sequences the lighting. The CCRs are two filing cabinet sized units and are currently located at the fire station on the runway and will likely be moved to the Point Mele Non-Directional Beacon (NDB) at the start of the approach lighting system, 5km from the runway.

In replacing the approach lighting system, the preference of the Government of Vanuatu is to bury the power supply cables along approximately 3km the lighting path. This will reduce the need for ongoing maintenance and will also reduce the infrastructure's exposure to climatic events. Cable burial will be across privately leased land and will require access to that land. Appropriate safeguard arrangements will be made with the lease holders and



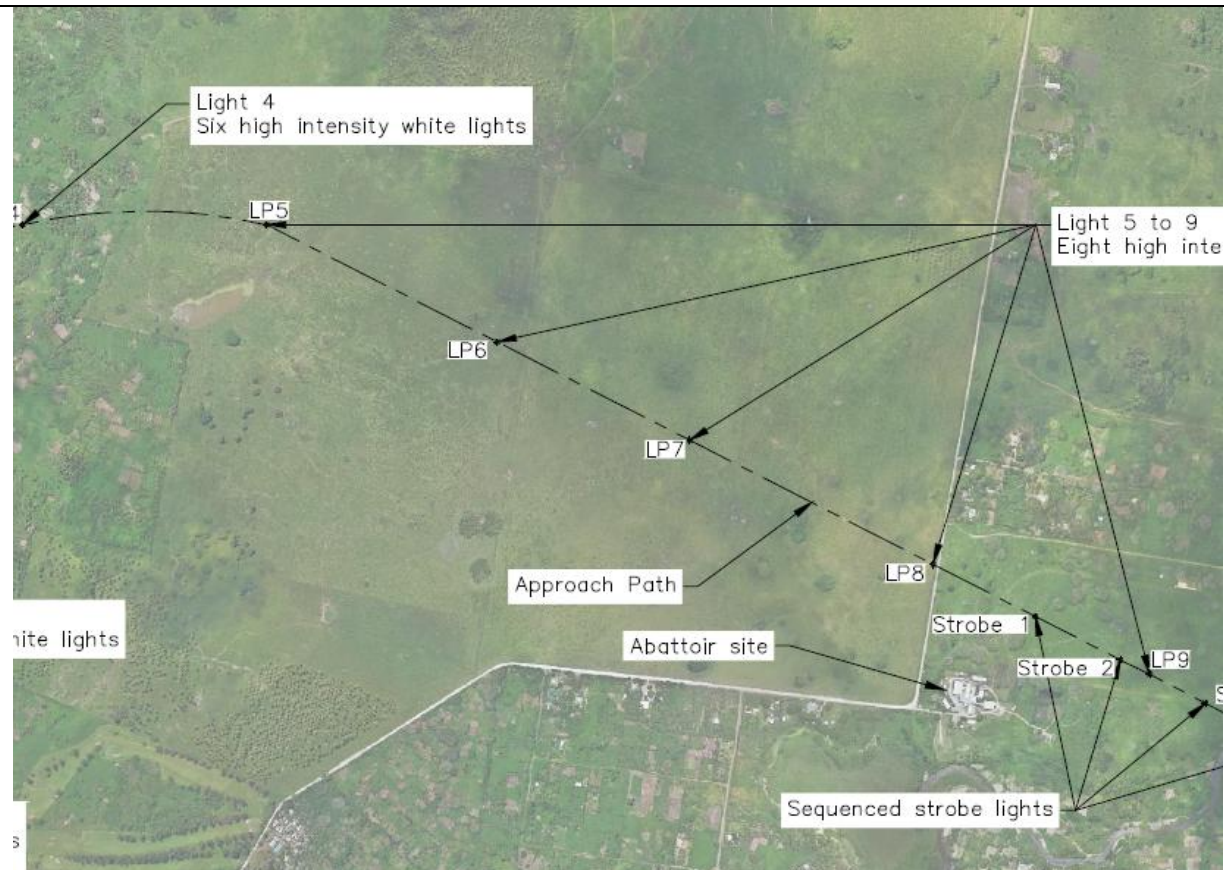
custom land owners once all leases and their status have been identified (see Section 6.3). While access to the land for cable burial will be short term and temporary, there are some longer term consideration regarding access to the cable and some restrictions of uses to that section of land.

The approach lighting pathway crosses the La Colle River, located 100m to the west of the runway. Before Cyclone Pam, the power supply for the lighting was via overhead cables, however the new lighting design will negate the need to span the river with any cabling. The power source for the high intensity navigation light on the airfield side of the river will be powered from the airport. The remaining high intensity lights and all of the strobe 'running rabbit' lights will be located on the far side of the river and powered from the new CCRs at the Point Mele NDB location. The introduction of running rabbit lights will enable domestic aircraft and international flights to land in bad weather, low light conditions and at night. These lights will provide a sequenced pathway for planes to follow for the entire approach route over land and will enable the airport and airlines to increase their services to operate over more hours of the day, increasing passenger numbers and revenue generated.

The physical works associated with this element of the project would involve trenching and burying the cables, installing new lighting poles in the same locations as the previous poles along the same pathway and providing a secure location to house the CCRS and spare backup generator.

In order to bury the cabling for the approach lighting system, excavation works will need to be carried out across privately leased land (Figure 2). The trenching for the underground cable ducting can either be excavated manually or with trenching equipment. For a single duct, the trench shall be between 150-300mm and increase proportionally for 2 or more ducts. The walls of the trench will be vertical in order to minimise surface disruption. When burying the ducting, the top of the duct will be between 500-750mm below the graded surface and the final 100mm of this will be the replacement of topsoil and vegetation separately removed during the excavation process. The trenched and excavated area will be compacted level with the adjacent surface. Surplus spoils from the excavations will be reused where possible or, if reuse is not possible, disposed of off-site at a pre-approved disposal location (see Section 7.9).

**Figure 2: Proposed route for approach lighting. Burial length will be approximately between Light 4 and LP9.**



### 2.1.9 Upgrade of Airfield Drainage System

The need for subsoil drainage has been recognised for the taxiway area, based upon measured groundwater levels in this area and the saturation within the recovered asphalt core samples. Additionally, stormwater drainage has been identified as being inadequate to effectively manage massive rain events such as those caused by TC Pam in 2015. The April 2015 inspection noted that flood flows caused by TC Pam caused severe scouring to the outflow area of the stormwater swales both on the airside and landside of the perimeter fence on the southern side of RWY 11 threshold and westwards from there towards the La Colle river. Observations made during TC Pam report that widespread flooding of the airfield occurred during the cyclone, most notably at the low point surrounding the RWY 11 turning node. As a result of these inspections, a drainage study was commissioned and upgrades of the stormwater drainage system have been added to the design scope.

The drainage study identified that VLI airfield is vulnerable to flooding from overland flow generated from the direct catchments to the north. Currently the main flooding relates to the northern swale drain and its disconnect from draining into the La Colle river. Due to the topography, catchment runoff to this drain collects and ponds against the runway with downstream capacity of this drain limited by the culverts under the runway which connect to the southern swale drain and ultimately, the La Colle flood plain. However, given the limited size and capacity of these cross runway culverts, flood waters rise in the northern drain and along the runway edge until overtopping and flooding the runway as water flows across to the southern side. The modelling indicates that this can be expected to occur more frequently than once every five years.

The knock on effect of this above scenario is high volumes of water exiting the southern drain westernmost culvert and causing flooding over the roads on the landside of the airfield perimeter until the water can naturally permeate the La Colle flood plain or reach the river.

The drainage study recommended that, based on flood management considerations and the degree of flood relief achievable, the preferred option for the drainage would be to re-direct and increase the capacity of the northern and southern runway drains to the La Colle River. In essence this would mean increasing the capacity of the northern swale drain by widening and deepening the existing drain so as to grade it to the La Colle river channel some 150 meters from the western end of the runway and allow for drainage from this side of the runway. This option would reduce the pressure on the existing cross runway culverts and reduce the peak discharge across the runway to  $2\text{m}^3/\text{s}$  from  $2.5\text{m}^3/\text{s}$  and would reduce the instances and pooling and flooding of the runway. Opening the northern drain to allow drainage to the La Colle flood plain will also reduce the volume of runoff discharged through the southern drain and will more evenly distribute the water flow into the flood plain from the airfield helping to lessen any localised flooding outside the boundary fence.

The study also recommended that scour protection be considered to protect the runway from erosion at the western end along the La Colle River course to ensure the long term continuity of airport operations. This recommendation was based on the mapping which showed that the runway extends to some extent into the La Colle active flood plain the airfield vulnerable to erosion at high river flows.

Based on the recommendations of the drainage study, the detailed designs have provided for:

- J New swale drain installed around northern perimeter of RWY 11 turning node and channelled to a rehabilitated catchpit and culvert just outside the perimeter fence (see Plan 751098.2000-301, Appendix A).
- J New culvert and swale drain system installed around the southern perimeter of RWY 29 turning node and channelled towards the strengthened apron drainage system catchpit and inlet basin (see Plan 751098.2000-305, Appendix A).
- J Installation of new oil-water separator in apron drainage system and realignment of swales and culverts to support pavement upgrades (see Plan 751098.2000-306, Appendix A).

The design plans do not include the recommendation made in the drainage study to provide scour protection from potential erosion caused by the La Colle river flood plain to the western end of the runway which may have an impact on operations in the long term but can be addressed in the Master Plan development process.

#### **2.1.10 Installation of New Air Traffic Control Equipment**

This will include the provision of new Air Traffic Services (ATS) consoles in the existing control tower for VLI to monitor airport operations.

#### **2.1.11 Installation of New Air Navigation Aids**

The VAIP project will finance critical navigation aids to ensure safe operations, including the installation of Doppler very high frequency (VHF) Omnidirectional Range (DVOR) and Distance Measuring Equipment (DME) for VLI. This will replace the current outdated Conventional VHF Omnidirectional Range (CVOR) and in addition, new localizers will also be financed. As access to the existing localizer location is via a degraded 4x4 track on private land, it is expected that the replacement localizers will have remote reboot capability which will minimise the need for direct access to the site following installation. At this stage, it is not envisioned that any upgrade works will be undertaken on the access track, however, should track upgrading works be considered for funding under the project at a future time they would require commensurate environmental assessment and land ownership and access issues to be resolved. Furthermore the project will fund the installation of ADS-B, including ground stations and the necessary avionics equipment for aircraft. A detailed roll-out study has been conducted under PAIP identifying requirements, and an implementation coordinator is currently being recruited to supervise implementation.

The physical works associated with the new air navigation aids include concrete pads and trenching for power and communication cables.

#### **2.1.12 Installation of New Weather Monitoring Equipment**

An Automatic Weather Observation Station will be financed for VLI.

#### **2.1.13 Installation of New Secure Communications**

The project will upgrade the nationwide VHF communications and supply and installation of very small aperture terminal (VSAT) secure communications system for satellite-based ground-to-ground communications. The system will enable voice and data communications for airline operations via a full-mesh closed network connecting regional civil aviation authorities, airports and air services providers. The project will also finance a management contract, which will operate the network across the region.

#### **2.1.14 Improved Power Supply**

The provision of improved power supply including backup generators is proposed for VLI.

#### **2.1.15 Airport Rescue and Fire Fighting Shelter**

Due to damage incurred during TC Pam, it is necessary to replace the existing fire tender shelter which was significantly damaged in the storm. This will consist of a simple steel frame shelter on a concrete pad, near the location of the existing station.

#### **2.1.16 Installation of New Security Equipment**

New x-ray machines for passenger baggage and cargo screening are proposed for the international terminal at VLI. These will be installed in existing facilities.

## **2.2 Alternatives**

The VLI airport is existing infrastructure which requires significant repairs to ensure jet operations continue operations.

During project preparation, numerous stakeholders and affected parties raised the issue of the current VLI airport location during the March and April 2015 public consultation meetings. There was a general consensus that, ideally, the international airport on Efate should be relocated outside of Port Vila, further away from residential settlements and at a location that has more capacity for expansion. However, it was also recognized that such an investment would be a long-term (some 10 year) undertaking, and in the interim it would be necessary to ensure full operations at VLI were maintained. The degraded condition of the runway means that the works needed to keep VLI operational are emergency works and the emphasis of this project is on enabling VLI to provide a safe

operating environment for the airlines that have ceased flights to Vanuatu. The relocation of the airport is outside the current or envisaged scope of the VAIP project and is not under consideration.

The runway and airport upgrades to Code E were considered a suitable alternative to maintaining the airport at its original capacity for up to Code C aircraft because of the small incremental cost and short delay in detailed design, in return for a broad and long term social and economic benefit. The benefits derived from upgrading to a Code E airport, specifically with regard to increased opportunity for economic growth and safe operations of disaster relief flights cannot be achieved with a Code C runway. The increased apron capacity will avoid the congestion problems experienced in the aftermath of Cyclone Pam.

The replacement of the approach lighting system and its associated power supply has presented a number of alternative design approaches and methodologies for spanning the La Colle river with the necessary cabling that have been considered. There were three options considered regarding the installation of the cables; installing the power cables above ground as per the pre-cyclone design, designing the lighting in such a way that sequenced strobes lights are not on both sides of the river and therefore sequencing control cables do not have to span the river or burying the cables under the river. In considering the cost and logistical implications for burial of the cable under the river and the vulnerability to climatic events of the above river method, it was decided to rearrange the lighting to negate the need for cables to span the river at all. This chosen method means the relocation of one strobe light to the far side of the river, however this does not limit any aircraft operations.

Additionally, two locations have been considered for the necessary relocation of new CCRs units which will power and regulate the approach lighting. A potential site at a nearby abattoir would be a convenient location for the CCRs controlling the strobe lights, however this is privately owned land and would require some form of easement or secured lease to install the equipment. A second location which is preferable for the CCRs is at the Point Mele NDB at the start of the approach lighting path. The preferred option by the design consultants is to use the NDB location for the CCRs and stand by generator due to the land ownership that AVL already exists over this property and to also facilitate compliance with WB safeguard policies.

Other alternatives regarding design approach and methodology were explored however budgets and constraints around land and natural resource availability limited the selection of design and construction methodology. The designs and proposed construction methodology have been selected based on the most effective use of natural resources, labour, ease of ongoing maintenance, effects on the local environment and community.

## **2.3 Construction Methodology**

The runway pavement will be the first component of the VAIP to be started followed by the navigational aids. The contracts for the physical works for each component have yet to be awarded so the precise construction methodology is unknown. These will be detailed in the CESMP which will be submitted and approved prior to commencing civil works. The detailed design for the pavement works has now been completed and this PESMP reflects these plans.

### **2.3.1 Method of Works Plan (MOWP)**

The Method of Works Plan (MOWP) is a required document by CAAV and AVL for any major construction works within the boundaries of an airport. The MOWP sets out the operational requirements for maintaining a functioning airport throughout the construction process. It includes the concessions and alternative arrangements that may need to be made (e.g. alternative aircraft parking apron) and staging of the construction process while ensuring the safety and security of all personnel, the community and aircraft and continued operation of the airport throughout construction works.

### **2.3.2 Equipment**

Specialised equipment such as the asphalt plant (including dust scrubber), paver and milling machine will need to be imported for the VAIP project. It is likely that general construction equipment such as excavators and rollers can be sourced locally. All cargo, whether air or ship, will need to be processed in accordance with Vanuatu quarantine and customs laws which require fumigation (proof of) of materials and equipment and declarations by personnel (specifically regarding communicable diseases).

### **2.3.3 Aggregate Supply**

It is likely that basalt aggregate materials will need to be imported for the VAIP works due to current unavailability of a suitable local supply and the timeline for undertaking construction. For coronous aggregates, importing should not be necessary as there are a number of existing permitted local quarries on Efate which are currently

established and in use for other infrastructure projects. The sources and estimated volumes of the different types of aggregate (basalt and coronous) and materials required for the pavement works and also the runway lighting and air navigational aids will be stipulated in the CESMP.

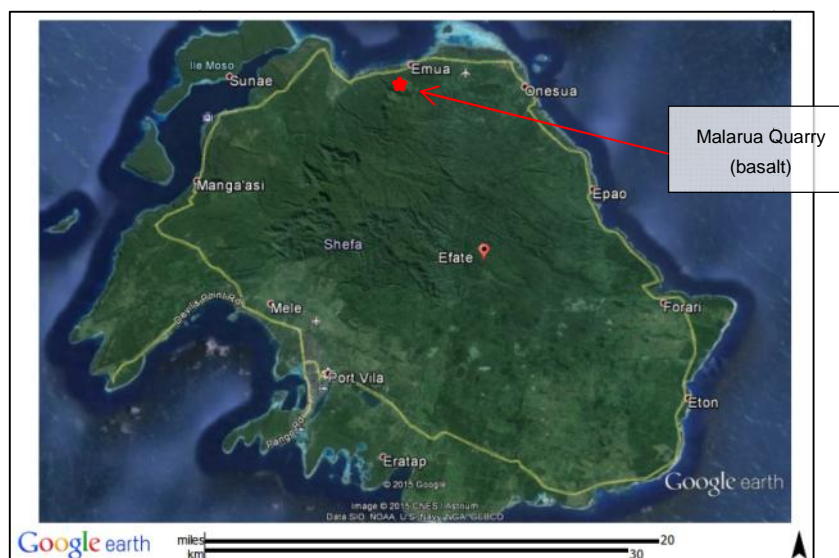
In the event that the contractor wishes to open a new quarry, a new quarry permit would be required under the Mines and Minerals Act, Quarry Permit Regulation Order No. 8. The Act describes the requirement of a permit application and Appendix G of this PESMP provides a guideline to the Contractors for selecting and renewing quarries which must be, along with the requirements in the PESMP, adhered to ensure compliance with WB safeguard policies. Prior to any new quarries being used for the VAIP project, public consultation will be completed with any affected parties relating to each new or re-opened quarry site.

### Basalt Aggregate Source

Local supplies of basalt aggregate are available from one existing quarry on Efate, Malarua Quarry (Figure 3). This quarry does have sufficient material left to extract, however, since the new Lands Act has come into effect the custom ownership of the site has been disputed and the quarry is not currently accessible to the VAIP. In August 2016 it was considered unlikely that the Lands Tribunal would resolve this issue within the timeframe necessary for the VAIP project and therefore it is now likely that these aggregate materials will be imported into the country. An MOU agreement was put in place in August 2016 which has enable GoV owned existing basalt stockpiles to be removed and used, however the amount available is insufficient to for the demands of VAIP and other ongoing projects so it is anticipated that aggregate will need to be imported. Any imported aggregates would need to be fumigated, verified as inert and free of contaminates and subject to import conditions of Vanuatu as well as export conditions of the source country.

There is a precedent for the Government of Vanuatu to put an interim measure in place which would allow access to the quarry and the monies put into a trust account for dispersal once the dispute is resolved. This has been undertaken on other occasions for infrastructure projects; however this solution would not satisfy WB Safeguard requirements and would therefore not be permitted for this project. Should the land dispute be resolved at the Malarua Quarry in time for the VAIP works, a new quarry permit will be required under the Mines and Minerals Act, Quarry Permit Regulation Order No. 8. The Act describes the requirement of a permit application and Appendix G of this PESMP provides a guideline to the Contractors for selecting and renewing quarries which must be adhered to ensure compliance with WB safeguard policies. The quarry property boundary will also need to be redefined to encompass the land beyond the existing quarry face. Prior to any local quarries being create or reinstated for the VAIP project, public consultation will be completed with any affected parties relating to each new or re-opened quarry site.

Figure 3 Malarua Quarry Site Location in North Efate



Source: Google Earth 2015, Imagery date 7 December 2014.

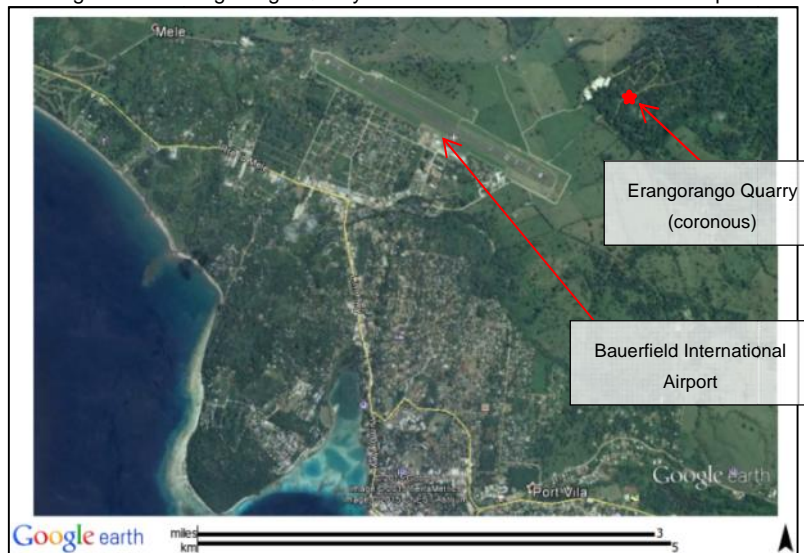


### Coronous Aggregate Source

In the vicinity of Port Vila, there are currently 5 existing, permitted coronous quarry operations. One quarry, Erangorango Quarry is less than 1 km north-east of VLI (refer Figure 4). This is the largest coronous quarry operation in the area. There is a diesel generator on site to power the processing operations. There is also an established permitted water supply network for aggregate washing processes. Plates 1-2 show the quarry and aggregate processing operations at Erangorango Quarry. The haul route from this quarry is less than 1 km and passes briefly through the eastern periphery of the settlement south of VLI. Due to the size of the operation, permit status and proximity to VLI, this quarry is the preferred coronous aggregate source.

Plate 3-4 show the quarry conditions of two of the other four existing permitted quarries within the Port Vila vicinity. Teoumaville Quarry is the least structured or controlled of these quarries and does not allow for crushing of the aggregate on site while Eratap Quarry is similar to Erangorango Quarry in the available facilities and site conditions.

Figure 4 Erangorango Quarry Location North-East of Bauerfield Airport



Source: Google Earth 2015, Imagery date 7 September 2014.

Plate 1 Existing quarry face and blasted material



Plate 2 Aggregate processing plant at the quarry site



**Plate 3 Aggregate stockpiles at Tueomaville Quarry**



**Plate 4 Eratap Quarry operations**



### **Runway Lighting and Air Navigational Aids Aggregate Requirements**

Small amounts of material (sand and hard fill) will be required for the excavations associated with the runway lighting and air navigational aids upgrade work as detailed in Section 2.1.6. Material from the excavations themselves will be used in the first instance and supplemented as required either by the former pavement basecourse material that could not be re-used during the rehabilitation works, or coronous quarry derived material.

#### **2.3.4 Construction Camp and Lay Down Areas**

The construction camp is not a workers residential camp, and foreign contractors will be required to use local existing accommodation facilities throughout the project. The construction camp consists of the site offices, storage and associated facilities. The final selection of lay down sites and location of asphalt plant have yet to be decided and will be included in the CESMP.

The proposed construction camp and lay down area to be utilised by all project Contractors (pavement works and air navigational aids) at differing times should be located either on the VLI site or on land located close to the airport (subject to appropriate custom owner and leaseholder approval); at this stage, the preferred location is within the airport boundaries in the south east corner of the site as indicated in Plan 751098.2000-020 (Appendix A). This is the location of the lay down area used for runway resurfacing works in the 1990s. Several other potential areas have been indicated in the referenced plan and in addition to this, AVL have been in talks with the land lease owner along the south eastern boundary of the airport site. Should the lay down area be located off AVL property, an easement would need to be arranged on the leased lands.

The construction camp will be utilised by all project Contractors (pavement works and air navigational aids) at differing times so the scale of the camp will vary. The greatest land area required will be for the pavement works (runway) component of the VAIP as the equipment and aggregate requirements are the greatest. The estimated area required for the duration of the construction works has yet to be confirmed.

The exact details of the size and site management (health and safety, solid waste management, water management and wastewater management) will need to be decided by the Contractors in consultation with AVL. Final approval of these details will be required by AVL, custom owners and leaseholders (if necessary) and documented in the CESMP before the construction camp and lay down areas can be set up

Construction camp size should be kept to a minimum, be fenced and materials and equipment kept secure to prevent access and use by non-authorised personnel. Should the construction camp be located outside of the VLI security perimeter, hiring of a local security firm to provide security for the area is recommended.

At the potential construction camp and lay down areas, there are no existing hard stand areas available for stock piling or bunded areas (secondary containment) for hazardous substance storage. Vegetation clearance along with temporary hard stand and bunded areas will need to be constructed as appropriate. It should be noted that the specifications call for self bunded fuel and asphalt storage tanks. Any bunded area, also known as secondary containment, is to be as defined by the International Finance Corporation (IFC) , environmental, health and safety

guidelines as “appropriate secondary containment structures consist of berms, dikes, or walls capable of containing the larger of 110% of the largest tank or 25% percent of the combined tank volumes in areas with above-ground tanks with a total storage volume equal or greater than 1,000 L and will be made of impervious, chemically resistant material”<sup>1</sup>.

Prior to the establishment of the asphalt plant, consideration should be made on where the asphalt plant is to be located. Although the use of this machinery will be short-term (2 to 3 months), it can produce nuisances such as noise and a mercaptan odour. If located away from communities, the social impacts should be minimal. The location will be clearly noted in the CESMP and subject to WB clearance.

Noise, dust, wastewater production, vibration and increased traffic are impacts that can negatively affect communities and sensitive receptors (settlement to the south, river to the west of VLI and groundwater); these potential impacts will need to be considered when identifying the location of the construction camp and laydown areas.

While it is not anticipated that there will be a need for a workers camp to be established for the works at VLI, it is prudent to be aware of the necessary steps required to install a workers camps should this become necessary for any reason. These steps have been included within the codes of practice in Appendix G. Should a worker camp be required then these guidelines must be adhered to and updates made to the PESMP and CESMP as appropriate.

#### **2.3.5 Haul Routes**

Transport to and from the site and the construction camp, particularly of materials and equipment, must occur on the existing road network and measures undertaken to prevent accidents, dust, spillages, noise and vibration nuisance (e.g. wheel wash, covering of loads, servicing of vehicles). If the transport of material or equipment is likely to impact on normal pedestrian and vehicle traffic or pose an increased safety hazard, consideration should be given to moving these items during off peak times. Measures such as prohibiting the use of engine breaking and use of speed control in and close to settlements can be implemented to reduce noise, speed and vibration near sensitive receptors. Once quarries and haul routes have been identified, the CESMP should assess these requirements. Should off peak transportation of materials be necessary, it is important to communicate this in a meaningful manner to the communities along the route, particularly those on any unsealed roads where additional traffic management may be necessary.

Temporary lay down areas for stockpile of material or equipment may be suitable to reduce the need to transport items on the road. All temporary stockpiles must be kept small (no higher than 2 m) and bunded to prevent dust and sediment laden runoff being generated. If need be the stockpiles should be wetted or covered to prevent dust. Lay down areas should not be sited near sensitive receptors (refer Section 5.5). Any land required for a temporary lay down area will need to be negotiated with the custom owner and lease holder and agreed to by the VPMU before the camp is established.

#### **2.3.6 Hazardous Substances**

Hard stand areas must be available for storage of hazardous substances and other equipment that poses a potential risk to the environment (e.g. leaking lubricant from machinery). Runoff from hard stand areas used to store machinery will need to be collected and treated (e.g. oil water separator) to prevent contamination of soil or water bodies. Hazardous substances (e.g. fuel, lubricants, oil, paint or ACM) must be stored in a bunded area. Solid waste and wastewater must be managed in such a way to prevent the spread of vector-borne diseases and contamination of soil and water bodies.

#### **2.3.7 Waste**

There is one official landfill on Efate. Bouffa Landfill is located to the east of Port Vila which is managed by the Port Vila Municipal Council (PVMC). This landfill only accepts general waste and waste from septic tanks.

At all times, the Contractor is responsible for the safe and sound disposal of all solid waste generated by the Works.

Solid waste includes:

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<sup>1</sup> International Finance Corporation and World Bank (30 April 2007) Environmental, Health and Safety (EHS) Guidelines, Section 1.5 Hazardous Materials Management, Control Measures.



- General waste (i.e. office type waste, household waste (from any workers camps), lightweight packaging materials).
- Recyclable waste (i.e. certain plastics, metals, rubber etc. that can be recycled).
- Organic biodegradable waste (i.e. waste that will decay / break down in a reasonable amount of time, such as green waste, food waste).
- Inorganic non-recyclable waste (i.e. waste that cannot decompose / break down and which cannot be recycled).
- Hazardous waste (i.e. asbestos, waste oil etc.)

General waste (including only small quantities of lightweight packaging waste) can be disposed of at Bouffa Landfill, subject to PVMC approval. In addition to this and with the approval of the Supervision Engineer:

- ) Organic biodegradable waste may be deposited in designated dumping areas in reasonable quantities.
- ) Recyclable waste may be supplied to a local receiver licensed to process such waste.

All other waste is to be disposed of OFFSHORE in permitted or licensed facilities. It is the Contractor's responsibility to obtain all necessary permissions for transport and safe disposal of hazardous waste from the project site in a legally designated hazardous waste management site within the country or in another country, and to ensure compliance with all relevant laws. Evidence will need to be supplied to the Supervision Engineer of proper disposal of waste at the final location.

The export of any hazardous waste must be in compliance with the Basel and Waigani Conventions and any relevant laws enacted by source and the recipient countries.

Disused material will be generated in the form of asphalt millings and from the excavations associated with the runway pavement works, concrete pads for air navigational aids and cable trenches. Most of the clean fill material can either be used to backfill areas where old equipment or infrastructure has been removed or as a resource (e.g. crushed asphalt and basecourse material) for general use by AVL or PWD and the community. An option for disposal of these clean solid wastes is an approved site in the disused Stella Marie Quarry which has been used for this purpose by other GoV infrastructure projects. Written permission to use this location is to be obtained from DEPC before use.

All surplus material from excavations shall be removed from the site area and safely disposed of in compliance with any local requirements at the Employer's nominated disposal site(s) and/or disposed of at the Contractor's quarry site(s), before the start of the defects liability period.

Unless otherwise instructed by the Supervision Engineer, other surplus materials not needed during the defects liability period shall be removed from the site and the country.

There is no reticulated sewer network on the island, septic tanks are utilised. Therefore, if access to existing airport facilities are not available, any temporary toilets and disposal or treatment of wastewater will need to be in accordance with the Ministry of Infrastructure and Public Utilities (MIPU), VPMU and AVL (site location) advice.

### 2.3.8 Health and Safety (OHS)

All occupational health and safety requirements as per WB EHS and GoV law must be in place and workers trained in necessary procedures (e.g. spill response plan). The OHS Code of Practice in Appendix G have been designed to reinforce existing GoV health and safety law and must be applied to all aspects of the VAIP project

For the purposes of the project, in addition to the national OHS standards the employer is adopting a Code of Practice for occupational health and safety based on good international industry practice. To be qualified for bidding contractors will be required to have in place an occupational health and safety management system which is compliant with, or equivalent to, OHSAS 18000 (<http://certificationeurope.com/ohsas-18000-health-safety-management-standards/>) and is acceptable to the client. The contractor shall specify which occupational health and safety standards are to be applicable to the project, and provide evidence of application of such standards on a project of similar size and complexity during the past 5 years. The standards to be adopted may include those of Australia, Canada, New Zealand, the EU and the US, which are referred to in the World Bank Group EHS Guidelines.'.

Civil works shall not commence until the Supervision Engineer has approved the OHS plan, the Safety Officer is mobilized and on site, and staff have undergone induction training. Details of the expected content of the OHS

Plan and expected practices of the Contractor with regards to health and safety are stipulated Code of Practice in Appendix G and summarized in section 6.3.1.

### **2.3.9 Duration and Timing of Construction Activities**

Two separate contracts will most likely be awarded for the two types of work, namely pavement rehabilitation (runway) and installation of navigational approach aids. As the contractors have yet to be appointed the exact duration of each component is not yet known.

Normal working hours in Vanuatu are Monday to Saturday, 7am to 6pm. Working on a Sunday or Public Holiday is not recommended and would likely only be approved if urgently required for safety purposes and with the approval of the Supervision Engineer. It is likely the runway pavement works will need to be completed outside of normal working hours in order to work around flight schedules to ensure safe operations of the airstrip for incoming and outgoing aircraft. All flight and construction scheduling must be coordinated with air operators as documented in the MOWP.

Careful consideration must be given to keeping the surrounding communities informed of any night works with particular regard to nature of noise and likely duration. While the Switi community is used to a level of commercial activity noise in their direct vicinity, this noise is generally during normal working hours therefore the addition of night works noises associated with VAIP should be well advertised.

## **2.4 Master Planning and Sector Strategy Activities**

At present, the AVL Master Plan (developed in 2011) is in need of updating and a desktop review (AirBiz Report, 2015) has been completed. The review was undertaken to confirm key design parameters for works at VLI and ensure that they enable Code E operations. The review also compared the 2011 international aircraft movement (two way) forecasts (culminating in 300 additional movement per year by 2030) against actual data for 2011-2014 and found that the actual numbers were significantly higher than forecast, providing further need for updates to the document<sup>2</sup>.

The AirBiz review concluded that while there were no confirmed scheduled Code E operations for VLI, it is appropriate to plan for Code E operations. Code E aircraft do operate in other areas of the Pacific with similar tourist drivers to Vanuatu and therefore developing Code E capability will allow scheduled Code E services to operate without necessarily enticing them. The recent Tropical Cyclone Pam also demonstrated the critical importance of being able to safely serve larger disaster relief aircraft.

The Vanuatu Airport Master Plan and Aviation Sector Strategy (forming the Strategic Infrastructure Plan) activities financed under the project will ensure the sustainability and viability of long term investments at all international airports in Vanuatu. The Aviation Sector Strategy takes stock of existing conditions in Vanuatu's aviation sector, including policy, infrastructure and regulatory aspects and will make recommendations for future policy developments and reforms in the sector. The Master Plan will guide future AVL airport investments.

This work is designed to support land use, modernization and expansion efforts by providing a blueprint to guide development in line with demand, socioeconomic, and environmental considerations. It will also take into account passenger/movement forecasts, future design requirements, facilities and management options.

As well as economic, operational and other technical aspects, the strategic planning process will recognize and incorporate environmental and social aspects into the development process. There are potential social impacts including increases in noise disturbance, land acquisition and resettlement, that may arise from the recommendations and implementations of these technical assistance activities. Where the study processes have the potential to impact on communities outside the airports, these communities, with representatives of both men and women groups, will be engaged in a meaningful way in the master plan process.

As there will be potential social impacts arising from the implementation of the AVL Master Plan, consultations with key stakeholders and community groups will be ongoing throughout the development of the updated Master Plan.

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<sup>2</sup> AirBiz (2015) Vanuatu Airport Limited, 11914r01d Bauerfield Airport Technical Assistance Review, Final Report, 2 November 2015



## 3.0 Policy, Legal and Administration Framework

### 3.1 National Requirements

Vanuatu has a well-established regulatory framework that provides measures to protect and preserve the environment. Legislation concerning the protection and preservation of the environment is found in a number of Acts and is the responsibility of a number of different ministries according to their focuses, they are detailed below:

#### 3.1.1 Environmental Management and Conservation Act (2006)

This is national legislation which provides for the protection and management of the environment including its lands, air and waters in Vanuatu. Key areas of this legislation which will impact the VAIP project are detailed below.

#### Part 3 – Environmental Impact Assessment

Part 3 of this Act – Environmental Impact Assessment (EIA), states that all projects, proposals or developing activities that impact or are likely to impact the environment are subject to this Act and may require an EIA. Initially, all projects are required to be registered with the DEPC and a preliminary assessment (PEA) of the project is required to assess whether a full EIA is required. However under Section 17 – EIA determination, at the Director of the DEPC's discretion, they have the authority to determine whether an EIA is required on a case by case basis. In the case of this VAIP project, this PESMP, along with the Ministry of Environment's PEA form will be submitted to the Director of DECM for review prior to start of works, at this point they will determine whether a full EIA will be required or whether this document meets GoV EIA requirements. The DEPC EIA decision, once received, will be presented as an Appendix to subsequent revisions of this document.

#### Part 4 – Biodiversity and Protected Areas

With regard to the National Biodiversity Conservation Strategy (NBCS), the DEPC have indicated that there are no protected or community conservation areas in the vicinity of VLI. However, the NBCS identifies all rivers on Efate as important and vulnerable. La Colle River is located approximately 100 m to the west of VLI and unnamed watercourses are also located to the north and south of the site.

With regard to Section 32 – Biorespecting to require permit, no permits would be required for the VAIP project. However, it should be noted that any imported equipment and aggregates would be required to go through quarantine processes and be deemed clean prior to entering Vanuatu.

The Biosecurity Act is planned to be enacted by the end of 2018, however in the interim Biosecurity Vanuatu operates within the Ministry of Agriculture, Livestock, Forestry, Fisheries and Biosecurity. Biosecurity Vanuatu is mandated to protect the borders of Vanuatu from incursions of pests and diseases into Vanuatu and should be involved in any importing of equipment and materials into the country,

#### 3.1.2 Water Resources Management Act (2002)

This national legislation provides for the protection, management and use of water resources in Vanuatu. This national legislation applies to all water in Vanuatu.

Under Part 2 – Use of Water, Section 6 – Application for right to use water, if the Contractor elects to obtain water supply from natural resources such as groundwater or surface water, they would be required to apply to the Director for the right to utilise it. Furthermore the Contractor must apply to the Director for the right to construct, operate or maintain works for any purpose including:

- Any work in or adjacent to any water or any bore – VLI is directly adjacent La Colle River and two potable bores are located within 100 m of the site. One bore is utilised by UNELCO for the private reticulated supply and one is used by a local residential property.
- Any work whose purpose is to supply water to any other person – this does not apply to the VAIP project.

Section 10 – Matters to be considered, the Director will make assessment on the application and the following factors would need to be considered with regard to an application for the VAIP project:

- It is not likely to create a water shortage – an assessment on water requirements will need to be made to ensure the resource used is not compromised.

- It is not likely to create a health nuisance – wastewater disposal and control of hazardous waste at the site needs to be controlled and monitored.
- It is not likely to adversely affect other lawful users of the water resources – an assessment of adverse effects will need to be made once the Contractors water supply methodology has been determined.
- It is not likely to damage the water resource or its environment – an assessment of adverse effects will need to be made once the Contractors water supply methodology has been determined.
- It is compatible with other uses in and works in the immediate area – an assessment of adverse effects will need to be made once the Contractors water supply methodology has been determined.

Under Part 4 – Water Resource Management, the National Water Resources Management Policy and Plan aims to manage water resources in Vanuatu.

All water use (water usage and also wastewater / hazardous waste / sediment management) during the VAIP project will be required to meet the rules under this legislation and the permitting requirements will need to be met.

### **3.1.3 Mines and Minerals Act (1986)**

This Act makes provision for the control of mining and related operations in Vanuatu. This Act provides for legalisation regarding licensing for mining and quarrying. Key areas that have implications to the VAIP project include:

- Part 14 – Quarry Permits: provides details on the permitting system.
- Part 16 – Restrictions and Surfacing Rights: this section defines a ‘custom owner’ as the person or persons who, in the absence of a dispute, the Minister responsible for land is satisfied are the custom owners of land. It also defines a ‘lawful occupier’ in relation to any land, means an alienator or the custom owners, or any person occupying the land with the lawful consent of the custom owners in relation to that land. Part 16 describes the rights and compensation rights of the lawful occupier.

#### **3.1.3.1 Mines and Minerals Act, Quarry Permit Regulation Order No. 8 (2005)**

This is a Regulation to make provision for applications for the issue of Quarry Permits and for related matters. This Act supersedes the quarry permitting section in the Mines and Minerals Act (1986).

The Act states that a permit is not required for the extraction of building minerals on land by the custom owner of the land for customary purposes. A permit is required if the custom owner of land sells, or intend to sell, any extracted building minerals for use outside the land from which they were extracted.

#### **Quarry Permit Application**

Any new or reopening of an existing quarry would require a new permit application to be sought prior to it being re-established. There are 5 coronous quarry operations within the vicinity of Port Vila that are operating and have existing active permits (refer to Section 2.3.3)

The DGMRW have advised that as long as there is sufficient resource and approval from custom owners, a quarry permit holder may increase their permitted abstraction volume, they would just be required to pay an additional permit fee to GoV and royalties to the custom owner.

A quarry permit application must include the following information:

- 1) A person must apply to the Commissioner for the issue or renewal of a quarry permit.
- 2) A non-refundable fee of Vatu 2,500 must accompany any application for the issue or renewal of a quarry permit.
- 3) An applicant is a company, the full names, addresses and nationalities of the directors and details of where the company is registered.

The permit application requires the following site details:

- Details of the area to be covered by the permit which must not exceed 0.5 km<sup>2</sup> illustrated by a sketch plan, at a scale of not less than 1:2000, whose boundaries must be straight lines, and whose coordinates must be fully defined in a manner acceptable to the commissioner.
- An occupational and health safety management plan outlining the occupational health and safety risks that may occur, and the steps to be taken to manage those risks.

- Information on the number of persons to be employed, including citizens and non-citizens, and any employee training programs.
  - An infrastructure plan, including expected requirements.
  - Information on the number of persons to be employed, including citizens and non-citizens, and any employee training programs.
  - An infrastructure plan, including expected requirements.
  - An environment management plan consistent with guidelines (if any) determined by the Minister setting out:
    - ) The environment risks which may occur and the steps to be taken to reduce or manage those risks.
    - ) The measures to deal with overburden, water runoff and topsoil management.
    - ) A proposed rehabilitation plan for ongoing rehabilitation and rehabilitation of the site after relinquishment.
  - Details of the building minerals to be extracted, including an estimate of the quantity in m<sup>3</sup> to be extracted, and the building materials to be made and the proposed program of work including information on blasting and drilling operations, transport, and the frequency, type and mode of spillage protection.
  - The term for which the permit is required.
  - Copy of the signed contract between the applicant and the custom owner of the land and the lawful occupier of the land (if different to the custom owners) approving the quarry.
- 4) The Commissioner may, by notice served on the applicant, require further information in respect of the application as the Commissioner considers relevant or necessary. The applicant must comply with the notice.
- 5) The Commissioner must not issue or renew any permit unless a copy of the application has been exhibited for a period of not less than 30 days at the headquarters of the area council of the local government council responsible for the land which is the subject of the application.

The fee payable for a quarry permit is Vatu 50,000 per year payable annually in advance to the Commissioner.

As part of permitting requirements, Contractors will need to include provision for quarry specific plans including environmental management, health and safety and rehabilitation.

#### **Restoration of Land**

Unless the Commissioner otherwise specifies, the quarry permit holder must remove, within 60 days after the expiry or relinquishment of the permit, any camp, temporary buildings or machinery erected or installed by the permit holder and make safe the area covered by the permit, to the satisfaction of the Commissioner.

The permit area is to be rehabilitated to the level specified in the permit or, if this is not specified, the level determined by the Commissioner in consultation with the custom owners of the land.

To compliment the national legislation, the rehabilitation measures stipulated in the Quarry Code of Practice (Appendix G) details the type of rehabilitation planning required under this PESMP.

#### **3.1.4 Lands Acts (2009) and New Land Laws (2014)**

The Vanuatu land system is administered through numerous Lands Acts and the newly amended / introduced New Land Acts, as of the end of 2013 and those recently Gazetted in June 2014, that govern land administration in Vanuatu. They comprise comprehensive laws and provide for custom land management, land reform, customary land tribunals and land leases.

Under the Customary Land Management (Amendment) Act, a land tribunal is presently being held over the custom ownership at Malarua Quarry, the only basalt quarry in Vanuatu. This is the first pilot tribunal and has been ongoing since March 2015. Previously during the quarry's operation between 2009 and 2010, custom owner royalties for the natural resources at the site went to three land occupiers and not the Emua tribe who are alleged to be the custom owner. The pilot tribunal seeks to establish the custom owners prior to the quarry being re-established and designation of any further royalties for natural resources.

### 3.1.5 Health and Safety at Work Act (Cap 195) 1987

This act describes the responsibilities of employers to their employees and members of the public in regard to health and safety. The act also allows for the powers of inspectors.

### 3.1.6 Other Legislation

Other national legislation that may have implications on the project includes:

- **Civil Aviation Laws of Vanuatu** – The Civil Aviation Authority of Vanuatu (CAAV) discharges its duties and responsibilities in accordance with Civil Aviation laws of Vanuatu CAP 258 and the specific operating rules, satisfying the Vanuatu Government policy and ICAO standards and requirement. All VAIP works at VLI would be required to be in line with the CAAV safety requirements and this will be monitored by AVL.
- **Public Health Act (1994)** – This Public Health Act prescribes rules relative, among other things, prevention of nuisance, prevention of poisoning by food, prevention of mosquitoes and vermin, water supply, waste disposal and waste water discharge and control of baby food.
- **International Trade (Fauna and Flora) Act (1991)** – This International Trade (Fauna and Flora) Act deals specifically with the importation and exportation of species that are found in Vanuatu and other countries for trading purposes.
- **The Wild Bird Protection Regulation (1962)** – This Wild Bird Protection Regulation protects a number of wild birds in Vanuatu by setting controls on their hunting and prohibiting their sale or export.
- **Forestry Act (2006)** – The Forestry Act makes provision for the protection, development and sustainable management of forests and the regulation of the forestry industry in Vanuatu, and for related purposes.
- **Fisheries Act (2006)** – This Fisheries Act makes provisions for the management, development and regulation of fisheries within Vanuatu waters, and for the regulation of Vanuatu fishing vessels outside of Vanuatu waters in a manner consistent with Vanuatu's international obligations, and for related matters.
- **National Parks Act (2006)** – The National Parks Act makes provisions for the declaration of national parks and nature reserves, for the protection and preservation of such areas.
- **Animal Importation and Quarantine Act (1998)** This national legislation makes provisions for the regulation and control of the importation of animals, animal products and biological products into Vanuatu. This act is regulated by Vanuatu Customs and Inland Revenue Department. Any imported equipment and aggregates will be subject to the permitting and importation requirements of this Act.
- **Employment Act (1983)** – Part 9 of this act outlines the employers responsibilities to his employees health and safety giving broad stipulations for the responsibility of employers to provide a safe working environment, report accidents to the labour office and provide employees and members of their families living with them first aid and medical treatment.
- **Workmen's Compensation Act (1987)** – This act is to provide for compensation for injuries and death suffered by workmen in the course of their employment.

## 3.2 Regional Requirements

The regional authority is PVMC, they do not have any regulations or by-laws regarding noise or operating hours and days.

PVMC operate the only landfill on Efate, Bouffa Landfill (refer to Section 2.3.7). This landfill accepts only general waste and septic tank waste; the landfill does not have capacity to accept hazardous waste (e.g. ACM, chemicals or hydrocarbons).

## 3.3 International Obligations

Vanuatu is also a signatory to a number of international agreements. Listed below are some of the more applicable agreements to the type of activities of the VAIP. This list is not exhaustive.

- Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Waste and to Control the Transboundary Movement and Management of Hazardous Waste within the South Pacific region. (Adopted at Waigani in 1995, but has yet to ratify).

- Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (Adopted at Noumea, New Caledonia on 24 November 1986), this also includes:
  - ) Protocol concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region.
  - ) Protocol for the Prevention of Pollution of the South Pacific Region by Dumping.
- Agreement Establishing the South Pacific Regional Environment Program (SPREP Convention).
- Stockholm Convention on Persistent Organic Pollutants (Adopted at Stockholm on 21 May 2002)

There are also a number of international standards and operating procedures that the airport operations must comply with (e.g. ICAO and CAANZ).

As no landfill sites in Vanuatu accept hazardous waste and any generated during the project will need to be exported, the Waigani Convention and Basel Convention are particularly relevant and will need to be adhered to in preparing hazardous substances (e.g. waste oil, lubricants, articles containing polychlorinated biphenyls or asbestos) for shipping and final disposal at acceptable and licensed waste facilities. The conventions outline the necessary information required for documents (notification and movement) and agreements that need to be in place with the receiving territory.

### 3.4 World Bank Policy

The PAIP VLI is a category B project under WB environmental and social screening guidelines and requires development of the project specific PESMP. Due to the nature of the project it is expected that environmental impacts will be site specific, few if any are irreversible, and mitigation measures can be readily designed and implemented. In accordance with the WB Operational Policy 4.01 Environmental Assessment this PESMP includes information on mitigation, monitoring, capacity development and training, and implementation costs. The PESMP outlines the potential environmental impacts and the measures needed to prevent, minimise, mitigate or compensate for adverse impacts and improve environmental performance of the project.

The PESMP is a dynamic document which must be updated as consultation and detailed designs of the project components are finalised to ensure currently unanticipated impacts and revised mitigation measures are addressed. Effective implementation of the PESMP is a requirement of the funding agencies and local legislation so monitoring is an integral component of implementation. A Monitoring Plan is included in Section 9 (and Appendix C) of this PESMP. This PESMP is to form part of the bidding documents for contract(s) awarded under the VAIP and will form the basis of the CESMP.

All works completed for the VAIP project should be completed in compliance with the Environmental and Social Safeguard Instruments for Pacific Island Countries (World Bank, October, 2014) and the IFC Environmental, Health, and Safety Guidelines (2007)<sup>3</sup>.

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<sup>3</sup> International Finance Corporation, 30 April 2007. Environmental, Health, and Safety General Guidelines, <http://www.ifc.org/wps/wcm/connect/554e8d80488658e4b76af76a6515bb18/Final%2B-%2BGeneral%2BEHS%2BGuidelines.pdf?MOD=AJPERES>



## 4.0 Environmental and Social Environment

### 4.1 Physical Environment

#### 4.1.1 Location and Geography

Vanuatu, officially the Republic of Vanuatu is an archipelago island nation located in the South Pacific Ocean and consists of 83 islands dispersed over 1,300 km (refer Figure 5). The island group is of volcanic origin and lies 1,750 km east of northern Australia. Port Vila is situated on the south coast of the island Efate, Vanuatu's third largest island. The land area is approximately 12,336 km<sup>2</sup>.

Figure 5 Location Plan of Vanuatu showing Port Vila on Efate



Source: Geographic Guide Oceania, <http://www.geographicguide.com/oceania-maps/vanuatu.htm>

Vanuatu's exclusive economic zone (EEZ) extends some 827,891 km<sup>2</sup> as illustrated on Figure 6 by the red circle. The EEZ is an area of coastal water and seabed, to which the country claims exclusive rights for fishing, drilling and other economic activities.

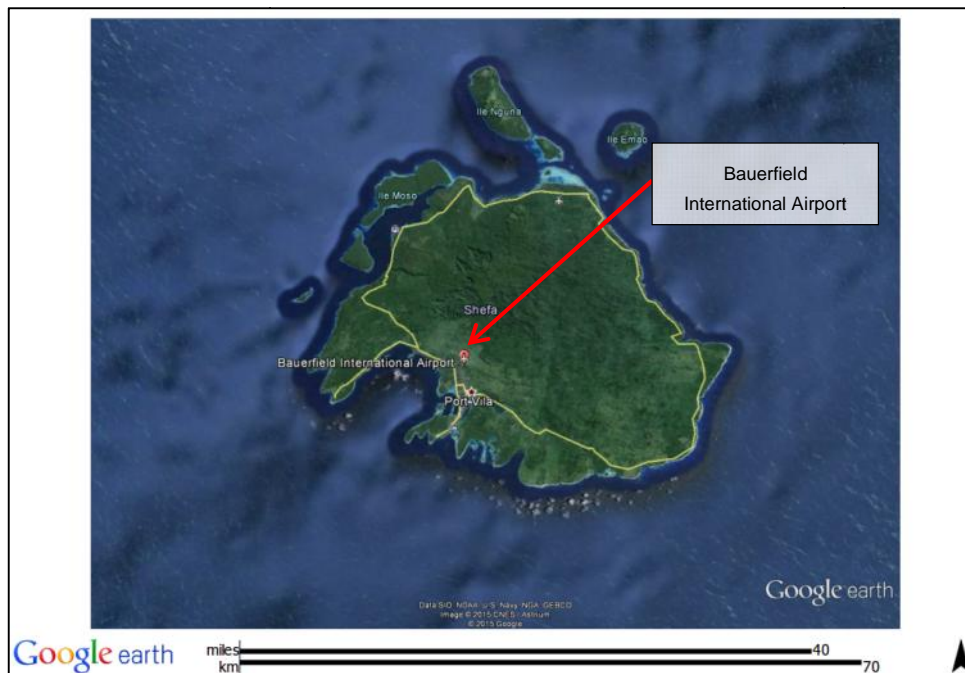
**Figure 6 Vanuatu's Exclusive Economic Zone**



Source: Australian National University, <http://asiapacific.anu.edu.au/maponline/base-maps/pacific-eez-zones>

VLI is located in a lowland area on the south side of Efate (refer to Figure 7), approximately 6 km north of Port Vila, Vanuatu's capital and largest and most populated city. The centre of Efate consists largely of inhabited, forested, mountains; Mount Macdonald located to the north-west is the highest point on Efate and is 647 m above mean sea level. Approximately 73% of Vanuatu is forested. The majority of the population live in the lowland coastal areas.

**Figure 7** Location of Bauerfield International Airport on Efate



Source: Google Earth 2015, Imagery date 7 December 2014.

#### **4.1.2 Climate**

Being an equatorial country, Vanuatu has relatively uniform temperature throughout the year. The country has two distinct seasons – a warm wet season from November to April and a cooler dry season from May to October. Across Vanuatu the annual average temperatures are between 23.5–27.5°C. Port Vila has an average annual temperature of 25 °C with August averaging at 23 °C. Changes in the temperature from season to season are strongly tied to changes in the surrounding ocean temperature. Rainfall in Vanuatu is affected by the South Pacific Convergence Zone. On the windward side of Efate, annual rainfall is measured from 2400 and 3000 mm and is almost half that amount on the leeward side<sup>4</sup>.

Mountains also play a role in the variations in rainfall across some islands. During the wet season, rainfall is particularly high on the windward (south-east) side of the mountain ranges of the bigger islands, and scarce on the leeward (north-west) sides, especially during the dry season. Vanuatu's climate varies considerably from year to year due to the El Niño Southern Oscillation. This is a climate pattern that occurs across the tropical Pacific Ocean and affects weather around the world. There are two extreme phases of the El Niño-Southern Oscillation: El Niño and La Niña. There is also a neutral phase. In both Port Vila and Aneityum El Niño events tend to bring drier conditions as well as a late start to the wet season and cooler than normal dry seasons. The opposite occurs during La Niña events<sup>5</sup>.

#### **4.1.3 Soil and Geology**

The geology of Efate comprises of three rock formations that make up the island. The oldest geology is the Efate Pumice Formation, a Pliocene-Pleistocene series of submarine pumice tuff and breccias that generally occur in the central part of the island. The pumice formation is overlain in north Efate by Pleistocene Basalt Volcanic Formation. These two older formations have been overlain by limestone terraces, which make up the Late Pleistocene to Recent Reef Limestone Formation. It has extensive outcrop totalling nearly 500 m<sup>2</sup> on Efate and near shore islands<sup>6</sup>.

<sup>4</sup> Ministry of Infrastructure and Public Utilities, Vanuatu Government Meteorological Services, <http://www.meteo.gov.vu/climate/VanuatuClimate/tabid/196/Default.aspx>

<sup>5</sup> Australian Government Pacific Climate Change Science, [http://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/15\\_PCCSP\\_Vanuatu\\_8pp.pdf](http://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/15_PCCSP_Vanuatu_8pp.pdf)

<sup>6</sup> South Pacific Applied Geoscience Commission, Technical Report on Geological and Geo-Technical Assessment of the Quoin Hill Volcanic Rocks, Efate, Vanuatu, as a Potential Aggregates Source, June 2005.

#### **4.1.4 Water Resources**

In Vanuatu, both ground and surface water is utilised for domestic potable purposes. In urban areas, the main water sources are shallow aquifers whereas in rural areas various sources are used such as bores, wells, springs, rivers and rainwater catchments. All rural supplies are donor-funded and designed and delivered by either the drilling section or rural water supply operated and managed by the local community. A reticulated urban water supply is provided by a private company (UNELCO) in Port Vila. UNELCO obtain their water supply from both river (Tagabe River, west of Port Vila) and groundwater sources, including a bore located less than 100 m south of VLI.

In Port Vila the groundwater aquifer is under increasing pressure from housing, agriculture and other developments. Groundwater quality in the urban centre of Port Vila is generally good with only calcium hardness to note. The UNELCO water supply currently does not require treatment other than chlorination; however the aquifer level is thought to be decreasing while pumping demands are increasing<sup>7</sup>.

VLI sources its water supply from the reticulated UNELCO network.

#### **4.1.5 Land Use around VLI**

The land to the north and east of VLI is dominated by cattle grazing farmland and a residential settlement with some commercial/industrial activity located to the south. To the west is La Colle River beyond which are sparse residential properties amongst scrubland and farmland. The airport is located approximately 22 m above mean sea level and the topography at VLI is relatively flat. To the north of VLI, the topography inclines to undulating hills approximately 1 km away.

The route for the approach lighting system starts at the Point Mele NDB, approximately 200m from the coastline and 5km away from VLI along the lighting path. From Point Mele, the approach lighting path follows the existing lighting route through the village of Mele and then into farmland with sparse residential properties for the remainder of the route until it reaches La Colle River.

### **4.2 Biological Environment**

#### **4.2.1 Marine Biodiversity**

Vanuatu's 200 nautical mile EEZ is extensive and encompasses mangrove, sea grass, lagoon and coral habitats. Therefore, marine biodiversity is an important national consideration. Vanuatu's two towns and many villages are close to the coast. Fish, shellfish, crabs and other marine animals have become important components of subsistence diets and valuable economic commodities. There has been intensive subsistence and commercial land use in coastal areas of many islands and most national infrastructure (roads, ports, electricity supplies, airports, hospitals etc.) is located on the relatively flat coastal plains. These areas are vulnerable to cyclones and tidal waves. Mangroves, sea grass and other coastal ecosystems provide protective buffers that shelter land and human settlements from the full impacts of these storm events<sup>8</sup>.

Freshwater fish restricted to Vanuatu include the gobies. Endemic marine fish include the Sharpnosed Coralbrotula, a flounder, and a duckbill eel<sup>9</sup>. Many marine animals such as crabs, sea cucumbers and turtles are vulnerable due to over exploitation. The increasing human population and more advanced fishing methods causes negative impacts biodiversity.

VLI is approximately 2 km inland from the coast therefore it is not expected that the VAIP construction activities will have any effect on the marine or coastal environments.

#### **4.2.2 Terrestrial Biodiversity**

Vanuatu's islands are young in geological terms, small and highly disturbed as a result of natural cyclones, seismic and volcanic activity, and as a consequence Vanuatu's biodiversity is less rich than that of the two nearest countries (New Caledonia and the Solomon Islands). There are threats which impact Vanuatu's terrestrial

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<sup>7</sup> SOPAC, Pacific Water. <http://www.pacificwater.org/pages.cfm/country-information/vanuatu.html>

<sup>8</sup> Ministry of Land and Natural Resources, Mine and Rural Water Supply, November 1999. Vanuatu National Biodiversity Strategy and Action Plan Project – National Biodiversity Conservation Strategy.

<sup>9</sup> Living National Treasures, <http://lntreasures.com/vanuatu.html>

biodiversity and these include over exploitation of many plant and animal resources, degradation of ecosystems due to development practices, and declining respect for traditional resource management systems and authority structures.

Vanuatu is included in the Vanuatu Rain Forests terrestrial ecoregion and the East Melanesian Islands biodiversity hotspot.

There are nine species of bird endemic to Vanuatu (Vanuatu Petrel, Vanuatu Imperial-pigeon, Tanna Fruit-dove, Vanuatu Kingfisher, Vanuatu Honeyeater, Yellow-fronted White-eye, Royal Parrotfinch, and Santo Mountain Starling, and Buff-bellied Monarch). There are two mammals unique to the country (Vanuatu Flying Fox and Banks Flying Fox) and nine reptiles (Toupeed Skink *Emoia sanfordi*, Vanuatu Coppery Vine Skink, Anatom Tree Skink, Erronan Tree Skink, Vanuatu Snake-eyed Skink, Vanuatu Saw-tailed Gecko, Vanuatu Forest Gecko, Vanuatu Ant-nest Gecko, and Vanuatu Yellow-lipped Sea Snake). A rich endemic land mollusc fauna includes a slug and several snails. Other endemic invertebrates include a freshwater snail, a new tree-climbing mangrove crab of the, a starfish, a bryozoan, and a crinoid. Invertebrates known solely from Vanuatu include two species of butterflies, a hawk moth, a damselfly, two species of bees, a parasitic wasp, two katydids, several cricket species, a termite, a lace bug, a checkered beetle, a mayfly, a scorpion and a millipede <sup>4</sup>.

There are a number of endemic plant species in Vanuatu which include several palms, orchids, kauri, and yams.

#### **4.2.3 Conservation Areas on Efate**

Parks and Sanctuaries on Efate include the Efate Land Management Area, an initiative established by the Efate Vaturisu Council of Chiefs to protect the natural, cultural and historical resources of Efate for future generations. Other areas include the Nguna-Pele Marine Protected Area Network on Nguna and Pele (islands on the north coast of Efate), and the Hideaway Marine Sanctuary at Hideaway Island, Mele (10 km north-west of Port Vila).

The Vanuatu National Biodiversity Strategy and Action Plan Project, NBCS identifies locations of places and habitats of conservation significance on Efate, they are as follows:

- Bat caves.
- Mangroves – identified as been vulnerable as they have been damaged / degraded by human impacts.
- Rivers – identified as been vulnerable as they have been damaged / degraded by human impacts.
- Creek AI (west coast)

The NBCS also identified places on Efate that are vulnerable because they have been damaged or degraded due to human impacts, they include mangroves, rivers, sea grass beds, low-land forest ecosystems and the coastline at Mele Bay and Samoa Point due to sand mining.

The area in which the airport is located is a farmland area on the periphery of a settlement, there are no specified conservation areas within the vicinity of VLI. The same holds true for the approach lighting route, it does not cross any specified conservation areas. The route does start 200m away from the vulnerable coastline of Mele Bay, however, the first light, and the closest in proximity to the coastline, will be located within the Point Mele NDB property perimeter and will use the same footprint as the existing lights. However, the NBCS identifies all rivers on Efate as important and vulnerable. La Colle River is located approximately 100 m to the west of VLI and unnamed watercourses are also located to the north and south of the site.

##### **4.2.3.1 La Colle River**

The La Colle River is located approximately 100m to the west of the airfield. Pre-Cyclone Pam, the river was approximately 6-10m wide at the point of crossing. Extreme rainfall and flooding caused by the cyclone increased the width of the river to between 20-50m in the vicinity of the crossing point. The land around the river is comprised mostly of scrubland, sparse vegetation and farmland. The La Colle River is one of the most accessed waterways by the residents of Port Villa and nearby settlements. It is not used for drinking water but is used for washing laundry and watering stock and cattle. In terms of access to the river, where it flows through leased lands only people with access to those lands may access that water, however, where it flows through public or custom lands then it can be accessed by everyone.

#### 4.2.4 Rare or Endangered Species

The 2008 International Union for Conservation of Nature (IUCN) Red List categorised a total of nine species in Vanuatu, of which seven are endemic to Vanuatu. The nine species and their red list categories are listed below:

- Akihito Vanuatu (fish species) – least concern.
- Vanuatu Starling – vulnerable.
- Vanuatu Imperial Pigeon – vulnerable.
- Vanuatu Silver Vine Skink – least concern.
- Vanuatu Thicket Bird – near threatened.
- Vanuatu Scrub Fowl – vulnerable.
- Vanuatu Saw Tailed Gecko – data deficient.
- Vanuatu Kingfisher – near threatened.
- Vanuatu White Eye (bird species) – least concern.

The IUCN regard the threatened status of animals and plants as one of the most useful signs for assessing the condition of an ecosystem and its biodiversity. The IUCN Red List of Threatened Species™ (IUCN Red List) is widely recognized as the most comprehensive, apolitical approach for assessing and monitoring the status of biodiversity.

Populations of black flying fox have declined in many of the islands. Over collecting or hunting is a common cause for the decline of many of the species, but so too is the degradation of habitats. Without proper management these natural resources could further decline, or become extinct as has happened elsewhere in the Pacific region.

### 4.3 Socio-Economic Conditions

#### 4.3.1 Population and Demographics

According to the results of the 2009 Census the population of Vanuatu was 234,023 and there were 7,373 households. The population of Efate is 66,000 with 44,040 living in Port Vila. The growth rate between 1999 and 2009 was 2.3% per annum. Approximately 80% of the population live in rural areas.

#### 4.3.2 Education and Health

School attendance is compulsory up until the age of seven years. However, from the age of six, rates of attendance are low as school fees are often a barrier. School attendance in Vanuatu is the lowest in the Pacific. Port Vila is home to a campus of the University of the South Pacific, an educational institution co-owned by 12 Pacific countries. The campus in Port Vila, known as the Emalus Campus, houses the university's law school<sup>10</sup>.

The average life expectancy in Vanuatu is 71 years. The Ministry of Health is responsible for the four provincial hospitals. One of two major hospitals is located in Port Vila. In Vanuatu there are 30 health centres and 97 active dispensaries providing inpatient and outpatient care, preventative medicine and primary care around the islands<sup>11</sup>.

#### 4.3.3 Livelihoods and Economic Activities

Vanuatu's economy is primarily agricultural, whereby 80% of the population is engaged in agricultural activities that range from subsistence farming to smallholder farming of coconuts and other crops. Copra (dried kernel or meat of the coconut from which coconut oil is expressed) is the most important cash crop, making up more than 35% of the country's exports, followed by timber, beef and cocoa. Copra, cocoa, kava and beef account for more than 60% of Vanuatu's total exports by value. Agriculture accounts for 20% of the gross domestic product (GDP).

Tourism is Vanuatu's fastest growing sector, tourism and travel makes a significant contribution to Vanuatu's economy representing about 23.2% of GDP in 2013. Tourist arrivals have been steadily increasing, recording around 330'000 visitors in 2013. A quarter of these tourists arrive by air<sup>12</sup>. In 2013, tourism and travel services

<sup>10</sup> International Council for Open and Distance Education, [www.icde.org](http://www.icde.org)

<sup>11</sup> Commonwealth Health Online, [www.commonwealthhealth.org/pacific/vanuatu](http://www.commonwealthhealth.org/pacific/vanuatu)

<sup>12</sup> Statistics from Vanuatu Hotels and Resorts Association.



directly engaged 12,500 workers representing around 18.2% of total employment. The direct contribution of travel and tourism to GDP is expected to grow by 4.3% per annum to 25% by 2024<sup>13</sup>.

The average household income in Vanuatu is approximately 60,700 vatu. The average income in Port Vila is 93,400 vatu.

#### **4.3.4 Land Tenure and Rights**

In 1980 the country declared its independence. The indigenous people are the custom owners of all land in Vanuatu and the government cannot take it away under any circumstance. By definition, custom owners are any lineage, family, clan, tribe or other group who are recognised by the rules of custom, following the custom of the area in which the land is situated, as the perpetual owners of that land and, in those custom areas where an individual person is regarded by custom as able to own custom land, such individual person. For the most part, the ni-Vanuatu people are agreeable in leasing their real estate to investors as it means they have an income on their land.

The Vanuatu land system is administered through numerous Lands Acts and the newly amended / introduced New Land Acts, as of the end of 2013 and those recently Gazetted in June 2014, that govern land administration in Vanuatu. They comprise comprehensive laws and provide for custom land management, land reform, customary land tribunals and land leases.

Land issues are sensitive and are governed by comprehensive legislative processes. Land in Vanuatu may not be sold, but may be leased or sub-leased. All land can be leased for up to 75 year periods and there are no restrictions of foreign ownership of property other than land. Leases are common in Vanuatu and may be made between the custom owners and individuals, organisations or companies.

AVL are the leaseholders of the VLI land. It is understood that the land on which VLI resides is owned by four custom owners. Any infrastructure changes or upgrade works proposed at VLI would require permission from the leaseholders only and not the custom owners.

It should be noted that under Vanuatu law, any quarrying of natural resources by leaseholders is subject to quarry royalty payments to custom owners.

For project works that will require trenching to bury lighting cables, there will be a need to access leased lands. Under Vanuatu's current land law, there are two options for dealing with the trenching access:

- 1) Negotiation of an easement over a lease. This is currently used in Vanuatu to create roads, utilities or other public works which need to cross leased lands.
- 2) Acquisition of a strip of land to become government land based on agreed value and then used for utilities such as cables.

The WB's policy on indigenous peoples (Operational Policy (OP) 4.10) is only triggered in the Pacific where all of the following four defining characteristics are present:

- a) Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others.
- b) Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources therein.
- c) Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture.
- d) An indigenous language, often different from the official language of the country or region

Projects situated in Vanuatu do not usually trigger OP 4.10 as only characteristic (b) is relevant.

## **4.4 Projected Climate Changes and Impacts**

The Pacific Climate Change Science Program (PCCSP) (part of the International Climate Change Adaptation Initiative) conducts critical climate research and capacity building in Pacific Island countries. Information regarding

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<sup>13</sup> World Travel and Tourism Council. 2013. Travel and Tourism. Economic Impact 2014 Vanuatu, <http://www.wttc.org/focus/research-for-action/economic-impact-analysis/country-reports/>

climate change projections was obtained from the BoM and CSIRO (2011) Climate Change in the Pacific: Scientific Assessment and New Research (Vol. 2: Country Reports) produced by the Pacific Climate Change Science Program<sup>14</sup>.

Vanuatu, like many other Pacific nations are already experiencing the effects of increased temperatures and rising sea level. Sea level (measured by satellite altimeters and tide gauges) has risen in Vanuatu by 6 mm per year since 1993. This is larger than the global average of 2.8 to 3.6 mm per year. Sea level does fluctuate year to year and decade to decade due to El Niño-Southern Oscillation. Annual maximum and minimum temperatures have increased in Port Vila since 1950; at VLI, maximum temperatures have increased at a rate of 0.17°C per decade. Data since 1950 for Port Vila show a decreasing trend in wet season rainfall, however, there are no clear trends in annual and dry season rainfall here. Over this period, there has been substantial variation in rainfall from year to year<sup>15</sup>.

Climate change projections for 2030, 2055 and 2090 (relative to 1990) were reviewed. The PCCSP report (as identified above) reviewed a number of climate projection models to determine the most plausible representations of future climate in the Pacific under the three emission scenarios developed by the Intergovernmental Panel on Climate Change (IPCC). The three emission scenarios are: low, medium and high for time periods around 2030, 2055 and 2090.

Table 1 presents the projected changes in annual average air temperature and sea level for Vanuatu for the three emission scenarios and the three time horizons.

**Table 1 Air temperature and sea level rise projections for the three emission scenarios and three time periods**

Annual Average Air Temperature Projection				Sea Level Rise Projection			
Values represent 90% of the range of the models and changes are relative to the average of the period 1980-1999.							
	2030 (°C)	2055 (°C)	2090 (°C)		2030 (cm)	2055 (cm)	2090 (cm)
Low emissions scenario	0.2–1.0	0.5–1.5	0.7–2.1	Low emissions scenario	5–16	10–27	17–47
Medium emissions scenario	0.3–1.1	0.8–2.0	1.3–3.1	Medium emissions scenario	5–16	8–31	20–59
High emissions scenario	0.4–1.0	1.1–1.7	2.0–3.2	High emissions scenario	3–17	7–31	21–63

The PCCSP make the following climate change predictions for Vanuatu:

- Increases in temperatures.
- More very hot days – increases in average temperatures will also result in a rise in the number of hot days and warm nights and a decline in cooler weather.
- Changing rainfall patterns – projections generally suggest a decrease in dry season rainfall and an increase in wet season rainfall over the course of the 21st century.
- More extreme rainfall days.
- Less frequent but more intense tropical cyclones.

The projected design life is 20 years for the runway. Therefore, the climate change projections for 2030 reflect the VAIP project most adequately. At VLI the majority of runoff from rain events goes to natural soakage and this does have implications for localised flooding depending on impermeable surfaces and the ability of the rainfall to percolate into the ground. Presently the north-western end of the runway has flooding issues. The projected

<sup>14</sup> Australian Government, Pacific Climate Change Science, <http://www.pacificclimatechangescience.org/>

<sup>15</sup> Australian Government Pacific Climate Change Science, [http://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/15\\_PCCSP\\_Vanuatu\\_8pp.pdf](http://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/15_PCCSP_Vanuatu_8pp.pdf)



increase in intensity of wet season rainfall was considered as part of the VLI upgrade and stormwater drainage system design (see Section 2.1.9).

VLI is approximately 22 m above mean sea level and approximately 2 km from the coast. Therefore, it is unlikely that the predicted rises in sea level will have an effect on the airport operations.

## 5.0 Consultation and Stakeholder Engagement

### 5.1 Background and Approach

As required by WB Safeguards Policies consultation and disclosure of Category B projects must be undertaken with project affected groups (stakeholders) and non-government organisations (NGOs). The potential environmental and social impacts of the project require the opportunity for discussion and review during the environmental assessment/ ESMP process to inform detailed design and mitigation measures. Revision C (May 2015) version of this PESMP has been consulted on with communities through VPMU and their nominated Consultant, Henry Vira. Ongoing consultations will be needed to inform the communities of upcoming works and their schedules.

### 5.2 Outcomes of Consultation to Date

Institutional stakeholders in safeguards compliance are the implementing agency (MIPU), VPMU, AVL and the Department of Geology, Mines and Water (Mines and Minerals Section). Local stakeholders are the communities surrounding the Government owned buffer zones around the airports and airport concessionaires. Consultation with stakeholders commenced on 11 March 2015 and is ongoing throughout the project life.

Broader public consultation was originally scheduled at the National Council of Chief's Nakamal in Port Vila on 17 March 2015. An announcement for the public consultation was sent out between 11 and 12 March 2015. Cyclone Pam impacted Vanuatu on 13 March 2015 creating widespread damage and disruption. Consequently, the consultation was not able to proceed as planned. The commencement of the public consultation process was rescheduled and held between 25 March and 9 April 2015.

A report summarising the key outcomes of the initial public consultation lead by Henry Vira in March and April 2015 is presented in Appendix E. There were 32 individuals representing 22 agencies and communities were consulted in the vicinity of Port Vila, Vanuatu. The key agencies consulted included the following:

- AVL.
- Vanuatu Environment Unit (DEPC).
- VPMU.
- CAAV.
- Vanuatu Association of Non-Governmental Organisations (VANGO).
- Global Environment Facility (GEF).
- Vanuatu Environment Advocacy Network (VEAN).

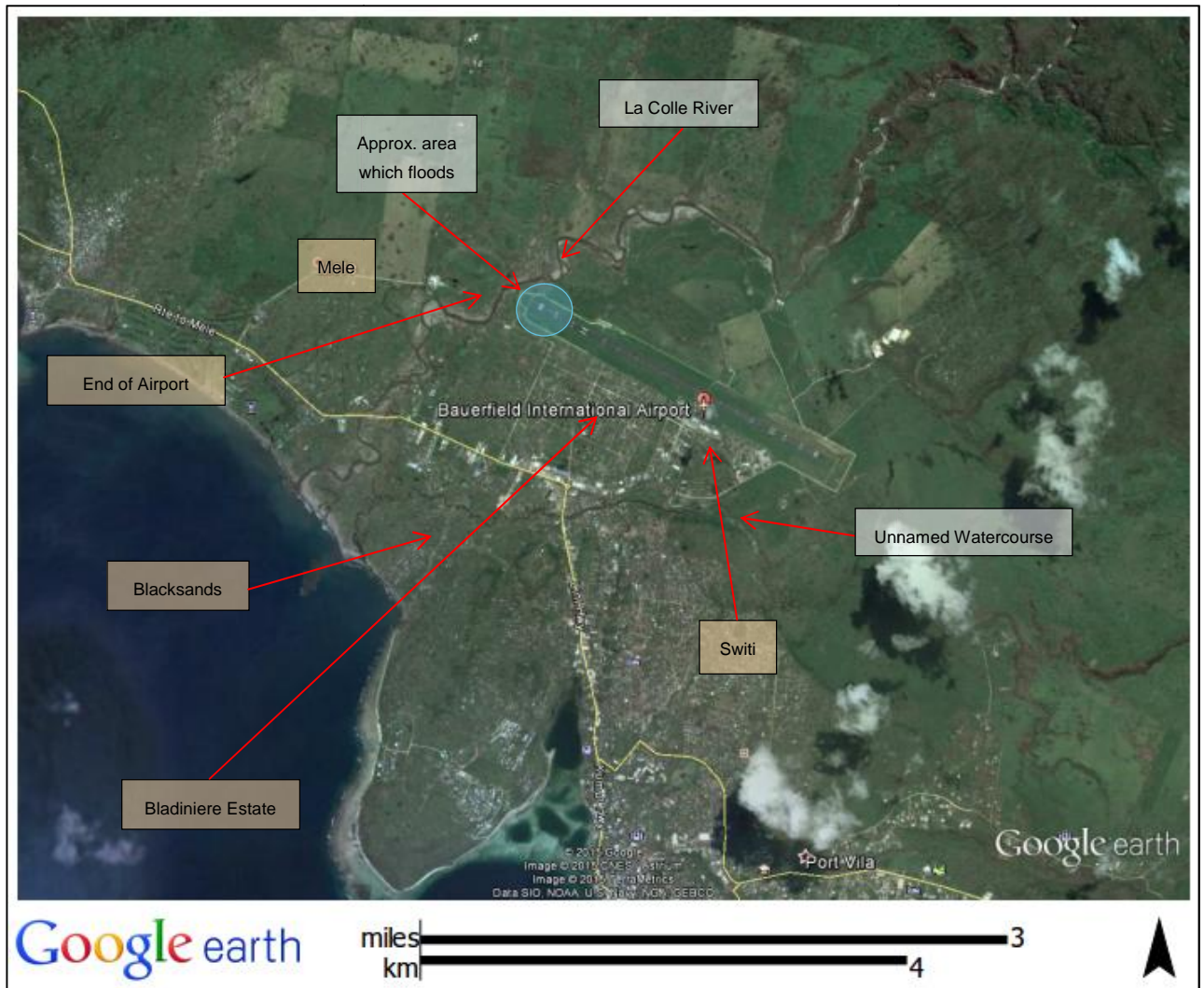
Representatives from the following communities in the vicinity of VLI were also consulted:

- Bladiniere Estate.
- Switi.
- End of Airport.
- Blacksands.
- Mele.

Figure 8 indicates the approximate locations of these communities in the vicinity of VLI. Chiefs from these communities and other professionals working in agencies such as Office of the Chief Trade Adviser (OCTA), Vanuatu Association of Sports and National Olympic Committee (VASANOC), Customs Rates and Taxes, VAT office, University of the South Pacific (USP), Vanuatu Police Force (VPF), Reserve Bank of Vanuatu (RBV), National Bank of Vanuatu (NBV) and the office of the Ombudsman also attended these community focus group sessions.

While certain elements of the design plans may have changed since the 2015 consultation, all key outcomes and concerns that were raised during the meetings are summarized below.

**Figure 8** Approximate Locations of the Communities consulted in the Vicinity of Bauerfield International Airport



Source: Google Earth 2015, Imagery date 16 March 2015.

#### **5.2.1 Vanuatu Environment Unit Meeting – 25 March 2015**

A number of concerns were raised during this meeting, these included the following:

- This unit will be involved with any EIA associated with the project and they request to review the final PESMP prior to its implementation. They will be provided the CESMP for comment prior to the contractor commencing civil works.
- The unit had concerns regarding potential dust generation during aggregate transportation from the quarries.
- They were also concerned with the potential for increased surface runoff from the resealed runway as a potential environmental risk, both to communities living around VLI and to animals grazing on the land on the periphery of VLI.

#### **5.2.2 VANGO Meeting – 27 March 2015**

This meeting included representatives from VANGO, GEF and VEAN. A number of concerns were raised during this meeting, these included the following:

- The group's key concern was associated with informing the public and ensuring that stakeholders are given every opportunity to be part of the VAIP development.

- VANGO expressed concern over the GoV taking out a loan to complete the VAIP at a time when the country is going through a major disaster and recovery process. They would like the GoV to pursue a grant rather than a loan for the VAIP.

#### **5.2.3 CAAV Meeting – 30 March 2015**

A number of concerns were raised during this meeting, these included the following:

- In light of the recent natural disaster, this group also expressed concern regarding the GoV taking out a loan to complete the VAIP. They would like the GoV to pursue a grant rather than a loan for the work. They mentioned the potential to apply for grants from additional donors.
- CAAV are concerned that reducing the runway by 600 m will reduce the safety zone between landing and where the aircraft stops completely. It would mean reducing the runway safety area which could have direct safety implications for the adjacent communities on the VLI perimeter.
- CAAV indicated that any future developments at VLI will require moving the domestic and international terminals and Air Vanuatu hangar further back as these facilities are currently too close to the landing zone and thus pose significant risk to aircraft operators, passengers and the public at large.
- CAAV are adamant that the GoV should look at an alternative airport location for phase two of the VAIP. They recommend finding a site with more available space for further development. They stated Pekoa airport was proposed as a potential alternative for phase two of VAIP.

#### **5.2.4 Bladiniere Estate, Switi and End of Airport community Meeting – 31 March 2015**

A number of concerns were raised during this meeting, these included the following:

- VLI construction camp and lay down area location – They have concerns over this location with regard to noise and potential pollution issues.
- Security of tenure – Many residents are worried that the VAIP development at VLI will directly affect residents of these areas. They have concerns regarding leasing properties in an area in which has so much development is planned and whether they will have to relocate.
- Noise – Local residents were unhappy with the increase in aircraft activity at VLI during the cyclone Pam aftermath, they stated it was extremely traumatic for everyone, especially the young. Generally they have concerns regarding increased noise associated with increased aircraft traffic.
- VAIP phase two – As mentioned above, the local communities agreed that the GoV should investigate developing another airport at a safer location and in a place which could accommodate a higher number and larger aircraft. They gave examples such as Tontouta in New Caledonia, and Nadi in Fiji as international Ports of Entry that are located some distance from major residential areas and national capital cities.
- Night operations – Locals are concerned about being disturbed at night if construction works is carried out at night.
- Airport runoff and associated pollution – During the meeting, it was mentioned that runoff (including hydrocarbons from aircraft) from the airstrip has allegedly been identified in the vicinity of people's houses during rainy periods. They stated that the drainage system at the airport does not drain directly to the La Colle River, but also is transported to the adjacent properties.
- Funding – They also expressed concern regarding the GoV taking out a loan in light of the recent natural disaster. Members were informed that similar work carried out in both Tonga and Kiribati came under grant agreements.
- Tar Sealed Road – A senior member of Switi community cautioned government against using the road that runs through his community as it is not tar sealed and produces a lot of dust and danger to children using this access. This particular road was the main access during the last VLI upgrade.
- Transport of quarry material – The suggestion for moving quarry material from North Efate to the job site was met with trepidation. Community members suggested locating a quarry at a closer site to minimise dust, pollution and other potential hazards. They would like speed humps to be erected to slow traffic down as a safety mechanism for residents.

#### **5.2.5 AVL Meeting – 7 April 2015**

Key outcomes included the following:

- AVL stated that the VLI apron needs to be extended to accommodate increasing aircraft traffic. They suggested creating a second apron for smaller operators.
- AVL argued for an expansion of the current international terminal to accommodate the increasing number of travellers. This would also include expanding the international terminal car park which is currently not adequate to accommodate users.
- Noise pollution – They stated that it is unlikely that flight schedules will change as a result of the VAIP upgrade activities. They conceded that it is likely that work on the runway will take place during the night to minimise disruption to flight schedules.
- AVL indicated that the institution has the capacity to oversee the implementation of the VAIP upgrade and added that AVL has overall mandate over VLI under licence and it is the institution's prerogative to oversee such developments.

#### **5.2.6 Mele Community Meeting – 9 April 2015**

Key outcomes included the following:

- The Chief is generally supportive of the VLI upgrade which he sees as an essential component of developing Port Vila and Vanuatu as a whole.
- Their main concern is around the safety of the Mele community. Community members continue to be on edge particularly with recent increases in flights and the arrival of larger aircraft as a result of cyclone PAM emergency response missions.
- They confirmed that the western end of VLI is always at risk as it is within a flood zone.
- They also believe the GoV should find an alternative location for an airport which is suitable to accommodate larger aircraft in greater numbers. He further cautioned the GoV against complacency in finding an alternative location as this could compromise the public's safety and security.

#### **5.2.7 Summary**

A number of concerns have been raised as part of this initial public consultation process, they included airport surface water drainage, location of construction camp / lay down areas, VLI access routes, quarry transport routes, work hours, rescheduling of flights, subdivisions in vicinity of VLI, community engagement, the location of the international airport, and a loan vs grant. These concerns have either been addressed in the mitigation section of the PESMP (Section 7), or have been addressed through final design changes or will be addressed as part of the continuing public consultation process.

Initial in-country disclosure (considering the post-Cyclone Pam circumstances) involved the provision of documents at the AVL offices together with direct discussions with airport concessionaires where possible. Subsequent iterations of the PESMP (and the CESMP) will be disclosed prior to works commencing.

Stakeholders will continue to be consulted at other times during implementation (for example to announce the start of works or to advise of traffic management plans during the construction phase). Neighbouring communities will be made aware through these media of the procedure for registering any complaints or grievances in relation to the project. Where the airport Master Plan process has the potential to impact on communities outside the airports, these communities, with representatives of both men and women groups, will be engaged in a meaningful way in the Master Plan process.

### 5.3 Consultation Plan

Consultation meetings will continue to be held with the key Agencies and communities. As the works at VLI are at the tender stage, it is now appropriate to develop a consultation plan to enable effective communication with the core community and the wider stakeholders for these activities. Through VPMU, with input from AVL the following consultation activities should be implemented at these key times:

<b>Milestone for Construction Works</b>	<b>Stakeholders</b>	<b>Activity</b>	<b>Lead</b>
Disclosure of Rev E PESMP	Wider Stakeholders	Media releases to be made informing of availability of hard copy in VPMU and AVL offices.  Available for download from project web site <a href="http://www.vaip.vu">www.vaip.vu</a> .  Disclosed through World Bank InfoShop	VPMU
	Core communities	VPMU to identify core community members (hereafter referred to as 'core group') to act as conduit for communications between VAIP and core communities of Switi, Bladinere and End of Runway.	VPMU
Award of Contractors Tender:	Wider Stakeholders	Media releases to be made informing of commencement of works	VPMU
Review of Draft CESMP	Core Communities	Contractor, with VPMU and AVL, to communicate with core group on contents of draft CESMP to with specific regard to construction camps, management of night works, haul route for aggregate and lay down sites. Feedback from meetings to be relayed to TFSU, AVL and T&T for comment and, if necessary, instruction to Contractor to amend CESMP and/or PESMP	Contractor
Disclosure of Final CESMP	Wider Stakeholders	Media releases to be made informing of availability of hard copy in VPMU and AVL offices and availability for download from project web site <a href="http://www.vaip.vu">www.vaip.vu</a>	VPMU
Commencement and Duration of Works	Wider Stakeholders	media releases advising of commencement of works and GRM	VPMU
	Core Communities	VPMU and contractor to keep core group regularly informed of schedule and duration of works with particular regard to night works and haulage.  Schedule to be posted at entrance	VPMU  Contractor

		to airport and construction site. GRM also to be posted alongside schedule	
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In addition to the consultation plan for the construction works, serious consideration must be given towards how to effectively plan meaningful consultations for the Master Plan and aviation sector strategy development. Where the master plan process has the potential to impact on communities outside the airports, these communities, with representatives of both men and women groups, will be engaged in a meaningful way in the master plan process.

A community consultation plan for these strategic documents will be developed by VPMU and the Consultants to be implemented as part of the development process and to align with the key milestones of the process. This consultation plan will be finalised before the first key milestone of the master plan process to ensure community engagement in the process from the outset. Once the consultation plan is defined, this PESMP will be updated to reflect those changes.

## 5.4 Disclosure

Disclosure does not equate to consultation (and vice versa) as disclosure is about transparency and accountability through release of information about the project. A copy of this PESMP is available on the project web site ([www.vaip.vu](http://www.vaip.vu)) and the WB Infoshop. It will also be available from other GoV websites and hard copies available at GoV offices (most applicable and accessible), VPMU office in Port Vila, AVL office at VLI, and community centres on Efate. Final PESMP, and any updates, as well as the CESMP, will be further disclosed at the same locations.

## 5.5 Sensitive Receptors

Bladiniere Estate, Switi, End of Airport, Blacksands and Mele are located close to VLI (refer to Figure 8). Homes, schools (including pre-schools), churches, and hospitals are categorised as sensitive receptors where people can be more susceptible to the adverse effects of exposure, like to traffic (safety) or noise. Sensitive receptors do not usually include places of business or public open space. The core group of community representatives will be consulted before and during construction activities to ensure communication channels are kept active, impacts are minimised and community safety is heightened. This is particularly important for the transport of materials and equipment to and from VLI. Mitigation measures may include, for example, construction works or transport during specific hours which do not impact school hours or specific traffic (includes pedestrian) safety management like flag controls and route diversions.

## 5.6 Resettlement Policy Framework

Prior to any quarries, trenching routes or off-airport construction or workers camp sites being selected for the VAIP project, public consultation will be completed with any affected parties relating to each site, and in the case of quarries, these consultations are required whether it is an operating, re-opening or new quarry site.

The detailed design plans have identified that additional land, in the form of short term use of farmland for cable burial, and associated longer term use with the cable placement is required for the VLI. Therefore WB OP 4.12 has been triggered and the requirements of the RPF presented in Appendix F will need to be implemented.

VPMU and AVL are currently assessing the final approach lighting cable burial route and undertaking a census of impacted leases. Once this process is completed, since it is expected that as fewer than 200 people will be impacted by this activity, an Abbreviated Resettlement Action Plan (ARAP) will be required as per the RPF. This ARAP is to be developed by VPMU, following the RPF procedures and principles in this PESMP, once the status of the impacted leases is known. No involuntary resettlement at any of the sites will take place until after the World Bank has approved the ARAP and no construction related VAIP activities with involuntary resettlement impacts will take place until satisfactory implementation of the ARAP.



## 6.0 Environmental and Social Impacts

### 6.1 Overview of Impacts

The VAIP VLI scope is to upgrade the existing runway, replace and upgrade the existing navigation aids, replace the approach lighting system, develop a Master Plan and Aviation Sector Strategy. Temporary access to land will need to be secured for the burial of approach light cabling and longer term occupation of the cable leading to potential restriction of land use. This means that the RPF (Appendix F) is triggered and an ARAP, which satisfies World Bank OP 4.12, will need to be produced before works can begin. The project is unlikely to cause any major negative environmental or social impacts as the work otherwise is all being undertaken within the lease boundaries of AVL property and is not enlarging the existing airfield footprint.

There may be increased noise and vibration disturbances on the surrounding communities during the operational phase of the project due to the code E upgrade. However, since the upgrade will cater for larger capacity aircraft the number of flights may decline, at least in the short to medium term. Beneficial impacts will arise from the planned Code E upgrade in regard to the safe operations of Code D disaster relief aircraft movements and the associated increases in disaster reliance that this will bring in addition to economic development opportunities for Vanuatu. While there will be some short and longer term localised negative impacts to the surrounding communities during construction, overall the social outcomes of the VAIP VLI are expected to be positive by improving safety, accessibility, improved capacity for disaster relief and mobility of island communities.

### 6.2 Environmental Impacts

#### 6.2.1 Solid Waste

Scarification, replacement of pavement material, replacement of lighting and air navigation aids will lead to the generation of excess soil and demolition waste. Efate is getting to terms with their waste management and has an approved, licensed landfill, Bouffa Landfill, located to the east of Port Vila. PVMC manages the landfill which is licensed to receive general waste and septic tank waste only. General waste as defined in section 2.3.7 can be disposed of at the Bouffa Landfill.

As also noted in Section 2.3.7, with the approval of the Supervision Engineer:

- Organic biodegradable waste may be deposited in designated dumping areas in reasonable quantities.
- Recyclable waste may be supplied to a local receiver licensed to process such waste.

All other waste is to be disposed of OFFSHORE in permitted or licensed facilities. It is the Contractor's responsibility to obtain all necessary permissions for transport and safe disposal of hazardous waste from the project site in a legally designated hazardous waste management site within the country or in another country, and to ensure compliance with all relevant laws. Evidence will need to be supplied to the Supervision Engineer of proper disposal of waste at the final location.

The export of any hazardous waste must be in compliance with the Basel and Waigani Conventions and any relevant laws enacted by source and the recipient countries.

Disused material will be generated in the form of asphalt millings and from the excavations associated with the runway pavement works, concrete pads for air navigational aids and cable trenches. Most of the clean fill material can either be used to backfill areas where old equipment or infrastructure has been removed or as a resource (e.g. crushed asphalt and basecourse material) for general use by AVL or PWD and the community. An option for disposal of these clean solid wastes is an approved site in the disused Stella Marie Quarry which has been used for this purpose by other GoV infrastructure projects. Written permission to use this location is to be obtained from DEPC before use.

The CESMP shall describe solid waste streams generated by the works and detail the approved disposal methods along with permissions.

#### 6.2.2 Water Resources

Freshwater will be required for workers and some construction activities (e.g. dust suppression and concrete and bitumen production). The impact on current water supply could be significant if not properly mitigated through good resource planning. The source of water supply for the VAIP project has yet to be confirmed, however the following water resource options are to be considered:



- Rainwater harvesting – it rains throughout the year therefore this is the most sustainable and preferred option.
- Use of local river supply – this would require an assessment of suitability as a resource and a permit under the Water Resources Management Act.
- Use of shallow groundwater – local groundwater is utilised as a potable supply and this is a finite resource therefore this is not a preferred option. This would also require a permit under the Water Resources Management Act.
- UNELCO private reticulated supply – this option is likely the most costly option.

Water efficiency, conservation and reclamation practices will be adopted

### **6.2.3 Biological Resources**

The VAIP VLI will rehabilitate and upgrade the existing infrastructure. The airport land is defined by a secure perimeter fence designed to exclude animals and prevent access by people. Most of the airport land is mown grass however there are areas of scrub in areas outside of the runway strip, these are potential locations for the construction camp and lay down areas. It is not anticipated that there will be any further loss of habitat or disturbance that is not short term (i.e. related to the construction phase).

There is the possibility that in the process of construction or quarry works, fauna (e.g. nesting birds) could be impacted or the temporary removal of vegetation (e.g. for quarry work, construction lay down area and burial of approach lighting cables) could impact on potential habitats. The habitats surrounding the runway and following the approach lighting route are primarily open pasture land to the north, east and west, Mele village to the east at the start of the approach lighting route and a settlement to the south. In addition to this, La Colle River lies at the eastern end of the runway. Mitigation measures will include liaison with the DEPC should any fauna (reptile, avian, or mammal) be encountered that affect construction activities (e.g. nesting bird). Should quarry works for the project result in any vegetation clearance, the measure stipulated in the codes of practice in Appendix G and throughout this PESMP will apply.

### **6.2.4 Hazardous Substances and Materials**

Potential soil and water pollution from construction run-off with fuel and lubricants are expected to be temporary and minor. Work practices and mitigation measures for spills will be implemented, including a spill response plan and bunded areas for storage (for all project locations during construction and operation phase) and the specifications call for self bunded tanks to be used.

The contract shall have spill kits readily accessible, with staff trained in their use.

Should any hazardous waste be produced during the works, it would be required to be exported to a landfill in a country which is approved to accept such waste.

Should an emergency event occur there is also potential for a discharge of hazardous substances to the environment or the use of fire retardants during firefighting. The spill response plan should include provisions for mitigating any adverse effects.

### **6.2.5 Noise and Vibration**

Noise and vibration disturbances are particularly likely during construction related to the transportation of construction materials from the quarries or ports and operation of equipment (e.g. blasting and processing of aggregate in quarries, asphalt plant operation and milling of pavement surface). Additionally, movement of trucks will increase the traffic levels when offloading and delivering imported aggregate. These impacts will be short-term and affect different people at different times. Impacts include noise during pavement resurfacing works at night and possible effect of vibration caused by operation of heavy machinery, increased traffic in some sections of roads, etc. The communities along the boundary fence understand of the need for these works, however they have expressed their concern over the level of noise during night works and consider this to be a negative impact on their home life over this short term. Effective communication and the implementation of the consultation plan in Section 5 will go towards mitigating these impacts.

The WB/IFC EHS Guidelines<sup>16</sup> Section 1.7 – Noise Management shall be applied for the duration of construction works. Noise impacts should not exceed the levels at the closest residential or other sensitive social receptors for one hour LAeq of 55 dBA between the hours of 0700-2200 or 45 dBA outside of these hours for night works, or result in a maximum increase in background noise levels of 3dBA at the nearest receptor location off site. The nearest sensitive receptors are expected to change as the work moves along the pavements and will be determined the closest residences to the active works and to the construction camps and/or asphalt plan.

Additional noise and vibration will also potentially cause disturbance during the operational phase (e.g. aircraft landing and take-off) with any increases in international air traffic movements (see Section 2.4). The communities are subject to noise and vibration from current airport operations however, it is important to note that as of this version E ESMP, the level of aircraft movement is lower than previously experienced due to the cessation of several international airline operations caused by the degraded runway condition. Once VAIP works are complete it is anticipated that, initially, aircraft movements will increase back to pre-Pam levels. In the longer term, forecasted operational expansion facilitated by the Code E upgrade and the replacement of navigational aids may change the noise profile of the airport (noisier aircraft, new approaches, more aircraft, extended hours of operations equivalent to pre-Pam). Any changes to the noise profile will need to be addressed in the Master Planning process and will require additional consultation with the affected communities and is most appropriately facilitated within the Master Plan development process.

Code E upgrades to RWY11 turning nodes mean that engine testing exercises will be relocated to the holding threshold at RWY11. This will reduce this type of noise disturbance on the nearby communities during the normal airport operations.

#### **6.2.6 Erosion and Sediment control**

Some soil erosion may occur as a result of the removal of shrubs and earth cover during resurfacing, and restoration of pavement areas and drainage. For small areas of exposed soil, any soil that is suspended will either be captured by the swale drains around the pavements or will be captured by the vegetated habitat of the airfield. Due to the effective soil retention role played by grasses, it is anticipated that any eroded soil will be captured locally and will not cause any long term impacts on the surrounding environment and mitigation measures stipulated in Section 7 will strengthen this. Division bunds may be required for larger areas of exposed soil where the topography does not allow drainage to the swales. The impacts on vegetative cover will be short-term and reversible through natural regeneration. There is only a thin topsoil layer in most parts and runoff is easily filtered into the underlying groundwater table. Where topsoil is required to be cleared this will be set aside for use in restoration of disturbed areas.

Sediment has the potential to be generated during any excavations. Disturbance will occur at the construction camp laydown areas, the two new 7.5m wide shoulder footprint, the installation of new and realignment of existing swales and the trenching route for burial of approach lighting cable. Excavation will also be required for the navigational aids (concrete pads and cabling) and details of these excavations will be defined in the CESMP.

#### **6.2.7 Air Emissions and Odours**

Air pollution can arise due to improper maintenance of equipment, dust generation and the bitumen smoke / fumes arising from application of the new pavement seal and maintenance work. Impacts are expected to be localised and short term with only minor negative impact on the ambient air quality in the vicinity of the construction areas. Consideration should be made as to where noisy and odorous equipment should be placed in relation to sensitive receptors, if located away from communities, the social impacts should be minimal however consideration needs to be given to Switi community comments regarding dust levels should the haul route through their village be utilised.

No ongoing impact to air quality is expected as this is upgrade of existing infrastructure, however the Master Plan should revisit this during the development process for forecasted increases to aircraft size and air traffic movement.

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<sup>16</sup> International Finance Corporation, Environmental Health and Safety Guidelines, General Guidelines: Noise Management

#### **6.2.8 Traffic and Airport Operations**

Traffic impacts will occur in transporting equipment and materials from the port and quarries. Impacts may also occur with any increased marine traffic associated with importing aggregate from overseas. These impacts will mostly be short-term and through good mitigation and traffic management the impacts should be low. As part of the CESMP, the Contractor is responsible for developing and implementing a Traffic Management Plan (TMP). The TMP will need to consider pedestrian traffic and commercial marine traffic as well as vehicle traffic management, and particular attention will need to be given to management near sensitive receptors (schools, residential dwellings, markets, churches etc.) and the management of increased heavy load traffic associated with aggregate transportation from the loading points, particularly in relation to the access road through Switi village as this road is unsealed and in poor condition. Upon completion of the construction phase of works, traffic and road safety impacts caused by the VAIP VLI should cease.

The MOWP will specify safety measures required for the operation of the airport when construction work is underway. The MOWP includes instruction on airfield operational distances, foreign object debris (FOD) protection, airfield security, and responsibility hierarchy and communication methods.

#### **6.2.9 Wastewater Discharges**

Sanitary facilities for workers will be provided to prevent water bodies or other areas being used. Specification of sanitary facilities will be defined in the CESMP.

Uncontrolled wastewater (e.g. sewage, grey water, wash water, water containing fire retardants used during emergency activities) discharges have the potential to contaminate soil, water and spread disease. Wash water from equipment can be contaminated with hydrocarbons (e.g. oil and fuel) which have a detrimental effect on aquatic life, water quality and soil quality. There are also human health impacts regarding hydrocarbon exposure which vary in severity depending on type and length of exposure.

Wash water from concrete processing and cutting is highly alkaline and can burn vegetation, result in fish kills and also cause burns to the skin. Sediment loads in wash water if allowed to discharge to either marine or freshwater systems can also adversely impact aquatic life and water quality. While the potential impacts of uncontrolled discharges of wastewater can adversely affect the receiving environment, they can be easily mitigated through planning and implementation of mitigation measures (as outlined in Section 7.8).

#### **6.2.10 Stormwater Runoff**

The final design of the drainage system upgrade based on the Drainage Study will reduce the instances of pooling and flooding of the runway associated with the northern swale drain. Upgrading of the northern swale drain to allow adequate capacity and drainage to the La Colle river flood plain will decrease the pressure on the southern runway drain and will enable more even discharge of storm water runoff from the western end of the runway. Hydrological modelling carried out used rainfall data, catchment characteristics, excess (runoff) rainfall and design flows for the northern and southern drain catchments to determine the frequency of the capacity of existing stormwater infrastructure being exceeded and the likelihood of flooding affecting the runway at VLI. Flood extent modelling was also undertaken using 5, 10, 20, 50 and 100 year Annual Recurrence Interval (ARI) using LiDar imagery of the airport and the entire flood plain as it extends to the north and south between the rivers. The final design was based on these models.

There is a potential impact on the La Colle river flood plain and the river itself from the storm water drainage runoff. At this time, the likelihood or scale of the impact cannot be assessed, however, it should be considered by AVL as a parameter to monitor during the operational phase of the project.

The recommendations for protection from scour of the western end of the runway as made in the drainage study have not been adopted in the final design and this may have some long term operational phase impact on the sustainability of the investment and airport operations. The western end of the runway extends into the flood plain of the La Colle river and could therefore be subject to erosion from extreme rainfall events as modelled in the 50 and 100 AVI models which show flooding greater than 2.5m close to the western end of the runway. These models are for AVIs longer than the projected operation life of these VAIP works but should become an important part of the Airport Master Plan development for Vanuatu.

#### **6.2.11 Local Quarry and Aggregate Supply**

For any locally sourced aggregates, potential adverse impacts from uncontrolled quarrying or mining are high and include all of the above listed impacts, namely:

- Air emissions – machinery and dust.
- Noise and vibration – machinery and blasting (if used).
- Water – consumption, hydrology (changes to site drainage patterns and groundwater), wastewater, and contamination.
- Waste – overburden, by-products and contaminated waste material.
- Land conversion – loss of habitat and agricultural land.

Only existing permitted quarry operations will be used to source suitable aggregate (Erangorango (coronous) quarries are recommended). The potential quarry sources identified in Sections 2.3.3 are either currently operating as a quarry or have been utilised as a quarry in the recent past so land conversion has already taken place. Impacts of quarrying are not limited to the location of the quarry but can extend along the delivery route.

Noise, dust, and traffic (vehicle and pedestrian) safety are primary concerns for the transport of materials from the quarry site. Depending on the quarry sites selected to supply the required aggregate, a more detailed assessment of impacts will be completed by the Contractor in their CESMP along with mitigation measure suitable for the location and activities within the quarry. Consideration and planning should also be implemented on quarry rehabilitation following the completion of the works.

Should a new quarry permit application be necessary for the VAIP project, the national obligations must be met. To support the development of the application documentation, a quarry management plan guideline has been included in the Codes of Practice in Appendix G and the measures stipulated in this PESMP and must be adhered to. The Contractor must detail this in their CESMP and the permitting process must be completed before any activities can take place on the site.

#### **6.2.12 Biosecurity**

Some equipment and aggregates are most likely going to be required to be imported which can harbour plant and animal species which may pose a threat to Vanuatu's biodiversity and ecosystems. Untreated aggregate or aggregate sourced from unlicensed rural quarries can also be a source of contamination from pesticides and other harmful substances which can pose short or long term environmental and public health risks. All imported materials will be required to have the appropriate biosecurity clearance certificates.

#### **6.2.13 Impacts on Cultural Property**

The Vanuatu Cultural and Historical Sites Survey (now known as the Vanuatu National Heritage Registry) were established in 1990. Their main role is to identify and conduct surveys on sites of cultural, historical and archaeological importance in the country, especially those sites that were exposed to development projects that could have substantial detrimental effects to the sites. Should any areas of potential cultural importance or artefacts be identified during the VAIP project, works should stop and the Vanuatu National Heritage Registry and the Ministry of Land and Natural Resources (MLNR) should be contacted. No work should continue until approval has been sought from the above-mentioned agencies.

#### **6.2.14 Secondary and Cumulative Impacts**

Secondary and cumulative impacts tend to be triggered by impacts to environmental resources that function as integral parts of a larger system over time and space, and can initially be 'invisible' to the normal present time impact assessment. Secondary impacts can include land use changes due to improved accessibility which in turn can impact habitats and pressure on existing resources and utilities (e.g. water supply). Secondary and cumulative impacts also often cannot be managed solely by the project executors (MIPU/VPMU). Town planning (e.g. restricting development and clearing of land) and conservation are two examples of external influences which can assist in reducing secondary and cumulative impacts.

Secondary and cumulative impacts are not always negative, positive impacts include increased business and supply chain opportunities due to improved infrastructure and accessibility, improved access to health and education facilities and employment (beyond the scope of the project).

**Long Term Operational Expansions:** The airport is existing infrastructure which has existing impacts (e.g. noise and dust generation). In most cases the VAIP will not be able to remedy these impacts however the designs can lessen and in some cases mitigate some of the impacts. Public consultation outcomes highlighted the issue with operational noise from the airport but also concerns regarding future airport expansion and potential loss of their homes. While no physical expansion is included in the scope of this project, the GoV stipulated Code E upgrade

works being undertaken will enable future expansions and increases in air traffic movements in the long term. The Master Plan update process is a critical element of ensuring that the planned expansions to Vanuatu's aviation sector are carried out in a sustainable manner taking the necessary measure to address social impact concerns. Given the stated concerns of the surrounding communities, the development of the updated Master Plan must include significant consultation with all stakeholders and communities. The socio-economic benefits of increasing Vanuatu's international visitors is a key consideration in the strategic development of VLI and this must be balanced with the concerns of the communities that will be directly impacted by increases in aircraft numbers and associated noise levels. It is the responsibility of the VPMU to ensure that a meaningful consultation plan is developed and implemented as an integral part of the Master Plan update.

#### **6.2.15 Coastal and Marine Environment Impacts**

A number of activities may have the potential to have minor impacts on the marine environment approximately 3.5km upstream via the La Colle River, including uncontrolled discharges (e.g. stormwater, wastewater, spills). Albeit unlikely, minor impacts may include reduced water quality and loss of aquatic life due to pollution.

### **6.3 Social Impacts**

Social implications with the regard to safeguarding sensitive receptors such as the community to the south of VLI and communities on the haul routes will be addressed through the public consultation process throughout the life of the project. Furthermore, it is stipulated in the Project Appraisal Document (PAD) that as well as stakeholder being consulted on a continuous basis during implementation of works, where the airport Master Plan process has the potential to impact on communities outside the airports, these communities, will be engaged in a meaningful way in the Master Plan processes.

As stated in Section 2 of this PESMP, the preferred option to bury the cabling for the approach lighting system will required temporary access to leased land along part of the path of the lighting. According to the World Bank Operational Policy 4.12 (Involuntary Resettlement), there is a requirement for the project to meet social safeguard criteria in the planning, delivery use and impacts of the project. Under OP4.12, resettlement includes cases in which affected persons (APs) experience:

- ) Relocation and loss of shelter; and/or
- ) There is loss of assets or access to assets; and/or
- ) There is loss of income or livelihoods

In the case of the VAIP, temporary access to land for cable burying provides a trigger for this policy and an ARAP needs to be developed using the guiding principles in RPF (Appendix F of this PESMP). This ARAP should be developed by VPMU once the status of the leases along the trenching route is known. The ARAP should be completed and approved before commencement of works.

Initial estimates by the VPMU Safeguards Team have put the number of separate impacted land parcels between 20 and 35 along the entire proposed cable route (overground and underground) and will potentially impact four types of lease:

- ) Special Lease: Government held leases, usually for public and civil uses such as schools, roads, airport, etc
- ) Agricultural Lease: Leases for farms and cattle or plantations.
- ) Commercial Lease: Leases for commercial uses such as the abattoir. The ARAP will need to determine if the status of this type of lease will be impacted by any project works.
- ) Residential Lease: These are for residential properties

A lease census along the route to determine the actual number of impacted parcels is underway between AVL and VPMU.

#### **6.3.1 Occupational Health and Safety (OHS)**

The primary hazards identified are traffic management, construction works involving hot bituminous products (up to 165 °C), working at night (artificial light, fatigue) and working in extreme ambient temperatures.

During construction and operation health and safety is to be managed through a Site Specific OHS Plan (to be developed by the contractors using the codes of practice attached to this PESMP in Appendix E) and application of international environmental and health and safety (EHS) standards (WB/IFC EHS Guidelines). The Contractors health and safety documentation should incorporate all aspects of the project including the airport site, quarries and transport routes.

Civil works shall not commence until the Supervision Engineer has approved the OHS plan, the Safety Officer is mobilized and on site, and staff have undergone induction training.

The following are the contractual requirements for OHS as stipulated in the bidding documents:

Health and Safety: Funding for Occupational Health and Safety (OHS) training and activities is provided in the bill-of-quantity as a provisional sum. The Contractor's costs shall be financed from this on proof of record (e.g. time sheets, material invoices etc.) for the following:

- Recruitment of provider for delivery of HIV/AIDS education training.
- Recruitment of provider for delivery of gender based violence (GBV) training.
- Expenses related to HIV/AIDS and GBV training
- Provision of Safety Officer when acting in the role of Safety Officer
- Personal Protective Equipment (PPE) for all workers on the site, and visitors as appropriate
- Safety signage, safety literature, HIV/AIDS literature, condoms, voluntary counselling and testing, GBV literature, etc.
- Alcohol testing of staff to enforce a zero alcohol tolerance policy
- Labor costs for attending: (i) dedicated safety training such as working at heights, confined space training, first aid training etc.; (ii) HIV/AIDS education training; (iii) gender based violence (GBV) training; and, (iv) child protection training. The contractor shall make staff available for initial training of 1.5 days, and a total of at least 0.5 days per month for other such formal trainings.

For the purposes of the project, in addition to the national OHS standards the employer is adopting a Code of Practice for occupational health and safety based on good international industry practice. To be qualified for bidding contractors will be required to have in place an occupational health and safety management system which is compliant with, or equivalent to, OHSAS 18000 (<http://certificationeurope.com/ohsas-18000-health-safety-management-standards/>) and is acceptable to the client. The contractor shall specify which occupational health and safety standards are to be applicable to the project, and provide evidence of application of such standards on a project of similar size and complexity during the past 5 years. The standards to be adopted may include those of Australia, Canada, New Zealand, the EU and the US, which are referred to in the World Bank Group EHS Guidelines.<sup>1</sup>

Civil works shall not commence until the Supervision Engineer has approved the OHS plan, the Safety Officer is mobilized and on site, and staff have undergone induction training.

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that first aid facilities and sick bays are available at all times at the Site, including having a site vehicle available at all times that can be used to transport Contractor's and Employer's Personnel to medical facilities. The Contractor shall ensure that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint a certified Safety Officer at the Site, with qualifications acceptable to the Supervision Engineer, responsible for maintaining safety and protection against accidents. This person shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.

The Contractor shall post in clearly accessible places information on how to transport injured Contractor's and Employer's Personnel to medical facilities, including the precise location and contact details of such medical facilities, name and contract details of the site designated Safety Officer.

The Contractor shall ensure that all workers on the site have appropriate PPE of an appropriate standard including: (i) impact resistant safety eyewear; (ii) safety footwear with steel toe, sole and heel; (iii) high visibility

clothing; (iv) long sleeves and long pants suitable for operating environment; (v) safety helmet with provision of sun protection as necessary; (vi) gloves (carried and worn when manual handling); (vii) hearing protection when working in close proximity to noisy equipment and in all underground environments. For site visitors, the above equipment will be supplied as appropriate based on assessed risks and depending on number of visitors and where they will be on site. See <http://tinyurl.com/nzta-ppe-requirements> for additional information.

The Contractor shall send, to the Supervision Engineer, details of any accident as soon as practicable after its occurrence.

Within 5 working days of the end of the calendar month the Contractor will be required to report to the Supervision Engineer on their performance with the following OHS indicators:

- Number of fatal injuries (resulting in loss of life of someone associated with the project or the public)
- Number of notifiable injuries (an incident which requires notification of a statutory authority under health and safety legislation or the contractor's health and safety management system)
- Number of lost time injuries (an injury or illness certified by a medical practitioner that results in absence of work for at least one scheduled day or shift, following the day or shift when the accident occurred)
- Number of medical treatment injuries (the management and care of a patient to effect medical treatment or combat disease and disorder excluding: (i) visits solely for the purposes of observation or counseling; (ii) diagnostic procedures (e.g. x-rays, blood tests); or, (iii) first aid treatments as described below)
- Number of first aid injuries (minor treatments administered by a nurse or a trained first aid attendant)
- Number of recordable strikes of services (contact with an above ground or below ground service resulting in damage or potential damage to the service)
- Lost Time Injury Frequency Rate (the number of allowed lost time injury and illness claims per 100 full-time equivalent workers for the injury year specified)
- Total Recorded Frequency Rate (the number of recordable injuries [recordable/lost time/fatal] per 100 full-time equivalent workers for the injury year specified)

The monthly reports shall also include:

- Number of alcohol tests
- Proportion of positive alcohol tests
- Number of site health and safety audits conducted by contractor
- Number of safety briefings
- Number of near misses
- Number of traffic management inspections
- Number of sub-contractor reviews
- Number of stop work actions
- Number of positive reinforcements
- For each fatality, injury or near miss incident, the Contractor shall provide a corrective action report within the monthly report detailing steps taken to ensure risks of a repeat incident are minimized.

### **6.3.2 HIV/AIDS, Gender Based Violence, and Child Protection**

There are also impacts associated with personnel recruited from outside the local community such as increased instances of HIV/AIDS. Additionally, the Contractor accepts that gender based violence might occur as an unintended consequence of economic development. As such the Contractor accepts responsibility for implementing actions to help reduce instances of both HIV/AIDS and gender based violence (GBV). The will also adhere to the client's 'Child Protection Code of Conduct' which is included in the bidding documents. Staff will be made available for training on all these, and other, issues.

The following are the contractual clauses for addressing social impacts:

**HIV-AIDS Prevention.** While mobilized for work, the Contractor shall conduct an HIV-AIDS Information, Education and Consultation Communication (IEC) campaign via an service provider approved by the Supervision Engineer, and shall undertake such other measures as are specified in this Contract to reduce the risk of the transfer of the HIV virus between and among the Contractor's Personnel and the local community, to promote early diagnosis and to assist affected individuals. The Contractor shall not discriminate against people found to have HIV-AIDS as part of the campaign.

The Supervision Engineer shall provide to the Contractor a list of approved service providers which shall include recognized NGOs and/or recognized local health departments. From the provided list, the Contractor shall enter into agreement with one service provider to undertake the HIV-AIDS IEC campaign. The cost of the campaign shall be funded by the Contractor from the provisional sum provided in the bill-of-quantity. The contractor shall make staff available for a total of at least 0.5 days per month for formal trainings including HIV/AIDS.

Prior to contractor mobilization, the approved service provider shall prepare an action plan for the IEC campaign based on the 'Road to Good Health Toolkit' ([www.theroadtogoodhealth.org](http://www.theroadtogoodhealth.org)) which shall be submitted to the Supervision Engineer for approval.

The action plan will clearly indicate (i) the types and frequency of education activities to be done; (ii) the target groups (as a minimum to all the Contractor's employees, all Sub-Contractors and Consultants' employees, and all truck drivers and crew making deliveries to Site for construction activities as well as immediate local communities); (iii) whether condoms shall be provided; and (iv) whether STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor shall be provided.

The IEC campaign shall adopt the 'Road to Good Health' Toolkit methodology ([www.theroadtogoodhealth.org](http://www.theroadtogoodhealth.org)) and use readily available information for the Project. No specific new information shall be produced unless instructed by the Supervision Engineer.

The IEC campaign shall be conducted while the Contractor is mobilized in accordance with the approved approach. It shall be addressed to all target groups identified concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to, of Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular.

The Contractor shall include in the program to be submitted for the execution of the Works under Sub-Clause 8.3 the IEC campaign for Site staff and labor and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program shall not exceed the Provisional Sum dedicated for this purpose.

**Gender-Based Violence:** The Supervision Engineer shall provide to the Contractor a list of approved service providers which shall include recognized NGOs and others for conducting training on GBV. From the provided list, the Contractor shall enter into agreement with one service provider to undertake the GBV IEC campaign. The cost of the campaign shall be funded by the Contractor from the provisional sum provided in the bill-of-quantity. The contractor shall make staff available for a total of at least 0.5 days per month for formal trainings including GBV.

Prior to contractor mobilization, the approved service provider shall prepare an action plan for GBV IEC campaign which shall be submitted to the Supervision Engineer for approval.

### 6.3.3 Business Impacts

During the construction phase there is the potential for minor impacts on airport concessionaires and other small businesses in the airport vicinity. These impacts would be limited to noise, dust and traffic from construction activities and will be of limited duration. Standard good practice construction management will mitigate these potential impacts to an acceptable level. All potentially affected businesses will be included in the consultation process.



#### **6.3.4 Disaster Resilience**

Vanuatu's remoteness, limited size and coastal settlement patterns and susceptibility to a host of natural disasters make aviation critical for effective disaster risk management, particularly in the delivery of relief aid. Air transport can effectively and efficiently bring in humanitarian cargo and aid workers to cut-off communities. In 2015, Cyclone Pam demonstrated the critical importance for the nation of being able to serve larger Code D or E aircraft engaged in civil defence and disaster relief activities. The upgrade of VLI runway to Code E will benefit all residents who, when such an event as Cyclone Pam occurs, must depend on disaster and emergency relief operations sourced from afar.

## 7.0 Mitigation Measures

Due to the nature of the rehabilitation activities proposed there are some mitigation measures which are applicable to all aspects of the project, while others that are specific to particular components. Sensitive receptors and environmental values have been identified around the airport site which will require specific mitigation measures for safety and environmental protection. The mitigation measures are outlined in Appendix B. The mitigation tables detail the impact or issue, the mitigation required, where this is to occur, when this mitigation is to be applied, estimated costs, implementation responsibility and supervision responsibility.

This PESMP will be included in all bidding documents and form the basis of the CESMP which will detail the practical implementation of the mitigation measures identified in this PESMP. The ESMPs are dynamic documents which should be updated to include any variation from the current scope or addition of newly identified impacts and mitigation measures that may arise through the bidding and contracting process (if not addressed in the CESMP) or consultation. The mitigation measures associated with the impacts identified above are detailed below.

### 7.1 Aggregate, Materials and Equipment Importation

The Contractor will have a choice as to which quarry source to use and how the quarry operation is to be set up (e.g. operated by the VAIP Contractor or a local quarry operator). The Supervision Engineer and VPMU are responsible for reviewing site operations to ensure that the operation is an existing permitted site which is approved for supply of aggregate (under Vanuatu law).

If the contractor uses a local operator, they are responsible for reviewing operating license/permits and any conditions of operation which may have been imposed to ensure the operation is legal and that the contractor's work complies with any transport or purchase requirements. If the VAIP Contractor is to operate the quarry (or part of) themselves they are responsible for ensuring the land ownership and lease arrangements are not under dispute, securing the necessary operating permits, completing environmental assessments and following the specific measures outlined in this PESMP, (including its RPF and Appendix G). An EIA and quarry management plan (incorporating the attached measures) may be required to support any permit application. As a minimum the contractor should adopt the IFC Environmental, Health and Safety Guidelines for Construction Materials Extraction. Key mitigation measures from this document are outlined below. Permitting requirements will need Contractors to include provision for quarry specific plans including environmental management, health and safety and rehabilitation.

Dust is a major issue at quarry sites and can travel some distance and affect a large number of people if not properly managed. The Switi settlement to the south of VLI is the closest (over 1 km) to Erangorango Quarry and is also located on the likely site access road for other aggregate sources. Dust should be managed using the same measures as identified in Appendix B along with use of linear layout for materials handling to reduce the need for loading and unloading and vehicle movements around the site. The CESMP should include a provision for quarry dust and noise control; all equipment including crushers, aggregate processors, generators etc. should / if possible, be located in the quarry pit to minimize noise and dust emissions. When locating operations consideration should be given to prevailing wind conditions.

The use closed/covered trucks for transportation of construction materials is a requirement.

Construction materials will be sourced commercially and use of wood from natural forests will not be permitted.

Water is significant resource in quarry activities and where possible closed circuit systems should be implemented for treatment and re-use in site activities and processes (e.g. washing plants). There is water supply to the Erangorango Quarry although its source is unconfirmed; the source would be declared and approved by the quarry permitting system. Erangorango Quarry has an established closed water circuit implemented at present. In order to minimise site waste, careful planning and understanding of product quality is required. Overburden by-product should be stockpiled for use in rehabilitation of the quarry site at a later date.

Imported aggregate will need to be fumigated for pests, completely inert and free of contaminants. Verification of source and/or results from laboratory testing must be provided for importations. Import permits and quarantine certificates are issued by the Vanuatu Customs and Inland Revenue Department. The Contractor must also coordinate with Biosecurity Vanuatu to ensure that all relevant departments have input.

Prior to materials being delivered to site the Supervision **Engineer** shall confirm that all necessary biosecurity documentation and clearances have been provided.

The transport of material from the quarry will need to be managed through a TMP which identifies the route, maximum load limits, required transport permits and required measures to reduce dust and spillages. Mitigation measures provided in Appendix B include covering of loads, refused delivery of overloaded trucks, transport during off peak times and route identification which uses existing less trafficked roads. The Contractor should also include provision for noise and speed control in their CESMP; this can include prohibiting the use of engine braking for noise reduction, speed control measures in and near settlements with particular attention to the unsealed access road through Switi settlement (e.g. introduction of speed bumps), and regulating working hours for the haul trucks.

Other mitigation measures that have been identified for the project as a whole (refer to Appendix B) are also applicable to the quarry site if managed by the VAIP pavement Contractor. For example chance find of archaeological artefacts or loss of biodiversity, damage to assets and infrastructure, erosion and sediment control measures (e.g. clean water diversion), wastewater treatment, noise and vibration mitigation etc.

**Chance find of archeological artifacts:** It is possible that at any stage of construction works new items of cultural importance or archaeological artifacts (fossils, coins, articles of value or antiquity, and structures and other remains or fossil items of geological or archeological interest) can be revealed, especially when undertaking works in any areas outside of airport property (e.g. camps or quarries). In the event of the discovery of an item as defined above, the finding must be registered and the information shall be handed over to the Vanuatu National Heritage Registry and the MLNR who will advise on how they shall monitor the construction works.

Before commencement of earth works, contractor will receive instructions from the Supervision Engineer acting for the client, under advice from the Vanuatu National Heritage Registry, on the course of action in case of chance finds. The Contractor will be obligated to strictly follow those instructions. Should an item of cultural importance, archaeological artifact or site be encountered, Contractor must hold works and promptly notify the Supervision Engineer and follow their further guidance. Works should resume only after receiving a formal clearance from the Supervision Engineer.

A representative of the Vanuatu National Heritage Registry shall be invited to carry out training in connection with archaeological questions.

## 7.2 Hazardous Substance Use, Storage and Disposal

Hazardous liquids (e.g. fuel and lubricants) must be managed through the use of self bunded drums and tanks, in accordance with the specification. If—with the permission of the Supervision Engineer—non-bunded vessels are used, the materials must be stored within hardstand and bunded areas to prevent runoff to surrounding permeable ground. Bunded areas (secondary containment) must contain the larger of 110% of the largest tank or 25% of the combined volumes in areas with a total storage volume equal or greater than 1,000 L. Bunded areas are to be impervious (water tight), constructed from chemically resistant material, and be sheltered from the rain as rain water allowed to collect within the bund could be contaminated if there is any hazardous substance residue on storage containers or spilt product within the bund.

A spill response plan must be in place and all workers trained in correct implementation of the spill response plan. Spill kits should be available in close proximity to where hazardous substances are used and stored e.g. on the work truck or beside the fuel store. Workers should be trained in the use of spill kits.

The bitumen and asphalt plant (including dust scrubber) should be located at the construction lay down area or quarry to contain potential environmental impacts. The location of the construction lay down area should be such that residential settlements and sensitive receptors are not impacted by noise, dust or runoff.

There is potential that hydrocarbon product or contamination may be encountered during construction work. A photoionization detector (PID) should be available to monitor the worker breathing zone. Parts per million (ppm) concentrations of volatile organic compounds (VOCs) should be used to quantify the potential risk to workers. If the breathing zone concentration exceeds 5 ppm, workers should move to an upwind location until vapours clear. If any soil staining is observed or odour experienced a sample of the affected soil material should be collected and measured using the PID. If the PID returns readings greater than 10 ppm the material should be treated as contaminated fill. Depending on the volume of material it may be appropriate to excavate the affected soils and prepare for transport to a facility licensed to accept hazardous waste. Material should be secured in airtight

containers for transport (as per Waigani Convention requirements for the trans-boundary movement of hazardous waste material).

### **7.3 Safety and Traffic Management**

The airport is protected by a patrolled perimeter security fence. All planned works, including the construction lay down area but excluding the navigational aids will occur within this fence. Security clearance will be required for all airside construction workers. Airside construction works will be managed through the MOWP and AVL will be responsible for ensuring the safe operation of the airport at all times. The MOWP will detail the specific safety and security requirements for the airport operations, including safe operating distances and responsibility of key project roles. If any off-site locations are approved for use then these management requirements, including a secure perimeter fence, shall be implemented for these locations.

The transport of materials has the potential to impact communities through noise, dust and road safety. The Contractors are responsible for developing a TMP which will specify how traffic (vehicle and pedestrian) will be managed, including transport times (outside peak hours), maximum speed and loads of trucks, use of flag controls at site entrances (construction lay down area), use of unsealed roads through sensitive communities, and around specific work areas.

### **7.4 Stormwater and Water Management**

#### **7.4.1 Stormwater Management**

AVL confirmed that, at least annually, localised flooding occurs on the southern perimeter of the runway, close to the La Colle River floodplain area. Furthermore, during the Bladiniere Estate, Switi and End of Airport community meeting, it was mentioned that runoff (including hydrocarbons from aircraft) from the airstrip has allegedly been identified in the vicinity of people's houses during rainy periods (refer Section 5.2.4 and Appendix E). A large open unsealed stormwater drain is located in this area but on these occasions, it is unable to cope with the volume of surface run-off which is generated by flash flooding. This is also a likely contributing factor to the current poor state of the south-western section of the runway pavement.

Stormwater drains are located on the northern and southern perimeter of the runway and these converge with La Colle River to the west of the site. There are also two drains that travel southwards from the airfield apron to an unnamed watercourse south of VLI. During construction, clean water diversion bunds will be used to direct any runoff from undisturbed areas away from work areas, stockpiles and storage areas. The diversion bunds will direct this clean water to land for soakage or to the established open stormwater drains located on site. Soakage pits should not be installed directly into a shallow aquifer.

The open stormwater drain located at RWY11 of the airport along the southern edge of the runway empties into the La Colle floodplain and discharged stormwater flows over and floods a frequently used unsealed road. Opportunistic talks with community members at the site on 31<sup>st</sup> August 2016 revealed that the road used to have operating culverts underneath to prevent pooling across it. These culverts are no longer operational, becoming clogged with sediment, and now during periods of rain, pedestrians and vehicles have to pass through the water flow as it pools on the road. Upgrades to the drainage system as described in Section 2 will re-direct a significant portion of runoff away from the southern drain and thereby alleviate the volume of water travelling through this culvert and pooling on the road. Having said this, the culverts beneath the road should be reinstated by the contractor to ensure the instances of flooding are further minimised. The contractor is to carry out some basic maintenance to remove the sediment build up and reinstate these culverts. The contractor is also to ensure that the runoff from the reinstated culvert on the northern drain is able to flow freely into the La Colle river flood plain without pooling on this landside perimeter road.

Infrastructure to provide protection from scouring at the western end of the runway has not been included in this final design as per the recommendations in the drainage study. There are long term implications for the airport operations should the 50 and 100 ARI models be accurate in the depth of flooding (.2.5m) predicted in close proximity to the western end of the runway. This potential impact is to be included in the development of the updated airport Master Plan to ensure the long term sustainability of operations outside the lifespan of these VAIP upgrade works.

#### **7.4.2 Water Management**

Water required for construction activities such as dust suppression and concrete production will need to be managed carefully so as not to impact on the island's freshwater supply or the airport's needs for ARFF. Where

possible rain water should be collected or non-potable water should be used, provided there will be no risk of contamination of groundwater.

There are no groundwater bores located at VLI, ARFF collect rainwater in an above ground tank and utilise the reticulated supply as do the terminal and administration buildings. Two potable bores are however located within 100 m of VLI (estimated down and across hydraulic gradient). Due to the proximity of these bores, the Supervision Engineer shall communicate with the bore owners and MLNR to advise of groundwater monitoring prior to construction works commence, during construction works and at completion of all construction works; this would be to confirm that no there has been no contamination of groundwater as a result of the works. The parameters that should be monitored include pH, electrical conductivity, total petroleum hydrocarbons (for potential petroleum contamination), and total nitrogen (for potential sewage contamination), or as agreed with MLNR and VMPU (as the representatives for MIPU).

## **7.5 Bitumen, Asphalt and Concrete Plant**

Bitumen and asphalt production requires very high temperatures which pose a significant risk to workers and the general public. The bitumen and asphalt plant and all bitumen products will be located within a secure compound (the construction lay down area or quarry) to ensure security and reduce risk of unauthorised access.

The Contractor shall propose in their CESMP the location of the asphalt plant and the location shall be subject to approval by the Supervision Engineer, compliant with this PESMP. Although the use of this machinery will be short-term (2-3 months), it can create nuisances such as noise and a mercaptan odour. The bitumen and asphalt plant should be located at least 300 to 500 m downwind of any settlements or inhabited areas and 150 m away from any water bodies, streams or rivers. The asphalt plant should be equipped with either bag house or wet scrubber particulate removing system to reduce dust and odour emissions.

The Contractor shall include a bitumen and asphalt plant rehabilitation plan in their CESMP documentation.

The project will require concrete for the footings of new approach lighting poles and possible also for air navigational aids and runway. There are existing concrete production plants in Port Vila and these are the preferred source for concrete. However, if concrete is to be produced in-situ, care needs to be taken with slurry and runoff from the concrete. Concrete production should only take place when there is no rain forecast. Concrete slurry is highly alkali and cannot be diluted. Sand bags or diversion drains must be used to divert runoff from concrete cutting or setting areas. As hardened concrete is inert, the best approach for disposing of concrete debris is to set any concrete waste and then dispose of as clean fill or crush for reuse. All equipment used in concrete production must be cleaned in designated wash down areas in the construction laydown area, away from surface water, in a bunded impermeable area and shall not be allowed to permeate to ground. Wastewater from concrete cutting, washing equipment or production must be collected and treated (settling and neutralisation through pH adjustment) before disposal (see Section 7.7).

## **7.6 Construction Lay Down Area**

The construction lay down area will be used to store equipment and materials for all components of the project, and the production of concrete and asphalt and as such there are a number of potential hazards associated with the equipment and materials. The construction lay down area will most likely be within the airport perimeter fence however additional fencing may be required around specific stores (e.g. hazardous substances) to prevent access by unauthorised personal. The location must avoid aircraft operations. Areas within the compound must be clearly marked for solid waste collection, machinery maintenance, hazardous substance storage, plant operations (concrete, bitumen, asphalt) and toilet facilities for workers. Each of these areas must be constructed in such a way to prevent any potential adverse impacts on the surrounding environment; ideally it should be located to the north or east side of VLI away from the surface water bodies and the nearby communities. Including hard stand areas, protection from wind and rain, bunding (hazardous substances), clean water diversion drains, and collection and treatment of waste water from site operations (e.g. concrete production, machinery maintenance). The construction lay down area is not a residential camp. Foreign contract and project staff are expected to utilise existing local accommodation. The ground of the construction lay down area will likely be compacted by the end of its use and so restoration will require scarification of the soil, application of topsoil and re-vegetation.

## 7.7 Erosion and Sediment Control

The land within the vicinity of VLI is relatively flat, low lying with permeable soils. Wet weather is usually experienced as short, heavy rainfall events, often in the morning or at night. Clean water diversion bunds should be constructed around any excavation or cleared vegetation to prevent ingress of runoff from surrounding areas. Any ponding which may occur within an excavated area shall either be allowed to percolate into the subsoil or pumped out to a settling area or used for dust suppression at a later date. Excavations should be kept to a manageable size to reduce the time of exposure.

It is most likely that the largest stockpiles will be within the construction laydown areas for the aggregate. These stockpiles will need to be on an impermeable geotextile or hardstand and runoff directed to permeable land. The aggregate material will be inert larger size pieces. Stockpiles of any fine grain materials (e.g. sand and topsoil) must be covered to prevent dust and sediment laden runoff during rain events.

These erosion and sediment control measures must also be applied to the quarry sites. Discharges from any activity at these locations are prohibited from discharging directly to the marine and coastal environment. Clean runoff should be diverted inland for percolation to underlying groundwater, and potentially contaminated runoff should be collected and treated. Treatment will be dependent on type of potential contamination (e.g. oil water separator for runoff contaminated with hydrocarbons, or settling pond or tank for sediment laden runoff).

## 7.8 Waste Water Management

There are a number of activities during construction and operation phases of the project which will generate wastewater. During construction wastewater will be generated by the sanitation facilities provided for workers and as there is no reticulated wastewater treatment system on Efate, the contractor is responsible for the collection and treatment of the generated wastewater from sanitation facilities. There are a number of options regarding sewage treatment that the contractor can implement to mitigate the potential impacts on the land and or water (ocean or groundwater). These include using an existing waste removal contractor to remove the waste to Bouffa Landfill, use of composting systems or a mobile proprietary treatment system (to be imported for the project). The Contractor is responsible for ensuring the treatment and disposal of wastewater is in accordance with MIPU, DEPC and AVL advice and approved by Supervision Engineer.

Wastewater from wash down areas is to be collected either in a settlement pond or tank to allow sediment and particulate matter to drop out (or processed through a filtration system) before the water can be reused as wash water, dust suppression or in other processes. A separate wash down area is required for machinery or material with oil or fuel residue as this wash water is required to be treated through a mobile oil water separator. Wash water from concrete production, cutting, washing of equipment used and areas where concrete is produced must be collected and treated to lower the pH (closer to neutral) and to allow settlement of suspended solids (see Section 7.5). All wash down areas and wastewater treatment areas should be located within the construction lay down areas.

Treated wash water where possible should be reused for dust suppression or within other processes. Direct discharge to the river, marine or coastal environment or to the water reserve protection area is prohibited. Discharges of treated wash water are to occur to land only at least 500m from any bore used for potable water at a rate not exceeding 20mm/day or the infiltration rate of the ground (i.e. no ponding or runoff).. Quarries must have sufficient measures to avoid direct discharges when working adjacent to the marine and coastal environment, particularly for the runway resurfacing component, which may include bunding (e.g. sand bags), demarcation of exclusion zones, and limited use of large machinery.

Precautions should be in place to prevent wastewater and hazardous substances or materials entering the environment (e.g. fuel spillage, wastewater containing fire retardant during firefighting), however should an incident occur, the Contractor must have a spill response plan in place. The response plan should include details on the use of spill kits and absorbent items to prevent spills entering the receiving sensitive environment (ground, surface water). This spill response plan should be applicable to all VAIP project works areas (airport, trenching routes, quarries, and transport routes). A spill response plan should be in place for both the construction phase and operational phase.

The existing VLI fuel farm is a hard stand area with bunding to contain all stored hazardous substances; any drainage from these areas is transported to a soak pit. Wastewater from this soak pit is removed by Thomson Septic Contractors. In the case of a contained spill at VLI, with AVL and the Supervision Engineer's permission, wastewater could be disposed of in this soak pit.

## 7.9 Solid Waste Management

Solid waste includes:

- General waste (i.e. office type waste, household waste (from any workers camps), lightweight packaging materials).
- Recyclable waste (i.e. certain plastics, metals, rubber etc. that can be recycled).
- Organic biodegradable waste (i.e. waste that will decay / break down in a reasonable amount of time, such as green waste, food waste).
- Inorganic non-recyclable waste (i.e. waste that cannot decompose / break down and which cannot be recycled).
- Hazardous waste (i.e. asbestos, waste oil etc.)

General waste (including only small quantities of lightweight packaging materials) can be disposed of at Bouffa Landfill, subject to approval from PVMC. In addition to this and with the approval of the Supervision Engineer:

- ) Organic biodegradable waste may be deposited in designated dumping areas in reasonable quantities.
- ) Recyclable waste may be supplied to a local receiver licensed to process such waste.

All other waste is to be disposed of OFFSHORE in permitted or licensed facilities. It is the Contractor's responsibility to obtain all necessary permissions for transport and safe disposal of hazardous waste from the project site in a legally designated hazardous waste management site within the country or in another country, and to ensure compliance with all relevant laws. Evidence will need to be supplied to the Supervision Engineer of proper disposal of waste at the final location.

The export of any hazardous waste must be in compliance with the Basel and Waigani Conventions and any relevant laws enacted by source and the recipient countries.

Disused material will be generated in the form of asphalt millings and from the excavations associated with the runway pavement works, concrete pads for air navigational aids and cable trenches. Most of the clean fill material can either be used to backfill areas where old equipment or infrastructure has been removed or as a resource (e.g. crushed asphalt and basecourse material) for general use by AVL or PWD and the community. An option for disposal of these clean solid wastes is an approved site in the disused Stella Marie Quarry which has been used for this purpose by other GoV infrastructure projects. Written permission to use this location is to be obtained from DEPC before use.

All surplus material from excavations shall be removed from the site area and safely disposed of in compliance with any local requirements at the Employer's nominated disposal site(s) and/or disposed of at the Contractor's quarry site(s), before the start of the defects liability period.

Unless otherwise instructed by the Supervision Engineer, other surplus materials not needed during the defects liability period shall be removed from the site and the country.

The CESMP shall describe solid waste streams generated by the works and detail the approved disposal methods along with permissions.

## 7.10 Social Impact Measures

Temporary access to private land required for burial of underground approach lighting cables trigger the requirements of the RPF, presented in Appendix F and therefore an ARAP needs to be developed and approved before any works can be undertaken on these lands. The potential relocation of the CCRs and associated systems from the fire station to the nearby abattoir should also be included in this ARAP should the contractor elect to use this location.

Furthermore, any impacts or concerns from communities close to VLI, the quarries or haul routes will be addressed throughout the VAIP project life through the disclosure and public consultation process (refer Section 5).

A Consultation Plan is to be developed for incorporation into the Master Plan update process. This plan is to include key milestones of the update process and an associated schedule of community and stakeholder consultations to feed into the strategic development of Vanuatu's aviation sector. This consultation plan will be

developed by the Consultants in conjunction with VPMU and will be the responsibility of VPMU, AVL and Master Plan development consultants to implement.



## 8.0 PESMP Implementation

### 8.1 Roles and Responsibilities

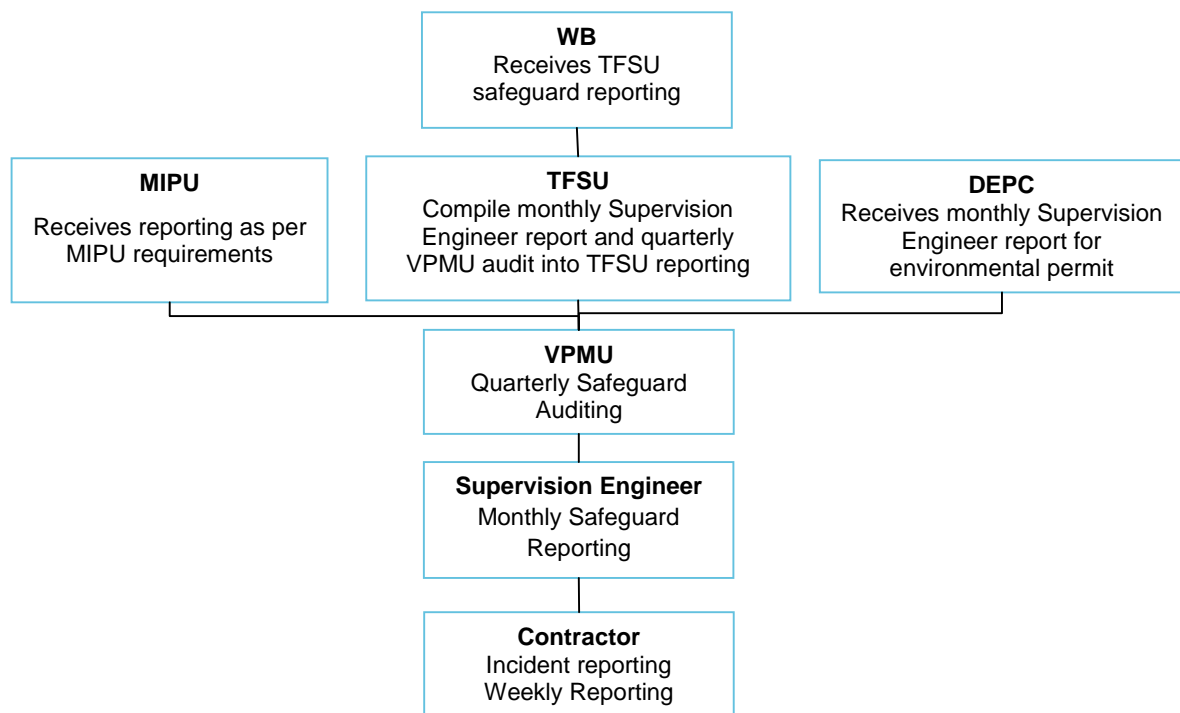
The following are the roles and responsibilities:

- **VPMU:** The VPMU manages the project on behalf of the GoV. The VPMU:
  - Acts on behalf of the client and works closely with AVL to ensure that VAIP objectives are delivered in a compliant manner consistent with client and AVL requirements.
  - Conducting quarterly safeguard audits with the Supervision Engineer's environmental specialist and other staff
  - Responsible for working with AVL and Supervision Engineer (and contractors where appropriate for CESMP) to implement consultation plans for the VAIP upgrade works and the Master Plan development.
  - Monitors and manages of complaints/incidents logged via the GRM mechanism on [www.vaip.vu](http://www.vaip.vu).
  - During the construction phase, VPMU receives reporting from the Supervision Engineer and shares these reports with the AVL, MIPU, DEPC (to comply with permit monitoring requirements) and TFSU.
  - VPMU is responsible for managing recurring instances of non-compliance by the contractor as they are reported by the Supervision Engineer and all instances of non-compliance by the Supervision Engineer. VPMU will conduct their own quarterly on-site audit of construction works, to supervise CESMP and PESMP implementation.
  - Ensuring that the PESMP and World Bank policies are integrated into the of the Master Plan and Aviation Sector Strategy development process and the airport upgrade design works, and processes and outputs.
- **TFSU:** The TFSU provides technical assistance with project implementation to VPMU. TFSU receives the Supervision Engineers reporting via VPMU and receives the quarterly PESMP and CESMP audit report. TFSU safeguards specialist monitors these reports for consistency and compliance. TFSU provides these safeguard reports to WB for review. TFSU also receives all new and updated PESMP or CESMP for review. TFSU provides these reviewed instruments to WB for approval.
- **Supervision Engineer:** is responsible for the day to day oversight of the construction works for the project, including safeguard compliance. The Supervision Engineer is the only party who is contractually able to provide instruction to the Contractor. The Supervision Engineer will work closely with the Contractor on a daily basis to ensure that VLI works are implemented in a compliant manner consistent with the detailed designs provided and the PESMP. They are responsible for:
  - Daily monitoring the Contractors work for compliance with the CESMP and PESMP as per the measures detailed in Appendix B, C and D and providing safeguard monitoring results in their monthly reporting to VPMU. As part of their CESMP monitoring responsibilities, the Supervision Engineer will ensure that a suitably qualified and experience safeguard specialist is resourced to provide at least monthly site inspections to VLI and available for support at other times to respond to incidents, non-compliances, review of CESMP, update of the PESMP and other tasks.
  - Managing the review process of CESMPs for approval. The Supervision Engineer must ensure that all current safeguard instruments have been reviewed internally as well as by VPMU, TFSU, WB and final approval from WB has been secured before disclosure.
  - Updating the PESMP as necessary to reflect changes in the designs.
  - Working with VPMU to provide meaningful input and direction into community consultations on the draft updated versions of the PESMP.

- Managing instances of non compliance by the Contractor and reporting all instances to VPMU. They are also responsible for escalating recurring instances of non compliance by the Contractor to VPMU for action.
- Managing and responding to all direct complaints/incidents received by their representatives as per the GRM process in Section 8.2 and reporting all instances to VPMU for inclusion into statistical database.
- **Contractor:** It is the contractors responsibility to:
  - Prepare and have cleared by the Supervision Engineer the CESMP in accordance with this PESMP.
  - Carry out the VLI upgrade works in accordance with the CESMP.
  - Conduct daily and weekly safeguard inspections of the works to ensure compliance and reporting the results of these inspections to the Supervision Engineer.
  - Proactively update the CESMP as construction methodology or other features change.
  - Provide meaningful input and direction into community consultations on the draft CESMP.
  - Advise the Supervision Engineer of any changes to works or methods that are outside the scope of the PESMP for updating.
  - Post all notifications specified in this PESMP at the site entrance.
  - Report all environmental and OHS incidents to the Supervision Engineer for any action.
- **AVL:** As the site owner and airport operator, AVL have a role in ensuring stipulated OHS measures are being implemented as they relate to airport operations, such as the location and timing of works, signing off on the MWOP etc. They also have a role in approving uses of areas of their site for particular uses as they may relate or impact on airport operations (e.g. laydown sites). They will be involved in consultations and any publication of information relating to the works. There will also be ongoing airport operational monitoring requirements of AVL.

The Figure 9 below shows the safeguard reporting responsibilities for VLI as described in this PESMP.

**Figure 9 Safeguard Reporting Responsibilities for VLI**



## 8.2 Institutional Capacity

The GoV has delegated the delivery and management of VAIP to the VPMU which is a project management unit specifically tasked and resourced to manage large scale infrastructure projects such as VAIP. As such, the VPMU carries much of the institutional capacity required by the GoV to implement the project and to monitor the works for compliance. The VPMU is currently resourced with in-house safeguards specialists who are suitably placed to ensure compliance with the PESMP, World Bank policies and Vanuatu legislation. For any additional support in areas of expertise that may be required by VPMU, the PAIP TFSU is tasked with either providing that support directly or assisting with any procurement of additional expertise or capacity that may be required.

Other parties to this PESMP who have implementation or monitoring responsibilities (Supervision Engineer, Contractor) are required to be resourced with suitably experienced and qualified safeguards specialists.

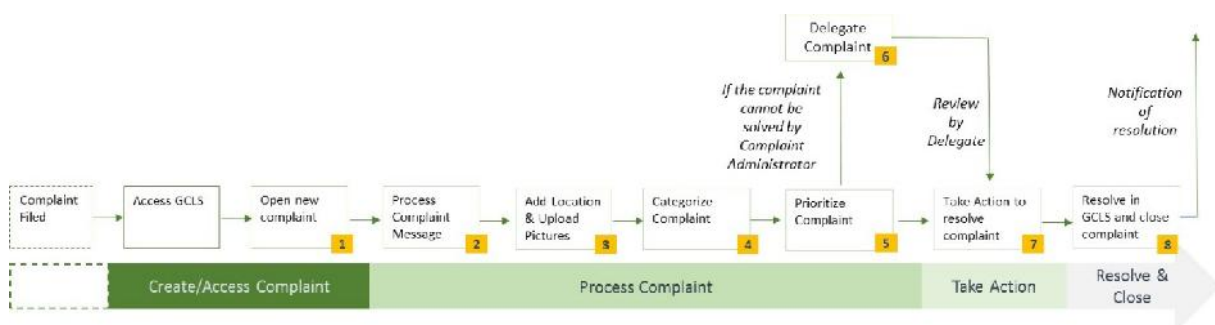
It is the responsibility of the Contractor and Supervision Engineer to ensure that they allocate budget lines to have the necessary tools and equipment for the mitigation and monitoring measures as stipulated in this PESMP. At this stage, it is not anticipated that budget needs to be allocated for equipment, capacity building or training through this PESMP.

## 8.3 Grievance Redress Mechanism

The Grievance Redress Mechanism offers remedies appropriate to the scale of the grievance. Grievances may be lodged in person, via telephone, e-mail, through the project web site, or by letter. They may be lodged with AVL, the VPMU, the Contractor and/or the Supervision Engineer.

All grievances are to be logged by the VPMU into the 'Grievance and Complaints Logging System' (GCLS) database for tracking and reporting on resolution. In accordance with the World Bank's 'Citizen Engagement' commitments under IDA 17, key indicators from the GRM are published online at [www.vaip.vu](http://www.vaip.vu).

All complaints must be acknowledged within 24hrs. The following procedure is followed to address complaints:



If it is impossible to resolve the complaint, or the complainant is not satisfied with the resolution, the case may be referred to legal proceedings in accordance with Vanuatu laws and procedures.

Signage at site entrances, at the airport and at other key public locations will be displayed by the Contractor outlining the above complaints procedures and contact details for making complaints will be provided.

In addition to the above project level GRM, communities and individuals who believe that they are adversely affected by a WB supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns.

Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures.

Complaints may be submitted at any time after concerns have been brought directly to the WB's attention, and WB Management has been given an opportunity to respond.

For information on how to submit complaints to the World Bank's corporate GRS, please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit [www.inspectionpanel.org](http://www.inspectionpanel.org)

## 9.0 Compliance and Monitoring Plan

### 9.1 Monitoring Plan

The PESMP identifies the environmental and social monitoring requirements to ensure that all the mitigation measures identified in this PESMP are implemented effectively. Environmental and social monitoring methodology (refer Appendix C) for this project includes:

- Audit of detailed designs.
- Audit and approval of site environmental planning documents.
- Consultations with communities and other stakeholders as required.
- Routine site inspection of construction works to confirm or otherwise the implementation and effectiveness of required environmental mitigation measures (refer to inspection checklist in Appendix D).

Non-compliance to environmental mitigation measures identified in the PESMP will be advised to the Contractor(s) in writing by the Supervision Engineer in the first instance. The non-compliance notification will identify the problem, including the actions the Contractor needs to take and a time frame for implementing the corrective action. Recurring instances of non-compliance will be referred to VPMU for follow up action.

### 9.2 Monitoring Plan Reporting

Throughout the construction period, the Supervision Engineer will include results of their weekly PESMP monitoring, along with the details of any incidents report by the Contractor, in a monthly report for submission to the VPMU who is responsible for submitting these monthly progress reports to the World Bank through the PAIP TFSU. The format of the monthly report shall be agreed with all agencies but is recommended to include the following aspects:

- Description and results of environmental monitoring activities undertaken during the month.
- Status of implementation of relevant environmental mitigation measures pertaining to the works.
- Key environmental problems encountered and actions taken to rectify problems.
- Summary of non-compliance notifications issued to the Contractor during the month, actions taken and non-compliances closed out.
- Summary of complaints received, actions taken and complaints closed out.
- Key environmental and social issues to be addressed in the coming month.
- Training records
- Health and Safety Indicators
- Summary of consultation / stakeholder engagement undertaken
- Copies of environmental inspection reports
- Summary of reported incidents, actions taken and recommendations for follow up.

A day to day contract diary is to be maintained pertaining to administration of the contract, request forms and orders given to the Contractors, and any other information which may at a later date be of assistance in resolving queries which may arise concerning execution of works. This day to day contract diary is to include any environmental events that may arise in the course of the day, including incidents and response, complaints and inspections completed.

There are monitoring requirements associated with this PESMP that are applicable once VAIP has concluded and normal airport operations have resumed. At this stage, there is no vehicle for continuing with safeguard monitoring during operations and it is recommended that this be incorporated into existing or new AVL processes as part of the Master Plan development process. This PESMP should be updated to reflect the AVL environmental and social monitoring and reporting processes before the completion of the project.

VPMU are responsible for quarterly progress reports to the WB. This quarterly progress report will include a section on safeguard compliance and issues. This section will cover (as a minimum):

- The overall compliance with implementation of the PESMP.
- Any environmental issues arising as a result of project works and how these issues will be remedied or mitigated.
- OHS performance
- Community consultation updates (VLI upgrade works and Master Plan development)
- Public notification and communications
- Schedule for completion of project works
- Summary of any complaints received, actions taken and complaints closed out
- Master Plan and aviation sector strategy safeguard related developments

## 10.0 Contingency Planning

As part of their CESMP, the Contractors are required to prepare a Contingency Plan encompassing cyclone and storm events. The purpose of the Plan is to ensure all staff are fully aware of their responsibilities in respect to human safety and environmental risk reduction. Procedures should clearly delineate the roles and responsibilities of staff; define the functions to be performed by them, the process to be followed in the performance of these functions including tools and equipment to be kept in readiness, and an emergency medical plan. All of the Contractor's staff should undergo training/induction to the Plan.

The wet season in Vanuatu is usually November to April which coincides with the cyclone season. While it is preferable to undertake construction works outside of the wet season, it is currently anticipated that construction will commence in March 2017 and it is therefore possible that storm and heavy rain events will occur while works are underway.

The Contractors are responsible for monitoring weather forecasts, inspecting all erosion and sediment control measures and undertaking any remedial works required prior to the forecast rain or storm event.

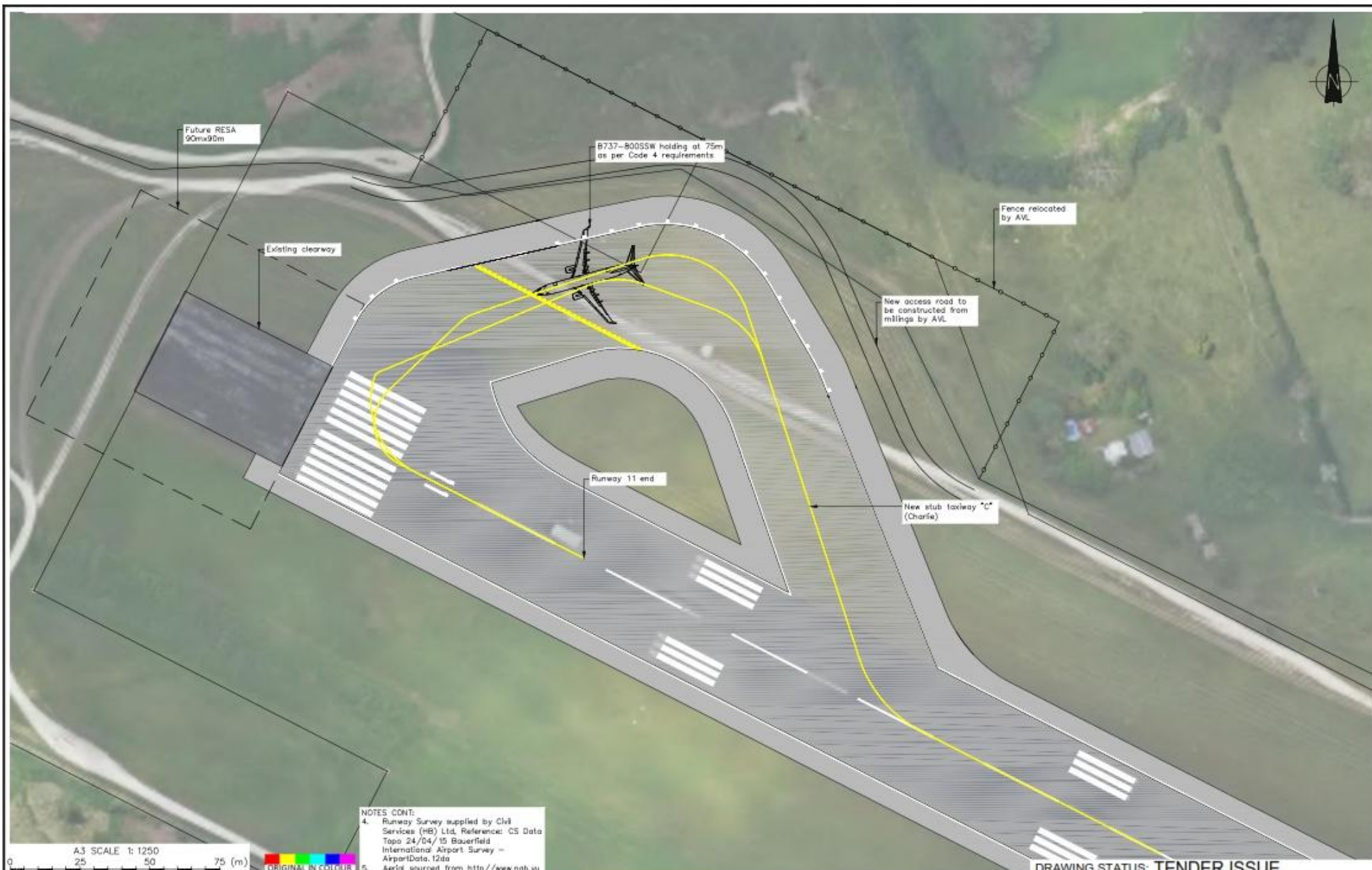
In general the Contractors will:

- Inspect daily weather patterns to anticipate periods of risk and be prepared to undertake remedial works on erosion and sediment control measures to suit the climatic conditions.
- Monitor the effectiveness of such measures after storms and incorporate improvements where possible in accordance with best management practice.
- Ensure appropriate resources are available to deal with the installation of additional controls as and when needed.
- Inform Supervision Engineer if there are any concerns associated with the measures in place.

## Appendix A

# Design Plans





A3 SCALE 1: 1250  
0 25 50 75 (m)



NOTES CONT:  
4. Runway Survey supplied by Civil Services (HB) Ltd, Reference: CS Data Topo 24/04/15 Baufield International Airport Survey - AirportData.12da  
5. Aerial sourced from <http://www.nab.vu>

NOTES:  
1. All dimensions are in millimetres unless noted otherwise.  
2. Coordinate Datum: WGS 84, coordinates in UTM 59S, Level Datum: MSL.  
3. Airport Survey supplied by AVL, Reference: Baufield -Update Layout -International-2012

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**DRAWING STATUS: TENDER ISSUE**

CLIENT PROJECT  
**AIRPORTS VANUATU LTD**  
BAUERFIELD INTERNATIONAL AIRPORT "CODE E" UPGRADES

TITLE  
**GENERAL**  
General Arrangement Taxiway "C" Charlie

SCALE (AT A3 SIZE)  
1: 1250

DWG. No.  
75 1098.2000-006

REV.  
A

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DRAWN :	NSW Aug 16
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APPROVED :	
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REVISION DESCRIPTION	BY DATE
A Tender Issue	

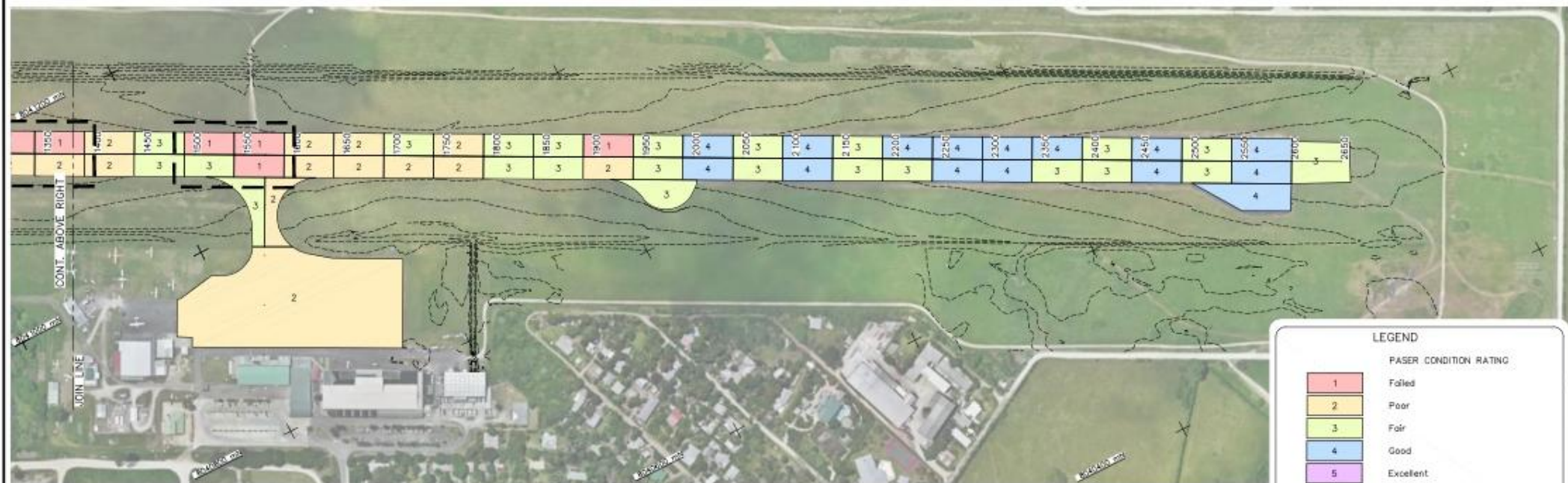
REVISION DESCRIPTION

REFERENCE :





EXISTING RUNWAY CONDITION SURVEY PLAN 1  
SCALE: 1:4000



EXISTING RUNWAY CONDITION SURVEY PLAN 1  
SCALE: 1:4000

**LEGEND**

**PASER CONDITION RATING**

1	Failed
2	Poor
3	Fair
4	Good
5	Excellent

Area where emergency repairs may be required from an operational safety perspective about the central portion of the runway

SCALE 1:4000  
0 40 80 120 160 200 (m)

NOTES CONT:  
4. Airport Survey supplied by AVL, Reference: Bourfield -Update Layout-International-2012

DESIGNED :	RAVB	Aug 16
DRAWN :	NSW	Aug 16
DESIGN CHECKED :		
DRAFTING CHECKED :		
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B. Tender Issue	C.F	Aug 16
A. Tender Issue	C.F	Aug 16

NOTES :

- All dimensions are in millimetres unless noted otherwise.
- Coordinate Datum: WGS 84, coordinates in UTM 59S, Level Datum: MSL.
- Runway Survey supplied by Civil Services (HB) Ltd, Reference: CS Data Topo 24/04/15 Bauerfield International Airport Survey - AirportData.12da

REFERENCE :

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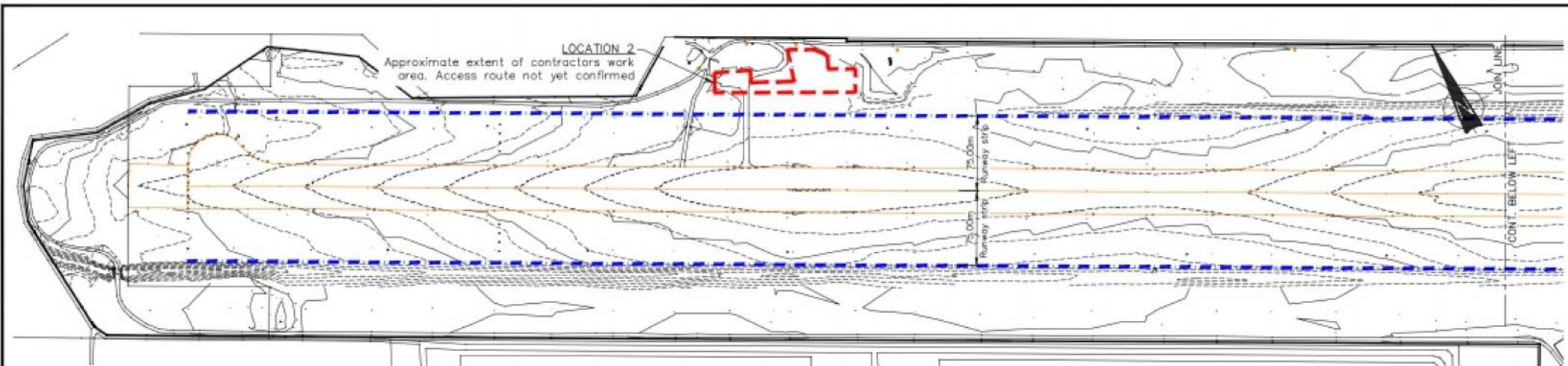
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SCALE (W AS SHD)  
**1:4000**

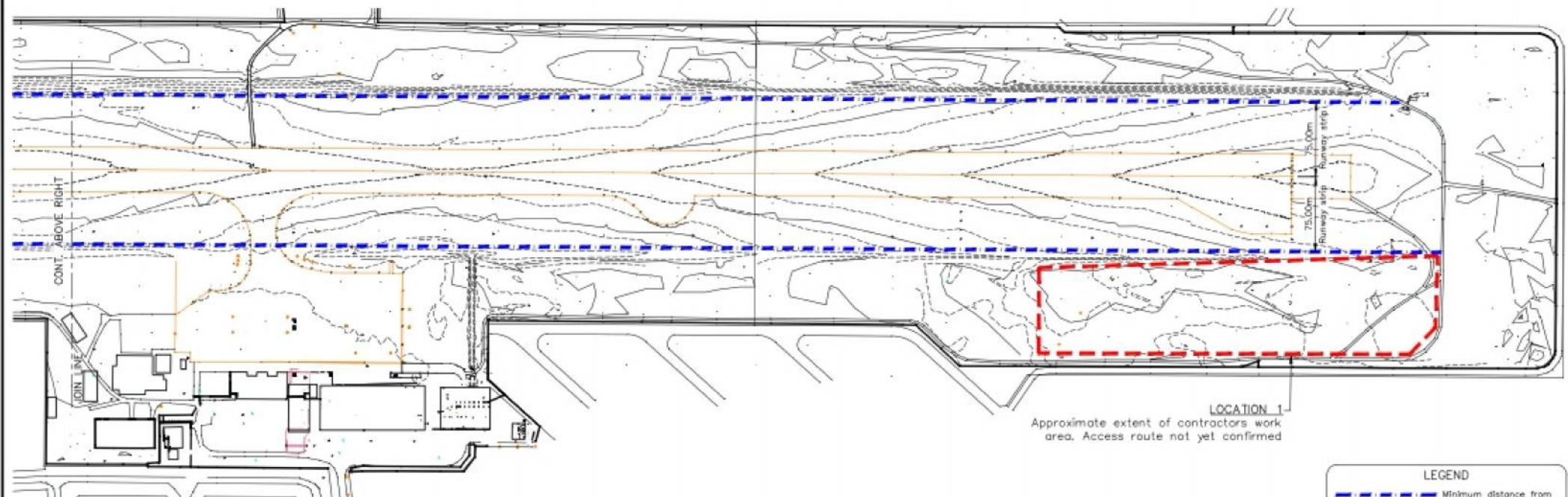
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**751098.2000-010**

REV.  
**B**





SITE ACCESS PLAN 1  
SCALE: 1:4000



SITE ACCESS PLAN 2  
SCALE: 1:4000

LEGEND	
	Minimum distance from runway centreline
	Contractors work area

SCALE 1:4000  
0 40 80 120 160 200 (m)

ORIGINAL IN COLOUR

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DRAWN :	NSW Aug 16	
DESIGN CHECKED :		
DRAFTING CHECKED :		
CAD FILE : \\751098.2000-020.dwg		
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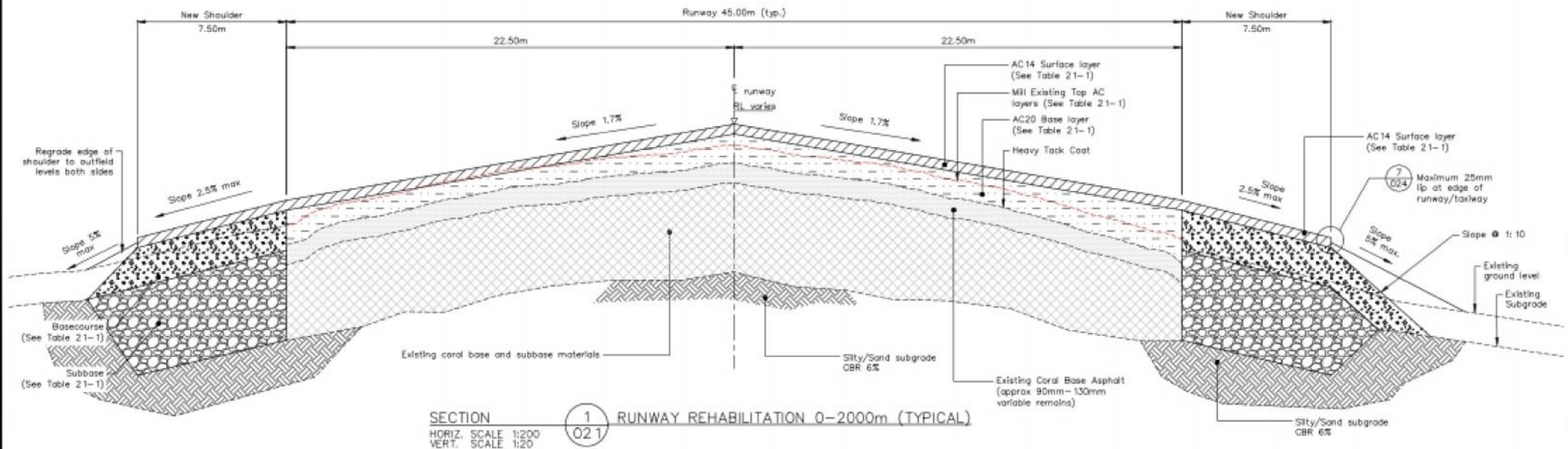
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TITLE	GENERAL Site Access & Contractors Area Plan	
SCALE(S) (AT A3 SIZE)	1:4000	REV. A
DWG. No.	751098.2000-020	

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Pavement Depth (Nominal) Table 21-1						
Location	AC14 Runway Surface	AC20 Base	Milling	AC14 Shoulder Surface	Basecourse Shoulder	Subbase Shoulder
CH 0 to 400	50mm	140mm Nominal (110-180mm)	100mm	50mm	200mm	490mm
CH 400 to 1250	50mm	210mm Nominal (150-300mm)	100mm	50mm	200mm	490mm
CH 1250 to 1850	50mm	240mm Nominal (180-330mm)	100mm	50mm	200mm	490mm
CH 1850 to 2000	50mm	205mm Nominal (200-210mm)	100mm	50mm	200mm	490mm
CH 2000 to 2600	50mm	-	Texturizing	50mm	-	-

A3 SCALE 1:200  
0 2 4 6 8 10 (m)

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DRAWN :	NSW Aug. 16
DESIGN CHECKED :	
DRAFTING CHECKED :	
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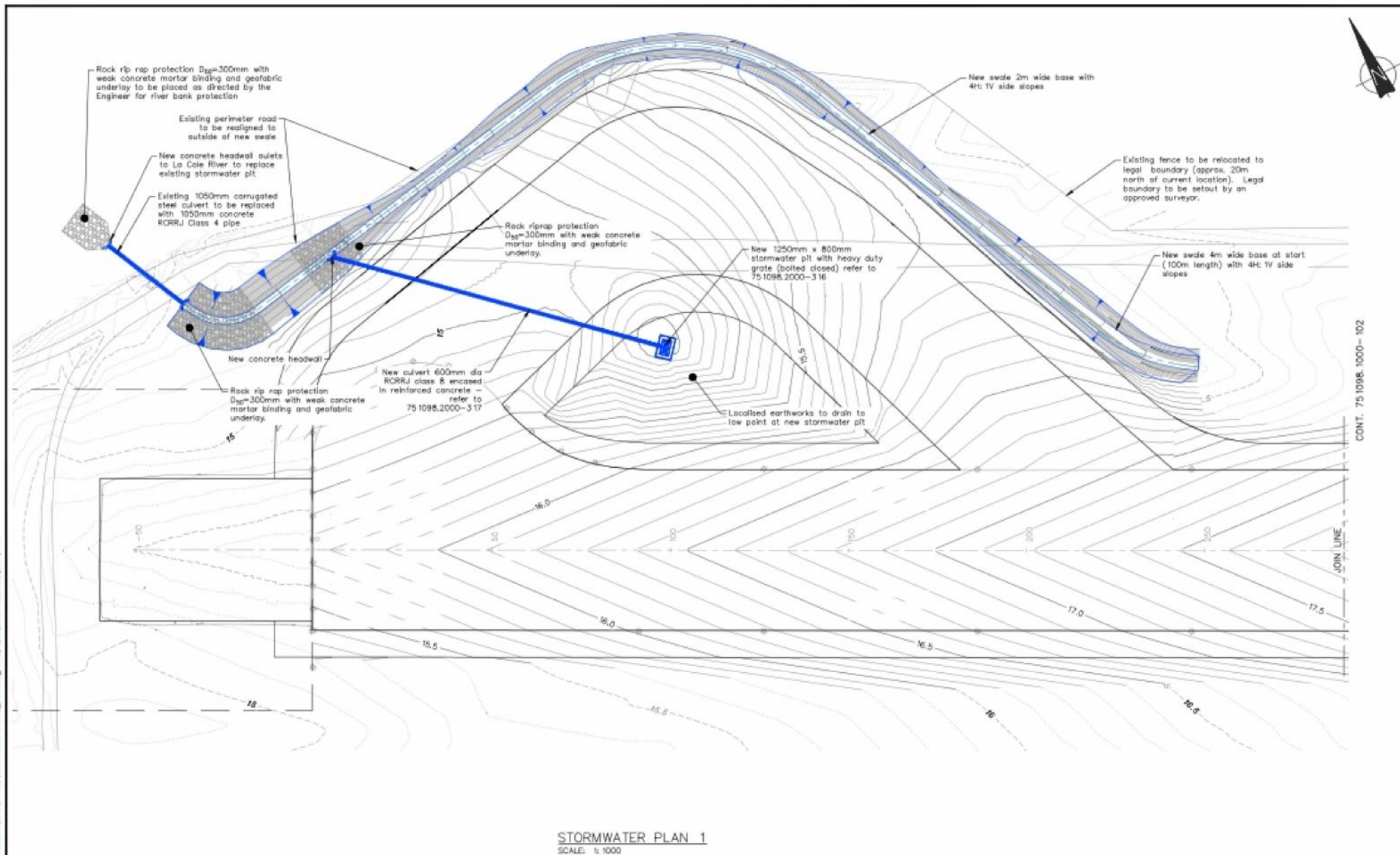
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CLIENT, PROJECT  
**AIRPORTS VANUATU LTD**  
BAUERFIELD INTERNATIONAL AIRPORT "CODE E" UPGRADES  
TITLE  
**TYPICAL SECTIONS**  
Typical Sections - Sheet 1  
Scales (at A3 Size)  
Horiz. 1:200 Vert. 1:20  
DWG. No.  
751098.2000-022  
REV.  
A





DESIGNED :	RAKB Sep. 16	NOTES :
DRAWN :	NSW Sep. 16	1. Refer to pavement plans for legend.
DESIGN CHECKED :		2. Coordinate Datum: WGS 84, coordinates in UTM 59S. Level Datum: MSL.
DRAFTING CHECKED :		3. Runway Survey supplied by Civil Services (HIS) Ltd. Reference Date: CS Data Topo 24/04/15. Bauerfield International Airport Survey - AirportData.
DATEFILE :	75 1098.2000-301_308.dwg	
APPROVED :		
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REVISION DESCRIPTION	BY	DATE
B Tender Issue	CJF	Aug. 16
A Tender Issue		
REFERENCE :		

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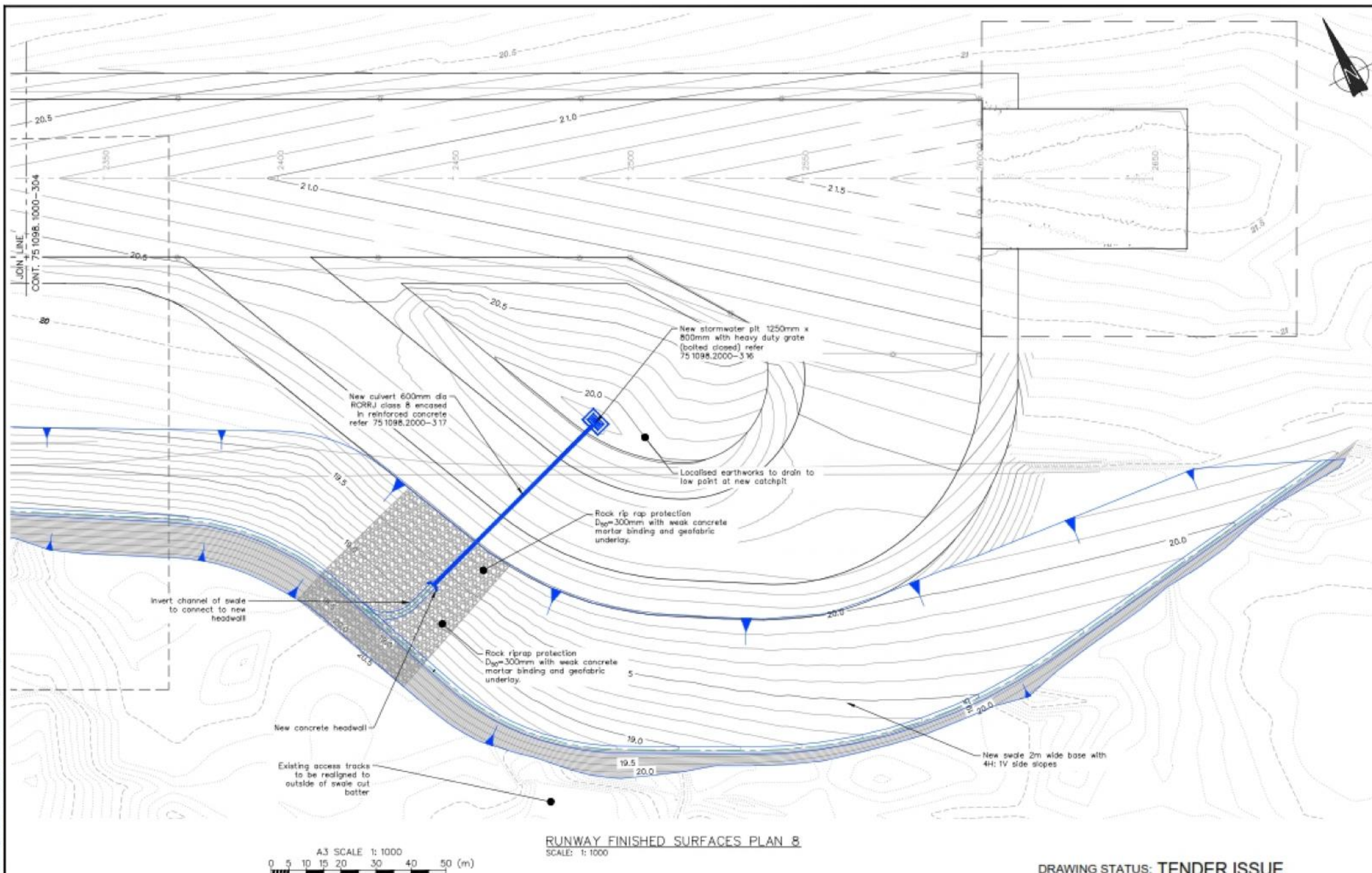
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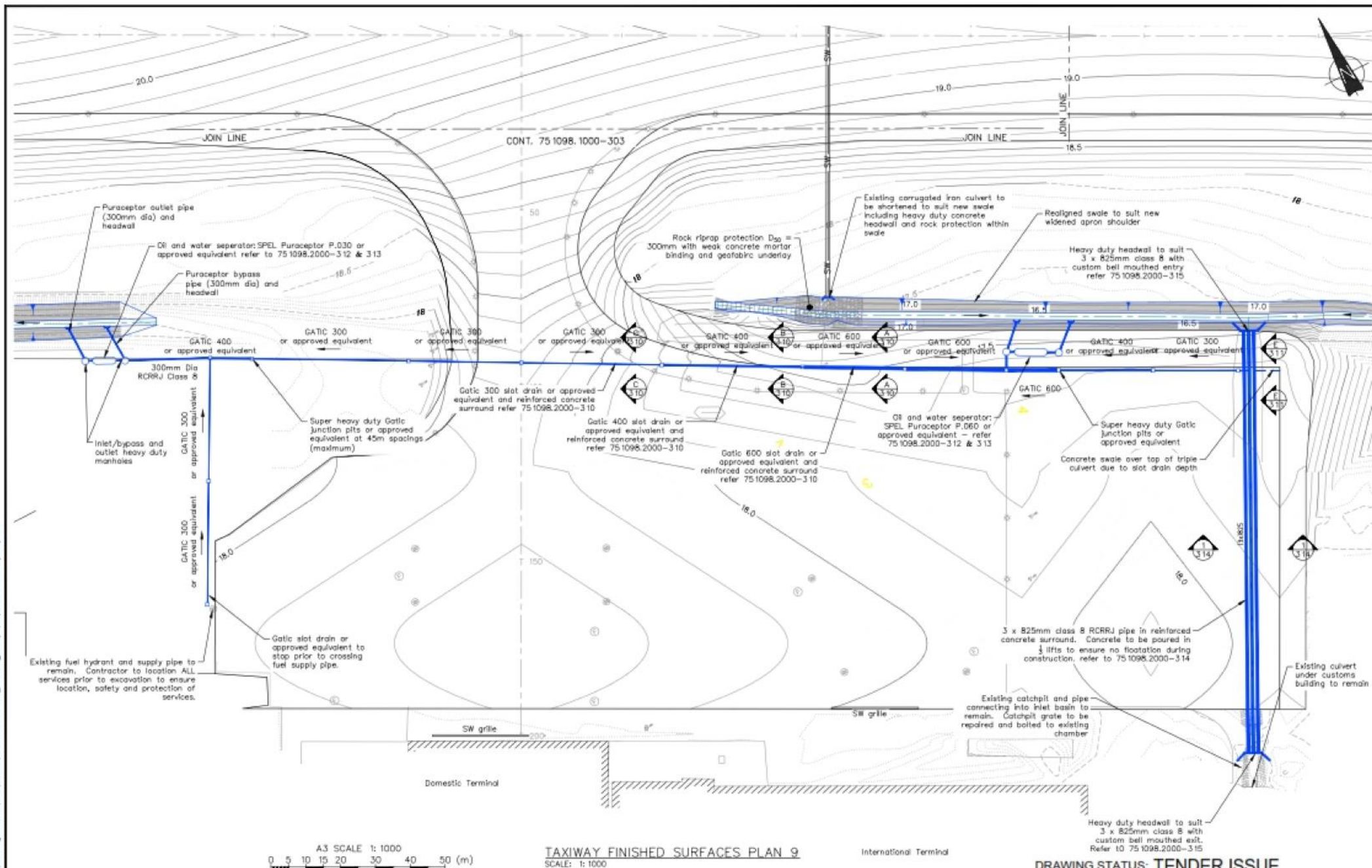
DRAWING STATUS: TENDER ISSUE

CLIENT PROJECT	AIRPORTS VANUATU LTD
TITLE	BAUERFIELD INTERNATIONAL AIRPORT RUNWAY IMPROVEMENT PROJECT
Node 11	STORMWATER
Scale (at A3 size)	1:1000
Drawn No.	75 1098.2000-301
Rev.	B





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DRAWN :	NSW Sep. 16	1. Refer to pavement plans for legend.
DESIGN CHECKED :		2. Coordinate Datum: WGS 84, coordinates in UTM 59S. Level Datum: MSL.
DRAFTING CHECKED :		3. Runway Survey supplied by Civil Services (HIS) Ltd. Reference Date: CS Data Topo 24/04/15 Bauerfield International Airport Survey - AirportData.12da
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B Tender Issue		

**TAXIWAY FINISHED SURFACES PLAN 9**  
SCALE: 1:1000

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**AIRPORTS VANUATU LTD**  
BAUERFIELD INTERNATIONAL AIRPORT RUNWAY IMPROVEMENT PROJECT

**STORMWATER**  
Apron - Drainage and Environmental Controls

## Appendix B

# Mitigation Measures



POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
<b>DETAILED DESIGN/ PRE-CONSTRUCTION MOBILISATION STAGE</b>					
Road traffic safety	<p>The bid documents will require a Traffic Management Plan (TMP) to be developed by Contractor, to include signage, flag operators, personnel protective equipment (e.g. high visibility vest), and specific actions (e.g. regulating working hours for haul trucks, installation of speed bumps and prohibition of engine braking) to be implemented around sensitive receptors (e.g. residential dwellings, schools, hospital). TMP to include vehicle and pedestrian traffic.</p> <p>Include transport of materials and equipment to construction lay down area (likely to be located at the airport) in the TMP e.g. covering of loads, maximum speed, designated travel times and notification of police and other required departments (e.g. hospital and schools).</p>	<p>From port to airport (delivery of equipment/aggregates)</p> <p>To and from the construction lay down area and the quarries</p>	Minimal (requirement of bidding documents)	Design Consultant	Vanuatu Project Management Unit (VPMU)
Aviation traffic safety	Each investment within an operational airport is to have a Methods of Works Plan (MOWP) which is to be included in all bid and contract documents. The Contractor is to develop a Safety Management Plan as an addendum to the MOWP. The MOWP will include details of site works scheduling around known flight timetables and procedures for emergency response for all workers.	Operational airports	Minimal (requirement of bidding documents and standard construction practices)	Design Consultant	Airports Vanuatu Limited (AVL) / VPMU
Soil erosion	<p>Minimize erosion and design erosion protection measures according to international good practice standards, including incorporation of effective drainage systems (soakage pits) and consideration of surface flow paths.</p> <p>Wherever feasible, schedule excavation works for the dry season months (May to October)</p> <p>Develop Contingency Plan for works to allow for anticipated construction start date during the wet season. Contingency Plan must</p>	All locations	Minimal (part of standard design practices)	Design Consultant	VPMU
				Contractor	VPMU

Revision C – 22-May-2015  
Prepared for – Vanuatu Project Management Unit, Ministry of Finance and Economic Management, Government of Vanuatu – Co No.: N/A  
Updated from AECOM NZ, VAIP ESMP VLI Revision C 22 May 2015

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	detail soil erosion prevention measures in event of storm or heavy rain event.				
Dust / Odours / Air Pollution	<p>Identify and locate waste disposal sites, stockpile sites and equipment (e.g. bitumen plant) at least 300 to 500 m downwind of any settlements or inhabited areas and 150 m away from any water bodies, streams or rivers, to minimize impacts on the environment and nearby population.</p> <p>The CESMP should include a provision for quarry dust control; all equipment including crushers, aggregate processors, generators etc. should / if possible, be located in the quarry pit to minimize dust emissions.</p> <p>Ensure all equipment is serviced and issued with warrant of fitness (as required). Any machinery deemed to be polluting the air must be replaced (or fixed) on instruction by the Supervision Engineer.</p>	Construction lay down area	Minimal (part of standard design practices)	Contractor	Supervision Engineer
Water and soil pollution	<p>Minimise risk to groundwater and surrounding soil by developing a spill response plan and provide training to all contract workers on how to implement the spill response plan. Precautions should be in place to prevent wastewater and hazardous substances or materials entering the environment (e.g. fuel spillage, wastewater containing fire retardant during firefighting), The spill response plan should include factors associated with both the construction and operational phases and should be available at all VAIP locations.</p> <p>Ensure bunded areas and hard stands are allocated at construction lay down area for the storage of fuel, lubricants and other potential substances required for the project. Water tight bunds to be able to contain 110% of volumes being stored or 25% if total volume greater than 1,000 L.</p> <p>Ensure wash down areas with respective collection and treatment systems are designated within the construction camp (e.g. settling pond or tank and concrete slurry treatment) prior to works</p>	All components	Minimal (part of standard design and construction practices)	Contractor	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>commencing.</p> <p>Sanitation treatment system (e.g. removal of waste to landfill, compost or proprietary treatment system) is approved by the Supervision Engineer prior to implementation.</p> <p>Supervision Engineer to undertake groundwater monitoring prior to any site establishment or construction activities at two specified potable bores within 100 m of VLI (to be coordinated with MLNR and bore owner ) to determine base line conditions. Measure depth to groundwater and analyse samples for concentrations of pH, electrical conductivity, total petroleum hydrocarbons (for potential petroleum contamination), and total nitrogen (for potential sewage contamination), or as agreed with MLNR.</p>			Supervision Engineer	VPMU / MLNR
Water and soil pollution	Soakage pits should not be installed directly into a shallow aquifer. However drainage improvements are needed to reduce flooding impacts on surrounding residents. Oil water separators should be included to treat runoff from the apron and maintenance hangers.	All components	Minimal (part of standard design and construction practices)	Design Consultant	VPMU
Water supply	The Contractors will need to ensure adequate supply of water for construction and personnel which does not adversely affect local community's water supply (e.g. rainwater harvesting or reclamation, permitted use of river, or use of reticulated supply).	All components	Minimal (part of standard design practices)	Contractor	Supervision Engineer
Sourcing aggregate material	<p>Ensure aggregate is sourced from approved/ permitted quarry sources and are operating in accordance with the Vanuatu law. Prior to any quarries being selected for the VAIP project, public consultation will be completed with any affected parties relating to new or re-opened quarry sites. Should it be identified that a new quarry site will be required for the VAIP project, the requirements of the Resettlement Policy Framework (RPF) presented in Appendix F will need to be implemented and the COP in Appendix G be followed.</p> <p>Permitting requirements will need Contractors to include provision for quarry specific plans including environmental management, health</p>	All components	Minimal (part of standard design and construction practices)	Contractor	Supervision Engineer / Department of Geology, Mines & Rural Water (DGMRW)

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	and safety and rehabilitation.				
Burial of approach lighting cabling	Produce an ARAP that satisfies the requirements of the RPF presented in appendix B to ensure that all aspects of cable burial satisfy social safeguard policies, specifically WB OP 4.12.	Approach Lighting Pathway	VPMU Consultant Costs	VPMU	TFSU
Solid waste generation	<p>Solid waste includes:</p> <ul style="list-style-type: none"> <li>• General waste (i.e. office type waste, household waste (from any workers camps), lightweight packaging materials).</li> <li>• Recyclable waste (i.e. certain plastics, metals, rubber etc. that can be recycled).</li> <li>• Organic biodegradable waste (i.e. waste that will decay / break down in a reasonable amount of time, such as green waste, food waste).</li> <li>• Inorganic non-recyclable waste (i.e. waste that cannot decompose / break down and which cannot be recycled).</li> <li>• Hazardous waste (i.e. asbestos, waste oil etc.)</li> </ul> <p>General waste (including only small quantities of lightweight packaging materials) can be disposed of at Bouffa Landfill, subject to approval from PVMC. In addition to this and with the approval of the Supervision Engineer:</p> <ul style="list-style-type: none"> <li>) Organic biodegradable waste may be deposited in designated dumping areas in reasonable quantities.</li> <li>) Recyclable waste may be supplied to a local receiver licensed to process such waste.</li> </ul> <p>All other waste is to be disposed of OFFSHORE in permitted or licensed facilities. It is the Contractor's responsibility to obtain all necessary permissions for transport and safe disposal of hazardous waste from the project site in a legally designated hazardous waste management site within the country or in another country, and to ensure compliance with all relevant laws. Evidence will need to be supplied to the Supervision Engineer of proper disposal of waste at</p>	All locations	Minimal (part of standard design and construction practices)	Contractor	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>the final location.</p> <p>The export of any hazardous waste must be in compliance with the Basel and Waigani Conventions and any relevant laws enacted by source and the recipient countries.</p> <p>Disused Material (millings, excavation materials, concrete rubble) can either be used to backfill areas where old equipment or infrastructure has been removed or as a resource (e.g. crushed asphalt and basecourse material) for general use by AVL or PWD and the community. An option for disposal of these clean solid wastes is an approved site in the disused Stella Marie Quarry which has been used for this purpose by other GoV infrastructure projects. Written permission to use this location is to be obtained from DEPC before use.</p> <p>All surplus material from excavations shall be removed from the site area and safely disposed of in compliance with any local requirements at the Employer's nominated disposal site(s) and/or disposed of at the Contractor's quarry site(s), before the start of the defects liability period.</p> <p>Unless otherwise instructed by the Supervision Engineer, other surplus materials not needed during the defects liability period shall be removed from the site and the country.</p>				
Hazardous substances	<p>Where possible fuel shall be obtained from local commercially available sources. Prior arrangement regarding quantity and type will need to be organised by the contractor. All fuel to be stored in self-bunded containers</p> <p>In all VAIP project locations, fuel should only be stored in designated areas that are designed to store and facilitate operations associated with it (e.g. re-fuelling).</p>	All locations	Minimal (part of mobilisation and construction planning)	Contractors	VPMU / AVL

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>Spill Response Plan to be developed by Contractor. The response plan should include details on the use of spill kits and absorbent items to prevent spills entering the receiving sensitive environment (ground, surface water). This spill response plan should be applicable to all VAIP project works areas (airport, quarries, and transport routes). A spill response plan should be in place for both the construction phase and operational phase.</p> <p>Identify suitable area for hardstand and bunded storage areas as per section 7.2.</p> <p>Develop ACM Plan, if appropriate, for handling and disposing of asbestos containing materials where they may occur.</p> <p>All empty asphalt or bitumen drums will be removed offshore and either returned to supplier or disposed of in a legally approved facility outside Vanuatu.</p>				
Importation of equipment, aggregate and materials	Obtain import permits and quarantine certification prior to export from country of origin. Certificate of fumigation and verification of source (or proof that material is free of contamination) to be submitted to Quarantine Services and Customs department and approved by the Supervision Engineer prior to delivery to site.	All components	Minimal (part of mobilisation and construction planning)	Contractor	VPMU
Community grievances	<p>Ensure that public consultation and disclosure communication is completed as per the schedule in Section 5 to ensure that the public are fully aware of the VAIP project. Consultation should include all aspects of the project including the airport site, quarries and transport routes. Consultation shall include raising awareness of the project GRM, how to complain and how complaints will be managed.</p> <p>Advertise, maintain and operate a grievance response mechanism,</p>	All components	Minimal (part of mobilisation and construction planning)	VPMU Safeguards Team and Supervision Engineer	VPMU

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	including publishing statistics on resolutions, at <a href="http://www.vaip.vu">www.vaip.vu</a> .  Design consultation plan for implementation during the Master Plan development process			VPMU	TFSU
Airport concessionaires / local business grievances	Ensure that local businesses and airport commissionaires are included in the public consultation and disclosure communication process. Regular communication should be made with affected parties to ensure that they are fully aware of the proposed program of works and how to complain and how complaints will be managed.	Airport	Minimal (part of mobilisation and construction planning)	VPMU Safeguards Team	VPMU
<b>CONSTRUCTION STAGE</b>					
Traffic (vehicle and pedestrian) and construction safety	Implement the traffic management plan (TMP) to ensure smooth traffic flow and safety for workers, passing vehicles and pedestrian traffic.  Where appropriate, employ flag operators on the road to prevent traffic accidents. The workers shall have relevant safety equipment and training.  The TMP should prohibit the use of engine breaking close to and through communities and inhabited areas, it should also regulate the working hours for the haul trucks.	Route from quarries and port to airport	Safety equipment included in construction cost	Construction Contractors	Supervision Engineer
Soil erosion	Minimise time and size of ground disturbing activities to workable size at any one time. Vegetation to be removed manually, strictly no use of herbicides/ pesticides.  Division bunding or other similar methods to be used for large areas of vegetation clearance and around excavations.  Keep construction vehicles on defined tracks.  Re-vegetate disturbed areas that are not being paved as soon as practicable (loosen ground; apply topsoil; seed or plant as necessary).	All locations	Minimal (part of standard construction practice)	Construction Contractors	Supervision Engineer
Waste disposal	Ensure all construction waste material is re-used, recycled, returned	All locations	Minimal (part of	Construction	Supervision

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>to supplier, or packed up for transport to approved disposal site or out of country depending on accepted waste streams at each facility (see Section 7.9).</p> <p>Ensure all general waste (as defined in section 7.9) is disposed of at the Bouffa Landfill</p> <p>Ensure areas for waste collection, recycling and off-site disposal are clearly marked/sign posted. Segregate waste to avoid cross contamination, such as with contaminated material (hazardous substance).</p> <p>Install waste collection facilities at construction lay down area to allow for collection and packing of waste. Strictly no dumping of rubbish. Include awareness training in general environmental training.</p> <p>If access to airport facilities is not available, workers must be provided with a sanitary system to prevent fouling of surrounding soils. Sanitary system must be of sufficient size for the number of workers and must take into account the disposal situation in Port Villa.</p> <p>All hazardous waste is to be disposed of offshore in permitted or licensed facilities. It is the Contractor's responsibility to obtain all necessary permissions for transport and safe disposal of hazardous waste from the project site in a legally designated hazardous waste management site within the country or in another country, and to ensure compliance with all relevant laws. Evidence will need to be supplied to the Supervision Engineer of proper disposal of waste at the final location.</p> <p>With the approval of the Supervision Engineer, organic biodegradable waste may be deposited in designated dumping areas in reasonable quantities.</p>		standard construction practice)	Contractors	Engineer



POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>Disused Material (millings, excavation materials, concrete rubble) can either be used to backfill areas where old equipment or infrastructure has been removed or as a resource (e.g. crushed asphalt and basecourse material) for general use by AVL or PWD and the community. An option for disposal of these clean solid wastes is an approved site in the disused Stella Marie Quarry which has been used for this purpose by other GoV infrastructure projects. Written permission to use this location is to be obtained from DEPC before use.</p> <p>All surplus material from excavations shall be removed from the site area and safely disposed of in compliance with any local requirements at the Employer's nominated disposal site(s) and/or disposed of at the Contractor's quarry site(s), before the start of the defects liability period.</p> <p>Unless otherwise instructed by the Supervision Engineer, other surplus materials not needed during the defects liability period shall be removed from the site and the country</p> <p>There is no reticulated sewer network on the island, septic tanks are utilised. Therefore temporary toilets and disposal or treatment of wastewater will need to be in accordance with the Ministry of Infrastructure and Public Utilities (MIPU) and AVL advice (for example construction and training in use of composting toilet facilities).</p>				
Water and soil pollution	<p>Hydrocarbons (lubricants / fuel) shall be collected and recycled, or disposed of according to Vanuatu regulations (removed from country – see section 7.2).</p> <p>The VLI fuel farm is a hard stand area with bunding to contain all stored hazardous substances; any drainage from these areas is transported to a soak pit. Wastewater from this soak pit is removed by Thomson Septic Contractors. In the case of a contained spill at VLI,</p>	All locations	Minimal (part of standard construction practice)	Construction Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>with AVL permission, wastewater could be disposed of in this soak pit.</p> <p>Spill response kits available at all locations where fuel is stored.</p> <p>Spill response plan training completed for all construction workers.</p> <p>Precautions should be in place to prevent wastewater and hazardous substances / materials entering the environment (e.g. fuel spillage, wastewater containing fire retardant during firefighting), however should an incident occur, the Contractor must have a spill response plan must be in place. The response plan should include details on the use of spill kits and absorbent items to prevent spills entering the receiving sensitive environment (ground, surface water). This spill response plan should be applicable to all VAIP project works areas (airport, quarries, and transport routes). A spill response plan should be in place for both the construction phase and operational phase.</p> <p>Zones for preliminary accumulation of waste should be designated in areas that will cause no damage to the vegetation cover or leach into groundwater or surface water (e.g. within construction lay down area on hard surface).</p> <p>Excavations are bunded to prevent ingress of water runoff and clean water diversion (e.g. sand bags, clay bund, or shallow trenches) are used to direct overland flow away from active work and storage areas. Soakage pits should not be installed directly into a shallow aquifer.</p>				
Water and soil pollution	<p>Hydrocarbon impacted soil may be identified. Any material excavated which has a PID reading of 10 ppm shall be treated as contaminated fill and must be disposed of internationally at an approved facility able to handle contaminated fill.</p> <p>Sediment laden runoff from excavations or stockpiles must be directed to a settling area or collected for dust suppression provided</p>	All locations	Minimal (part of standard construction practice)	Construction Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>the runoff is not contaminated with any chemicals (e.g. fuel). Discharges of treated wash water are to occur to land only, at least 500m from any bore used for potable water at a rate not exceeding 20mm/day or the infiltration rate of the ground (i.e. no ponding or runoff).</p> <p>Supervision Engineer to undertake groundwater monitoring during construction works and after completion at two specified potable bores within 100 m of VLI (to be coordinated with MLNR and bore ) to determine base line conditions. Measure depth to groundwater and analyse samples for concentrations of pH, electrical conductivity, total petroleum hydrocarbons (for potential petroleum contamination), and total nitrogen (for potential sewage contamination), or as agreed with MLNR.</p>			Supervision Engineer	VPMU / MLNR
Generation of dust	<p>Use closed/covered trucks for transportation of construction materials.</p> <p>Any vehicle which is overloaded (exceed designed load limit) or is not covered properly shall be refused entry to the construction lay down area or material shall be refused delivery (if not to the construction lay down area).</p> <p>Cover stockpiles containing fine material (e.g. sand and topsoil) when not actively being used.</p> <p>Keep work areas clean with regular sweeping.</p> <p>Only small areas should be cleared of vegetation at any one time and</p>	All locations	Minimal (part of standard construction practice)	Construction Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>re-vegetation should occur as soon as practicable.</p> <p>Dust masks and personnel protective equipment must be available for workers during dust generating activities (e.g. pavement milling).</p> <p>Manage speed of transportation trucks on unsealed roads, particularly when passing through settlements.</p>				
Noise and vibration disturbances	<p>Minimise nuisance from noise, especially closer to residential areas and sensitive receptors, through establishment and communication to affected parties of working hours, including night works and avoid increase of noise and number of work equipment at outside of advertised hours. Advertise working hours at the site entrance.</p> <p>If possible, use noise barriers / screens or mounds to shield sensitive receptors.</p> <p>It's likely that work at VLI will be completed at night, this will require approval by the AVL / VPMU and early notice to affected peoples provided and then again at least one week prior to schedule works starting. Work on Sunday is restricted. The contractor is to determine what time Saturday night works are required to end and what time early hour Monday morning works can commence. Working during the day on Sunday is likely to only be approved in emergency situations.</p> <p>Regularly check and maintain machinery, equipment and vehicle conditions to ensure appropriate use of mufflers, etc.</p> <p>Workers in the vicinity of sources of high noise shall wear necessary protection gear rated for the situation they are being used.</p> <p>Signage to outline complaints procedure (GRM) and contact details of recipient of complaints (e.g. phone number, physical address and email).</p>	All locations	Minimal (part of standard construction practice)	Construction Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	The WB/IFC EHS Guidelines <sup>18</sup> Section 1.7 – Noise Management shall be applied. Noise impacts should not exceed the levels at the closest residential or other sensitive social receptors for one hour LAeq of 55 dBA between the hours of 0700-2200 or 45 dBA outside of these hours for night works, or result in a maximum increase in background noise levels of 3dB at the nearest receptor location off site. The nearest sensitive receptors are expected to change as the work moves along the pavements and will be determined the closest residences to the active works and to the construction camps and/or asphalt plant.				
Accident risks/Impacts on traffic safety	<p>Arrange necessary measures for pedestrian and passer-by safety and all means of transportation safety (e.g. establish protection zones, by-pass these areas during transportation of materials, etc.)</p> <p>Relevant safety elements such as guardrails, road signs and delineators, pavement markings, barricades and beams, warning lights shall be installed. In some cases a flag operator or traffic control supervisor could be engaged around the specific work site.</p>	All locations	<p>Safety equipment included in construction cost</p> <p>Minimal (part of standard construction practice)</p>	Construction Contractors	Supervision Engineer
Loss of archaeological artefacts or sites	<p>Chance Find procedure to be followed as per Section 7.1</p> <p>Work to stop in specific location of unearthed artefacts or site. Fence the area to limit access and notify Vanuatu National Heritage Registry, AVL and MLNR immediately for instruction to proceed.</p>	All locations	No marginal cost	Construction Contractors	Vanuatu National Heritage Registry / AVL / MLNR / Supervision Engineer
Landscape degradation	<p>Contractor to include provision for construction lay down area rehabilitation following the completion of the construction phase.</p> <p>Restoration of quarries to be completed in accordance with quarry permit and Quarry Management Plan.</p>	All locations	Minimal (part of standard construction practice)	Construction Contractors	AVL / Supervision Engineer / VPMU / DGMRW

<sup>18</sup> International Finance Corporation, Environmental Health and Safety Guidelines, General Guidelines: Noise Management

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>Restoration of landscape after completion of rehabilitation works; restore the vegetation cover in accordance with the surrounding landscape and any required design (e.g. grass land or shrubs).</p> <p>Use plant species characteristic for the landscape in the course of restoration of the vegetation cover.</p>				
Hazardous substances and safety and pollution	<p>Store and handle hazardous substances self-bunded tanks or drums. With the Supervision Engineer's permission may alternatively be store in bunded, hard stand or designated areas only. Bunded areas to drain to an oil water separator which will need to be constructed or a mobile proprietary unit imported specifically for use on the VAIP. Bunds to contain 110% of total volume required to be stored or 25% of total volume if total volume is over 1,000 L.</p> <p>Provide hazard specific personnel protective equipment to workers directly involved in handling hazardous substances (e.g. chemical or heat resistant clothing, gloves).</p> <p>Complete list, including safety data sheets (SDS) for each hazardous substances stored or used shall be accessible at all times. Signage to be posted in storage areas identifying all chemicals present.</p> <p>Precautions should be in place to prevent wastewater and hazardous substances / materials entering the environment (e.g. fuel spillage, wastewater containing fire retardant during firefighting), however should an incident occur, the Contractors spill response plan must be in place. The response plan should include details on the use of spill kits and absorbent items to prevent spills entering the receiving sensitive environment (ground, surface water). This spill response plan should be applicable to all VAIP project works areas (airport, quarries, and transport routes). A spill response plan should be in place for both the construction phase and operational phase.</p>	All locations	<p>Safety equipment included in construction cost</p> <p>Minimal (part of standard construction practice)</p>	Construction Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>Spill kits and training of use to be provided to all workers during toolbox meetings. Spill kits to contain PPE for the spill clean-up (e.g. appropriate gloves [nitrile] and overalls), material to contain the spill and absorbent pads, and a heavy duty rubbish bag to collect absorbent pads or material.</p> <p>Waste oil to be collected and removed abroad to an approved facility (for disposal or cleaning) at completion of works.</p>				
Loss of biodiversity	If during course of construction work, particularly vegetation clearance and excavations any bird, reptile or mammal species is identified as being potentially impacted (e.g. nesting bird in area of proposed vegetation clearance) work is to stop in the specific location of the find and the Department of Environmental Protection and Conservation (DEPC), VPMU and AVL notified immediately for instruction to proceed.	All locations	No marginal cost	Contractors	AVL / VPMU / DEPC
Health and safety	<p>Fully implement OHS requirements in PESMP Code of Practice.</p> <p>Have safety officer with suitable qualifications available at all times during construction.</p> <p>Ensure all workers have undergone suitable induction training on OHS with regular training over course of project.</p> <p>Prepare site specific safety plans specifying responsibilities and authorities. Health and safety documentation to include all areas of the project (e.g. airport, quarries and transport routes). Ensure all occupational health and safety requirements are in place on construction sites and in work camps.</p> <p>Construction lay down area to be fenced to prevent access by unauthorised personnel.</p> <p>First aid training to be provided as required to site workers with basic first aid services to be provided by Contractor e.g. stretcher, vehicle</p>	All locations	Included as provisional sum in the bill of quantity	Contractor	Supervision Engineer / VPMU / AVL

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>transport to hospital.</p> <p>Provide education on basic hygiene practices to minimize spread of diseases.</p> <p>Increase workers' HIV/AIDS and sexually transmitted disease (STD) awareness, including information on methods of transmission and protection measures.</p> <p>Prohibit usage of drugs and alcohol on construction sites and undertake regular alcohol testing.</p> <p>Install lights and cautionary signs in hazardous areas.</p> <p>Enhance safety and inspection procedures.</p> <p>Ensure use of PPE and consider providing for on-site storage of workers allocated PPE.</p>				
Damage to assets and infrastructure	<p>Maintain high standard of site supervision and vehicle and plant operation to reduce risks of damage to water, power and telecommunication lines.</p> <p>Prepare procedures for rapid notification to the responsible authority (VPMU / AVL and service providers).</p> <p>As a result of VAIP construction activities any damage to assets or infrastructure must be reported to the VPMU / AVL and rectified at the expense of the Contractors.</p> <p>Provide assistance with reinstatement, in the event of any disruption.</p>	All locations	Dependent on asset/ infrastructure and level of damage	Contractors	VPMU / AVL
Community grievances	<p>Maintain the grievance response mechanism at <a href="http://www.vaip.vu">www.vaip.vu</a>.</p> <p>Ensure that public consultation and disclosure communication is completed at regular intervals to ensure that the public are fully aware</p>	All components	Minimal (part of standard construction practice)	VPMU	TFSU



POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>of the VAIP project program of activities and the GRM process. Consultation should include all aspects of the project including the airport site, quarries, transport routes and Master Planning. (see section 5)</p> <p>Signage should be used in public areas around the VAIP project sites advising the complaints procedure and contact details of key project individuals responsible for responding to issues raised.</p>			Contractor	Supervision Engineer
Airport concessionaires / local business grievances	<p>Ensure that local businesses and airport commissionaires are included in the public consultation and disclosure communication process throughout the construction phase. Regular communication should be made with affected parties to ensure that they are fully aware of the proposed program of works and the GRM.</p> <p>Signage should be used in public areas around the vicinity of VLI advising the complaints procedure and contact details of key project individuals responsible for responding to issues raised.</p>	Airport	Minimal (part of standard construction practice)	VPMU  Contractor	TFSU  VPMU

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
<b>OPERATION STAGE</b>					
Hazardous substance management	<p>Strictly apply and enforce manufacturer's recommendations for handling and storage. These measures include sealing of drums, and avoiding extreme heat.</p> <p>Compliance with international good practice.</p> <p>Security of storage areas to facilitate transport, handling and placement to be maintained (e.g. fences and locks fixed immediately if broken or vandalised).</p> <p>Complete list, including MSDS for each chemical stored or used shall be accessible at all times. Signage to be posted in storage areas identifying all chemicals present.</p> <p>Staff to wear manufacturers recommended PPE (e.g. gloves and overalls) when handling or mixing hazardous substances.</p> <p>Emergency vehicles are to be serviced and maintained at existing workshop areas.</p>	All airport compounds	No marginal cost (standard operating procedure)	AVL	AVL Management
Fuel storage	<p>All refuelling activities to occur on designated areas at fuel tank farm and ARFF at VLI. The VLI fuel farm is a hard stand area with bunding to contain all stored hazardous substances; any drainage from these areas is transported to a soak pit. Wastewater from this soak pit is removed by Thomson Septic Contractors. In the case of a contained spill at VLI, with AVL permission, wastewater could be disposed of in this soak pit.</p> <p>Precautions should be in place to prevent wastewater and hazardous substances / materials entering the environment (e.g. fuel spillage), however should an incident occur, updated AVL spill response plan must be in place. The response plan should include details on the use of spill kits and absorbent items to prevent spills entering the receiving sensitive environment (ground, surface water). The operational phase</p>	All airport compounds	No marginal cost (standard operating procedure)	AVL	AVL Management

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	spill response plan should be updated on completion of VAIP construction phase.				
Airport waste management	Development of AVL Waste Management Plan recommended to allow for recycling or re-using of as much waste as possible. PVMC should be consulted for approval to receive material (at Bouffa Landfill) that cannot be recycled, reused or returned to the supplier.	All airport compounds	No marginal cost (standard operating procedure)	AVL Management	AVL
Use of fire retardant in ARFF	Spill response plan training to be completed for AVL workers. Precautions should be in place to prevent potentially hazardous substances entering the environment (e.g. wastewater containing fire retardant during firefighting), however should an incident occur, AVL must have a spill response plan must be in place.	All airport compounds	No marginal cost (standard operating procedure)	AVL Management	AVL
Water or soil pollution	Workshops or maintenance areas to be fitted with bunded areas for storage of oil and fuel drums (and any other hazardous substances).  Used oil drums should be returned to the suppliers or, after being cleaned, sold in secondary local market if there is demand for this.  Used oils may be used for emergency drills/preparedness exercises as appropriate by ARFF.	All locations	No marginal cost (standard operating procedure)	AVL Management	AVL
Maintenance of drainage and soakage systems	Drainage systems shall be periodically cleared of sediment and organic matter build up to ensure appropriate flows and soakage. Material to be disposed at approved site (e.g. landfill or used as clean fill) or composted if organic.  Drainage systems should also be periodically visually inspected for signs of contamination (e.g. hydrocarbons from airstrip runway) to ensure that the designed system is operating appropriately.  Vegetation to be cleared from drainage channels and soakage pits and composted (check with PVMC/MIPU regarding composting facilities on Efate).  Grass in drainage swales to be maintained at a height slightly higher	All locations	No marginal cost (standard operating procedure)	AVL Management	AVL

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS <sup>17</sup>	EXECUTING AGENCY	SUPERVISING AGENCY
	<p>than the surrounding grass on the shoulders.</p> <p>Ongoing monitoring of stormwater impacts on the La Colle river and flood plains should be considered</p>				

## Appendix C

# Monitoring Plan

## Appendix C Monitoring Plan

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING RESPONSIBILITY
<b>DETAILED DESIGN/ PRE-CONSTRUCTION PHASE</b>				
Traffic safety	CESMP documents	Ensure TMP established for project.	Prior to commencing civil works	Supervision Engineer
Aviation safety	CESMP documents	MOWP complete with details of flight schedules and emergency procedures.	Prior to commencing civil works	Supervision Engineer with inputs from AVL and CAAV
OHS Plan	Design documents	Ensure safety plan established for project	Prior to commencing civil works	Supervision Engineer
Workers Camp Plan	Design documents	Ensure plan following WB/IFS Guidelines established for any workers camp	Prior to mobilization	Supervision Engineer
Approach lighting cable burial	CESMP documents	Ensure ARAP is completed and approved	Prior to commencing civil works	Supervision Engineer
Soil erosion	CESMP documents	Ensure Contingency Plan is completed and approved with provisions for anticipated construction date of March 2017. Storm event management and soil erosion prevention measures to be included.	Prior to sign off of final designs	Design Consultant
Water supply	CESMP documents	Suggested water source and supply network to be included in designs	Prior to commencing civil works	Supervision Engineer
Stormwater management	CESMP documents	Proposed stormwater management / drainage design (e.g. use of oil-water separator) to consider impacts on hydrology, receiving environments and also contamination risk	Prior to commencing civil works	Supervision Engineer

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING RESPONSIBILITY
Quarry operations	Quarry	<p>Upon confirmation of which quarries are to supply aggregate verify quarry operations to ensure any required permits or approvals are in place.</p> <p>Ensure TMP is included in procurement documentation for transport of materials from the quarries to the airport.</p>	Prior to commencing civil works	Supervision Engineer
Importation of equipment and materials	Importation permits	Approval to import material and equipment is given prior to material and equipment leaving country of origin.	Contractor to organize prior to export from country of origin.	Supervision Engineer

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING RESPONSIBILITY
<b>CONSTRUCTION</b>				
Agreement for waste disposal	Construction Contractor's records	Permits and/or agreements with local waste disposal providers (e.g. Bouffa Landfill) and licensed recycling operators. Inspection of disposal sites.	Documentation viewed prior to construction works starting Weekly as applicable to schedule of works.	Supervision Engineer
Soil erosion	Areas of exposed soil and earth moving	Inspections at sites to ensure silt fences, diversion drains etc. are constructed as needed. Inspection to ensure replanting and restoration work completed.	Weekly inspection as applicable to schedule of works and after site restoration.	Supervision Engineer
Waste disposal	At construction and quarry sites	Inspection to ensure waste is not accumulating and evidence waste has been stockpiled for removal to licensed landfill (Bouffa Landfill), removal from Vanuatu as hazardous, recycling or returning to supplier.  Inspections to ensure waste streams are sorted for re-use, recycling or waste to landfill.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Supervision Engineer
Water and soil pollution	At construction sites	Ensure all storage tanks are self bunded.  Inspection of sites to ensure waste collection in defined area; spill response plan in place and workers trained at all VAIP locations. Complete spill kits available where hazardous substances sorted and handled.  All results from Supervision Engineers groundwater sampling are submitted to MLNR, owner and MIPU with remedial action points if background/baseline conditions are exceeded.  Any encounters with potentially or confirmed contaminated soil (based on PID readings) are reported to MIPU / AVL.  Inspect soakage pits siting directly above any underlying aquifer (if present).	Weekly inspection as applicable to schedule of works and on receipt of any complaints	Supervision Engineer



PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING RESPONSIBILITY
Dust	At construction sites, quarries and adjacent sensitive receptors	Site inspections. Regular visual inspections to ensure stockpiles are covered when not in use and trucks transporting material are covered and not overloaded.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Supervision Engineer
Noise	At work sites and two residential sensitive receptors close to active work are and a control site	<p>Site inspections to ensure workers wearing appropriate PPE when required.</p> <p>Measurement of noise level (one hour LAeq) at closest social receptors (residences) to active work sites, construction camps and lay down areas not to exceed 45dB between 2200-0700 or 3dBA above background.</p> <p>Public signage detailing complaints procedure and contact people/person on display.</p> <p>Noisy machinery is replaced or fixed as soon as problem arises or on instruction by Supervision Engineer.</p>	<p>Weekly inspection as applicable to schedule of works and on receipt of any complaints.</p> <p>: Weekly monitoring of noise levels to be carried for at least 4 hours at night (after 2200) for duration of night works at the nearest social receptors to the active work areas and construction camps and on receipt of any complaints.</p> <p>Monitoring to be carried out with equipment suitable for measuring LAeq(dBa).</p> <p>Baseline noise levels should be recorded before commencement of works at control sites and at lay down site. For two weeks after completion of all construction works final monitoring should be completed at control sites and lay down site.</p>	Supervision Engineer
Air pollution	At work sites	<p>Site inspections to ensure equipment and machinery operating without excessive emissions. If an issue is reported the contractor is responsible for replacing or fixing the equipment to the satisfaction of Supervision Engineer.</p> <p>Bitumen and asphalt processes plants to be located away from closest communities</p>	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Supervision Engineer

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING RESPONSIBILITY
Storage of fuel, oil, bitumen, etc.	At work sites and construction camp. Contractors training log.	Regular site inspections to ensure material is stored within bunded area and spill response training for workers completed. Visual inspection of spill kit for completeness and accessibility. Checking that staff are trained on use of spill kits.	Weekly as applicable to schedule of works and on receipt of any complaints.	Supervision Engineer
Vehicle and pedestrian safety	At and near work sites	Regular inspections to check that TMP is implemented correctly (e.g. flags and diversions in place) and workers wearing appropriate PPE.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Supervision Engineer
Construction workers and staff safety (personal protective equipment)	At work sites	Inspections to ensure workers have access to and are wearing (when required) appropriate personnel protective equipment (e.g. for handling hazardous materials). Code of Practice in PESMP implemented.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Supervision Engineer
Community / airport concessionaires / local business safety	At work sites	Inspections to ensure signs and fences restricting access are in place and pedestrian diversion routes clearly marked (whether for access to a building or home or particular route).	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Supervision Engineer
Community grievances	At all locations	Monitor the GRM database for the number and type of grievances and the average number of days to resolve a grievance.	Weekly	At all locations
Airport concessionaires / local business grievances	At and near VLI work sites	Monitor the GRM database for the number and type of grievances and the average number of days to resolve a grievance.	Weekly	At and near VLI work sites
Materials supply	Quarry and work sites	Evidence that trucks are not overloaded and loads are covered e.g. complaints register, evidence of debris on the road.	Weekly visual inspection as applicable to schedule of works and on receipt of any complaints.	Supervision Engineer
<b>OPERATION (Recommended for Consideration by AVL)</b>				

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING RESPONSIBILITY
Accidents with hazardous materials or wastes	Airport sites	Accident report.	Immediately after accident	AVL
Drainage system operational with reduced flooding incidences	Runway	Clean out of soakage pits documented and inspection of grass swales after mowing shows grass height in swale is higher than surrounds.	Soakage pit – after storm events to clear blockages and annually to remove sediment. After grass mowing.	AVL
Waste disposal	Airport sites	Inspection to ensure waste is not accumulating and evidence waste has been stockpiled for removal to licensed landfill (Bouffa Landfill), removal from Vanuatu as hazardous, recycling or returning to supplier.  Inspections to ensure waste streams are sorted for re-use, recycling or waste to landfill.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	AVL
Water and soil pollution	Airport sites	Inspection of sites to ensure waste collection in defined area; spill response plan in place and workers trained at all VAIP locations. Complete spill kits available where hazardous substances sorted and handled.  Inspection drains on site to ensure no blockages present or maintenance required.	Weekly inspection as applicable to schedule of works and on receipt of any complaints	AVL
Storage of fuel, oil, bitumen, etc.	Airport sites AVL training log.	Regular site inspections to ensure material is stored within bunded areas and spill response training for AVL workers up to date. Visual inspection of spill kit for completeness and accessibility.	Weekly as applicable to schedule of works and on receipt of any complaints.	AVL

## Appendix D

# PESMP and CESMP Monitoring Plan Construction Inspection Checklist

## Appendix D PESMP and CESMP Monitoring Plan Inspection Checklist

### PESMP and CESMP Monitoring Plan Checklist for all Work Site Areas

<b>Location:</b>	
<b>Auditor:</b>	
<b>Audit Date/Time (Start):</b>	
<b>Audit Date/Time (Finish):</b>	

Environmental Issue:	Inspection areas:	Requirements met?
<b>1.0 Construction Phase</b>		
1.1 Soil Erosion	<ul style="list-style-type: none"> <li>- Silt fences and diversion drains in place</li> <li>- Replanting and restoration work completed</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.2 Waste accumulation and Disposal Agreements	<ul style="list-style-type: none"> <li>- Good housekeeping around the work sites</li> <li>- Waste collected in defined area on impermeable ground or containers</li> <li>- Separation of waste into (i) Recyclable waste (i.e. certain plastics, metals, rubber etc. that can be recycled); (ii) Organic biodegradable waste (i.e. waste that will decay / break down in a reasonable amount of time, such as green waste, food waste; (iii) Inorganic non-recyclable waste (i.e. waste that cannot decompose / break down and which cannot be recycled) and, (iv) Hazardous waste (i.e. asbestos, waste oil etc.)</li> <li>- Hazardous waste stored in safe and appropriate manner.</li> <li>- Waste management plan in place and operating for proper disposal</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.3 Soil and Water Pollution	<ul style="list-style-type: none"> <li>- Appropriate spill response plan/kit in place for waste area</li> <li>- No visible spills on soil or uncovered ground</li> <li>- Drainage and soakage systems clear and fit for purpose</li> <li>-</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:

Environmental Issue:	Inspection areas:	Requirements met?
1.4 Dust and Materials Transport	<ul style="list-style-type: none"> <li>- Stockpiles covered or kept wet when not in use</li> <li>- Visual inspection of ambient dust conditions on site and at nearby sensitive locations</li> <li>- Truck transports are covered</li> <li>- No evidence of aggregate spills on haulage route</li> <li>-</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.5 Noise	<ul style="list-style-type: none"> <li>- Workers wearing ear protection as required</li> <li>- Noise level maximum of 45dB between 2200-0700</li> <li>- Noise monitoring results by Supervision Engineer confirm acceptable noise levels</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.6 Air Pollution	<ul style="list-style-type: none"> <li>- Equipment operating without excessive emissions</li> <li>- Bitumen and asphalt plant emissions move away from nearby communities</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.7 Fuel, Oil and Bitumen Storage	<ul style="list-style-type: none"> <li>- Substances stored in self-bunded vessels or within bund on impermeable surface</li> <li>- Spill kit complete and accessible</li> <li>- Spill training completed</li> <li>- No evidence of spills on the ground</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.8 Traffic Management Plan Implementation	<ul style="list-style-type: none"> <li>- Traffic Management Plan (TMP) under effective implementation</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.9 Occupational Health and Safety	<ul style="list-style-type: none"> <li>- Workers have access to, and using appropriate, PPE for the task.</li> <li>- All workers have undergone appropriate OHS training</li> <li>- Proper briefing of staff before undertaking work activities</li> <li>-</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.10 Community / Airport Concessionaires / Local Business Safety	<ul style="list-style-type: none"> <li>- Public signage of complaints procedure</li> <li>- Signs and fences restrict or direct pedestrians and public where appropriate.</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:

Environmental Issue:	Inspection areas:	Requirements met?
1.11 Materials Supply	<ul style="list-style-type: none"> <li>- Quarry establishment and operations in fully compliance with Code of Practice</li> <li>- All quarries licensed to supply materials</li> <li>- All imported materials with appropriate biosecurity clearances</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.12 Asphalt Plant	<ul style="list-style-type: none"> <li>- Asphalt plant established on pre-approved sites</li> <li>- Asphalt plant noise levels managed efficiently</li> <li>- Secure fencing correctly installed at asphalt plant</li> <li>- Asphalt plant not causing excessive odours at nearby communities</li> <li>- Notification of asphalt plant noise generating operation times publically displayed</li> <li>- Asphalt plant in clean and orderly condition</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:
1.13 Lay Down Area	<ul style="list-style-type: none"> <li>- Laydown areas established on pre-approved sites</li> <li>- Laydown areas dust levels managed efficiently</li> <li>- Traffic management plan correctly implemented at laydown site</li> <li>- Water run off management systems operating correctly</li> <li>- Dust management effectively implemented</li> <li>- PPE present and correctly used</li> <li>-</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:

Environmental Issue:	Inspection areas:	Requirements met?
1.14 Workers Camp	<ul style="list-style-type: none"> <li>- Camp established in accordance with Code of Practice in PESMP Annex G.</li> <li>- Septic system cleaned and fully operational.</li> <li>- Waste stored in an appropriate location in a clean and tidy manner, segregated by waste type.</li> <li>- Workers living and recreational areas clean and properly equipped.</li> <li>- OHS, HIV/AIDS, GBV and other information available</li> <li>-</li> </ul>	Yes <input type="checkbox"/> No <input type="checkbox"/> If No, details:



**Actions Required:**

Issue No.	Action Required? By Whom?	Date Action Required?

**Signoff**

Signature:

Date:

.....

.....

## Appendix E

# VAIP Community Engagement Report April 2015

**VAIP**  
**VANUATU AVIATION INVESTMENT PROGRAM**  
**COMMUNITY ENGAGEMENT REPORT**  
**APRIL 2015**  
**VAN/ICS/V-PP02.1**

**Henry Vira, Community Engagement Consultant**  
**henryvira@gmail.com**

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2. Community Engagement meeting records and issues raised

3. Recommendations

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Annex 1: List of participants.

## ABBREVIATIONS

AVL	Airports Vanuatu Limited
CAAV	Civil Aviation Authority of Vanuatu
GEF	Global Environment Facility
NBV	National Bank of Vanuatu
OCTA	Office of the Chief Trade Adviser
RBV	Reserve Bank of Vanuatu
RESA	Runway Safety Area
USP	University of the South Pacific
VAIP	Vanuatu Aviation Investment Program
VANGO	Vanuatu Association of Non Government Organisations
VASANOC	Vanuatu Association of Sports and National Olympic Committee
VEAN	Vanuatu Environment Advocacy Network
VPF	Vanuatu Police Force
VPMU	Vanuatu Project Management Unit

## **ACKNOWLEDGMENT**

I wish to acknowledge and thank everyone who gave up their time to meet with me, particularly at a difficult time when everyone consulted was affected by the devastation caused by Cyclone PAM. A special thank you to Catherine Malosu who provided me with invaluable support and the Director, Mr Johnson Wabaiat and staff of VPMU for their guidance and support during the execution of this assignment.

## **INTRODUCTION**

Thirty two (32) individuals representing twenty two (22) agencies and communities were consulted around Port Vila, Vanuatu. We were limited in our ability to consult more agencies due to the commitments of respective agencies in responding to the national State Of Emergency following the devastation caused by Cyclone PAM. Major agencies consulted included Aviation Vanuatu Limited (AVL), Vanuatu Environment Unit, Vanuatu Project Management Unit (VPMU), Civil Aviation Authority of Vanuatu (CAAV), Vanuatu Association of Non Government Organisations (VANGO), Global Environment Facility (GEF) and Vanuatu Environment Advocacy Network (VEAN). We were able to consult representatives from major communities living within the vicinity of Bauerfield including Bladiniere Estate, Switi, End of Airport, Blacksands and Mele communities. Chiefs from these communities and other professionals working in agencies such as OCTA, VASANOC, Customs Rates and Taxes, VAT office, University of the South Pacific (USP), Vanuatu Police Force (VPF), Reserve Bank of Vanuatu (RBV), National Bank of Vanuatu (NBV) and office of the Ombudsman attended these sessions.

There is significant interest in the Bauerfield upgrade within the agencies and communities consulted as any major development on Bauerfield has the potential to affect over ten thousand people living within the vicinity of the airport. Community members are organising themselves formally to continue dialogue with the Government of Vanuatu on this initiative.

The major part of this document contains the minutes of meetings held and issues raised, followed by recommendations based largely on discussions held.

## **2. MINUTES OF MEETINGS AND ISSUES RAISED**

### **(i) Environment Unit**

**Staff Met:** Trinison Tari, Acting Director, Vanuatu Government Environment Unit  
Reedly Tari, Senior Environment Impact Assessment Officer  
**Venue:** Environment Unit  
**Date:** 25 March 2015

Trinison Tari, Environment Unit Acting Director was happy to be informed of this initiative as the unit will be involved in any Environment Impact Assessments (EIAs) done on such a development. Mr Tari requested that a full implementation plan for Bauerfield upgrade be sent to the Environment Unit for their assessment before the unit can be in a position to comment further. Both officers however pointed out their concerns with regard to dust from machines moving material to the quarry, etc. and increasing runoff from a resealed runway as potential environmental risks, both to communities living around Bauerfield and to animals grazing on land on the periphery of the airfield.

### **(ii) Vanuatu Association of NGOs (VANGO)**

**Representatives met:** Charlie Harrison, VANGO Secretary General Leah Nimoho, Global Environment Facility (GEF) Manager Lai Sakita, Vanuatu Environment Advocacy Network (VEAN) CEO  
**Date:** March 27 2015

VANGO is the national umbrella body for over 50 community groups, local and international NGOs and has existed since the 1980s. The meeting took place at the VANGO office at Nambatu and it involved the Secretary General, Mr Charlie Harrison, Global Environment Facility Manager, Mrs Leah Nimoho, Chief Executive Officer of Vanuatu Environment Advocacy Network, Mr Lai Sakita, Catherine Malosu of VPMU and Henry Vira, consultant.

VANGO was concerned mainly with informing the public and ensuring that stakeholders are given every opportunity to be part of such developments. VANGO offered to inform its members and other members of the public about this project and welcomed the opportunity to host more discussions on this and other similar developments in future. VANGO expressed concern over the Government of Vanuatu taking out a loan at this time when the country is going through a major disaster and recovery process. It proposed that the Vanuatu government revisit its decision and renegotiate this agreement with the World Bank as a grant rather than a loan.

### **(iii) Civil Aviation Authority of Vanuatu (CAAV)**

**Venue:** Civil Aviation Office, Port Vila  
**Date:** Monday, March 30 2015

Joseph Niel, Chief Executive Officer of Civil Aviation Authority of Vanuatu (CAAV) advised that the Government of Vanuatu should revisit its agreement with the World Bank in light of the current disaster facing the country in the aftermath of cyclone PAM. Mr Niel questioned whether a grant should be negotiated instead of the assistance coming in the form of a loan as it currently stands? In addition, Mr Niel alluded to the fact that other development partners such as the Government of Papua New Guinea are also committing financial assistance to upgrade parts of Bauerfield such as the VIP lounge.

**Length of runway:** Mr Niel is concerned that reducing the runway by six hundred (600) metres would reduce the safety zone between landing and where the aircraft stops completely. It would mean reducing RESA which could have a direct safety implication for communities located around the perimeter of Bauerfield. Mr Niel explained that future developments at Bauerfield must move the domestic and international terminals and Air Vanuatu hangar further back as these facilities are currently too close to the landing zone and thus pose significant risk to aircraft operators, passengers and the public at large.

Mr Niel is adamant that the Government of Vanuatu must look at another location for phase two of this initiative where there is a lot more space for further development compared to where Bauerfield is currently located. Pekoa airport was proposed as a possible alternative for phase 2 of VAIP.

#### **(iv) Bladiniere Estates, Switi, End of Airport communities**

**Venue:** VPMU Conference Room  
**Community Chief Representatives:** Nuvi Iata (Switi), Livo Lui (Bladiniere), Manuel  
(End of Airport)  
**Date:** 31 March 2015

These communities form the core group of people residing in areas adjacent to Bauerfield airport. Twenty five (25) members of these communities including chiefs, church members, women and men from the public and private sectors, and private individuals participated in a consultation meeting at the VPMU conference room. Here are some of the issues raised:

**Location of equipment for work on Bauerfield upgrade:** Residents were concerned about where the machinery and equipment would be located as a lot of noise and pollution could be expected from this site.

**Security of tenure:** many residents are worried that upgrading and other development on Bauerfield would directly affect residents of these areas. Many of the residents work in the public and private sectors and aim to invest much of their income and time into establishing a future foundation for their children and for generations to come. It is unsettling for a lot of families as many were not aware that they were leasing properties in a risky zone.

**Noise:** Residents complained that the current increase in aircraft activity, particularly in relation to emergency activities following the devastation caused by cyclone PAM, is extremely traumatic for everyone, especially the young. It is extremely difficult to enjoy any form of serenity or sleep with shorter intervals between aircraft landing and departing.

**2nd Phase of VAIP:** a community member sought confirmation as to whether a likely 2nd phase of VAIP would mean having to relocate residents? He also warned that likely increases in the number



and sizes of aircraft utilising the upgraded airstrip would make it totally unbearable for anyone to live in the communities surrounding Bauerfield. Everyone who attended the meeting agreed that the government should look at developing another airport at a safer location and in a place which could accommodate a higher number and larger aircraft. Tontouta (New Caledonia) and Nadi (Fiji) were examples that participants used to argue that these international Ports of Entry are located quite far from major residential areas and away from respective national capital cities.

**Companies operating at night:** concern was raised that residents would be kept awake if upgrading work is done mainly during the night. According to participants, it is highly likely that work would be undertaken at night to avoid disrupting normal daily flight schedules.

**Airport runoff and pollution of nearby residents:** It was brought to our attention that runoff (including oil from aircrafts) from the airstrip is allegedly found around people's houses during rainy periods. It appears that the drainage system at the airport is not functioning as intended to allow the runoff to enter Tagabe River.

**Loan vs. Grant:** participants inquired as to why the Bauerfield upgrade work comes under loan and not a grant, particularly at this time of devastation? Members were informed that similar work carried out in both Tonga and Kiribati came under grant agreements.

**Tar Sealed Road:** A senior member of Switi community cautioned government against using the road that runs through his community as it is not tar sealed and produces a lot of dust and danger to children using this access. This particular road was the main access during the last Bauerfield upgrade.

**Resettlement of community members:** female members of these communities expressed concern on the likelihood that development associated with the Bauerfield upgrade would lead to forced resettlement of community members. Many confirmed that a lot of investment has gone into their properties and that many have just moved into the area.

**Transport of quarry:** The suggestion for moving quarry from North Efate to the job site was met with inquisitive looks. Community members suggested locating quarry at a closer site to minimise dust, pollution and other potential hazards.

#### **(v) Airports Vanuatu Limited (AVL)**

**Staff met:** Rowland Kalson, Airports Vanuatu Limited (AVL) Acting CEO Lindsay Taylor,  
Bauerfield Air Traffic Controller Manager  
**Venue:** Airports Vanuatu Limited (AVL) office, Bauerfield  
**Date:** April 7, 2015

Both Lindsay and Rowland are quite confident that there will be no significant environmental impact during this Bauerfield upgrade phase as it does not involve any extension or expansion of the current runway. Lindsay pointed out however that the Bauerfield apron needs to be extended to accommodate increasing traffic. A possible solution, he suggested would be to create another apron for smaller operators. Both gentlemen also argued for an expansion of the current International terminal to accommodate the increasing number of travellers. This would also include expanding the International terminal car park which is currently hardly adequate to accommodate users.

On noise pollution, Lindsay confirmed that it is unlikely that flight schedules will change as a result of activities relating to the Bauerfield upgrade. Rowland however conceded that it is likely that work on the runway will take place during the night to minimise disruption to flight schedules.

On the Capacity of Airports Vanuatu Limited (AVL), both Lindsay and Rowland confirmed that the institution has the capacity to oversee the implementation of the Bauerfield upgrade and added that AVL has overall mandate over Bauerfield Aerodrome under licence and it is the institution's prerogative to oversee such developments.

**(vi) Mele Community, Efate**

**Representative:** Chief Simeon Poilapa  
**Venue:** Jill's Cafe, Port Vila  
**Date:** April 9 2015

Catherine Malosu (VPMU) and I met with Chief Poilapa on the morning of Thursday 9 April at Jill's cafe, Port Vila. Chief Poilapa informed Catherine and I that he had had a long connection to Bauerfield discussions since the 1970s, as a concerned member of Mele community, Tourism Office Project Liaison Officer, Political Adviser under various governments, Mele Tustee, and now as Mele Community Chief. Chief Poilapa is generally supportive of the Bauerfield upgrade which he sees as an essential component of developing Port Vila and Vanuatu as a whole.

Chief Poilapa's main concern has always been around the safety of the Mele Community which currently accommodates around 6,000 members. He recalled a close call back in the 1970s when an Air Pacific flight nearly crashed onto his community. The Mele Chief also confirmed that community members continue to be on edge particularly with recent increases in flights and the arrival of bigger aircraft as a result of Cyclone PAM emergency response missions. He confirmed that the western end of Bauerfield is always at risk due to the fact that it is within a flood zone.

While generally supportive of the current Bauerfield upgrade, Chief Poilapa is adamant that the Government of Vanuatu must find another location for an airport suitable to accommodate larger aircraft in greater numbers. He further cautioned government against complacency in finding an alternative location as this could compromise the public's safety and security. Chief Poilapa wished to remind those in authority that, 'Prevention is better than cure'.

Chief Poilapa was happy that the Mele community had been consulted and he looked forward to staying engaged in the Bauerfield upgrade and other relevant discussions.

### 3. RECOMMENDATIONS

These recommendations are derived largely from the discussions held with representatives from agencies and communities identified above and discussions with wider members of the public.

(i) **Drainage:** Airports Vanuatu Limited must ensure that proper drainage is constructed and remains unblocked to minimise runoff (which may contain harmful chemicals) into surrounding communities.

(ii) **Location of machines:** Utilise the previous site used in the last upgrade which is to the east of the airport away from the majority of residents

(iii) **Access:** the Government of Vanuatu through the Port Vila Municipality should undertake tar-sealing of the road that runs through Switi area. It is most likely that this access will be utilized in this phase of the Bauerfield upgrade. Speed humps must also be erected to slow traffic down as a safety mechanism for residents

(iv) **Access to quarry:** That VPMU and AVL negotiate with land owners and developers who have access to quarry very close to Bauerfield as a way of minimising pollution through transporting this material long distances and also as a cost-saving exercise to government.

(v) **Work hours:** AVL and VPMU to ensure that the Bauerfield upgrade work schedule takes into account noise disturbance to surrounding communities.

(vi) **Rescheduling of flights:** AVL to work with airlines to agree on flight schedules that would create minimal disruption to communities surrounding Bauerfield.

(vii) **Subdivisions:** Government of Vanuatu to discourage further subdivisions around Bauerfield which could limit any further development on the strip.

(viii) **Community Engagement:** It is extremely important that the line of communication between community members and the Government of Vanuatu (through AVL and VPMU) remains open to ensure that the public is informed and their views are heard.

(ix) **Phase 2 of VAIP:** Government of Vanuatu to consider developing Phase 2 of VAIP on another location. Ninety Nine percent (99%) of people we met argue that another location be secured for Phase 2 of VAIP. It was made very clear that any attempt to extend or expand Bauerfield would be met with stiff resistance from the public.

(x) **World Bank Loan vs. Grant:** Considering that the country is currently recovering following major cyclone devastation, the Government of Vanuatu should revisit its decision to accept a loan rather than a grant from the World Bank.

#### **4. CONCLUSION**

Bauerfield was built by the Americans during World War 2 in a location which was quite convenient at that time as the surrounding hills provided protective cover against the enemy. It is currently evident that rigorous work is required to maintain the aerodrome as fit for continuous use by the government in its development.

While the Government of Vanuatu may, in the long run, secure another location big enough and safe enough to cater for larger aircraft and higher numbers of users, it is at present carrying out a balancing act to ensure that Bauerfield remains operational, while at the same time guarantees the safety, security and wellbeing of community members living within the vicinity of the airstrip. It is very important that regular dialogue is forged between the government of Vanuatu (through AVL and VPMU) and communities living around Bauerfield to ensure that there is transparency and an avenue for grievances to be heard.

**ANNEX 1: LIST OF PEOPLE WHO PARTICIPATED IN THIS EXERCISE**

NAME	DESIGNATION	ORGANISATION	CONTACT
Steve Siro	TPO	OCTA	25003
James Malau	SDO	VASANOC	23230
Melton Aru	Manager, Rates and Taxes	Customs and Internal Revenue	24969
Davidson Hehe	Senior VAT Auditor	VAT Office	24573
Christophe Omu	Air Vanuatu Engineer	Air Vanuatu	24270
Lai Sakita	CEO	Vanuatu Environment Advocacy Network	7100186
Pakoa Toara	Staff	Air Vanuatu	7736827
Nuvi Iata	Chief	Switi Area	7736827
Livo Lui	Chief	Bladiniere Estate	5413620
Manuel	Chief	End of Airport	7793022/7765159
Amton Serel	Lecturer	University of the South Pacific (USP)	5648572
Alwin S.	Police Officer	Vanuatu Police Force	7753134
Ian Rarao	Staff	Air Vanuatu	71202248
Holybake Bule	Insurance Supervisor	Reserve Bank of Vanuatu	5475599
Laisa Savo	Documentation Officer	National Bank Vanuatu	5358320
Shala Bwibwi	DEO	National Bank of Vanuatu	22201
Diana Isaiah	Staff	National Bank of Vanuatu	22201
Rachel Kalman	Staff	National Bank of Vanuatu	22201
Jimmy Taseru	Bank Officer	National Bank of Vanuatu	22201
Martha Kwip	Bank Officer	National Bank of Vanuatu	22201
Dorah S	Staff	Ombudsman's Office	27200
Velma K	Staff	Ombudsman's Office	27200
Rose A	Staff	Ombudsman's Office	27200
Rene Bebe	Accountant	Air Vanuatu	7120193
Charlie Harrison	Secretary General	VANGO	5958237
Leah Nimoho	Manager	Global Environment Facility (GEF)	5669017
Joseph Niel	Chief Executive Officer	Civil Aviation Authority Vanuatu (CAAV)	23301
Lindsay Taylor	Manager	Air Traffic Controller	ltaylor@airports.vu
Chief Simeon Poilapa	Chief	Mele Community, Efate island	7747736
Nauni Vakesa	Chief	Futuna Community	7100186
Steward Moli	Staff	Airports Vanuatu Limited	5550549
Isaac Vira	Chief	Bladiniere Estates	7776816
Catherine Malosu	Staff	VPMU	7772627

## Appendix F

# Resettlement Policy Framework

Due to the need to replace the approach navigational lights at VLI and the plan to bury the light cabling for, at least, part of the route, it has been confirmed that short term use of leased lands will be required for burying approach lighting cable therefore the requirements of this Resettlement Policy Framework (RPF) will need to be implemented. Detailed design has yet to be completed for the SON and TAH airport works, therefore it is still uncertain whether additional land acquisition will be necessary for these sites.

This RPF should be executed in a manner which enables the resulting ARAP to be a standalone document applicable to all three VAIP sites.

#### **A. Project Description**

For project description, please refer to Sections 1 and 2 of the VLI PESMP (Version E), the SON PESMP (Version A) and the TAH PESMP (Version A)..

#### **B. Justification for Preparing a Resettlement Policy Framework**

The exact nature of the investments, detailed design of the engineering works and precise siting of infrastructure works for the projects has not been determined, and will be decided taking in to account feedback from initial consultations with stakeholders and affected parties (APs). A Resettlement Policy Framework (RPF) has therefore been selected as the appropriate social safeguard instrument. As a Category B project, it is not anticipated that there will be substantial resettlement requirements, and no physical displacement is envisaged in either project. The RPF describes the policies and procedures leading to development of the resettlement plan (RAP), which is to be completed in the detailed planning stages of the projects or sub-projects, prior to implementation of the civil works. The RAP will be developed in conformance with World Bank Operational Policy 4.12, Involuntary Resettlement, Annex A paragraphs 1 to 21. If resettlement affects fewer than 200 people, and impacts are minor, an Abbreviated Resettlement Plan (ARAP) will be developed as per Operational Policy 4.12, Annex A paragraph 22. The RAP or ARAP will form part of the agreement between the GoV and the World Bank. For brevity, the term 'RAP/ARAP' will be used in this document to refer to whichever resettlement instrument is selected applicable to all VAIP airport sites.

#### **C. Objectives, Definitions and Key Principles**

The guiding principles for the RAP are that involuntary resettlement is to be avoided or minimised. APs should be better off or at least as well off as before the project. All persons affected by the project are to be consulted throughout the project, have the opportunity to participate in planning, and to share in project benefits. The project should contribute to sustainable development.

These principles entrain a process of early identification of stakeholders, and in particular of APs; frank and effective public disclosure of any known impacts; consultation and participation to avoid or mitigate negative impacts identified, and to ensure that no person or impact is overlooked; fair, transparent and timely intervention to support APs during implementation, resettlement and restoration of livelihoods; and commitment where possible to improve upon the status quo, particularly for those who may be vulnerable by reason of poverty, ethnicity, gender, age, disability, or social status.

In the present projects, the policy objective to avoid, and where avoidance is not possible, to minimise impacts will inform the final technical design and implementation planning of the works. To ensure that the projects contribute to the objective of sustainable development, the implementing agency's (IA) plan comprehensive disclosure and consultation process that includes all stakeholders. The consultation process with APs will reveal all foreseeable impacts, and will elicit AP concepts of how mitigation options and resettlement planning can contribute to their aspirations for sustainable restoration or improvement of their livelihoods.

If there is loss of land, and land-based assets, the aim will be to replace like for like, and if this is not possible, to compensate for lost land, assets and income, and meet the costs of relocation and restoration of livelihoods. Restoration includes not only physical assets, but also social and cultural assets. If there is a risk of disruption of these values, which are often disproportionately encountered by women, the APs will contribute to selection of mitigation and resettlement options to ensure policy objectives are met.

#### **D. Legal and Regulatory Framework**

A number of Vanuatu legal instruments are relevant for concepts or mechanisms that bear on resettlement planning.

##### **National Legislation**

For the full legal and regulatory framework, please refer to Section 3.

With regard to land laws in Vanuatu, the national land system is administered through numerous Lands Acts and the newly amended / introduced New Land Acts, as of the end of 2013 and those recently Gazetted in June 2014, that govern land administration in Vanuatu. The Land Acts comprise comprehensive laws including the following:

- Alienated Land Act 12, 18 (1982).
- Customary Land Tribunal Act 7 (2001).
- Freehold Titles Act 13 (1994).
- Land Acquisition Act 5 (1992), 34 (Amendment) (2000).
- Land Leases Act 4 (1983), 32 (1985), 10 (1987), 30 (1988), 38 (1989), 24 (2003).
- Land Reform Act 31 (1980), 6 (1981), 10 (1983), 31 (1985), 6 (1992), 35 (2000).
- Land Survey Act (1984).
- Land Valuers Registration Act 23 (2002).
- Stata Titles Act 29 (2000).
- Valuation of Land Act 22 (2002).

The New Land Laws comprise the following:

- Customary Land Management (Amendment) Act (2014).
- Land Reform (Amendment) Act (2014).
- Customary Land Tribunal (Repeal) Act (2014).
- Custom Land Management Act (2013).
- Land Leases (Amendment) Act (2013).
- Land Reform (Amendment) Act (2013).
- Sixth Amendment of the Constitution (2013).

These laws impact the rights of custom owners, leaseholders and users of land. A full review of the legislative implications will be completed as part of the ARAP development.

### **World Bank Policy**

WB resettlement policy starts from the principle of restoration or improvement of livelihoods at replacement cost, rather than current value, recognising not only financial and physical assets, but also the environmental, social, and cultural assets of an individual, irrespective of gender, ethnic or social status, in the resettlement context. Resettlement policy enjoins avoidance and minimisation of adverse impacts not only because it is less costly, but also because it avoids damage to the less tangible and hard-to-value aspects of livelihoods and cultures. WB resettlement policy has a positive objective of sustainable development, with particular regard for the vulnerable.

### **Gap Analysis**

Gap analysis between national laws covering involuntary resettlement and the Bank's OP/BP 4.12, will be included in any subsequent RAP/ARAP.

## **E. Preparing and Approving ARAP**

For any RAP/ARP developed the following will preparation will be undertaken:

Responsibility for preparation, implementation and monitoring of RAPs/ARAPs (including responsibility for meeting all associated costs with their implementation), in accordance with this RPF, rests with the GoV (VPMU). The agency in the GoV (VPMU) with direct and overall responsibility for managing the land acquisition and involuntary resettlement process in this project is to be determined. As necessary, VPMU will exercise its authority to coordinate actions with any other agencies involved to ensure timely and effective RAP/ARAP implementation.

Preparation of the RAP/ARAP begins as soon as it is determined that involuntary resettlement is essential to complete any of the project activities and shall be finalized prior to the commencement of any works to carry out said project activities. The VPMU will carry out, or cause to be carried out, a census survey to identify and enumerate Displaced Persons and to identify and inventory land and other assets to be required. The census survey must cover 100% of the displaced persons. The census survey also establishes whether any displaced



persons are significantly affected by loss of productive land, whether any commercial enterprises are affected, or whether any households will be required to physically relocate.

If involuntary resettlement impacts are minor (i.e., affected people are not physically displaced and less than 10% of their productive assets are lost) or fewer than 200 people are displaced, the VPMU prepares one or more abbreviated resettlement plans (ARAP). If the resettlement impacts of the project are not minor or lead to the displacement of more than 200 people, the VPMU prepares one or more resettlement action plans (RAP).

The RAP/ARAP will be prepared in accordance with the policy, principles and planning and implementation arrangements set forth in this RPF. The RAP/ARAP is based on accurate baseline census and socioeconomic survey information, and establishes appropriate mitigation measures (e.g., compensation at full replacement cost for loss assets, transitional assistance for relocation, and transitional assistance for livelihood restoration, and transitional assistance for commercial enterprises) for all relevant categories of adverse impacts. Depending on the categories of impacts, the RAP/ARAP specifically addresses the following:

- Description of the project activity causing involuntary resettlement and explanation of efforts to avoid or minimize involuntary resettlement associated with the project (alternative project designs considered).
- Range and scope of potential adverse resettlement impacts.
- Socioeconomic survey and baseline census survey information.
- Review of relevant laws and regulations relating to land acquisition and involuntary resettlement (see section above on legal and regulatory framework for more details).
- Description of asset valuation procedures and specific compensation rates (or alternative measures) for all categories of affected assets.
- Other assistance measures, if any, necessary to provide opportunities for livelihood restoration for displaced persons.
- Assistance to affected commercial enterprises.
- Eligibility criteria for compensation and all other forms of assistance.
- Relocation arrangements, if necessary, including transitional support.
- Resettlement site selection, site preparation, and measures to mitigate impacts on host communities, if necessary.
- Restoration or replacement of community infrastructure and other services.
- Land donation arrangements and documentation requirements, if relevant.
- Organizational arrangements for implementation.
- Consultation and disclosure requirements and arrangements.
- Resettlement implementation schedule.
- Costs and budget.
- Monitoring arrangements.
- Grievance procedures.
- Summary entitlements matrix.

## **F. Eligibility Criteria**

### **Criteria Defining Displaced Persons**

Eligibility of an individual for resettlement assistance will relate to their:

- Loss of land, whether an owner, lessee or informal occupant.
- Loss of trees or other plants, whether on owned, leased or informally accessed land.
- Loss of land-based improvements – houses, shelters, business buildings, also irrespective of the ownership status of the land.
- Loss of access to commons and reserves, e.g. road reserves, whether or not legally encroached, and restricted areas.

Eligibility for loss of non-land assets, whether temporary or permanent, will be recognised for project-induced impacts on:

- An individual's business or income.
- Soil or water quality changes that impact the individual's livelihood activities in the direct or indirect impact area.
- Air, light or noise pollution, or restrictions on access to social or economic resources that impact property values and amenity.
- Access to resources due to quarrying operations.
- Any other assets or elements of livelihoods recognised in the Tuvalu law and in WB Operational Policy that may be discovered during disclosure and consultation.

Persons demonstrating that they will suffer losses from any of these causes as at the cut-off date for entitlements will be regarded as eligible for resettlement assistance. Losses from encroachments or activities commenced after the cut-off date for the respective projects will not be eligible.

### **Nature of Impacts**

The nature of foreseeable impacts cannot be identified at this early stage in the VAIP project; this will be included in any subsequent RAP/ARAP.

## **H. Communal Land Acquisition – Guiding Principles**

The following resettlement planning process will be reviewed and established:

- a) Alternatives to land acquisition are considered. Especially where replacement land is scarce or non-existent, or where customary land tenure is deemed inalienable, negotiated agreements for long-term lease, even for infrastructure siting, should be considered.
- b) Where communal land must be acquired, collective compensation may be appropriate. Under such conditions, compensation is used solely for appropriate community purposes, or is distributed equitably among community members. The RAP/ARAP describes arrangements for usage of collective compensation.
- c) Individual users and occupants of acquired communal land are identified in the census prepared for the RAP/ARAP and the RAP/ARAP describes mitigation measures or negotiated agreements providing for restoration of their livelihoods or living standards.
- d) Where replacement land does not exist, it will be impossible to establish a technical valuation for replacement cost. The RAP/ARAP describes alternative means used for valuation. This may include negotiated agreement with affected communities.
- e) Where negotiated agreements for land valuation, for long-term lease, or for provision of remedial assistance to users or occupants of acquired communal land, are to be established, the resettlement plan describes the methods by which affected communities are involved in the negotiations, and methods by which terms of negotiated agreements are fully disclosed to them, in a manner accessible to the affected community.
- f) If relevant, the RAP/ARAP describes any changes that may occur regarding land use and tenurial arrangements for remaining communal land in project-affected areas.
- g) The RAP/ARAP describes a process by which conflicting claims to ownership or use rights will be addressed.

## **Implementation Arrangements**

Implementation arrangements such as a time-bound implementation schedule of all activities relating to involuntary resettlement shall be included at the development of the ARAP. Payment of compensation should be completed at least one month prior to involuntary resettlement. If there is a delay of one year or more between land or asset valuation and payment of compensation, compensation rates will be adjusted for inflation purposes.

## **I. Budget and Costs**

The GoV bears responsibility for meeting all costs associated with involuntary resettlement. Any RAPs/ARAPs prepared in accordance with this RPF require a budget with estimated costs for all aspects of their implementation. All APs are entitled to compensation or other appropriate assistance and mitigation measures, regardless of whether these persons have been identified at the time of resettlement planning, and regardless of whether sufficient mitigation funds have been allocated. For this reason, and to meet any other unanticipated costs that may arise, the budget shall include contingency funds, i.e., at least 10% of estimated total costs.

Compensation must be paid promptly and in full to the APs. No deductions from compensation will occur for any reason. The RAP/ARAP should describe the procedures by which compensation funds will flow from VPMU to the APs.

## **J. Consultation and Disclosure Arrangements**

### **Disclosure and consultation on the RPF**

Disclosure does not equate to consultation (and vice versa) as disclosure is about transparency and accountability through release of information about the project. A copy of this RPF should be made available on the WB Infoshop and GoV websites, and hard copies available at GoV offices (most applicable and accessible), VPMU office in Port Vila, AVL office at VLI, SON and TAH and community centres on Efate, Espiritu-Santo and Tanna. The RPF will be included in ongoing public consultations

### **Disclosure and consultation on the ARAP**

The RAP/ARAP must describe measures taken to consult with displaced persons regarding proposed land acquisition, transitional assistance, relocation arrangements, and other arrangements, and summarizes results of those consultations. The VPMU also discloses the RAP/ARAP- both the draft and final versions – to the displaced persons and the general public in the project area, in a language and location accessible to them. Disclosure of the draft RAP/ARAP should occur at least one month prior to Bank review. Disclosure of the final RAP/ARAP occurs following WB acceptance.

## **K. Monitoring Arrangements**

Monitoring arrangements will be established in the RAP/ARAP to assess the effectiveness of RAP/ARAP implementation in a timely manner. Monitoring includes review of progress in land acquisition, payment of compensation, provision of transitional assistance, and functioning of project grievance procedures. The RAP/ARAP should establish the frequency of monitoring activities. Monitoring should be conducted by an individual, firm, or community organization not directly affiliated with the VPMU. Any issues or problems associated with RAP/ARAP implementation that are observed in the monitoring process will be reported to the VPMU and the WB project team.

Prior to project completion, the monitoring process will assess whether livelihoods and living standards of displaced persons have been improved, or at least restored. If these objectives have not been achieved, the VPMU identifies plans and implements supplemental measures necessary to achieve satisfactory outcomes.

## **L. Grievance Procedures**

### **Grievance Redress Mechanisms**

The availability of redress, and information about how to access it, will be publicly disclosed in Public Information Bulletins for the media, and during consultations with the public. The Grievance Mechanism will offer remedies appropriate to the scale of the grievance. The project will publish information on grievance resolution rates at [www.vaip.vu](http://www.vaip.vu).

Minor project-related grievances will in the first instance be notified to the project Safeguard Officers / Supervision Engineer's Environmental Officer for mediation within a specified short time, preferably not more than ten working days. The project's Safeguard Officers / Supervision Engineer's Environmental Officer will endeavour to arrange mediation hearings in open forum close to the place of residence of APs. APs will be entitled at no personal cost to independent representation by a mediator of their choice, and will be encouraged to be accompanied by supporters during the process. The IAs will ensure that such negotiations are transparent, and that the policies, principles and methods of value assessment in the RAP/ARAP are applied equitably to all APs.

If mediation is unsuccessful, or if the matter is substantive, the case may be referred to legal proceedings in accordance with Vanuatu laws and procedures.

Communities and individuals who believe that they are adversely affected by a WB supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns.

Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures.

Complaints may be submitted at any time after concerns have been brought directly to the WB's attention, and WB Management has been given an opportunity to respond.

For information on how to submit complaints to the World Bank's corporate GRS, please visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the World Bank Inspection Panel, please visit [www.inspectionpanel.org](http://www.inspectionpanel.org).

## Appendix G

# Codes of Practice

Quarry Management

Occupational Health and Safety

Workers Camps

## QUARRY MANAGEMENT CODE OF PRACTICE

### 1. Objective

The objective of this Code of Practice is to prescribe the safety requirements for the development and operation of quarries as well as to define procedures and works that shall be used to mitigate against adverse environmental effects. The quarry operations shall follow the principles of WorkSafe New Zealand's guidance on health and safety good practice at opencast mines, alluvial mines and quarries (<http://tinyurl.com/quarry-guide>). It is recommended that all workers be provided with the associated pocket guide (<http://tinyurl.com/quarry-pocket-guide>).

***Only in the case when extraction of material from the existing quarries is uneconomical or unsuitable, or alternative material sources are not available, then only the Contractor should establish a new quarry with prior environmental, social and legal approval.***

### 2. Planning and Design

#### 2.1 Quarry Sites

During the planning of a development project which will involve earthworks, potential quarry sites shall be identified. The potential sites shall be discussed during public consultations in regard to the project. Such potential sites shall be identified on plans drawn to an appropriate scale and the plans shall be displayed and discussed during public consultations.

It is the contractor's responsibility to identify the specific sites to be used during construction in order to meet the project specifications.

#### 2.2 Land Acquisition

The purchase or lease of land for quarry development shall be undertaken in terms of the procedures defined in the Resettlement Policy Framework (RPF). No quarrying is to be undertaken prior to the execution of a Land Use Agreement with the owners.

#### 2.3 Licensing

The Government of Vanuatu requires all new and existing quarries to have valid permits for operations and for environmental management. The Mines and Minerals Act makes provision for the control of mining and related operations in Vanuatu. This Act provides for legalisation regarding licensing for mining and quarrying. This act provides details on the permitting system. As part of the permitting application, an environment management plan consistent with guidelines (if any) determined by the Minister is required, setting out the environment risks which may occur and the steps to be taken to reduce or manage those risks; the measures to deal with overburden, water runoff and topsoil management; and, a proposed rehabilitation plan for ongoing rehabilitation and rehabilitation of the site after relinquishment.

#### 2.4 Site Plans

It is desirable that no quarry boundary is located within 500 metres of a public area or town or village nor within 300 metres of any isolated dwelling. The designer shall provide site plans of potential quarry sites in the tender documents. Such plans shall show existing level contours, access road, natural watercourses and other relevant topographical features.

The area defined for quarry operation shall be based on the volume of aggregate to be quarried and hence the extent of quarry operation. It shall also provide the area necessary for stockpiling stripped overburden, the establishment of a crusher and screening plant, the stockpiling of crushed aggregate and the installation of stormwater cut off drains, silt retention ponds and staff amenities.

### 3. Construction

#### 3.1 Quarry Management Plan

All quarry operation shall be the entire responsibility of the contractor and shall be carried out in terms of the agreed management plan.

Prior to commencing any physical works on site, a quarry development plan shall be prepared and approved by the Supervision Engineer and DGMRW. The quarry management plan shall satisfy all DGMRW permit application requirement and ensuring due regard for the following:

- ) All operations shall comply with the laws of Vanuatu and the VAIP PESMP.
- ) Show the extent of overburden stripping and the stockpiling of same for later site restoration.
- ) Document the methods of vegetation clearance, including the results of plant / habitat surveys and / or the plan to carry out such surveys.
- ) Show the details and location of surface water drainage from the quarry site and the silt retention pond that will be constructed to settle silt and soil contaminated water prior to its discharge to ground or a natural water course.
- ) Show details of catch drains installed to intercept overland flow of surface water to prevent its discharge into the quarry area.
- ) State safety precautions to be implemented.
- ) Show facilities such as guardhouse, amenities block and other facilities to be constructed.
- ) Show location of aggregate stockpiles.
- ) List plant and equipment to be used in the development and operation of the quarry.
- ) Show the site of the proposed magazine for the storage of explosives.
- ) Show sensitive environmental receptors (vegetation, waterways, neighbouring land uses)
- ) Community engagement strategy – how the community will be consulted, warned of blasting, traffic will be controlled, site safety maintained etc.
- ) Other relevant environmental controls based on an environmental impact assessment
- ) Basic rehabilitation plan
- ) Copies of all relevant licences (environmental permits, mining licences etc.)
- )

On no account shall physical works be commenced for development of the quarry until an agreed Quarry Management Plan has been approved by the Supervision Engineer and cleared by the World Bank as compliant with the PESMP.

#### 3.2 Safety Provisions

The following provisions shall be made in the operation of any quarry opened and/or operated by the Contractor for the safety of all employees or persons on site:

- ) All operations for quarries must comply with the OHS requirements of the PESMP.
- ) A daily register is to be maintained identifying all personnel who are engaged in or about the quarry.
- ) All persons engaged in the operation of the quarry shall be trained and have sufficient knowledge of and experience in the type of operation in which they are engaged.
- ) All persons engaged in the operation of the quarry shall be adequately supervised.
- ) Approved lighting shall be provided in inside working places where natural lighting is inadequate to provide safe working conditions.
- ) All personnel engaged in quarry operations shall wear appropriate PPE at all times when on the quarry site.
- ) All employees engaged in operations on a quarry face at a height greater than 1.5 metres above the level of the quarry floor or bench floor shall be attached at all times to a properly secured safety rope by means of a safety belt.

- )] All persons whose duty it is to attend to moving machinery in or about any quarry shall wear close fitting and close fastened garments. Their hair shall be cut short or securely fixed and confined close to their head.
- )] All boilers, compressors, engines, gears, crushing and screening equipment and all moving parts of machinery shall be kept in a safe condition. Every flywheel and exposed moving parts of machinery shall be fitted with safety screens or safety fenced as appropriate.
- )] All elevated platforms, walkways and ladders shall be provided with adequate hand or safety rails or cages.
- )] Machinery shall not be cleaned manually while it is in motion nor oiled or greased while in motion.

Should any of the above safety measures be ignored or inoperative at any time then the Supervision Engineer shall direct that quarry operations cease until all safety measures are provided and are in operating order.

### 3.3 Provision of First Aid

At every quarry there shall be provided the following first aid equipment:

- )] A suitably constructed stretcher with a warm, dry blanket.
- )] A well equipped first-aid box.

The quarry manager shall at least once every working week personally inspect the first-aid equipment to ensure that it complies with the requirements of this specification. Any supplies used from the first-aid box shall be replaced forthwith.

A person trained in first aid to the injured shall be available at the quarry during all operational periods of whatever nature.

### 3.4 Health Provisions

At every quarry a sufficient number of toilets and urinals shall be provided for the use of employees and shall be properly maintained and kept in a clean condition.

At every quarry a supply of potable water, sufficient for the needs of the persons employed, shall be provided. If persons are employed in places remote from the source of water supply, suitable clean containers of potable water shall be provided for their use.

Suitable facilities for washing shall be provided and maintained in a clean and tidy condition to the satisfaction of the employer, and those facilities shall be conveniently accessible for the use of persons employed in or about the quarry.

### 3.5 Quarry Manager

A manager who is experienced in all aspects of quarry operation and in particular safety procedures shall control every quarry. The manager shall be personally responsible for ensuring that all safety facilities are available and that safety procedures are followed.

The quarry manager shall have appropriate qualifications as recognised and required by GoV

When requesting the Supervision Engineer's approval to operate the quarry, the contractor shall ensure that the credentials include certified true copies of the following documents:

- )] Grade quarry manager's surface certificate
- )] Quarry shot firer's certificate
- )] References from previous clients or employers demonstrating experience in:
  - The design and layout of quarries including the layout of benches, faces, access roads, drainage and crushing plant.
  - The methods of working quarry faces with particular reference to face stability and the safety of persons employed in or about the quarry
  - The safety of the public at large
  - The provision for and application of first aid.

The quarry manager's duties shall include as a minimum:



- J daily, within two hours immediately before the commencement of the first working shift of the day in any part of the quarry, inspect every working place and travelling road, and all adjacent places from which danger might arise, and shall forthwith make a true report of the inspection in a record book kept for the purpose at the quarry. The record book shall be accessible to the Supervision Engineer and the persons employed in or about the quarry.
- J at least once in every 24 hours examine the state of the safety appliances or gear connected with quarrying operations in the quarry, and shall record the examination in the record book.
- J once in each week carefully examine the buildings, machinery, faces, benches, and all working places used in the quarrying operations, and shall forthwith after every such examination record in writing in the record book his opinion as to their condition and safety and as to any alterations or repairs required to ensure greater safety of the persons employed in the working of the quarry. The manager shall then ensure that any such alterations or repairs are carried out.

### 3.6 Vegetation

Vegetation shall be stripped from the proposed quarry development area. Before stripping any vegetation a survey shall be undertaken to determine the presence of any threatened plant species or habitats of threatened animal species. All necessary steps shall be taken to save plants classified as important. Care shall be taken to avoid damage to any vegetation outside the defined quarry area. On no account shall burning of vegetation be permitted.

### 3.7 Overburden Stripping

Overburden stripped from any proposed quarry area shall be stockpiled clear of the quarry operation to be used for site restoration at the completion of operations. Stockpiles shall be shaped and smoothed to minimise ingress of rainwater.

Surface water run off from stockpiles shall be intercepted by perimeter drains which shall be discharged to silt retention ponds.

Batters in overburden excavation shall be sloped to ensure they are safe and stable against failure.

The maximum height of any batter in overburden shall be 3 metres. Any higher batter in overburden shall have an intermediate bench at least 3.5 metres in width. Such benches shall be shaped and drained.

### 3.8 Blasting Operations

Blasting operations shall be conducted in a manner that will not cause danger to life or property.

All explosives shall be stored in purpose built locked magazines on a site within the quarry boundary but remote from blasting operations. Detonators shall be stored in a separate locked magazine but similarly sited.

A blasting operations manual shall be prepared for any quarry and such manual, which shall be maintained by the quarry manager, shall stipulate procedures for at least the following:

- J Operation of magazines for the storage of explosives and for the storage of detonators.
- J The quantity of explosive that may be removed from a magazine at any one time.
- J The procedure for quarry explosive cases.
- J Persons allowed to fire shots.
- J Explosives to be carried in securely covered containers.
- J Tamping of explosives.
- J Diameter of drill holes.
- J Time when charges are to be fired.
- J Detonation delay.
- J Firing warnings.
- J Blasting shelters.
- J Treatment of misfired charges
- J Inspection of work site after each detonation by the quarry manager or an approved person appointed in writing by the quarry manager.

A person specially appointed in writing by the quarry manager for the purpose shall be in charge of every magazine, and shall have keys to one of the locks. That person shall be responsible for the safe storage of explosives contained therein, for the distribution of explosives therefrom, and for the keeping of accurate records of stocks and issues in a book provided for the purpose. A second person, appointed by the employer shall have keys to the second lock. Both persons shall be present to unlock the magazine, and note the removal of stock and ensure both locks are subsequently secured.

- ) Explosives shall be used in the same order as that in which they were received into the magazine.
- ) Naked lights shall not be introduced into a magazine or into any working place in a quarry where explosives are temporarily stored.
- ) Explosives shall not be taken from a magazine in quantities exceeding that required for use during one shift, and any surplus explosives shall be returned to the magazine at the end of that shift.
- ) No case or carton containing explosives shall be opened in the storage area of any magazine.
- ) Instruments made solely of wood, brass, or copper shall be used in opening cases or cartons of explosives, and the contractor shall provide and keep suitable instruments for that purpose.
- ) The preparation of charges and the charging, tamping, and firing of all explosive charges in or about a quarry shall be carried out under the personal supervision of the quarry manager.

### **3.9 Access/Haul Roads**

Access to a new quarry site may require construction of a new road or rehabilitation of an existing road. Construction of a new road, in a rural environment is may be permitted where it does not impact natural habitats or require resettlement. The rehabilitation / strengthening of an existing road is a preferred alternative and may involve widening of the road, replacement and /or strengthening of road pavement, improvements in drainage and side slopes, and repairs of culverts and bridges. It may also include realignment of a short stretch of the road.

As part of the rehabilitation plan the Contractor may be required to restore roads to their condition prior to commencing quarrying works.

### **3.10 Workers Accommodation**

Any accommodation provided by the Contractor for workers must comply with the worker's accommodation requirements in the PESMP and CESMP.

### **3.11 Dust Suppression**

Operation of any quarry shall incorporate dust suppression measures. Dust generation during blasting operations shall be minimised. All haul roads shall be regularly dampened by spray bars fitted to water tankers or similar systems in order to minimise dust generation by traffic movements. Crushers, screens and stockpiles shall be dampened by appropriate water sprays to minimise dust generation.

## **4. Rehabilitation**

Quarry rehabilitation shall be done in accordance with the principles of the CSI Guidelines on Quarry Rehabilitation (<http://tinyurl.com/quarry-rehabilitation>).

A realistic Rehabilitation Plan will be developed and rehabilitation planning shall begin as early as possible in the quarry life cycle in order to be fully effective. Once objectives are set, rehabilitation activities should be defined and performed in order to achieve these goals.

The objectives of a rehabilitation plan should be based upon the specific characteristics of the extraction site and should reflect:

- Legislative requirements
- Health and safety considerations
- Environmental and social characteristics of the quarry and surrounding area
- Biodiversity of area

- Ecosystem services provided within the sites ecological boundaries
- Operating plan for the quarry – technical feasibility of the rehabilitation objectives will be affected by the manner in which the quarry operates
- Status of the quarrying area of existing operating site
- Characteristics of the deposit (geology and hydrology)
- Impacts arising from operation of the site
- Post closure land use plan

Rehabilitation plans should adopt the following structure:

- a. Context
- b. Objectives
- c. Action plans
- d. Prioritised actions and schedule
- e. Monitoring and evaluation
- f. Rehabilitation and post-closure costs
- g. Roles and responsibilities
- h. Compatibility with biodiversity

## **5. Consent**

### **5.1 Consent Required**

In accordance with the Mines and Minerals Act, Quarry Permit Regulation Order No. 8 (2005) and any other relevant legislation, any person who engages in quarry development or operations shall first obtain Quarry Permit from DGMRW for the proposed activity.

### **5.2 Application for Consent**

Permit applications shall be on an approved form and shall be submitted by to the Commissioner. Applications shall be accompanied by such other documents as DGMRW may require. The Commissioner must not issue or renew any permit unless a copy of the application has been exhibited for a period of not less than 30 days at the headquarters of the area council of the local government council responsible for the land which is the subject of the application.

### **5.3 Special Conditions**

The Commissioner may, by notice served on the applicant, require further information in respect of the application as the Commissioner considers relevant or necessary. The applicant must comply with the notice.

## OCCUPATIONAL HEALTH AND SAFETY CODE OF PRACTICE

### 1. Objective

The objective of this Code of Practice is to provide guidance on the:

- )] key principles involved in ensuring the health and safety of workers is protected;
- )] preparation of Health and Safety Code of Practices and associated Job Safety Analyses (JSA); and
- )] implementation of Health and Safety Code of Practices during project implementation.

The key reference document for this Guideline is the World Bank Group's *Environmental, Health, and Safety (EHS) Guidelines* together with the relevant Industry Sector EHS Guidelines available at [www.ifc.org/ehsguidelines](http://www.ifc.org/ehsguidelines).

### 2. Requirements

For the purposes of the project, in addition to the national OHS standards the employer is adopting a code of practice for occupational health and safety based on good international industry practice. To be qualified for bidding contractors will be required to have in place an occupational health and safety management system which is compliant with, or equivalent to, OHSAS 18000 (<http://certificationeurope.com/ohsas-18000-health-safety-management-standards/>) and is acceptable to the client. The contractor shall specify which occupational health and safety standards are to be applicable to the project, and provide evidence of application of such standards on a project of similar size and complexity during the past 5 years. The standards to be adopted may include those of Australia, Canada, New Zealand, the EU and the US, which are referred to in the World Bank Group EHS Guidelines.'

With their bids, Contractors will be required to submit statistics for their workplace safety performance for the past 5 years on (including sub-contractors for projects where they were lead contractor):

- )] Number of fatal injuries (resulting in loss of life of someone associated with the project or the public)
- )] Number of notifiable injuries (an incident which requires notification of a statutory authority under health and safety legislation or the contractor's health and safety management system)
- )] Number of lost time injuries (an injury or illness certified by a medical practitioner that results in absence of work for at least one scheduled day or shift, following the day or shift when the accident occurred)
- )] Number of medical treatment injuries (the management and care of a patient to effect medical treatment or combat disease and disorder excluding: (i) visits solely for the purposes of observation or counselling; (ii) diagnostic procedures (e.g. x-rays, blood tests); or, (iii) first aid treatments as described below)
- )] Number of first aid injuries (minor treatments administered by a nurse or a trained first aid attendant)
- )] Number of recordable strikes of services (contact with an above ground or below ground service resulting in damage or potential damage to the service)
- )] Lost Time Injury Frequency Rate (the number of allowed lost time injury and illness claims per million man-hours equivalent workers for the injury year specified)
- )] Total Recorded Frequency Rate (the number of recordable injuries [recordable/lost time/fatal] per million man-hours equivalent workers for the injury year specified)

The Supervision Engineer is required to monitor OHS guidance during their regular duties. There will be monthly/bi-monthly independent OHS audits by a certified auditor as part of the consultant's supervision team.

The Contractor will be required to report monthly on their performance with the above indicators supplied during bidding, as well as:

- )] Number of alcohol tests
- )] Proportion of positive alcohol tests
- )] Number of site health and safety audits conducted by contractor

- ) Number of safety briefings
- ) Number of near misses
- ) Number of traffic management inspections
- ) Number of sub-contractor reviews
- ) Number of stop work actions
- ) Number of positive reinforcements

### 3. Principles

Employers must take all reasonable practicable steps to protect the health and safety of workers and provide and maintain a safe and healthy working environment.

All contractors must have in place an OHS management system which is compliant with, or equivalent to, OHSAS 18000, Work Safe Australia, Work Safe New Zealand, or an OECD country acceptable to the client to be proposed and agreed during bidding by the client. The system must be kept current and maintained for the life of the project.

The application of prevention and control measures to occupational hazards should be based on comprehensive job safety analyses (JSA). The results of these analyses should be prioritized as part of an action plan based on the likelihood and severity of the consequence of exposure to the identified hazards.

The following key principles are relevant to maintaining worker health and safety:

#### 3.1 Identification and assessment of hazards

Each employer must establish and maintain effective methods for:

- ) Systematically identifying existing and potential hazards to employees;
- ) Systematically identifying, at the earliest practicable time, new hazards to employees;
- ) Regularly assessing the extent to which a hazard poses a risk to employees.

#### 3.2 Management of identified hazards

Each employer must apply prevention and control measures to control hazards which are identified and assessed as posing a threat to the safety, health or welfare of employees, and where practicable, the hazard shall be eliminated.

The following preventive and protective measures must be implemented in order of priority:

- ) Eliminating the hazard by removing the activity from the work process;
- ) Controlling the hazard at its source through engineering controls;
- ) Minimizing the hazard through design of safe work systems;
- ) Providing appropriate personal protective equipment (PPE).

The application of prevention and control measures to occupational hazards should be based on comprehensive job safety analyses (JSA). The results of these analyses should be prioritized as part of an action plan based on the likelihood and severity of the consequence of exposure to the identified hazards.

#### 3.3 Training and supervision

Each employer must take all reasonable practicable steps to provide to employees (in appropriate languages) the necessary information, instruction, training and supervision to protect each employee's health and to manage emergencies that might reasonably be expected to arise in the course of work. Training and supervision extends to the correct use of PPE and providing employees with appropriate incentives to use PPE.

To that end, all safety officers, supervisors and managers for the contractor and Supervision Engineer must have a minimum level of occupational health and safety (OHS) training equivalent to the New Zealand Construction Safety Council Tier-1 training (<http://tinyurl.com/ohs-tier-1-training>).

#### 3.4 General duty of employees

Each employee shall:

- ) take all reasonable care to protect their own and fellow workers health and safety at the workplace and, as appropriate, other persons in the vicinity of the workplace;
- ) use PPE and other safety equipment supplied as required; and
- ) not use PPE or other safety equipment for any purpose not directly related to the work for which it is provided.

### 3.5 Protective clothing and equipment

Each employer shall:

- ) provide, maintain and make accessible to employees the PPE necessary to avoid injury and damage to their health;
- ) take all reasonably practicable steps to ensure that employees use that PPE in the circumstances for which it is provided; and
- ) make provision at the workplace for PPE to be cleaned and securely stored without risk of damage when not required.

## 4. Design

Effective management of health and safety issues requires the inclusion of health and safety considerations during design processes in an organized, hierarchical manner that includes the following steps:

- ) identifying project health and safety hazards and associated risks as early as possible in the project cycle including the incorporation of health and safety considerations into the worksite selection process and construction methodologies;
- ) involving health and safety professionals who have the experience, competence, and training necessary to assess and manage health and safety risks;
- ) understanding the likelihood and magnitude of health and safety risks, based on:
  - o the nature of the project activities, such as whether the project will involve hazardous materials or processes;
  - o The potential consequences to workers if hazards are not adequately managed;
- ) designing and implementing risk management strategies with the objective of reducing the risk to human health;
- ) prioritising strategies that eliminate the cause of the hazard at its source by selecting less hazardous materials or processes that avoid the need for health and safety controls;
- ) when impact avoidance is not feasible, incorporating engineering and management controls to reduce or minimize the possibility and magnitude of undesired consequences;
- ) preparing workers and nearby communities to respond to accidents, including providing technical resources to effectively and safely control such events;
- ) Improving health and safety performance through a combination of ongoing monitoring of facility performance and effective accountability.

For further information on safety in design see: <http://tinyurl.com/ohs-safety-in-design>.

## 5. Job Safety Analysis

The job safety analysis (JSA) is a process involving the identification of potential health and safety hazards from a particular work activity and designing risk control measures to eliminate the hazards or reduce the risk to an acceptable level. JSAs must be undertaken for discrete project activities such that the risks can be readily identified and appropriate risk management measures designed.

The annex to this Code of Practice includes a template for a JSA that must be completed and included as an attachment to the Health and Safety Code of Practice.

## 6. Implementation

## 6.1 Documentation

A Health and Safety Plan must be prepared and approved and submitted as part of the CESMP prior to any works commencing on site.

The H&S Plan must demonstrate the Contractor's understanding of how to manage safety and a commitment to providing a workplace that enables all work activities to be carried out safely. The H&S Plan must detail reasonably practicable measures to eliminate or minimise risks to the health, safety and welfare of workers, contractors, visitors, and anyone else who may be affected by the operations. The H&S Plan must be prepared in accordance with the World Bank's EHS Guidelines, Vanuatu's health and safety legislation, and industry best practices as appropriate.

## 6.2 Training and Awareness

Provisions should be made to provide health and safety orientation training to all new employees to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow employees. Training should consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate.

To that end, all safety officers, supervisors and managers for the contractor and Supervision Engineer must have a minimum level of occupational health and safety (OHS) training equivalent to the New Zealand Construction Safety Council Tier-1 training (<http://tinyurl.com/ohs-tier-1-training>).

Visitors to worksites must be provided with a site induction prior to entering and must be escorted at all times while on site. This induction must include details of site hazards, provision of necessary PPE and emergency procedures. Visitors are not permitted to access to areas where hazardous conditions or substances may be present, unless appropriately inducted.

## 6.3 Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems.

The PPE requirements shall be clearly defined in the CESMP and be based on the New Zealand Transport Agency's ZeroHarm approach (<http://tinyurl.com/ohs-ppe-requirements>). It should be noted that these PPE requirements also apply to site visitors, based on the perceived risk.

PPE is considered to be a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection. The table below presents general examples of occupational hazards and types of PPE available for different purposes. Recommended measures for use of PPE in the workplace include:-

- )] active use of PPE if alternative technologies, work plans or procedures cannot eliminate, or sufficiently reduce, a hazard or exposure;
- )] identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual;
- )] proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE should be part of the recurrent training programs for Employees
- )] selection of PPE should be based on the hazard and risk ranking described earlier in this section, and selected according to criteria on performance and testing established

Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords.	Plastic Helmets with top and side impact protection.
Hearing protection	Noise, ultra-sound.	Hearing protectors (ear plugs or ear muffs).

Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids.	Safety shoes and boots for protection against moving & falling objects, liquids and chemicals.
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration.	Insulating clothing, body suits aprons etc. of appropriate materials.

## 7. Monitoring

Occupational health and safety monitoring programs should verify the effectiveness of prevention and control strategies. The selected indicators should be representative of the most significant occupational, health, and safety hazards, and the implementation of prevention and control strategies. The occupational health and safety monitoring program should include:

- ) **Safety inspection, testing and calibration:** This should include regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment, and tools used. The inspection should verify that issued PPE continues to provide adequate protection and is being worn as required.
- ) **Surveillance of the working environment:** Employers should document compliance using an appropriate combination of portable and stationary sampling and monitoring instruments. Monitoring and analyses should be conducted according to internationally recognized methods and standards.
- ) **Surveillance of workers health:** When extraordinary protective measures are required (for example, against hazardous compounds), workers should be provided appropriate and relevant health surveillance prior to first exposure, and at regular intervals thereafter.
- ) **Training:** Training activities for employees and visitors should be adequately monitored and documented (curriculum, duration, and participants). Emergency exercises, including fire drills, should be documented adequately.
- ) **Accidents and Diseases monitoring.** The employer should establish procedures and systems for reporting and recording:
 
  - o Occupational accidents and diseases
  - o Dangerous occurrences and incidents

These systems should enable workers to report immediately to their immediate supervisor any situation they believe presents a serious danger to life or health.

Each month, the contractor shall supply the following data to the Supervision Engineer for reporting to the client. These data are to also include incidents related to any sub-contractors working directly, or indirectly, for the Contractor.



Lead Indicators	Lag Indicators
Number of drug and alcohol tests	Number of Fatal injuries
Proportion of positive drug and alcohol tests	Number of Notifiable Injuries
Number of site health and safety audits	Number of Lost Time Injuries (LTI)
Number of safety briefings	Number of Medical Treatment Injuries (MTI)
Number of near misses	Number of First Aid Injuries (FAI)
Number of traffic management inspections	Total Recordable Injuries
Number of Safety in Design workshops (Designers only)	Number of serious environmental incidents
Number of Safety in Design issues eliminated (Designers only)	Number of service strikes
Number of sub-contractor reviews	Number of property damage incidents
Number of stop work actions	Number of staff on reduced/alternate duties
Number of positive reinforcements	Lost Time Injury Frequency Rate (LTIFR)
	Total Recordable Frequency Rate (TRFR)

Definitions of the above are to be in accordance with those used by the New Zealand Transport Agency (<http://tinyurl.com/nzta-ohs-reporting>).

The Supervision Engineer shall be notified of any incident in accordance with the standards below:

Incident Severity Class	Incident Classification	Notification timeframe
<b>Class 1</b>	Fatality	As soon as possible
	Notifiable Injury, Illness or Incident	As soon as possible
<b>Class 2</b>	Lost Time Injury	As soon as practicable but within 48 hours
	Medical Treatment	Within 72 hours

All Class 1 and Class 2 health and safety incidents must be formally investigated and reported to the Supervision Engineer through an investigation report. This report shall be based on a sufficient level of investigation by the

Contractor so that all the essential factors are recorded. Lessons learnt must be identified and communicated promptly. All findings must have substantive documentation. As a minimum the investigation report must include:

- ) Date and location of incident
- ) Summary of events
- ) Immediate cause of incident
- ) Underlying cause of incident
- ) Root cause of incident
- ) Immediate action taken
- ) Human factors
- ) Outcome of incident, e.g. severity of harm caused, injury, damage
- ) Corrective actions with clearly defined timelines and people responsible for implementation
- ) Recommendations for further improvement

## Job Safety Analysis (JSA)

Add Organisation Name:

Ref: Version:

<b>Business details</b>			
Business name:			
Contact person:			
Address:		Contact position:	
Contact phone number		Contact email address:	
<b>Job Safety Analysis details</b>			
Work activity:		Location:	
Who are involved in the activity:		This job analysis has been authorised by: Name: ..... Position: ..... Signature: ..... Date: .....	
Plant and equipment used:			
Maintenance checks required:			
Tools used:			
Materials used:			
Personal protective equipment:			
Certificates, permits and/approvals required			
Relevant legislation, codes, standard MSDSs etc applicable to this activity			

## Risk assessment

\*\*Use the risk rating table to assess the level of risk for each job step.

		Likelihood				
		1	2	3	4	5
Consequence		Rare The event may occur in exceptional circumstances	Unlikely The event could occur sometimes	Moderate The event should occur sometimes	Likely The event will probably occur in most circumstances	Almost Certain The event is expected to occur in most circumstances
1	<b>Insignificant</b> No injuries or health issues	LOW	LOW	LOW	LOW	MODERATE
2	<b>Minor</b> First aid treatment	LOW	LOW	MODERATE	MODERATE	HIGH
3	<b>Moderate</b> Medical treatment, potential LTI	LOW	MODERATE	HIGH	HIGH	CRITICAL
4	<b>Major</b> Permanent disability or disease	LOW	MODERATE	HIGH	CRITICAL	CATASTROPHIC
5	<b>Extreme</b> Death	MODERATE	HIGH	CRITICAL	CATASTROPHIC	CATASTROPHIC

### Risk rating:

**Low risk:** Acceptable risk and no further action required as long as risk has been minimised as possible. Risk needs to be reviewed periodically.

**Moderate risk:** Tolerable with further action required to minimise risk. Risk needs to be reviewed periodically.

**High risk:** Tolerable with further action required to minimise risk. Risk needs to be reviewed continuously.

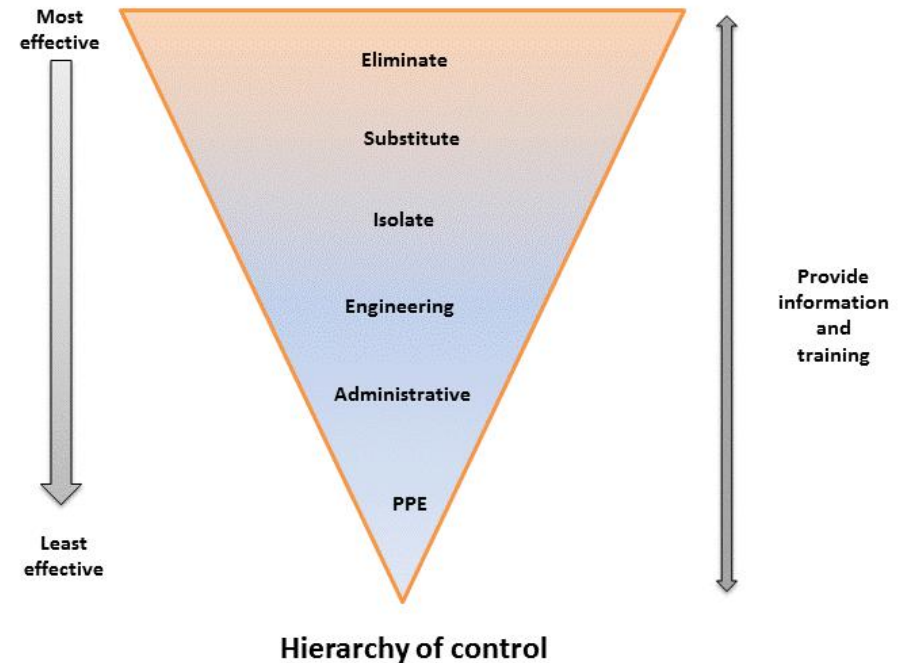
**Critical risk:** Unacceptable risk and further action required immediately to minimise risk.

**Catastrophic:** Unacceptable risk and urgent action required to minimise risk.

## Risk controls

The hierarchy of control can be used as an effective tool to deal with health and safety issues at work. Use the type of control suggested as measures to deal with the hazard. Aim to use control measures from as high on the hierarchy of control list as possible. If that is not possible the next option down the list or a combination of the measures should be implemented. The least effective control measure is the use of personal protective equipment (PPE) and it should be used as a last resort or a support to other control measures. Information and training should be integrated with all levels of control to explain how controls work.

1. **Eliminate** – if it is possible, the hazard should be removed completely. For example, get rid of dangerous machines.
2. **Substitute** – replace something that produces the hazard with something that does not produce a hazard. For example, replacing solvent based paint with water based paint. Risk assessment on the substitution must be conducted to ensure that it will not pose another hazard.
3. **Engineering control** – isolate a person from the hazard by creating physical barrier or making changes to process, equipment or plant to reduce the hazard. For example, install ventilation systems.
4. **Administrative control** – change the way a person works by establishing policies and procedures to minimise the risks. For example, job scheduling to limit exposure and posting hazard signs.
5. Use **personal protective equipment (PPE)** – protect a person from the hazard by wearing PPE. For example, wearing gloves, safety glasses, hard hats and high-visibility clothing. PPE must be correctly fitted, used and maintained to provide protection.



## JSA – Action steps

Step No	Job step details	Potential hazards	Risk rating**	How to control risks***	Name of persons responsible for work

**This job safety analysis has been developed through consultation with our employees and has been read, understood and signed by all employees undertaking the works:**

<b>Print Names:</b>	<b>Signatures:</b>	<b>Dates:</b>

<b>Review No</b>	<b>01</b>	<b>02</b>	<b>03</b>	<b>04</b>	<b>05</b>	<b>06</b>	<b>07</b>	<b>08</b>
<b>Initial:</b>								
<b>Date:</b>								

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# Workers' accommodation: processes and standards

A guidance note by IFC and the EBRD



The EBRD is an international financial institution that supports projects from central Europe to central Asia. Investing primarily in private sector clients whose needs cannot be fully met by the market, we foster transition towards open and democratic market economies. In all our operations we follow the highest standards of corporate governance and sustainable development.

IFC, a member of the World Bank Group, creates opportunity for people to escape poverty and improve their lives. We foster sustainable economic growth in developing countries by supporting private sector development, mobilising private capital, and providing advisory and risk mitigation services to businesses and governments. Our new investments totalled US\$ 15 billion in fiscal 2009, helping play a prominent role in addressing the financial crisis. For more information, visit [www.ifc.org](http://www.ifc.org).

## About this guidance note

This Guidance Note is aimed at providing practical guidance to IFC and EBRD specialists, consultants and clients on the processes and standards that should be applied to the provision of workers' accommodation in relation to projects funded by IFC or the EBRD. Applying appropriate standards to the construction and operation of worker housing falls within the performance requirements on labour and working conditions expected of clients by both institutions. The Guidance Note also provides examples of good practice approaches that businesses have successfully applied in their operations. IFC and the EBRD have not financed all the projects or companies mentioned in the Note. Some of the information in the Note originates from publicly available sources such as company web sites. IFC and the EBRD have not verified the accuracy of such information nor the companies' practices. This Guidance Note is not intended to establish policy itself; and any issues arising in an IFC- or EBRD-financed project will be assessed and addressed in the context of the particular circumstances of that project. The EBRD and IFC recognise that there are no comprehensive international regulations relating to workers' accommodation, and that good and best practices are constantly evolving. The EBRD and IFC intend to update this Guidance Note to reflect such developments, and would welcome feedback and comments from users to contribute to this process. Comments should be sent to [environmentalandsocial@ebrd.com](mailto:environmentalandsocial@ebrd.com) and [asksustainability@ifc.org](mailto:asksustainability@ifc.org)

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# Workers' accommodation: processes and standards

Public guidance note by IFC and the EBRD

## EXECUTIVE SUMMARY

This guidance note addresses the processes and standards that should be applied to the provision of workers' accommodation in relation to projects funded by the EBRD or IFC. Applying appropriate standards to the construction and operation of worker housing falls within the performance requirements on labour issues expected of clients by both organisations.

There is a range of different types of workers' accommodation that may be required by various projects and at different stages within projects, including temporary exploration camps, construction camps and permanent dormitories. Specific issues arise in relation to each of these. This note reviews various international, national, private sector and public sector standards and guidance that are more generally applicable. In some cases clear standards or good practice have been identified. In others, we present a range of standards that provide some flexibility and adaptability within the local context. In these cases, compliance with at least the minimum standard is expected.

Issues for consideration are organised in terms of a staged process to be undertaken in planning, constructing and then operating worker housing facilities. These issues may be relevant to the direct client or to (sub)contractors undertaking particular elements of a project, such as construction or management of facilities. In cases where contractors are used, it is important to set up appropriate mechanisms and processes (reporting/monitoring) to ensure that performance requirements are complied with.

At the initial stage of any project, there is a need to assess whether accommodation for workers is

required, and if so, whether this can be provided within existing local communities or whether new facilities should be constructed. The likely impact on local communities and the housing market of either option should be assessed.

Before constructing any facilities, other potential impacts should be evaluated. These may include the impact of construction, and the effect of a new housed labour force on community services, such as health, and on community cohesion and safety. These assessments should form part of a project's Environmental and Social Impact Assessment.

The next step is to consider the standards to be applied for the location, arrangement and construction of any facilities. Issues here include consideration of a safe and healthy location, application of appropriate construction standards, provision of adequate and sanitary living conditions and provision of appropriate leisure and health facilities.

There are no universally applicable international regulations relating to workers' accommodation standards in general. However, there are some international standards/guidance on food safety, water sanitation and waste management that should be applied, and national or local building regulations that must be complied with.

Lastly, when the accommodation has been completed, there are issues around its operation and management. These include the type of staff who will manage it, development of appropriate management policies, such as security and grievance procedures, and ongoing liaison with local communities. All such policies should be subject to regular review.

## INTRODUCTION

This guidance note looks at the provision of housing or accommodation for workers by employers and the issues that arise from the planning, construction and management of such facilities.

Generally, workers are housed by their employers in cases where, either the number or the type of workers required cannot be sourced from or accommodated within local communities. Thus provision of workers' accommodation is often associated with the importation of an external workforce into an area. This can occur because the local labour supply or skills base is inadequate, because the workers are simply not available due to the remote location of the worksite or the particular skills required or because labour requirements can only be satisfied by migrant workers due to the nature of the work or the working conditions.

Provision of worker housing may relate to a temporary phase of a project (for example an exploration or construction camp) or may be more permanent (for example a factory dormitory or plantation camp). Depending on the type of accommodation, there are a range of considerations relating to both the living conditions of the workers themselves, and to the impact that workers' housing facilities may have on surrounding communities. The provision of workers' accommodation is a frequent component of large-scale projects funded by institutions such as the EBRD or IFC.

This note is aimed at providing practical guidance to IFC and EBRD specialists, consultants and clients on appropriate policies and standards relating to workers' accommodation. Both the EBRD and IFC apply environmental and social performance standards in relation to their investments that include provisions on labour and working conditions. The EBRD has included a specific provision in its *Environmental and Social Policy* addressing workers' accommodation; paragraph 16 of *Performance Requirement 2 (PR2)* stipulates:

*Where a client provides accommodation for workers, the accommodation shall be appropriate for its location and be clean, safe and, at a minimum, meet the basic needs of workers. In particular, the provision of accommodation shall meet national legislation and international good practice in relation, but not restricted, to the following: the practice for charging for accommodation; the provision of minimum amounts of space for each worker; provision of sanitary, laundry and cooking facilities*

*and potable water; the location of accommodation in relation to the workplace; any health, fire safety or other hazards or disturbances and local facilities; the provision of first aid and medical facilities; and heating and ventilation. Workers' freedom of movement to and from the employer-provided accommodation shall not be unduly restricted.*

IFC Performance Standard 2 (PS2) aims to promote "safe and healthy working conditions, and to protect and promote the health of workers." Arguably this covers living conditions as well when these are the responsibility of employers. *IFC Guidance Note 2 on Labour and Working Conditions* specifically mentions the potential danger of forced labour when housing is provided to workers in lieu of payment or where inappropriate charges for housing are levied.

In some instances, for example during construction phases of projects, workers will not be directly engaged by the EBRD's or IFC's clients, but by (sub)contractors. However, both the EBRD and IFC require their clients to ensure that non-employee

### Box 1 - Construction camp built and operated by a Chinese contractor

This example illustrates the different mechanisms and processes which can be set up in order to ensure that workers' accommodation standards are being implemented by contractors.

Antea, a Greek client of the EBRD and IFC, and a subsidiary of Titan Cement Co, has contracted out the construction of a cement factory in Albania to a Chinese contractor. The construction involves bringing in 700 migrant workers and housing them in workers' accommodation. As part of the contract with the construction company, Antea has included a Code of Conduct and specific language referring to compliance with national labour law, ILO conventions and IFC PS2 and has developed a supervision and monitoring plan (including safety and labour audits) to ensure the construction company is in compliance with all requirements stated in PS2, that living conditions in particular comply with the guidance provided by the EBRD/IFC and that all conditions enhance a safe and good working and living environment. Safety training courses and integration of best practices in accident prevention have been instigated, while solid waste and wastewater generated in the camp is managed in accordance with Albanian regulations and IFC/EBRD guidelines.

workers, engaged by contractors or other intermediaries to work on a project site to perform work related to the core function of the project, are covered by most of the provisions within PS2 and PR2, including (in the EBRD's case) paragraph 16 on workers' accommodation. To this end, clients should set up mechanisms and processes to ensure that contractors and other intermediaries comply with the EBRD's/IFC's standards. This should involve including contractual covenants related to workers' accommodation standards, reviewing contractor agreements, implementing reporting mechanisms and monitoring the implementation of workers' accommodation standards.

### A process approach

There are several stages to the process of addressing issues raised by workers' accommodation. These are:

- assessing whether housing is needed for the project and if so, what sort
- assessing impacts on local communities and planning mitigation of potential negative impacts
- awareness of the national and local regulatory framework

- determining the standards to apply to the location of facilities, the construction of housing and provision of facilities
- managing accommodation.

There are no comprehensive international regulations relating to workers' accommodation. However, there are legal and regulatory instruments and guidance that relate to particular aspects of the provision of worker housing.<sup>1</sup> This guidance note is based on a review of these instruments and legislation, as well as guidelines and best practices produced by a range of different private and public sector actions at national and international level. As such, the processes and standards cited often represent a range of acceptable practice. Those correspond to the Benchmark paragraphs under each section. The particular standard to be applied will depend on criteria such as the type of project, location, climate and length of project. In all cases at least the minimum standard included in a given range should be applied. However, depending on the particular circumstances the minimum standard may not always be acceptable, in which case the EBRD/IFC will agree an appropriate higher standard with the client, based on the environmental and social due diligence.

**Figure 1: Workers' accommodation, assessment and management process**

<b>Need assessment</b>	Is there a need for workers' accommodation?	<ul style="list-style-type: none"> <li>▶ Assess the availability of the local workforce</li> <li>▶ Assess the availability of existing housing</li> </ul>
<b>Impact assessment</b>	What are the expected impacts (positive and negative) on the communities?	<ul style="list-style-type: none"> <li>▶ Determine specific impacts of the workers' accommodation construction phase (including security and involuntary resettlement)</li> <li>▶ Assess existing community infrastructures, services and facilities</li> <li>▶ Understand the local business and employment context</li> <li>▶ Give special attention to community health and safety issues and social cohesion</li> <li>▶ Think about the consequences of dismantling and reinstatement</li> </ul>
<b>Construction</b>	Which accommodation standards are needed?	<ul style="list-style-type: none"> <li>▶ Identify and review the international, national, regional and sectoral regulations which address workers' accommodation</li> <li>▶ Apply mandatory provisions and use non-binding provisions as guidance</li> <li>▶ Apply at least the minimum requirements set out in this guidance note</li> </ul>
<b>Management</b>	What management systems are required?	<ul style="list-style-type: none"> <li>▶ Design management plans covering health and safety, security, workers' and communities' rights</li> <li>▶ Appoint the right staff or contract the right companies</li> <li>▶ Implement management plans</li> <li>▶ Set up complaint/grievance and conflict resolution mechanisms (for both workers and communities)</li> <li>▶ Review policies</li> </ul>

1. See footnotes under Part I, introductory remark

## PART I: PLANNING AND ASSESSING REQUIREMENTS FOR WORKERS' ACCOMMODATION

In considering worker housing, it is important to first be aware of the international, national and local regulatory framework. At a general level, several international instruments recognise a right to an adequate standard of housing for everyone or for specific categories of the population as part of respecting human rights.<sup>2</sup> To ensure the full realisation of this right, binding instruments generally require the State to take appropriate steps and measures. For workers, the recognition of such a right has been included in ILO Conventions and Recommendations

for both Plantations and for Safety and Health in Agriculture, and in the ILO Recommendation 115 on Workers' Housing (1961) in particular. Although the latter is a non-binding recommendation providing guidance on policy, legislation and practice to the State and to the national authorities in charge of housing in particular, it offers useful guidance on what is expected from employers who provide housing to their employees, and it specifies a number of housing standards (See Box 2).

### Box 2 - ILO Workers' Housing Recommendation 115

- It is generally not desirable for employers to provide housing for their workers directly and employers should use alternatives where possible. If there are no alternatives, specific attention should be paid to renting arrangements, workers' rights and housing standards. In addition, the possibility of worker-occupants acquiring, for a fair price, ownership of housing provided by the employer should also be examined.
- Renting arrangements should be fair. Adequate and decent housing should not cost the worker more than a reasonable proportion of their income and should never include a speculative profit.
- The employer should be entitled to repossess the accommodation within a reasonable time in the event of termination of the worker's contract of employment and the worker should be entitled to a reasonable period of continued occupancy and/or fair compensation when he ceases to exercise his employment.
- During the time workers spend in the workers' accommodation they should enjoy their fundamental human rights and freedom of association in particular. Workers' accommodation arrangements should not restrict workers' rights and freedoms.
- Housing standards should include special attention to the following:
  - minimum space allocated per person or per family (floor area; cubic volume; or size and number of rooms)
  - supply of safe water in the workers' dwelling in such quantities as to provide for all personal and household uses
  - adequate sewage and garbage disposal systems
  - appropriate protection against heat, cold, damp, noise, fire, and disease-carrying animals, and, in particular, insects
  - adequate sanitary and washing facilities, ventilation, cooking and storage facilities and natural and artificial lighting
  - a minimum degree of privacy both between individual persons within the household and for the members of the household against undue disturbance by external factors
  - the suitable separation of rooms devoted to living purposes from quarters for animals.
- Where accommodations are provided for single workers or workers separated from their families, additional housing standards should be considered:
  - a separate bed for each worker
  - separate gender accommodation
  - adequate sanitary conveniences
  - common dining rooms, canteens, rest and recreation rooms and health facilities, where not otherwise available in the community.

2. See for example

1948 Universal Declaration of Human Rights (Article 25)

1965 Convention on the elimination of all forms of racial discrimination (Article 5)

1966 International Covenant on Economic, Social and Cultural Rights (Article 11.1)

1979 Convention on the elimination of all forms of discrimination against women (Article 14.2)



At a national or regional level, regulations tend to contain only general provisions requiring employers to provide a decent standard of accommodation to workers. However, in some jurisdictions there are detailed regulations or standards setting out a comprehensive framework to be applied.<sup>3</sup> There may also be building regulations relating to issues such as sanitation, safety or building materials that must be adhered to. Therefore, national regulations and standards are the first place to look when determining the necessary standards for living facilities. However, responsibility for planning and building standards may well lie with regional or local levels of government, so it is important that these local authorities are consulted. Provisions on workers' accommodation can also be found in policy, guidelines or codes of practice adopted by a wide variety of actors such as international bodies, industry associations, national, regional or local authorities.<sup>4</sup> Compliance with national and local law is the basic and essential requirement.

## Benchmarks

1. The international/national/local regulatory frameworks on workers' accommodation have been reviewed.
2. Identified mandatory provisions on workers' accommodation are implemented thoroughly.

## I. Assessing the need for workers' accommodation

Before building and running workers' accommodation, it is important to understand the local housing and labour markets and the potential effects the building of new facilities may have on the surrounding communities.

### A. Availability of workforce

At the initial scoping phase of a project, it is important to consider whether workers' accommodation is needed at all. In this respect, it is worth analysing the project's workforce requirements including skills and likely numbers over the project cycle and to assess the capacity of the local population to meet those workforce requirements either from its current base or as a result of training. It is preferable to source labour from the local communities as this has many advantages; not only in terms of reducing the need for workers' accommodation, but also

as it will increase the direct and indirect benefits to the community arising from the project. This approach is strongly supported by the EBRD and IFC. Any national/local requirements to promote local employment opportunities must also be taken into account. It should be noted that even in the absence of such requirements, new recruitment on EBRD/IFC-financed projects must not be discriminatory.

## Benchmarks

1. There has been an assessment of workers' availability in the neighbouring communities.
2. There has been an assessment of the skills and competencies of the local workforce and how those skills and competencies fit the project needs.
3. There has been an assessment of opportunities to train the local workforce to fulfil the project's needs.

## B. Availability of existing housing

If local workers are unavailable or not sufficiently skilled, the question arises of whether external workers can be accommodated within the existing local housing capacity or whether new facilities are needed. In general, the decision to utilise host-community accommodation or to develop on-site accommodation will be based on factors such as whether project development is occurring near to larger, established population centres and on the capacity of any nearby communities, quality of housing stock and the capacity of the environment to assimilate a new workforce.

If existing capacity is available, in the form, for example, of lodging with local families, hotels, hostels or rented housing, the impact on the local communities and housing market should be assessed. Such off-site housing may create a wide range of economic opportunities such as rental income for local people or development of local businesses (shops and restaurants for instance), which are positive project impacts, and may also result in improvements to existing housing stock. However, off-site housing may also be associated with a range of adverse social impacts including increased demands on infrastructure, services and utilities, development of illicit trade activities (drugs, prostitution, selling of stolen goods) and inflation in local rent and other subsistence items with detrimental

3. See for example:

United States - Occupational Health and Safety Act (Standards 29, paragraph 1910.142)  
Brazil - Health and safety regulation in the agricultural, livestock farming, forestry and aquaculture sectors, 2005  
Malaysia - Workers' minimum standards of housing and amenities Act, 1990  
South Africa - Basic condition of employment Act, 1997  
New South Wales, Australia - Rural Workers Accommodation Act, 1969  
Western Australia - Construction camp regulations, 1970  
Dubai Municipality - Labour camp specifications (last updated in 2007)

4. See for example:

New South Wales, Australia - Accommodation for rural agricultural work, code of practice, 2006  
Singapore - Code of practice on environmental health, 2005  
Israel - Guide for Migrant Workers, Housing  
ILO - Code of Practice, safety and health in forestry work, 1998  
City of Geraldton-Greenough, Western Australia, Local planning policy - Temporary accommodation camps, 2006  
Sustainable Agriculture Network Standards, 5.14, 2009.

consequences for the local population. If a project anticipates that the workforce is to be resident within the local communities it is good practice to provide financing options for local residents to develop and/or improve hostels for instance.

Conversely, to provide on-site housing opportunities minimises workforce-host community interactions and reduces the pressure on existing infrastructures and can also pre-empt the development of various external activities such as prostitution.

In some cases, it may be feasible and beneficial to offer workers or certain categories of workers an option between self-accommodation and company-provided accommodation with varying compensation accordingly.

To avoid or mitigate the most negative impacts, it is important to conduct a comprehensive assessment of the housing market and the likely impact of the various options for workers' accommodation. For larger projects, this assessment will best be done at the stage of the Environmental and Social Impact Assessment (ESIA). Measures resulting from this assessment will need to be incorporated in tendering and contracting documentation. Furthermore, in cases where local facilities are utilised, potential mitigation measures for adverse impacts such as increased inflationary rates on local costs must be assessed in the ESIA, and procedures that will be implemented to monitor this must also be presented.

### Benchmarks

1. Prior to building any workers' accommodation, a comprehensive assessment of the local housing market has been conducted and the different types of housing available in the surrounding communities have been identified. For larger projects this assessment has been conducted at the stage of the project's Environmental and Social Impact Assessment.
2. There has been an assessment on communities of the impact of using existing housing opportunities.
3. Measures to mitigate adverse impacts on the local housing market have been identified and included in the Environmental and Social Action Plan (ESAP) or other relevant action plan.

## II. Assessing impacts of workers' accommodation on communities

Where the need to provide new workers' accommodation is identified, it is important to consider how this will impact on the surrounding communities. This may be relevant both to the construction phase of the camp (or other accommodation) and during its operation. Risk identification and assessments specific to the workers' accommodation should be undertaken as part of the Environmental and Social Impact Assessment and any related development of an Environmental and Social Action Plan. This assessment can also be used to determine whether contact between non-local workforce and local communities should be encouraged or minimised.

### Box 3 - Singapore National Environment Agency - Code of Practice on Environmental Health, 2005

The following guidelines shall be used for stand-alone dormitories.

- If the dormitory does not provide a separate space for cupboards/locker rooms, the minimum room space shall be 4 square metres per person (assuming a height of 2.4m).
- If the dormitory provides a separate space for cupboards/locker rooms, the minimum room space shall be 3 square metres per person (assuming a height of 2.4m).
- The room shall be adequately ventilated and lit.
- Adequate number of toilets and sanitary fittings shall be provided (1 toilet, 1 hand wash basin, 1 urinal and 1 bathroom with bench per 15 male workers).
- Where cooking area is to be provided in the dormitories, such provisions shall be in accordance with the requirements stipulated under Section 2.4 of the latest edition of Singapore Standard CP 102.

The above Singapore guidelines are mentioned as an example of "soft" regulations only. The standards described above may be inappropriate in different environments. Other standards apply in other countries.

### A. Specific impacts during the construction phase

The construction of workers' accommodation and its potential impacts on communities should be managed in the same way as for construction of the project itself. Impacts need to be identified and may include health and safety, disturbance issues arising from construction, including traffic (dust, noise and vibration), and involuntary resettlement issues (including physical and economical displacement) when the erecting of workers' accommodation entails land acquisition.

### B. Community infrastructure

Workers' influx in the vicinity of a community may strain existing infrastructure, in particular the water and sanitation, electricity and transport systems. Impacts of the worker facility should be avoided or mitigated, and included within the assessment of the overall project.

In general, where facilities are developed close to local communities it is important to provide adequate transport systems to preserve the right of workers' freedom of movement if they are not to become effectively "trapped". This should be balanced against the need to prevent any unnecessary disruption of and/or to the local communities. Therefore it may be appropriate to limit worker movements, but any restriction should be clearly justified by the need to avoid the disruption of local communities, in particular local communities' transport infrastructures – and to provide maximum security and safety to both workers and communities (see PART II, Section E "Workers' rights, rules and regulations on workers' accommodation", below at page 21).

### C. Community services and facilities

Depending on the size of the workers' accommodation, conditions of engagement (accompanied or unaccompanied) and the level of services offered to those workers, it may be necessary to assess the impact of workers on local medical, social, educational and recreational services and facilities, potentially to the detriment of nearby communities. It must be ensured that such services and facilities can meet increased demand. If not, services must be available to the workers on site.

### D. Local businesses and local employment

Local businesses such as shops, restaurants or bars are likely to benefit from their proximity to workers' living facilities. However, there may also be negative issues that need to be managed such as increases in local prices, crime, prostitution or alcohol consumption (see below Part II, section E).

### E. Community health and safety

The presence of a large number of workers, principally males, can give rise to an increased spread of communicable diseases such as HIV/AIDS in particular and other sexually transmitted diseases. In addition, special attention should be paid to risks such as road accidents, and other detrimental consequences of increased traffic generated by the project (dust, noise, and pollution). If the proposed project has major-accident hazards associated with it, emergency response and evacuation plans in accordance to PS4/PR4 will also need to be in place.

### F. Community cohesion

The impact of the presence of workers with different lifestyles or cultural backgrounds on the host community needs to be assessed and managed, in particular issues such as religious or other cultural proscriptions, local traditions and community structure and the relationship between men and women.

### G. Land acquisition and resettlement

Impacts and mitigation plans relating to land used for workers' accommodation facilities should be managed in the same way as for the project as a whole. As far as possible, land acquisition should be avoided or minimised.

### H. Dismantling and reinstatement

Dismantling and reinstatement of workers' accommodation should be taken into account at the outset of the project in order to avoid any unnecessary lasting impacts of the accommodations on the communities (land use for instance). Where possible and appropriate, the facilities can be handed over to the communities.



## Benchmarks

1. A community impact assessment has been carried out as part of the Environmental and Social Assessment of the overall project with a view to mitigate the negative impacts of the workers' accommodation on the surrounding communities and to enhance the positive ones.

2. The assessment includes potential health and safety impacts on the communities - including disturbances and safety issues caused by traffic (dust, noise, vibration, road accidents, disease) and consequences of land acquisition and involuntary resettlement occurring during the construction phase of the workers' accommodation.

3. Positive and negative impacts of workers' accommodation on community infrastructures,

services and facilities have been included in the assessment, including specific attention to emergency responses and evacuation plans.

4. Impacts of workers' accommodation on community local businesses and local employment have been included in the assessment.

5. General impacts of workers' accommodation on the health of communities (notably the increased risk of road accidents and the increase of communicable diseases) and community social cohesion have been included in the assessment.

6. The assessment includes appropriate mitigation measures to address any adverse impacts identified.

**Table 1: A typology of workers' accommodation**

Category	Subcategory/examples	Common characteristics	Sectors covered	Key issues
Rural workers' accommodation	Logging camp	Permanent or seasonal	Forestry	Worker access
	Off-farm accommodation	Remote	Agriculture	Monitoring difficulties
Plantation housing	Worker village	Permanent and long term	Agriculture	Need to provide sustainable livelihoods
	Off-farm accommodation	Families		Social infrastructures Living conditions
Construction camp	Worker camp	Temporary	Extractives	Enforcement of standards and monitoring difficulties
	Worker village	Migrant workers	Utilities	Relations with the communities
	Mobile worker camp	Gender separation	Infrastructure	Living standards
			Manufacturing	Cost
Mine camp	Company towns	Long term	Extractives	Relations with communities
	Dormitories	Remote location		Remoteness
	Integrated within existing communities	Gender separation		Living standards
	Commuter (fly-in, fly-out)			Worker access Long shifts No rest periods
Factory dormitory		Permanent Urban Internal migrants	Garments/textiles Manufacturing – toys, electronics	Space Privacy Living standards Deduction of excessive rent from wages

### III. Types of workers' accommodation

There is a large variety of workers' living facilities. These may be classified in a number of ways. Table 1 provides one typology. Key criteria may include whether the facilities are temporary or permanent, their location (remote or non-remote), size, or economic sector (agriculture, mining, oil and gas, construction, manufacturing).

The typology above is given as an example only; other classifications are possible. For instance, housing may be categorised in terms

of project phases for example, exploration (fly-in, fly-out camps), construction (temporary construction camp often with large proportion of migrant workers) and operational (permanent, dormitory, possible family accommodation).

Depending on the type of project, specific attention should be given to either providing single workers' accommodation or family accommodation. As a general rule, the more permanent the housing, the greater considerations should be given to enabling workers to live with their families. Such consideration is important where the workforce is

#### Box 4 - Best practice on home-ownership

When access to property schemes is proposed it is important to guarantee the sustainability of workers' investments. To this end, the location of the project and of the workers' accommodation and their integration in existing communities are factors to take into consideration. Caution should be exercised when offering such schemes in remote locations as it might be impossible to create a sustainable community and to develop non-project-related sources of livelihood.

**Affordable housing in a sustainable town:** A provider of affordable housing in South Africa and a provider of housing development for the mining sector worked together on a project to move away from mining hostels and rental villages to providing home-ownership opportunities to workers. To this end they developed a 400-plus unit in a village 20 km from the mine with the idea to create an economically and socially viable community close to the mine. A concern was to integrate people within existing communities with the necessary social amenities and infrastructures and to put the emphasis on better housing conditions, home ownership and affordable housing for mining workers. The success of the project relied on the ability for the service provider to take into account the often difficult financial situation of workers. To overcome over-indebtedness of workers, specific access to property schemes and programmes have been designed

including employer support, economies of scale, low interest rate and stepped payment options.

#### **Affordable housing in a self-sustaining community:**

An FMO (Netherlands Development Finance Company) client operating a mine in a remote location intends to manage and develop a well-planned, secure and independent village for approximately 1,000 employees. The FMO client is expected to provide residents with basic services, including water, electricity and sewerage as well as education, health services, sports facilities, shops, green areas and places of worship. In addition, provision has been made for a light industrial and small business area to support local business development. The long-term vision is for the Village to grow into a self-sustaining community of over 4,000 houses, which is capable of supporting a variety of small businesses and local enterprises. To support the long-term vision of a self-sustaining village and to provide mine employees with an opportunity to build up cash equity (in the form of a house), the FMO client will promote home ownership. In this context, an employee housing scheme has been designed that allows mine employees in all income categories to acquire title to property through mortgage debt all associated rights and obligations. Participation in the scheme is not a prerequisite for employment. The scheme includes several provisions to ensure affordability of home ownership to all mine employees and to protect employees against downside risks.

not sourced locally and in particular where migrant workers are used.<sup>5</sup> Provision for families will affect the other facilities necessary and the management of the accommodation. Best practice includes:

- To provide workers and their families individual family accommodation comprising bedrooms, sanitary and cooking facilities with an adequate level of privacy allowing families to have a normal family life.
- To provide nurseries, schools, clinics and recreational facilities for children, or to make sure that those services are readily available in the surrounding communities and of good quality.

### Benchmarks

1. Consideration has been given to provision of family accommodation.
2. When arrangements for family accommodations are in place:
  - families are provided with individual accommodation comprising bedroom, sanitary and cooking facilities
  - adequate nursery/school facilities are provided
  - special attention is paid to providing adequate safety for children.

#### Additional issue

In projects located in rural and remote locations, issues around the question of how workers can travel to their communities/countries of origin might arise. Alternatively, the possibility to create a sustainable community and to bring in the workers' families might be considered.

#### Box 5 - Best practice on migrant workers' accommodation: Business in the Community - Voluntary Code of Practice on Employing Migrant Workers/Overseas Staff in Great Britain<sup>6</sup>

The Code, which is designed to guide and reinforce best practice in relation to the employment of migrant workers, points out that migrant workers will often have to travel long distances and be in need of accommodation when they take up a job. Consequently, the Code suggests the following.

- Employers should assist with travel costs incurred by migrant workers during the recruitment stage and the repayment of these costs should follow a clear process and the money paid back at an agreed affordable rate over a specified time period. The total amount repayable should be no more than that lent so that workers are not financially disadvantaged.
- Employers, where possible, should support migrant workers in finding suitable accommodation. Workers should not be required to stay in accommodation provided by the employer but should be free to choose their own if they wish to do so. Where employers do provide accommodation, they should ensure that they do not breach the rules relating to the apportionment of wages for payment for accommodation (the accommodation offset rules).
- Employers should help to ensure that, where workers obtain their own accommodation, they are not being exploited, and offer advice and help if requested.
- Employers should ensure that accommodation which is provided is not overcrowded and does not pose a risk to the health and safety of those living there, and that any agreed notice periods are observed.

5. On the increase in the recognition of workers' rights to family life, the ILO Migrant Workers Convention No 143 calls Member States to take all necessary measures which fall within its competence and collaborate with other Members to facilitate the reunion of the families of all migrant workers legally residing in its territory. In the same way, Art 44-2 of the International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families requires States Parties to take measures that they deem appropriate and that fall within their competence to facilitate the reunion of migrant workers with their spouses [...] as well as with their minor dependent unmarried children.

6. [www.bitc.org.uk/resources/publications/migrant\\_workers\\_1.html](http://www.bitc.org.uk/resources/publications/migrant_workers_1.html)

## PART II: STANDARDS FOR AND MANAGEMENT OF WORKERS' ACCOMMODATION

### I. Standards for workers' accommodation

This section looks at the principles and standards applicable to the location and construction of workers' accommodation, including the transport systems provided, the general living facilities, rooms/dormitories facilities, sanitary facilities, canteen and cooking facilities, food safety, medical facilities and leisure/social facilities.

#### A. National/local standards

The key standards that need to be taken into consideration, as a baseline, are those contained in national/local regulations. Although it is quite unusual to find regulations specifically covering workers' accommodation, there may well be general construction standards which will be relevant. These may include the following standards:

- **Building construction:** for example, quality of material, construction methods, resistance to earthquakes.
- **Housing and public housing:** in some countries regulations for housing and public housing contain requirements on issues such as the basic amenities, and standards of repair.
- **General health, safety and security:** requirements on health and safety are often an important part of building standards and might include provisions on occupation density, minimal air volumes, ventilation, the quality of the flooring (slip-resistant) or security against intrusion.
- **Fire safety:** requirements on fire safety are common and are likely to apply to housing facilities of any type. This can include provision on fire extinguishers, fire alarms, number and size of staircases and emergency exits, restrictions on the use of certain building materials.
- **Electricity, plumbing, water and sanitation:** national design and construction standards often include very detailed provisions on electricity or plumbing fixtures/fittings, water and sanitation connection/equipment.

#### Benchmark

1. The relevant national and local regulations have been identified and implemented.

#### B. General living facilities

Ensuring good standards in living facilities is important in order to avoid safety hazards and to protect workers from diseases and/or illness resulting from humidity, bad/stagnant water (or lack of water), cold, spread of fungus, proliferation of insects or rodents, as well as to maintain a good level of morale. The location of the facilities is important to prevent exposure to wind, fire, flood and other natural hazards. It is also important that workers' accommodation is unaffected by the environmental or operational impacts of the worksite (for example noise, emissions or dust) but is sufficiently close that workers do not have to spend undue amounts of time travelling from their accommodation to the worksite. Living facilities should be built using adequate materials and should always be kept in good repair, clean and free from rubbish and other refuse.

#### Benchmarks

1. Living facilities are located to avoid flooding and other natural hazards.
2. Where possible, living facilities are located within a reasonable distance from the worksite.
3. Transport from the living facilities to worksite is safe and free.
4. The living facilities are built with adequate materials, kept in good repair and kept clean and free from rubbish and other refuse.

#### Drainage

The presence of stagnant water is a factor of proliferation of potential disease vectors such as mosquitoes, flies and others, and must be avoided.

#### Benchmarks

1. The building site is adequately drained to avoid the accumulation of stagnant water.

### Heating, air conditioning, ventilation and light

Heating, air-conditioning and ventilation should be appropriate for the climatic conditions and provide workers with a comfortable and healthy environment to rest and spend their spare time.

#### Benchmarks

1. For facilities located in cold weather zones, the temperature is kept at a level of around 20 degrees Celsius notwithstanding the need for adequate ventilation.
2. For facilities located in hot weather zones, adequate ventilation and/or air conditioning systems are provided.
3. Both natural and artificial lighting are provided and maintained in living facilities. It is best practice that the window area represents not less than 5% to 10% of the floor area. Emergency lighting is provided.

### Water

Special attention to water quality and quantity is absolutely essential. To prevent dehydration, water poisoning and diseases resulting from lack of hygiene, workers should always have easy access to a source of clean water. An adequate supply of potable water must be available in the same buildings where bedrooms or dormitories are provided. Drinking water must meet local or WHO drinking water standards<sup>7</sup> and water quality must be monitored regularly. Depending on the local context, it could either be produced by dedicated catchment and treatment facilities or tapped from existing municipal facilities if their capacity and quality are adequate.

#### Benchmarks

1. Access to an adequate and convenient supply of free potable water is always available to workers. Depending on climate, weather conditions and accommodation standards, 80 to 180 litres per person per day are available.
2. Drinking water meets national/local or WHO drinking water standards.<sup>8</sup>
3. All tanks used for the storage of drinking water are constructed and covered as to prevent water stored therein from becoming polluted or contaminated.

4. Drinking water quality is regularly monitored.

### Wastewater and solid waste

Wastewater treatment and effluent discharge as well as solid waste treatment and disposal must comply with local or World Bank effluent discharge standards<sup>9</sup> and be adequately designed to prevent contamination of any water body, to ensure hygiene and to avoid the spread of infections and diseases, the proliferation of mosquitoes, flies, rodents, and other pest vectors. Depending on the local context, treatment and disposal services can be either provided by dedicated or existing municipal facilities.

#### Benchmarks

1. Wastewater, sewage, food and any other waste materials are adequately discharged, in compliance with local or World Bank standards – whichever is more stringent – and without causing any significant impacts on camp residents, the biophysical environment or surrounding communities.
2. Specific containers for rubbish collection are provided and emptied on a regular basis. Standards range from providing an adequate number of rubbish containers to providing leak proof, non-absorbent, rust and corrosion-resistant containers protected from insects and rodents. In addition it is best practice to locate rubbish containers 30 metres from each shelter on a wooden, metal, or concrete stand. Such containers must be emptied at regular intervals (to be determined based on temperatures and volumes generated) to avoid unpleasant odours associated with decaying organic materials.
3. Pest extermination, vector control and disinfection are carried out throughout the living facilities in compliance with local requirements and/or good practice. Where warranted, pest and vector monitoring should be performed on a regular basis.

7. [www.who.int/water\\_sanitation\\_health/dwq/en/](http://www.who.int/water_sanitation_health/dwq/en/)  
8. *ibid*

9. As per the "Pollution Prevention and Abatement Handbook", World Bank Group, July 1998, available from [www.worldbank.org](http://www.worldbank.org)

### C. Room/dormitory facilities

The standards of the rooms or dormitory facilities are important to allow workers to rest properly and to maintain good standards of hygiene. Overcrowding should be avoided particularly. This also has an impact on workers' productivity and reduces work-related accidents. It is generally acknowledged that rooms/dormitories should be kept clean and in a good condition. Exposure to noise and odour should be minimised. In addition, room/dormitory design and equipment should strive to offer workers a maximum of privacy. Resorting to dormitories should be minimised and single or double rooms are preferred. Dormitories and rooms must be single-sex.

#### Benchmarks

1. Rooms/dormitories are kept in good condition.
2. Rooms/dormitories are aired and cleaned at regular intervals.
3. Rooms/dormitories are built with easily cleanable flooring material.
4. Sanitary facilities are located within the same buildings and provided separately for men and women.
5. Density standards are expressed either in terms of minimal volume per resident or of minimal floor space. Usual standards range from 10 to 12.5 cubic metres (volume) or 4 to 5.5 square metres (surface).
6. A minimum ceiling height of 2.10 metres is provided.
7. In collective rooms, which are minimised, in order to provide workers with some privacy, only a reasonable number of workers are allowed to share the same room. Standards range from 2 to 8 workers.
8. All doors and windows should be lockable, and provided with mosquito screens where conditions warrant.
9. There should be mobile partitions or curtains to ensure privacy.
10. Every resident is provided with adequate furniture such as a table, a chair, a mirror and a bedside light.
11. Separate sleeping areas are provided for men and women, except in family accommodation.

#### Additional issue

Irrespective of whether workers are supposed to keep their facilities clean, it is the responsibility of the accommodation manager to ensure that rooms/dormitories and sanitary facilities are in good condition.

#### Bed arrangements and storage facilities

The provision of an adequate numbers of beds of an appropriate size is essential to provide workers with decent, safe and hygienic conditions to rest and sleep. Here again, particular attention should be paid to privacy. Consideration should be given to local customs so beds could be replaced by hammocks or sleeping mats for instance.

#### Benchmarks

1. A separate bed for each worker is provided. The practice of "hot-bedding" should be avoided.
2. There is a minimum space between beds of 1 metre.
3. Double deck bunks are not advisable for fire safety and hygiene reasons, and their use is minimised. Where they are used, there must be enough clear space between the lower and upper bunk of the bed. Standards range from 0.7 to 1.10 metres.
4. Triple deck bunks are prohibited.
5. Each worker is provided with a comfortable mattress, pillow, cover and clean bedding.
6. Bed linen is washed frequently and applied with repellents and disinfectants where conditions warrant (malaria).
7. Facilities for the storage of personal belongings for workers are provided. Standards vary from providing an individual cupboard for each worker to providing 475-litre big lockers and 1 metre of shelf unit.
8. Separate storage for work boots and other personal protection equipment, as well as drying/airing areas may need to be provided depending on conditions.



## D. Sanitary and toilet facilities

It is essential to allow workers to maintain a good standard of personal hygiene but also to prevent contamination and the spread of diseases which result from inadequate sanitary facilities. Sanitary and toilet facilities will always include all of the following: toilets, urinals, washbasins and showers. Sanitary and toilet facilities should be kept in a clean and fully working condition. Facilities should also be constructed of materials that are easily cleanable and ensure privacy. Sanitary and toilet facilities are never shared between male and female residents, except in family accommodation. Where necessary, specific additional sanitary facilities are provided for women.

### Benchmarks

1. Sanitary and toilet facilities are constructed of materials that are easily cleanable.
2. Sanitary and toilet facilities are cleaned frequently and kept in working condition.
3. Sanitary and toilet facilities are designed to provide workers with adequate privacy, including ceiling to floor partitions and lockable doors.
4. Sanitary and toilet facilities are not shared between men and women, except in family accommodation.

### Toilet facilities

Toilet arrangements are essential to avoid any contamination and prevent the spread of infectious disease.

### Benchmarks

1. An adequate number of toilets is provided to workers. Standards range from 1 unit to 15 persons to 1 unit per 6 persons. For urinals, usual standards are 1 unit to 15 persons.
2. Toilet facilities are conveniently located and easily accessible. Standards range from 30 to 60 metres from rooms/dormitories. Toilet rooms shall be located so as to be accessible without any individual passing through any sleeping room. In addition, all toilet rooms should be well-lit, have good ventilation or external windows, have sufficient hand wash basins and be conveniently located. Toilets and other sanitary facilities should be ("must be" in cold climates) in the same building as rooms and dormitories.

### Showers/bathrooms and other sanitary facilities

Hand wash basins and showers should be provided in conjunction with rooms/dormitories. These facilities must be kept in good working condition and cleaned frequently. The flooring for shower facilities should be of hard washable materials, damp-proof and properly drained. Adequate space must be provided for hanging, drying and airing clothes. Suitable light, ventilation and soap should be provided. Lastly, hand washing, shower and other sanitary facilities should be located within a reasonable distance from other facilities and from sleeping facilities in particular.

### Benchmarks

1. Shower/bathroom flooring is made of anti-slip hard washable materials.
2. An adequate number of handwash facilities is provided to workers. Standards range from 1 unit to each 15 persons to 1 unit per 6 workers. Handwash facilities should consist of a tap and a basin, soap and hygienic means of drying hands.
3. An adequate number of shower/bathroom facilities is provided to workers. Standards range from 1 unit to 15 persons to 1 unit per 6 persons.
4. Showers/bathrooms are conveniently located.
5. Shower/bathroom facilities are provided with an adequate supply of cold and hot running water.

## E. Canteen, cooking and laundry facilities

Good standards of hygiene in canteen/dining halls and cooking facilities are crucial. Adequate canteen, cooking and laundry facilities and equipments should also be provided. When caterers are contracted to manage kitchens and canteens, special attention should be paid to ensure that contractors take into account and implement the benchmarks below, and that adequate reporting and monitoring mechanisms are in place. When workers can individually cook their meals, they should be provided with a space separate from the sleeping areas. Facilities must be kept in a clean and sanitary condition. In addition, canteen, kitchen, cooking and laundry floors, ceilings and walls should be made of easily cleanable materials.

### Benchmarks

1. Canteen, cooking and laundry facilities are built in adequate and easy to clean materials.
2. Canteen, cooking and laundry facilities are kept in a clean and sanitary condition.
3. If workers can cook their own meals, kitchen space is provided separate from sleeping areas.

### Laundry facilities

Providing facilities for workers to wash both work and non-work related clothes is essential for personal hygiene. The alternative is for the employer to provide a free laundry service.

### Benchmarks

1. Adequate facilities for washing and drying clothes are provided. Standards range from providing sinks or tubs with hot and cold water, cleaning soap and drying lines to providing washing machines and dryers.
2. When work clothes are used in contact with dangerous substance (for example, application of pesticide), special laundry facilities (washing machines) should be provided.

#### Additional issue

When workers are provided with facilities allowing them to individually do their laundry or cooking, it should be the responsibility of each worker to keep the facilities in a clean and sanitary condition. Nonetheless, it is the responsibility of the accommodation manager to make sure the standards are respected and to provide an adequate cleaning, disinfection and pest/vector control service when necessary.

#### Additional issue

When the employer provides family accommodation, it is best practice to provide each family with a private kitchen or the necessary cooking equipment to allow the family to cook on their own.

### Canteen and cooking facilities

Canteen and cooking facilities should provide sufficient space for preparing food and eating, as well as conform to hygiene and safety requirements.

### Benchmarks

1. Canteens have a reasonable amount of space per worker. Standards range from 1 square metre to 1.5 square metres.
2. Canteens are adequately furnished. Standards range from providing tables, benches, individual drinking cups and plates to providing special drinking fountains.
3. Places for food preparation are designed to permit good food hygiene practices, including protection against contamination between and during food preparation.
4. Kitchens are provided with facilities to maintain adequate personal hygiene including a sufficient number of washbasins designated for cleaning hands with clean, running water and materials for hygienic drying.
5. Wall surfaces adjacent to cooking areas are made of fire-resistant materials. Food preparation tables are also equipped with a smooth durable washable surface. Lastly, in order to enable easy cleaning, it is good practice that stoves are not sealed against a wall, benches and fixtures are not built into the floor, and all cupboards and other fixtures and all walls and ceilings have a smooth durable washable surface.
6. All kitchen floors, ceiling and wall surfaces adjacent to or above food preparation and cooking areas are built using durable, non-absorbent, easily cleanable, non-toxic materials.
7. Wall surfaces adjacent to cooking areas are made of fire-resistant materials. Food preparation tables are equipped with a smooth, durable, easily cleanable, non-corrosive surface made of non-toxic materials. Lastly, in order to enable easy cleaning, it is good practice that stoves are not sealed against a wall, benches and fixtures are not built into the floor, and all cupboards and other fixtures have a smooth, durable and washable surface.
8. Adequate facilities for cleaning, disinfecting and storage of cooking utensils and equipment are provided.
9. Food waste and other refuse are to be adequately deposited in sealable containers and removed from the kitchen frequently to avoid accumulation.



## F. Standards for nutrition and food safety

When cooking for a number of workers, hygiene and food safety are absolutely critical. In addition to providing safe food, providing nutritious food is important as it has a very direct impact on workers' productivity and well-being. An ILO study demonstrates that good nutrition at work leads to gains in productivity and worker morale, prevention of accidents and premature deaths and reductions in health care costs.<sup>10</sup>

### Benchmarks

1. The WHO 5 keys to safer food or an equivalent process is implemented (see Box 6 below).
2. Food provided to workers contains an appropriate level of nutritional value and takes into account religious/cultural backgrounds; different choices of food are served if workers have different cultural/religious backgrounds.
3. Food is prepared by cooks. It is also best practice that meals are planned by a trained nutritionist.

#### Box 6 - Five keys to safer food

##### Keep clean

Wash your hands before handling food and often during food preparation.

Wash your hands after going to the toilet.

Wash and sanitise all surfaces and equipment used for food preparation.

Protect kitchen areas and food from insects, pests and other animals.

While most micro organisms do not cause disease, dangerous micro organisms are widely found in soil, water, animals and people. These micro organisms are carried on hands, wiping cloths and utensils, especially cutting boards and the slightest contact can transfer them to food and cause food borne diseases.

##### Separate raw and cooked

Separate raw meat, poultry and seafood from other foods.

Use separate equipment and utensils such as knives and cutting boards for handling raw foods.

Store food in containers to avoid contact between raw and prepared foods.

Raw food, especially meat, poultry and seafood, and their juices, can contain dangerous micro organisms which may be transferred onto other foods during food preparation and storage.

##### Cook thoroughly

Cook food thoroughly, especially meat, poultry, eggs and seafood.

Bring foods like soups and stews to boiling to make sure that they have reached 70°C. For meat and poultry, make sure that juices are clear, not pink. Ideally, use a thermometer.

Reheat cooked food thoroughly.

Proper cooking kills almost all dangerous micro organisms. Studies have shown that cooking food to a temperature of 70°C can help ensure it is safe for consumption. Foods that require special attention include minced meats, rolled roasts, large joints of meat and whole poultry.

##### Keep food at safe temperatures

Do not leave cooked food at room temperature for more than 2 hours.

Refrigerate promptly all cooked and perishable food (preferably below 5°C).

Keep cooked food piping hot (more than 60°C) prior to serving.

Do not store food too long even in the refrigerator.

Do not thaw frozen food at room temperature.

Micro organisms can multiply very quickly if food is stored at room temperature. By holding at temperatures below 5°C or above 60°C, the growth of micro organisms is slowed down or stopped. Some dangerous micro organisms still grow below 5°C.

##### Use safe water and raw materials

Use safe water or treat it to make it safe.

Select fresh and wholesome foods.

Choose foods processed for safety, such as pasteurised milk.

Wash fruits and vegetables, especially if eaten raw.

Do not use food beyond its expiry date.

Raw materials, including water and ice, may be contaminated with dangerous micro organisms and chemicals. Toxic chemicals may be formed in damaged and mouldy foods. Take care in selection of raw materials and implement simple measures such as washing.

**Source:** World Health Organization, *Food Safety*

[www.who.int/foodsafety/publications/consumer/en/5keys\\_en.pdf](http://www.who.int/foodsafety/publications/consumer/en/5keys_en.pdf)

10. C. Wanjek (2005), "Food at Work – Workplace solutions for malnutrition, obesity and chronic disease", International Labour Organization, Geneva.

## G. Medical facilities

Access to adequate medical facilities is important to maintain workers' health and to provide adequate responses in case of health emergency situations. The availability or level of medical facilities provided in workers' accommodation is likely to depend on the number of workers living on site, the medical facilities already existing in the neighbouring communities and the availability of transport. However, first aid must always be available on site.

### First aid facilities

Providing adequate first aid training and facilities can save lives and prevent minor injuries becoming major ones.

### Other medical facilities

Depending on the number of workers living on site and the medical services offered in the surrounding communities, it is important to provide workers with additional medical facilities. Special facilities for sick workers and medical services such as dental care, surgery, a dedicated emergency room can, for instance, be provided.

## Benchmarks

1. A number of first aid kits adequate to the number of residents are available.
2. First aid kits are adequately stocked. Where possible a 24/7 first aid service/facility is available.
3. An adequate number of staff/workers is trained to provide first aid.
4. Where possible and depending on the medical infrastructures existing in the community, other medical facilities are provided (nurse rooms, dental care, minor surgery).

## Box 7 - UK/HSE First Aid facilities

### What should be in a first aid kit?

There is no standard list and it very much depends on the assessment of the needs in a particular workplace:

- a leaflet giving general guidance on first aid, for example HSE leaflet *Basic advice on first aid at work*
- individually wrapped sterile adhesive dressings (assorted sizes)
- two sterile eye pads
- four individually wrapped triangular bandages (preferably sterile)
- six safety pins
- six medium-sized (approximately 12 cm x 12 cm) individually wrapped sterile unmedicated wound dressings
- two large (approximately 18 cm x 18 cm) sterile individually wrapped unmedicated wound dressings
- one pair of disposable gloves.

What should be kept in the first aid room?

The room should contain essential first aid facilities and equipment. Typical examples of these are:

- a sink with hot and cold running water
- drinking water and disposable cups
- soap and paper towels
- a store for first aid materials
- foot-operated refuse containers, lined with disposable yellow clinical waste bags or a container for the safe disposal of clinical waste
- a couch with waterproof protection, clean pillows and blankets
- a chair
- a telephone or other communication equipment
- a record book for recording incidents where first aid has been given.

Source: UK Health and Safety Executive

## H. Leisure, social and telecommunication facilities

Basic leisure and social facilities are important for workers to rest and also to socialise during their free time. This is particularly true where workers' accommodation is located in remote areas far from any communities. Where workers' accommodation is located in the vicinity of a village or a town, existing leisure or social facilities can be used so long as this does not cause disruption to the access and enjoyment of local community members. But in any case, social spaces should also be provided on site. Exercise and recreational facilities will increase workers' welfare and reduce the impact of the presence of workers in the surrounding communities. In addition it is also important to provide workers with adequate means to communicate with the outside world, especially when workers' accommodation is located in a remote location or where workers live on site without their family or are migrants. Consideration of cultural attitudes is important. Provision of space for religious observance needs to be considered, taking account of the local context and potential conflicts in certain situations.

### Benchmarks

1. Basic collective social/rest spaces are provided to workers. Standards range from providing workers multi-purpose halls to providing designated areas for radio, TV, cinema.
2. Recreational facilities are provided. Standards range from providing exercise equipment to providing a library, swimming pool, tennis courts, table tennis, educational facilities.
3. Workers are provided with dedicated places for religious observance if the context warrants.
4. Workers have access to public phones at affordable/public prices (that is, not inflated).
5. Internet facilities can also be provided, particularly where large numbers of expatriates/Third Country Nationals (TCNs) are accommodated.

### Box 8 - Examples of social/leisure facilities

In Qatar there is a newly built 170-hectare complex which accommodates contractors and more than 35,000 workers for a project run by a major oil company. At the heart of this complex, the recreation area includes extensive sport facilities, a safety-training centre, an outdoor cinema and a park. The purpose of those facilities goes beyond providing adequate accommodation to the large numbers of contractors and workers on this project but is designed to provide the same level of services as a small town. The accommodation complex has a mayor, as well as a dedicated welfare team which is responsible for the workers' welfare, cultural festivals and also acts as the community's advocates.

## II. Managing workers' accommodation

Once the living facilities have been constructed and are operational, effective ongoing management of living facilities is essential. This encompasses issues such as the physical maintenance of buildings, security and consultation with residents and neighbouring communities in order to ensure the implementation of the housing standards in the long term.

### A. Management and staff

Worker camps and housing facilities should have a written management plan, including management policies or plans on health and safety, security, living conditions, workers' rights and representation, relationships with the communities and grievance processes. Part of those policies and plans can take the form of codes of conduct. The quality of the staff managing and maintaining the accommodation facilities will have a decisive impact on the level of standards which are implemented and the well-being of workers (for instance on the food safety or overall hygiene standards). It is therefore important to ensure that managers are competent and other workers are adequately skilled. The manager will be responsible for overseeing staff, for ensuring the implementation of the accommodation standards and for the implementation of the management plans. It is important the accommodation manager has the corresponding authority to do so.

If the facility is being managed by a contractor, as is often the case, the expected housing and management standards should be specified in the relevant contract, and mechanisms to ensure that those standards are implemented should be set up. As part of this process, the accommodation manager (or contractor) should have a duty to monitor the application of the accommodation standards and to report frequently on their implementation to the client.

### Benchmarks

1. There are management plans and policies especially in the field of health and safety (with emergency responses), security, workers' rights, relationships with the communities.
2. An appointed person with the adequate background and experience is in charge of managing the workers' accommodation.
3. If contractors are being used, there are clear contractual management responsibilities and monitoring and reporting requirements.
4. Depending on the size of the accommodation, there is a sufficient number of staff in charge of cleaning, cooking and of general maintenance.
5. Such staff are recruited from the local communities.
6. Staff have received basic health and safety training.
7. Persons in charge of the kitchen are trained in nutrition and food-handling and adequately supervised.

### B. Charging fees for accommodation and services

Charging fees for the accommodation or the services provided to workers such as food or transport should be avoided where workers do not have the choice to live or eat anywhere else, or if deemed unavoidable, should take into account the specific nature of workers' accommodation. Any charges should be transparent, discussed during recruitment and specified in workers' contracts. Any such charges should still leave workers with sufficient income and should never lead to a worker becoming indebted to an employer.

### Benchmarks

1. When fees are charged, workers are provided with clear information and a detailed description of all payments made such as rent, deposit and other fees.
2. When company housing is considered to be part of workers' wages, it is best practice that workers are provided with an employment contract clearly specifying housing arrangements and regulations, in particular rules concerning payments and fees, facilities and services offered and rules of notice.
3. When fees are charged, the renting arrangements are fair and do not cost the worker more than a small proportion of income and never include a speculative profit.
4. Food and other services are free or are reasonably priced, never above the local market price.
5. The provision of accommodation or other services by employers as a payment for work is prohibited.

#### Additional issue

To avoid that fair renting arrangements turn into unfair ones, any deposit of advance should be set at a reasonable level and it is best practice that renting prices include a fixed fee covering the water needed and the use of the energy required to the functioning of the heating/cooling/ventilation/cooking systems. However, in such cases it might be necessary to raise workers' awareness to ensure that workers will use the facilities responsibly, particularly in areas where water is scarce.

### C. Health and safety on site

The company or body in charge of managing the workers' accommodation should have the prime responsibility for ensuring workers' physical well-being and integrity. This involves making sure that the facilities are kept in good condition (ensuring that sanitary standards or fire regulations are respected for instance) and that adequate health and safety plans and standards are designed and implemented.

### Benchmarks

1. Health and safety management plans including electrical, mechanical, structural and food safety have been carefully designed and are implemented.
2. The person in charge of managing the accommodation has a specific duty to report to the health authorities the outbreak of any contagious diseases, food poisoning and other important casualties.
3. An adequate number of staff/workers is trained to provide first aid.
4. A specific fire safety plan is prepared, including training of fire wardens, periodic testing and monitoring of fire safety equipment and periodic drills.
5. Guidance on the detrimental effects of the abuse of alcohol and drugs and other potentially harmful substances and the risk and concerns relating to HIV/AIDS and of other health risk-related activities is provided to workers. It is best practice to develop a clear policy on this issue.
6. Workers have access to adequate preventive measures such as contraception (condoms in particular) and mosquito nets.
7. Workers have easy access to medical facilities and medical staff. Where possible, female doctors/nurses should be available for female workers.
8. Emergency plans on health and fire safety are prepared. Depending on the local context, additional emergency plans are prepared as needed to handle specific occurrences (earthquakes, floods, tornadoes).

### D. Security of workers' accommodation

Ensuring the security of workers and their property on the accommodation site is of key importance. To this end, a security plan must be carefully designed including appropriate measures to protect workers against theft and attacks. Policies regarding the use of force (force can only be used for preventive and defensive purposes in proportion to the nature and the extent of the threat) should also be

carefully designed. To implement those plans, it may be necessary to contract security services or to recruit one or several staff whose main responsibility is to provide security to safeguard workers and property. Before making any security arrangements, it is necessary to assess the risks of such arrangements to those within and outside the workers' accommodation and to respect best international practices, including IFC PS4 and EBRD PR4 and applicable law.<sup>11</sup> Particular attention should be paid to the safety and security of women workers.

### Benchmarks

1. A security plan including clear measures to protect workers against theft and attack is implemented.
2. A security plan including clear policies on the use of force has been carefully designed and is implemented.
3. Security staff have been checked to ensure that they have not been implicated in any previous crimes or abuses. Where appropriate, security staff from both genders are recruited.
4. Security staff have a clear mandate and have received clear instruction about their duties and responsibilities, in particular their duties not to harass, intimidate, discipline or discriminate against workers.
5. Security staff have received adequate training in dealing with domestic violence and the use of force.
6. Security staff have a good understanding about the importance of respecting workers' rights and the rights of the communities.
7. Body searches are only allowed in specific circumstances and are performed by specially trained security staff using the least-intrusive means possible. Pat down searches on female workers can only be performed by female security staff.
8. Security staff adopt an appropriate conduct towards workers and communities.
9. Workers and members of the surrounding communities have specific means to raise concerns about security arrangement and staff.

11. See for instance the Voluntary Principles on Security and Human Rights. [www.voluntaryprinciples.org/principles](http://www.voluntaryprinciples.org/principles)



## E. Workers' rights, rules and regulations on workers' accommodation

Freedoms and human rights of workers should be recognised and respected within their living quarters just as within the working environment. House rules and regulations should be reasonable and non discriminatory. It is best practice that workers' representatives are consulted about those rules. House rules and regulations should not prevent workers from exercising their basic rights. In particular, workers' freedom of movement needs to be preserved if they are not to become effectively "trapped". To this end it is good practice to provide workers with 24/7 access to the accommodation and free transport services to and from the surrounding communities. Any restriction to this freedom of movement should be limited and duly justified. Penalties for breaking the rules should be proportional and implemented through a proper procedure allowing workers to defend themselves and to challenge the decision taken. The relationship between continuing employment and compliance with the rules of the workers' accommodation should be clear and particular attention should be paid to ensure that housing rules do not create indirect limitation of the right to freedom of association. Best practice might include a code of conduct relating to the accommodation to be signed together with the contract of employment.

### Box 9 - Dole housing plantation regulation in Costa Rica

In every plantation there is an internal accommodation regulation that every worker is required to sign together with his/her employment contract. That document describes the behaviour which is expected from workers at all times and basic rules such as the prohibition of alcohol and the interdiction to make noise after a certain time at night. In case there is any problem concerning the application of those internal rules, a set of disciplinary procedures which have been designed with the workers' representatives can be enforced. Workers are absolutely free to enter or leave the site and do not have any restrictions in relation to accessing their living quarters. Families are not allowed in the living quarters unless they have been registered for a visit.

## Benchmarks

1. Restriction of workers' freedom of movement to and from the site is limited and duly justified. It is good practice to provide workers 24/7 access to the accommodation site. Any restrictions based on security reasons should be balanced by the necessity to respect workers' freedom of movement.
2. Where possible, an adequate transport system to surrounding communities is provided. It is good practice to provide workers with free transportation to and from local communities.
3. Withholding workers' ID papers is prohibited.
4. Freedom of association is expressly respected. Provisions restricting workers' rights on site should take into account the direct and indirect effect on workers' freedom of association. It is best practice to provide trade union representatives access to workers in the accommodation site.
5. Workers' gender and religious, cultural and social backgrounds are respected. In particular, workers should be provided with the possibility of celebrating religious holidays and observances.
6. Workers are made aware of their rights and obligations and are provided with a copy of the internal workers' accommodation rules, procedures and sanction mechanisms in a language or through a media which they understand.
7. Housing regulations, including those relating to allocation of housing, should be non-discriminatory. Any justifiable discriminatory rules – for example all-male dormitories – should be strictly limited to the rules which are necessary to ensure the smooth running of the worker camp and to maintain a good relationship with the surrounding communities.
8. Where possible, visitor access should be allowed.
9. Decisions should be made on whether to prohibit alcohol, tobacco and third party access or not from the camp and the relevant rules should be clearly communicated to all residents and workers.
10. A fair and non-discriminatory procedure exists to implement disciplinary procedures including the right of workers to defend themselves (see also next section).

## F. Consultation and grievance mechanisms

All residents should be made aware of any rules governing the accommodation and the consequences of breaking such rules. Processes that allow for consultation between site management and the resident workers will assist in the smooth running of an accommodation site. These may include a dormitory or camp committee as well as formal processes that allow workers to lodge any grievances about their accommodation.

### Benchmarks

1. Mechanisms for workers' consultation have been designed and implemented. It is best practice to set up a review committee which includes representatives elected by workers.
2. Processes and mechanisms for workers to articulate their grievances are provided to workers. Such mechanisms are in accordance with PS2/PR2.
3. Workers subjected to disciplinary proceedings arising from behaviour in the accommodation should have access to a fair and transparent hearing with the possibility to contest decisions and refer the dispute to independent arbitration or relevant public authorities.
4. In case conflicts between workers themselves or between workers and staff break out, workers have the possibility of easily accessing a fair conflict resolution mechanism.
5. In cases where more serious offences occur, including serious physical or mental abuse, there are mechanisms to ensure full cooperation with the police authority (where adequate).

#### Additional issue

Alcohol is a complex issue and requires a very clear policy from the workers' accommodation management. If a non-alcohol policy is taken, special attention should be paid to clearly communicate the interdiction, how it applies and the consequences for breaching this rule. Special attention should also be paid to enforce it adequately.

## G. Management of community relations

Workers' living facilities have various ongoing impacts on adjacent communities. In order to manage these, it is good practice to design a thorough community relations management plan. This plan will contain the processes to implement the findings of the preliminary community impact assessment and to identify, manage, mitigate or enhance ongoing impacts of the workers' accommodation on the surrounding communities. Issues to be taken into consideration include:

- community development – impact of workers' camp on local employment, possibility of enhancing local employment and income generation through local sourcing of goods and services
- community needs – ways to identify and address community needs related to the arrival of specific infrastructures such as telecommunications, water sanitation, roads, health care, education, housing
- community health and safety – addressing and reducing the risk in the increase in communicable diseases, corruption, trade in illegal substances such as drugs, alcohol (in the Muslim context), petty crimes and other sorts of violence, road accidents
- community social and cultural cohesion – ways to mitigate the impact of the presence of large numbers of foreign workers, often males, with different cultural and religious background, ways to mitigate the possible shift in social, economic and political structures due to changes in access to income generation opportunities.

### Benchmarks

1. Community relations plans addressing issues around community development, community needs, community health and safety and community social and cultural cohesion have been designed and implemented.
2. Community relations plans include the setting up of a liaison mechanism allowing a constant exchange of information and consultation with the local communities in order to identify and respond quickly to any problems and maintain good working relationships.
3. A senior manager is in charge of implementing the community relations management plan and liaising with the community.

4. The impacts of workers' accommodation on local communities are periodically reviewed, mitigated or enhanced.
5. Community representatives are provided with an easy means to voice their opinions and to lodge complaints.
6. There is a transparent and efficient process for dealing with community grievances, in accordance with PS1/PR10.

**Box 10 - Examples of community relations management**

**Community consultation in the Baku-Tbilisi-Ceyhan (BTC) pipeline**

The BTC pipeline's Environment and Social Management Plans incorporated a Worker Camp Management Plan to be implemented by the construction contractor. As part of ongoing community liaison over the project as a whole, community liaison officers were appointed for worker camps who were responsible for meeting regularly with communities, identifying issues and addressing community concerns. A particular responsibility was to review HR records and disciplinary logs at worker camps to assess that rules were being implemented effectively and that any community liaison after any incidents was effective.



## ANNEX I: CHECKLIST ON WORKERS' ACCOMMODATION

	Y	N	N/A	Comments
<b>General regulatory framework</b>				
Have the international/national/local regulatory frameworks been reviewed?				
Are mandatory provisions on workers' accommodation identified?				
<b>Assessing the need for workers' accommodation</b>				
<b>Availability of the workforce</b>				
Has there been an assessment of workers' availability in the neighbouring communities?				
Has there been an assessment of the skills and competencies of the local workforce and how do those skills and competencies fit the project's need?				
Has there been an assessment of the possibility of training a local workforce in order to fulfil the project's needs?				
<b>Availability of housing</b>				
Has there been a comprehensive assessment of the different type of housing available in the surrounding communities prior to building any workers' accommodation?				
For a larger project: is that assessment included in the Environmental and Social Impact Assessment?				
Has there been an assessment of the impact on the communities of using existing housing opportunities?				
Have measures to mitigate adverse impacts on the local housing market been identified and included in the Environmental and Social Action Plan (ESAP) or other relevant action plan?				

Y	N	N/A	Comments
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### Assessing impacts of workers' accommodation on communities

Has a community impact assessment been carried out as part of the Environmental and Social Assessment of the overall project with a view to mitigate the negative impacts of the workers' accommodation on the surrounding communities and to enhance the positive ones?				
Have the potential health and safety impacts and consequences of land acquisition and involuntary resettlement occurring during the construction phase of the workers' accommodation been included in the assessment?				
Have the impacts of workers' accommodation on community infrastructures, services and facilities been included in the assessment?				
Have the impacts on local community's businesses and local employment been included in the assessment?				
Have general impacts of workers' accommodation on communities' health, (notably the increased risk of road accidents and of communicable diseases), and community social cohesion been included in the assessment?				
Does the assessment include appropriate mitigation measures to address any adverse impacts identified?				

### Types of workers' accommodation

Has consideration been given to provision of family accommodation?				
Are individual accommodations comprising bedrooms, sanitary and cooking facilities provided as part of the family accommodation?				
Are adequate nursery/school facilities provided?				
Is special attention paid to providing adequate safety for children?				

	Y	N	N/A	Comments
<b>Standards for workers' accommodation</b>				
<b>National/local standards</b>				
Have the relevant national/local regulations been identified and implemented?				
<b>General living facilities</b>				
Is the location of the facilities designed to avoid flooding or other natural hazards?				
Are the living facilities located within a reasonable distance from the worksite?				
Is transport provided to worksite safe and free?				
Are the living facilities built using adequate materials, kept in good repair and kept clean and free from rubbish and other refuse?				
<b>Drainage</b>				
Is the site adequately drained?				
<b>Heating, air conditioning, ventilation and light</b>				
Depending on climate are living facilities provided with adequate heating, ventilation, air conditioning and light systems including emergency lighting?				
<b>Water</b>				
Do workers have easy access to a supply of clean/potable water in adequate quantities?				
Does the quality of the water comply with national/local requirements or WHO standards?				
Are tanks used for the storage of drinking water constructed and covered to prevent water stored therein from becoming polluted or contaminated?				
Is the quality of the drinking water regularly monitored?				

	Y	N	N/A	Comments
<b>Wastewater and solid waste</b>				
Are wastewater, sewage, food and any other waste materials adequately discharged in compliance with local or World Bank standards and without causing any significant impacts on camp residents, the environment or surrounding communities?				
Are specific containers for rubbish collection provided and emptied on a regular basis?				
Are pest extermination, vector control and disinfection undertaken throughout the living facilities?				
<b>Rooms/dormitories facilities</b>				
Are the rooms/dormitories kept in good condition?				
Are the rooms/dormitories aired and cleaned at regular intervals?				
Are the rooms/dormitories built with easily cleanable flooring material?				
Are the rooms/dormitories and sanitary facilities located in the same buildings?				
Are residents provided with enough space?				
Is the ceiling height high enough?				
Is the number of workers sharing the same room/dormitory minimised?				
Are the doors and windows lockable and provided with mosquito screens when necessary?				
Are mobile partitions or curtains provided?				
Is suitable furniture such as table, chair, mirror, bedside light provided for every worker?				
Are separate sleeping areas provided for men and women?				

	Y	N	N/A	Comments
<b>Bed arrangements and storage facilities</b>				
Is there a separate bed provided for every worker?				
Is the practice of “hot-bedding” prohibited?				
Is there a minimum space of 1 metre between beds?				
Is the use of double deck bunks minimised?				
When double deck bunks are in use, is there enough clear space between the lower and upper bunk of the bed?				
Are triple deck bunks prohibited?				
Are workers provided with comfortable mattresses, pillows and clean bed linens?				
Are the bed linen washed frequently and applied with adequate repellents and disinfectants (where conditions warrant)?				
Are adequate facilities for the storage of personal belongings provided?				
Are there separate storages for work clothes and PPE and depending on condition, drying/airing areas?				
<b>Sanitary and toilet facilities</b>				
Are sanitary and toilet facilities constructed from materials that are easily cleanable?				
Are sanitary and toilet facilities cleaned frequently and kept in working condition?				
Are toilets, showers/bathrooms and other sanitary facilities designed to provide workers with adequate privacy including ceiling to floor partitions and lockable doors?				
Are separate sanitary and toilet facilities provided for men and women?				

	Y	N	N/A	Comments
<b>Toilet facilities</b>				
Is there an adequate number of toilets and urinals?				
Are toilet facilities conveniently located and easily accessible?				
<b>Showers/bathrooms and other sanitary facilities</b>				
Is the shower flooring made of anti-slip hard washable materials?				
Is there an adequate number of hand wash basins and showers/bathrooms facilities provided?				
Are the sanitary facilities conveniently located?				
Are shower facilities provided with an adequate supply of cold and hot running water?				
<b>Canteen, cooking and laundry facilities</b>				
Are canteen, cooking and laundry facilities built with adequate and easy to clean materials?				
Are the canteen, cooking and laundry facilities kept in clean and sanitary condition?				
If workers cook their own meals, is kitchen space provided separately from the sleeping areas?				
<b>Laundry facilities</b>				
Are adequate facilities for washing and drying clothes provided?				
<b>Canteen and cooking facilities</b>				
Are workers provided with enough space in the canteen?				
Are canteens adequately furnished?				
Are kitchens provided with the facilities to maintain adequate personal hygiene?				

	Y	N	N/A	Comments
Are places for food preparation adequately ventilated and equipped?				
Are kitchen floor, ceiling and wall surfaces adjacent to or above food preparation and cooking areas built in non-absorbent, durable, non-toxic, easily cleanable materials?				
Are wall surfaces adjacent to cooking areas made of fire-resistant materials and food preparation tables equipped with a smooth, durable, non-corrosive, non-toxic, washable surface?				
Are adequate facilities for cleaning, disinfecting and storage of cooking utensils and equipment provided?				
Are there adequate sealable containers to deposit food waste and other refuse? Is refuse frequently removed from the kitchen to avoid accumulation?				

### Standards for nutrition and food safety

Is there a special sanitary process such as the WHO “5 keys to safer food” implemented in relation to food safety?				
Does the food provided contain appropriate nutritional value?				
Does the food provided take into account workers' religious/cultural backgrounds?				

### Medical facilities

Are first aid kits provided in adequate numbers?				
Are first-aid kits adequately stocked?				
Is there an adequate number of staff/workers trained to provide first aid?				
Are there any other medical facilities/services provided on site? If not, why?				

### Leisure, social and telecommunications facilities

Are basic social collective spaces and adequate recreational areas provided to workers?				
Are workers provided with dedicated places for religious observance?				
Can workers access a telephone at an affordable/public price?				
Are workers provided with access to internet facilities?				

Y	N	N/A	Comments
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## Managing workers' accommodation

### Management and staff

Are there carefully designed worker camp management plans and policies especially in the field of health and safety (including emergency responses), security, workers' rights and relationships with the communities?				
Where contractors are used, have they clear contractual management responsibilities and duty to report?				
Does the person appointed to manage the accommodation have the required background, competency and experience to conduct his mission and is he/she provided with the adequate responsibility and authority to do so?				
Is there enough staff to ensure the adequate implementation of housing standards (cleaning, cooking and security in particular)?				
Are staff members recruited from surrounding communities?				
Have the staff received basic health and safety training?				
Are the persons in charge of the kitchen particularly trained in nutrition and food handling and adequately supervised?				

### Charging fees for accommodation and services

Are the renting arrangements fair and transparent?				
Are workers provided with adequate information about payment made?				
Where appropriate, are renting arrangements and regulations clearly included in workers' employment contracts?				
Are food and other services provided for free or reasonably priced, that is, not above the local market price?				
Is the payment in kind for accommodation and services prohibited?				



	Y	N	N/A	Comments
<b>Health and safety on site</b>				
Have health and safety management plans including electrical, mechanical, structural and food safety been designed and implemented?				
Has the accommodation manager a duty to report to the health authority specific diseases, food poisoning or casualties?				
Is there an adequate number of staff/workers trained in providing first aid?				
Has a specific and adequate fire safety management plan been designed and implemented?				
Is guidance on alcohol, drug and HIV/AIDS and other health risk-related activities provided to workers?				
Are contraception measures (condoms in particular) and mosquito nets (where relevant) provided to workers?				
Do workers have an easy access to medical facilities and medical staff, including female doctors/nurses where appropriate?				
Have emergency plans on health and fire safety been prepared?				
Depending on circumstances, have specific emergency plans (earthquakes, floods, tornadoes) been prepared?				
<b>Security on workers' accommodation</b>				
Has a security plan including clear measures to protect workers against theft and attack been designed and implemented?				
Has a security plan including clear provisions on the use of force been designed and implemented?				
Have the backgrounds of security staff been checked for previous crimes or abuses?				
Has the recruitment of security staff from both genders been considered?				
Have security staff received clear instruction about their duty and responsibility?				
Have security staff been adequately trained in dealing with domestic violence and the use of force?				

	Y	N	N/A	Comments
Are body searches only performed in exceptional circumstances by specifically trained security staff of both genders?				
Do security staff have a good understanding about the importance of respecting workers' rights and the rights of the surrounding communities and adopt appropriate conduct?				
Do workers and communities have specific means to raise concerns about security arrangements and staff?				
<b>Workers' rights, rules and regulations on workers' accommodation</b>				
Are limitations on workers' freedom of movement limited and justified?				
Is an adequate transport system to the surrounding communities provided?				
Is the practice of withholding workers' ID papers prohibited?				
Is freedom of association expressly respected?				
Are workers' religious, cultural and social backgrounds respected?				
Are workers made aware of their rights and obligations and provided with a copy of the accommodations' internal rules, procedures and sanction mechanisms in a language or through a media they understand?				
Are house regulations non discriminatory, fair and reasonable?				
Are regulations on alcohol, tobacco and third parties' access to the camp clear and communicated to workers?				
Is a fair and non-discriminatory procedure to implement disciplinary procedures, including the right for workers to defend themselves, set up?				

	Y	N	N/A	Comments
<b>Consultation and grievance mechanisms</b>				
Have mechanisms for workers' consultation been designed and implemented?				
Are workers provided with processes and mechanisms to articulate their grievances in accordance with PS2/PR2?				
Have workers subjected to disciplinary proceedings arising from conduct in the accommodation had access to a fair and transparent hearing with the possibility to appeal the decision?				
Are there fair conflict resolution mechanisms in place?				
In cases where serious offences occur, are there mechanisms to ensure full cooperation with police authorities?				
<b>Management of community relations</b>				
Have community relation management plans addressing issues around community development, community needs, community health and safety and community social and cultural cohesion been designed and implemented?				
Do community relation management plans include the setting up of liaison mechanisms to allow a constant exchange of information and consultation of the surrounding communities?				
Is there a senior manager in charge of implementing the community relation management plan?				
Is there a senior manager in charge of liaising with the surrounding communities?				
Are the impacts generated by workers' accommodation periodically reviewed, mitigated or enhanced?				
Are community representatives provided with easy means to voice their opinions and lodge complaints?				
Is there a transparent and efficient process for dealing with community grievances, in accordance with PS1/PR10?				

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