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PACIFIC AVIATION INVESTMENT PROGRAM

Vanuatu Aviation Investment Project (VAIP)

Santo-Pekoa International Airport Environment and Social Management Plan, Espiritu Santo Island

Version A, October 2016

Prepared by PAIP Technical and Fiduciary Services Unit
Adapted from AECOM New Zealand Ltd VAIP Environmental and Social Management Plan – Bauerfield International Airport (VLI), Revision C, May 2015

Quality Information

Document	Vanuatu Aviation Investment Project (VAIP) Santo-Pekoa International Airport Environmental and Social Management Plan, Espiritu Santo Island
Date	24 October 2016
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Revision History

Revision	**Revision Date**	**Details**	**Authorised**
			Name/Position
A	24-Oct-2016	For information - Pending Public Consultation Information	Darin Cusak – PAIP Program Director, TFSU

Contents

Glossary and Abbreviations

ºC	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
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
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
IA	Implementing agency
ICAO	International Civil Aviation Organisation
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
km	kilometre
L	Litres
LMC	Luganville Municipal Council
LED	Light Emitting Diode
Localizers	A ground-based navigation aid that give lateral guidance to landing aircraft.
m/ m^2/ m^3	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

NBV	National Bank of Vanuatu
NBCS	National Biodiversity Conservation Strategy
NGO	Non-Governmental Organisation
OCTA	Office of the Chief Trade Adviser
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
PWD	Public Works Department
RAP	Resettlement Action Plan
RBV	Reserve Bank of Vanuatu
RPF	Resettlement Policy Framework
SEST	Surface Enrichment Spray Technique
SON	Santo-Pekoa International Airport located in Luganville, Espiritu Santo.
SPREP	South Pacific Regional Environmental Program
TAH	Whitegrass Airport on Tanna
TFSU	Technical and Fiduciary Services Unit
TPH	Total petroleum hydrocarbons
TMP	Traffic Management Plan
TOR	Terms of Reference
USP	University of the South Pacific
VAIP	Vanuatu Aviation Investment Project
VEAN	Vanuatu Environment Advocacy Network
VPF	Vanuatu Police Force

VHF	Very high frequency
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.

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.

This PESMP includes information on mitigation, monitoring, responsibilities and institutional capacity. 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 Santo.
- Disposal of waste materials.
- Safety hazards for workers and users of the facilities where upgrades are occurring.
- Water demand management for freshwater resources.

This PESMP is designed to address these issues through:

- Implementation of this PESMP through the Contractor's ESMP (CESMP) and associated Code of Practice documents included in Appendix E.
- Regular supervision and monitoring of the implementation of the PESMP (refer PESMP monitoring plan).

1. 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^2 spread over 1,300 km. Santo is the largest island and hosts the country's second largest urban centre, Luganville.

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 VLI airport to cater for Code E aircraft also brings direct benefits to disaster responses in all of the outer islands, by being able to handle Code D 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.

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. Following changes to the original scope of works at Bauerfield International Airport (VLI) finances have been released for urgent repairs that are needed to the pavement areas at Santo-Pekoa International Airport (SON) in Luganville on Espiritu Santo (Santo).

The Santo-Pekoa International Airport is located in Luganville on the island of Espiritu Santo, Vanuatu. The International Civil Aviation Organisation (ICAO) Code 4C runway flexible pavement has the orientation 12/30, is 1,998m long and 30m wide with 4.5m wide un-sealed shoulders. The airport services both international turbo jet aircraft and domestic operations. The runway is supported by turning nodes at both runway ends. There is a 200m long Code C flexible pavement taxiway, 18m in width, connecting the runway to the apron. The flexible pavement apron is approximately 100m by 100m. Aeronautical Ground Lighting (AGL) is provided in the form of edge lighting. The Navigational Aids present at the airfield are windsocks, Precision Approach Path Indicator (PAPI) and a Non-Directional Beacon (NDB). The airport services a minimum of twice daily ATR-72 flights, plus twice weekly international flights (B737-800) from Brisbane, as well as numerous light aircraft movements.

The Contract works include milling and overlay of existing asphaltic runway, taxi way and apron surfaces, filling areas subject to ponding, repainting runway, taxiway and apron markings and repair of damaged airside structures as well as the provision of new airport related equipment.

In order to progress to the bidding of the proposed pavement and associated works at SON, a site specific Project 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 safeguard requirements.

1.2. 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 SON as described in Section 2 of this document and addresses impacts and mitigation measures identified at each stage of the project's execution, namely detailed design, construction and operation. The detailed design plans for this project have yet to be completed and this PESMP will be updated once those designs are approved. This PESMP will be included in the bidding documents and will form the basis of the 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. 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 is updated as and when project scope, detailed designs or further information becomes available (e.g. as a result of consultation with stakeholders and the general public) or when there are changes to the project which will impact on the public, thus creating a hierarchy of document versions as the project progresses. At any one time there is only one PESMP which is considered current and applicable to the project. As of October 2016, the Version A of the SON PESMP is considered to be the current version.

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 CESMPs 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. The finalised PESMP should be included with the procurement bid documents for the SON works.

Figure 1: Environmental Safeguard Document Hierarchy

1.4. PESMP Methodology

The original scope of works for SON under the VAIP did not require a site specific PESMP as the works were focused on replacing or upgrading equipment rather than any infrastructure. Since the scope of works has now been expanded to include repairs of the pavement, a new site specific PESMP is required for SON. As such, information from the AECOM VAIP VLI Project ESMP Version C (AECOM, 2015) has been extracted and adapted to suit the specific conditions at SON and used as the basis of this SON PESMP.

Details of the works and the current pavement condition have been extracted from the technical specification documentation. Consultations with VPMU and DEPC have been held to discuss specific impacts with particular focus on areas such as aggregate sourcing. VPMU is undertaking initial community consultations in parallel with the development of this PESMP. Depending on the

outcomes of the initial consultations, additional meetings may need to be scheduled as final detailed designs become available.

This PESMP is a dynamic document that can inform the design and be modified accordingly as the design is finalised (and subsequently reissued). At this stage of the SON design process, there are some technical specifications on the minimum requirements for the repair works needed, however the final designs have not yet been undertaken. These will be addressed and updated in this PESMP once the design build contract has been awarded. Information from the AECOM VAIP VLI ESMP Rev C and technical consultations have been used to assist in identifying the impacts and mitigation measures for this document.

2. SON Upgrade Description of Works

2.1. Overview of Works

The VAIP SON program consists of the following primary tasks:

a) Rehabilitation and overlay of pavement areas

b) Installation of new air traffic control equipment.

c) Installation of new air navigation aids.

d) Installation of new secure communications.

e) Evaluation of ARFF capacity.

f) Installation of new security equipment.

At the time of the development of this PESMP version, the detailed design work for all of these components had yet to be completed. It is anticipated that these proposed SON tasks will require some short term disturbance but will have no more than minor impacts on the environment and sensitive social receptors.

2.1.1. Repair of Pavement Areas

2.1.1.1. Current Situation

Visual inspection suggests the asphalt surfacing is dense asphalt with high porosity and a maximum aggregate size of 14mm. On all of the airport pavements (runway, taxiway and apron) the asphalt surface is highly oxidised and embrittlement of the surfacing has been underway for numerous years. One third of the apron is chip seal which is also highly oxidised with significant chip loss.

The severity of the ravelling has varying levels. Medium to high severity ravelling is occurring in the central 12m of the runway, touchdown and braking zones. The outer / non-trafficked areas have low severity ravelling.

On the runway, in the location of braking (high speed zones along the central 12m of the runway) and sharp turning, the inspection team noted a high frequency of high severity ravelling. In all other areas of the runway low to medium severity ravelling is observed. High severity ravelling results in significant quantities of loose aggregate materials. This is a major foreign object debris (FOD) risk. Each and every aircraft movement is likely dislodging aggregate from the surface and creating FOD. Ravelling is also occurring on the taxiway, specifically at the intersection with the runway and central trafficked zone.

The apron pavement is truncated with a slot drain installed in an east/west direction about 1/3 of the length of the apron from the terminal. North of the slot drain is asphalt, 60% of which is treated with jet seal fuel resistance sealer. Low to moderate ravelling is occurring over 60% of the apron north of the slot drain, including areas covered with jet seal. The apron pavement surfacing south of the slot drain, (referred to hereafter as the “ground service area”), is a chip seal. The chip seal surface is suffering from very high severity ravelling and is causing some significant FOD issues. This area is not trafficked by aircraft; it is mainly used by ground service vehicles and passengers walking from the aircraft to and from the terminal building. However due to these movements, excessive amounts of FOD are making its way on to the northern portion of the apron used by aircraft.

Depressions are evident on the apron and are of medium severity and regularly hold water & detritus based on the staining observed. The location of the depression is outside of aircraft wheel track zone but is impacting ground servicing equipment and passengers.

2.1.1.2. Overview of Pavement Works

The deteriorated asphalt surfacing is causing FOD related concerns and is demanding a labour intensive FOD management programme. Surfacing cracks require treatment before the pavement surface deteriorates to a state where it presents FOD related concerns. Collapsed or exposed structures in the operational manoeuvring strip areas present an operational safety issue. These require repair to mitigate safety concerns.

The SON works are being tendered as a design build contract and the design and construction solution will consist of pavement resurfacing by the Contractor. The extent of works for the SON is defined in Figure 2 (see Appendix A for larger version) and shall include all runway, taxiway and apron surfacing areas and structures in need of improvement.

The primary tasks to be undertaken are:

- Removal and replacement of asphalt surfacing
- Protection of existing Runway, taxiway and apron edge lights
- Full airfield ICAO compliant paint markings reinstatement
- Filling in of depressions adjacent to the terminal building
- Repair or replacement of concrete structure at CH 885
- Repair or replacement of AGL concrete lid for chamber 6 metres from runway edge

At this stage in the project development, initial technical specifications of the works are available however detailed design plans are not yet available. Once contracts have been awarded and the detail design plans are developed, this PESMP will be updated to reflect that information.

Figure 2: Extent of Works at Santo-Pekoa International Airport

Surface Treatment Regular Wheel Trafficked Zones

The ravelling of the airside pavements at SON has progressed to high severity with the asphalt surfacing being highly oxidized. Due to the extensive loss of aggregates in the wheel trafficked zone the texture is very coarse and progressed to a state where rehabilitation is necessary. The

Contractors Design shall allow as a minimum for the complete removal of the existing asphalt surfacing and replacement with industry standard asphalt.

Structures

There are a number of collapsed or dilapidated structures that exist with the manoeuvring operational area. These pose an operational threat to aircraft movements and should be upgraded to meet the required design aircraft loadings.

Depressions

A range of high severity depressions exist in the apron area between the aircraft parking and the terminal. This is both a passenger trip and a ground servicing equipment safety hazard. These will be repaired/filled with a suitable asphalt product.

Chamber Structures

There are a minimum of two notable airside infrastructure items that present an operational threat to aircraft within the manoeuvring area. These include a minimum of two manhole structures in the runway strip which have either collapsed or missing lids. The Contractor's design should allow for the replacement of the chamber lids with ones that are capable of receiving the design aircraft loading and enable ease of maintenance access.

Airfield Paint Markings

All airfield pavement markings (runway, taxiway and apron) are faded and past their life expectancy. Following the completion of the surface treatment works all airfield markings shall be reinstated.

2.1.2. Installation of New Air Traffic Control Equipment

This will include the provision of new ATS consoles SON to monitor airport operations.

2.1.3. Installation of New Air Navigation Aids

The VAIP project will finance critical navigation aids to ensure safe operations, including the installation of DVOR and DME for SON. 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.

2.1.4. Installation of New Secure Communications

The project will upgrade of nationwide VHF communications and supply and installation of 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.

2.1.5. Evaluation of ARFF Capacity

Fire safety equipment including personal protection equipment (PPE) will be provided to ARFF employees at SON.

2.1.6. Installation of New Security Equipment

New x-ray machines for passenger baggage and cargo screening are proposed for SON.

2.2. Alternatives

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.

The 'no action' alternative would result in the further degradation of the airport pavements and increase the likelihood that airlines would cease to fly into SON. The 'no action' alternative would likely cause negative impacts to the socio-economic environment of Santo and is not considered an appropriate option.

2.3. Construction Methodology

The design build contract for the physical works at the site have yet to be awarded so the final design plans and precise construction methodology is unknown. Once this information is available, it should be updated into this PESMP.

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

Runway Aggregate Requirements

Aggregate demands for the SON pavement works are estimated to be approximately 11 tonnes (+/- 20%), however, exact quantities will be confirmed during the detailed design phase of the project. It is assumed that both basalt and coronous aggregates will be required. There is one existing permitted basalt quarry on Santo at Wailapa River, south Santo which has been previously used to supply other infrastructure projects.

Coronous aggregate is available from several active quarries on Santo that are currently permitted. Only existing permitted quarries can be used for the VAIP works.

Prior to any local quarries being used for the SON project, public consultation will be completed with any affected parties relating to each new or re-opened quarry site.

Accessible sources of suitable aggregate materials will need to be identified in the CESMP and approved by VPMU and DGMRW. In case these are not available or it is more cost effective, aggregate may be imported.

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 E 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. As noted above, 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.

2.3.4. Construction Camp and Lay Down Areas

The construction camp is not a workers residential camp. The construction camp consists of the site offices, storage and associated facilities.

The proposed location for the construction camp is indicated in Appendix A; at this stage, the preferred location is within the airport boundaries just to the south west of the apron and terminal buildings. The final selection of lay down sites has yet to be decided and will be addressed in the detailed design phase of the project. Once identified, this information should be included in the CESMP and, if necessary, updated in this PESMP. Should the lay down area be located off AVL property, an easement would need to be arranged on the leased lands.

The exact details of the size and site management (OHS, 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 SON security perimeter the 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 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"[1].

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

Prior to the establishment of the asphalt plant, consideration should be made on where the asphalt plant is to be located. Although plant will be small scale and the use of this machinery will be short-term, 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 (the Luganville communities to the east, south and west of the airport and groundwater supplies); these potential impacts will need to be considered when identifying the location of the construction camp and laydown areas.

2.3.5. Workers Camp

The construction camp is not residential, and it is likely that there will be a need for a workers camp to be established at SON due to the limited accommodation available in Luganville. Should this be the case, and the workers camp is not within the boundary of the airport, appropriate land lease arrangements should be made and approved by the Supervision Engineer in conjunction with VPMU and the necessary steps required in the IFC/WB Workers Accommodation: Process and Standards Codes of Practice (Appendix E) should be followed. These steps have been included in the Code of Practice in Appendix E. Should a workers camp be required then these guidelines must be adhered to and updates made to the PESMP and CESMP as appropriate. A Workers Camp Management Plan would be required from the Contractor. Particular attention should be paid to sanitary water systems and waste management.

2.3.6. 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). Deviations from the nominated access routes will not be tolerated. Access to work areas can be via the airfield, so long as the route is approved by AVL's Works Safety Officer (WSO).

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. Any land required for a temporary lay down area will need to be negotiated with the custom owner and lease holder and agreed by the VPMU before the camp is established.

2.3.7. 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 self-bunded tank or, with the Supervision Engineers permission, within 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.

2.3.8. Waste

Luganville Municipal Council (LMC) manages a landfill which is located 3km to the north west of the airport. This landfill is coming to the end of its active life and is likely to be relocated in the near future. This landfill only accepts general waste.

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

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.).

The contractor is able to dispose of general waste (including only small qualities of lightweight packaging materials) at local landfills, however, the situation at the LMC landfill is fragile and therefore the preferred disposal location of general wastes for SON is off Santo. Port Vila Municipal Council (PVMC) should be contact by the Contractor to assess this possibility of using Bouffa Landfill on Efate for this waste. 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.

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 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 (site location) advice (for example construction and training in use of compositing toilet facilities).

2.3.9. Occupational 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 Codes of Practice in Appendix E 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 Codes 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-managment-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 Codes of Practice in Appendix E and summarized in section 6.3.1.

2.3.10. Duration and Timing of Construction Activities

As the contractors have yet to be appointed the exact duration of works is not yet known. Once the contract is awarded, a detailed working plan showing the staging of the works for each working shift is to be submitted to AVL prior to any works commencing. The staging of the works is to be in coordination between AVL, the Contractor, airlines and Supervision Engineer to eliminate disruptions to flight schedules and to ensure safety of all parties is maintained at all times.

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. Based on current international and domestic airline schedules, available working hours will be as follows:

- Monday, Wednesday and Sunday 1600 to 0600 (next day)
- Tuesday and Wednesday 1400 to 0600 (next day)
- Friday and Saturday 2100 to 0700 (next day)

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.

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[2].

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.

[2] AirBiz (2015) Vanuatu Airport Limited, 11914r01d Bauerfield Airport Technical Assistance Review, Final Report, 2 November 2015

3. 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 draft 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 SON. 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 or 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.

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.

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.

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.

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 permit application requires the following site details:

- Details of the area to be covered by the permit which must not exceed 0.5 km^2 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^3 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.

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 Codes of Practice (Appendix E) 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.

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 SON 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 Bid 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 LMC, they do not have any regulations or by-laws regarding noise or operating hours and days.

LMC operate the only landfill on Santo. This landfill accepts only general waste and 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 SON 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 for 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 Contractor's ESMP.

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) [3].

[3] 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. 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. Luganville is situated on the south coast of the island Espiritu Santo, Vanuatu's largest island. The land area is approximately 4,000 km^2.

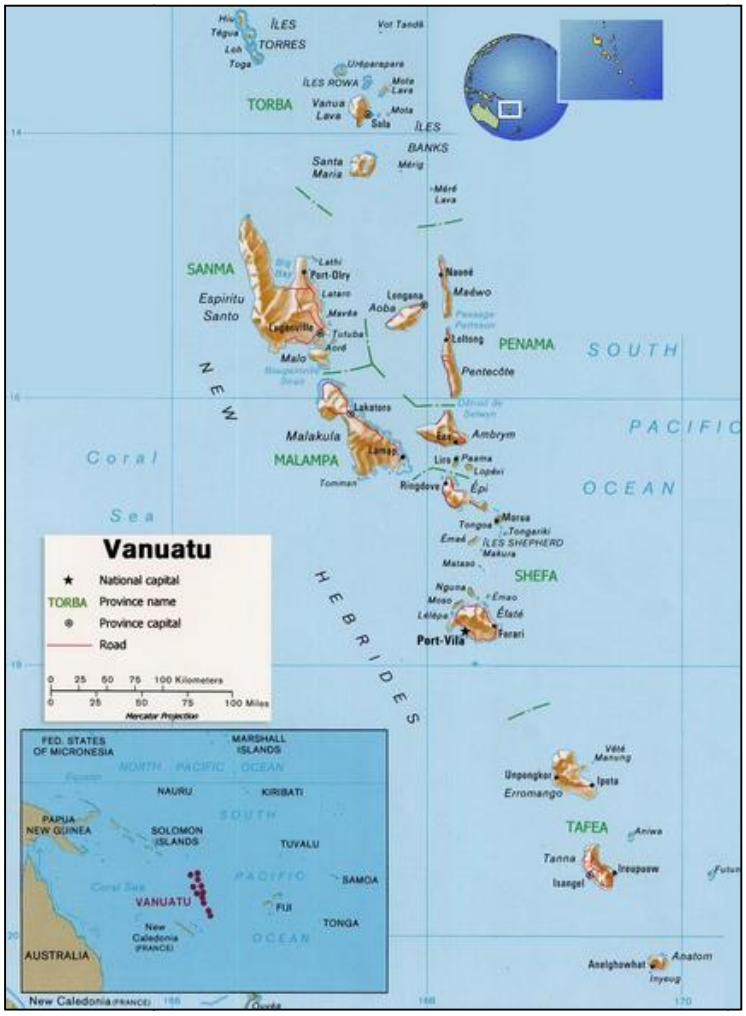


Figure 3: Location Plan of Vanuatu showing Luganville on Espiritu Santo

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

Vanuatu's exclusive economic zone (EEZ) extends some 827,891 km^2 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 4: Vanuatu's Exclusive Economic Zone

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

SON is located in a lowland area on the south east side of Santo (refer to Figure 7), approximately 4km east of Luganville, Vanuatu's second most populated city. The centre of Santo consists largely of sparsely inhabited mountain ranges; Mount Tabwemasana on Santo is Vanuatu's highest peak at 1,879 m above mean sea level. Approximately 73% of Vanuatu is forested. The majority of the population live in the lowland coastal areas.

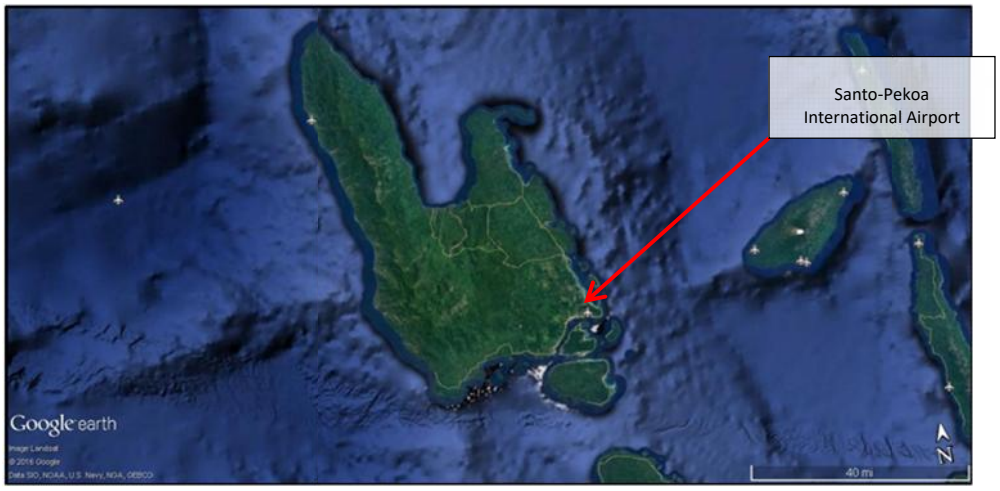


Figure 5: Santo-Pekoa International Airport, Espiritu Santo

Source: Google Earth 2016, Imagery date 9 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. Luganville has an average annual temperature of 26 ⌈C with August averaging at 24 ⌈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. Monthly averages in Santo fluctuate between 100-300mm per month with August and September being the driest months.

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[4].

4.1.3. 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. Luganville water supply is owned by GoV under the MPU. Luganvilles existing water supply system was built by American soldiers during WWII and is now maintained by the PWD in Santo. The source is from the spring and water flows into an open well from where it is pumped uphill into the storage tanks. Two reservoir tanks are located on hills close by the source which supplies the community and urban centre through gravity mains. The storage tank capabilities are 900 and 1100m³.

In Luganville the groundwater aquifer is under increasing pressure from housing, agriculture and other developments. Groundwater quality in the urban centre of Luganville is generally good with only calcium hardness to note. The water supply currently does not require treatment other than chlorination; however it in increasingly necessary to relocate the treatment plant at Luganville to the new bore well site to meet the water demand[5].

4.1.4. Land Use around SON

The land to the north and northeast of SON is dominated by vegetated undeveloped lots and residential settlements with some commercial/industrial activity located to the east, south and west. To the south, beyond the residential settlements is the coastline. The airport is located approximately 40 m above mean sea level and the topography at SON is relatively flat.

[4] Australian Government Pacific Climate Change Science, http://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/15_PCCSP_Vanuatu_8pp.pdf

[5] SOPAC, Pacific Water. http://www.pacificwater.org/pages.cfm/country-information/vanuatu.html

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[6].

Freshwater fish restricted to Vanuatu include the gobies. Endemic marine fish include the Sharpnosed Coralbrotula, a flounder, and a duckbill eel[7]. 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.

SON is approximately 1.5km 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 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 [4].

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

[6] 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.

[7] Living National Treasures, http://lntreasures.com/vanuatu.html

4.2.3. Conservation Areas on Santo

Parks and Sanctuaries on Santo include the Loru Rainforest Protected Area situated in the east coast lowland rainforest. This 220 hectare park was established in 1993 by Chief Caleb Ser and supports a rich variety of Vanuatu's bird, bat and plant life as well as a diverse range of marine species in the two-kilometre stretch of fringing reef. The other protected area in Santo is the Vatthe Conservation area near Big Bay in the north of the island.

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

- Bat caves.
- Mangroves – identified as been vulnerable as they have been damaged / degraded by human impacts.
- Seagrass beds – identified as vulnerable

Lowland forest ecosystems – identified as vulnerable

The area in which the airport is located is a on the periphery of a settlement, there are no specified conservation areas within the vicinity of SON.

4.2.4. Rare or Endangered Species

The 2008 International Union for Conservation of Nature (IUCN) Red List identified a total of nine species in Vanuatu of which three are vulnerable and two are near threatened, and 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 Santo is 39,500 with 13,156 living in Luganville. 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. Luganville is home to a sub-centre of the University of the South Pacific, an educational institution co-owned by 12 Pacific countries[8].

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 Luganville. In Vanuatu there are 30 health centres and 97 active dispensaries providing inpatient and outpatient care, preventative medicine and primary care around the islands[9].

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

[8] International Council for Open and Distance Education, www.icde.org
[9] Commonwealth Health Online, www.commonwealthhealth.org/pacific/vanuatu

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[10]. In 2013, tourism and travel services 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[11].

The average household income in Vanuatu is approximately 60,700 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 SON land. Any infrastructure changes or future upgrade works proposed at SON 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.

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.

[10] Statistics from Vanuatu Hotels and Resorts Association.
[11] 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/

d) An indigenous language, often different from the official language of the country or region

Projects situated in Vanuatu would not be expected to trigger OP 4.10 as only characteristic (b) is relevant.

4.3.5. 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 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[12].

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 to3.6 mm per year. Sea level does fluctuate year to year and decade to decade due to El Nino-Southern Oscillation. Annual maximum and minimum temperatures have increased since 1950; at VLI, maximum temperatures have increased at a rate of 0.17°C per decade. Data since 1950 for the capital city of 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[13].

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	5–16	10–27	17–47
Medium emissions scenario	0.3–1.1	0.8–2.0	1.3–3.1	5–16	8–31	20–59
High emissions scenario	0.4–1.0	1.1–1.7	2.0–3.2	3–17	7–31	21–63

[12] Australian Government, Pacific Climate Change Science, http://www.pacificclimatechangescience.org/
[13] Australian Government Pacific Climate Change Science, http://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/15_PCCSP_Vanuatu_8pp.pdf

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 for the asphalt overlay is 10 to 15 years for the runway. Therefore, the climate change projections for 2030 reflect the VAIP project most adequately. At SON 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. Detailed design work may require flood hazard modelling and this should allow for predicted changing rainfall patterns.

SON is approximately 40 m above mean sea level and approximately 1.5km from the coast. Therefore, it is unlikely that the predicted rises in sea level will have an effect on the airport operations or design parameters.

5. 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/PESMP process to inform detailed design and mitigation measures. This PESMP will remain a draft until consultation has been completed and this PESMP updated to reflect the outcomes.

5.2. Consultation Plan

Consultations plan are currently being developed for this SON PESMP and will be undertaken mid October 2016 with communities and stakeholders in Luganville, Espiritu Santo. It is not anticipated that there will be any significant long term negative impacts on the surrounding communities; however it is likely that disturbances will be caused in the short term for the duration of works. It is expected that noise and dust levels will increase in the area surrounding the airport as well as traffic associated with the transportation of materials and equipment. Consultations with the communities will be ongoing throughout the development of this project and notifications for out of hours work will be given in a timely manner.

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 as they relate to SON. Where the Master Plan process has the potential to impact on communities outside the airport, 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

5.3. 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) 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 SON, and community centres on Santo. Final PESMP, and any updates, as well as the CESMP, will be further disclosed at the same locations.

5.4. Sensitive Receptors

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. Specific consultation should be undertaken with surrounding communities before and during construction activities to ensure impacts are minimised and community safety in ensured. This is also important for the transport of materials and equipment to and from SON. Mitigation measures may include 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.

5.5. Resettlement Policy Framework

Prior to any quarries, or off-airport construction or worker 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. Should it be identified that additional land, for example short term use of land is required for the VAIP project, the Abbreviated Resettlement Action Plan (ARAP) developed for VAIP project works will be applicable to the SON project works.

6. Environmental and Social Impacts

6.1. Overview of Impacts

The VAIP SON scope is to rehabilitate the existing pavements and upgrade the existing navigation aids. At this stage, new land acquisition could be a possibility should a workers camp be required however, the project is unlikely to cause any major negative environmental or social impacts. The social outcomes of VAIP SON works are expected to be positive by improving safety, accessibility and mobility of island communities.

6.2. Environmental Impacts

6.2.1. Solid Waste

Scarification, replacement of pavement material and other works are expected to generate millings, excess of soil and demolition waste. Additionally solid waste in the form of general office waste, household type waste (from any workers camps) and packaging materials is also expected to be generated during the phases of work at SON. Luganville waste management systems are in need of upgrading with the one approved, licensed landfill approaching the end of its functioning life. The landfill is located 3km to the west of SON. LMC manages the landfill which is licensed to receive general waste only. The contractor is able to dispose of general waste (as defined in section 2.3.8) at local approved landfills, however, the situation at the LMC landfill is fragile and therefore the preferred disposal location of general wastes for SON is off Santo. Port Vila Municipal Council (PVMC) should be contact by the Contractor to assess this possibility of using Bouffa Landfill on Efate for this waste.

As also noted in section 2.3.8, 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.

Any 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.

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.

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 SON project has yet to be confirmed, however the following water resource options are 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.
- PWD 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 SON 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 (e.g. related to the construction phase).

There is the possibility that in the process of construction or quarrying works fauna (e.g. nesting birds) could be impacted or the temporary removal of vegetation (e.g. for quarrying activities or construction lay down area) could impact on potential habitats. The habitats surrounding the runway are primarily broken vegetation to the north and northeast and settlements to the east, south and west. 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 Code of Practice in Appendix E 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 would be 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 Contractor 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 fire fighting. The spill response plan should include provisions for mitigating any adverse effects.

The airport building structures may be constructed of ACM. During the design works and construction phase planning works, consideration should be made to the exposure risks, management and disposal of this hazardous material. Once the design and scope of works has been established, the PESMP will be updated subsequently to reflect this.

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 WB/IFC EHS Guidelines[14] 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 plant.

Noise and vibration is likely to be an ongoing issue throughout the construction stage and to a lesser degree the operational phase (e.g. aircraft landing and take-off) with any increases in international air traffic movement (see Section 2.4). Operationally, the airport represents existing infrastructure any noise or vibration impacts are likely already being experienced by the local community. However 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.

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 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. 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.

[14] International Finance Corporation, Environmental Health and Safety Guidelines, General Guidelines: Noise Management

Sediment has the potential to be generated during any excavations. The confirmed areas of disturbance will be 67,000m^2 project works area of pavement with an estimated 4,800m^3 of materials generated. The main areas of disturbance will be the main runway, the apron areas and taxiways. No work is anticipated on the pavement shoulders however there may some additional disturbance related to construction and workers camps. This will be clarified at the detailed design stage and updated in this PESMP.

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.

No ongoing impact to air quality is expected as this is rehabilitation of existing infrastructure. This should be revisited if the Master Plan development process reveals significant increases to flight numbers at SON.

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 marine traffic associated with importing aggregate from overseas. These impacts will be short-term and through good mitigation and traffic management the impacts should be minimal. The Contractor is responsible for developing and implementing a Traffic Management Plan (TMP) as part of the CESMP. 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.). Upon completion of the construction phase of works, traffic and road safety impacts caused by the SON 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. Sanitary system must be of sufficient size for the numbers of workers and must take into account the disposal facilities on Santo.

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. 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 materials. If new quarries are to be established or existing quarries reinstated the measures in Section 7.1 and the Codes of Practice in Appendix E must be followed.

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 E 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.

6.2.11. Biosecurity

Some equipment and potentially materials 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.

6.2.12. Impacts on Cultural Property

The Vanuatu Cultural and Historical Sites Survey (now known as the Vanuatu National Heritage Registry) were established in 1990 and were initially funded by the European Union. 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.

6.2.13. 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).

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. While no expansion is included in the scope of this project it is something that would need to be considered during the Master Plan development process for Vanuatu at a country level.

6.2.14. Coastal and Marine Environment Impacts

A number of activities may have the potential to have minor impacts on the marine environment in nearby waterways, 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

Potential impacts particularly impacting sensitive receptors, such as the community surrounding SON and communities on the haul routes, will be addressed through the public consultation process throughout the life of the project and updated in this PESMP. 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.

6.3.1. Occupational Health and Safety (OHS)

The primary hazards associated with the works at SON have been identified as construction works involving hot bituminous products (up to 165 °C), working at night 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 Code 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
- Labour 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 Codes 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-managment-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.

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 is 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 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) 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, counselling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labour shall be provided.

The IEC campaign shall adopt the 'Road to Good Health' Toolkit methodology (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 behaviour 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 labour 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. 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 C/PESMPs 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 the VAIP RPF and Appendix E).

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. 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. Use closed/covered trucks for transportation of construction materials. 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). Where there is no water supply to a quarry, water would need to be brought to site via tanker. It is preferable that utilised quarries implement a closed circuit water management cycle that will allow for treatment of wastewater contaminated with sediment (through settlement ponds) and collection of wastewater contaminated with hydrocarbons for treatment through an oil water separator.

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 or loading point 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 breaking for noise reduction, speed control measures in and near settlements (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 significance 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 advisement 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 only resume 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 scrubbers) should be located at the construction lay down area or quarry to contain potential environmental impacts. The proposed location of the construction lay down area at SON is a minimum of 100m from scattered residences so the location of this needs to be considered in the final design plans. Any asphalt plant should be located 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).

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.

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.

The terminal buildings subject to repair works may be contain ACM. During the design works and construction phase planning works, consideration should be made to the exposure risks, management and disposal of this hazardous material. Once the design and scope of works has been established, the PESMP will be updated subsequently to reflect this.

7.3. Safety and Traffic Management

The airport is protected by a perimeter security fence. It is likely that all works, including the construction lay down area 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) and around specific work areas.

7.4. Stormwater and Water Management

7.4.1. Stormwater Management

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.

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.

7.5. Bitumen, Asphalt and Concrete Plant

A small scale bitumen and asphalt plant will be required for the works. 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 product will be located within a secure compound (the construction lay down area or quarry) to ensure security and reduce risk of unauthorised access.

In the CESMP, the Contractor shall propose the location of the asphalt plant and the location shall be subject to approval by the Supervision Engineer and compliant with this PESMP. Although the use of this machinery will be short-term, 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 should include a bitumen and asphalt plant rehabilitation plan in their CESMP documentation. Other hazardous materials may be used in preparing the seal coats for the pavement which must be stored on hard stand areas within bunded areas (both should be available at the construction lay down area or quarry).

If concrete is required by the project, and there are no suitable concrete production plants available to source from, concrete may need to be produced in-situ. In this instance, 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 or production must be collected and treated (settling and neutralisation through pH adjustment) before disposal (see Section 7.9).

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 asphalt and, potentially, concrete. 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 away from 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 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. The construction lay down area is not a residential camp.

7.7. Workers Camp

It is preferred that foreign contract and project staff utilise existing local accommodation, however this may not be sufficiently available which may require the installation of a workers camp. Should this become necessary, the Contractor and Supervision Engineer will work with AVL and VPMU to determine a suitable location for this camp and to secure all necessary agreements with lease holders and custom owners of any private land needed. A Workers Camp Management Plan will be developed before any installation is made and will follow the IFC/WB Workers Accommodation: Processes and Standards Code of Practice included in Appendix E.

Particular attention should be paid to the septic water system and waste management facilities at any camps ensuring capacity for the number of workers and taking the disposal facilities on Santo into account. This PESMP and the CESMP will be updated to reflect this information.

7.8. Erosion and Sediment Control

The land within the vicinity of SON 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 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).

7.9. 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 Santo, 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 an LMC approved disposal site, 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 VPMU, DEPC and AVL advice and approved by the 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 marine or coastal environment is prohibited. Discharges of treated wash water are to occur to land only at least 500m from any bore hole used for potable water at a rate not exceeding 20mm/day or the infiltration rate of the ground (i.e. no ponding or run off). Sufficient measures must be used to avoid direct discharges are required 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 fire fighting), 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.

7.10. 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.)

LMC landfill is the only authorised landfill on Santo and is operated by LMC. This landfill only accepts general waste and is nearing the end of its usable life. LMC see closing this landfill and relocating it as a priority activity as such, this landfill is not suitable for large volumes of waste material.

The contractor is able to dispose of general waste (including only small amounts of lightweight packaging materials) at local approved landfills, however, the situation at the LMC landfill is fragile and therefore the preferred disposal location of general wastes for SON is off Santo. Port Vila Municipal Council (PVMC) should be contact by the Contractor to assess this possibility of using Bouffa Landfill on Efate for this waste.

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.

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.

7.11. Socio-Economic Measures

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

Furthermore should the project require the use of and new land e.g. a new quarry site or temporary use for workers camp, the (ARAP) developed for VAIP under the VLI project works will be applicable to the SON project works.

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. PESMP Implementation

8.1. Roles and Responsibilities

The following are the roles and responsibilities:

- **VPMU:** The VMPU 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.
    - 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 SON 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 SON and available for support at other times to respond

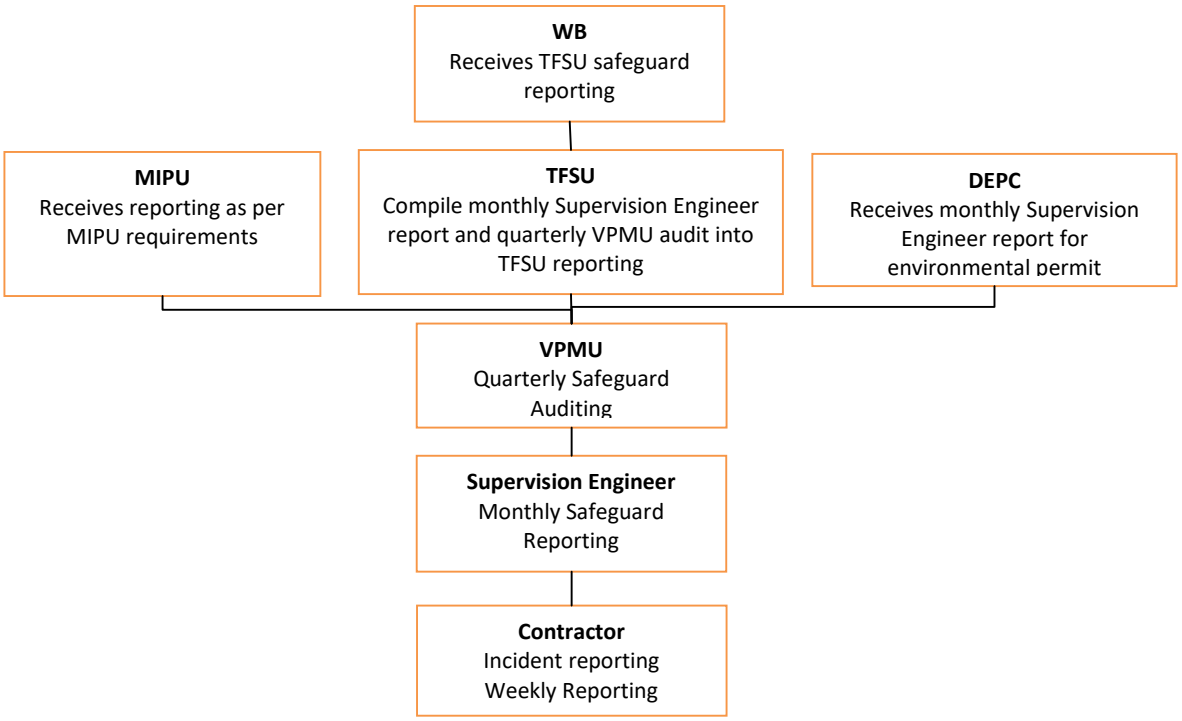
to incidents, non-compliances, review of CESMP, update of the PESMP and other tasks.

- 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 SON 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. lay down 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 SON as described in this PESMP.

Figure 6 Safeguard Reporting Responsibilities for SON



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 VMPU 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.

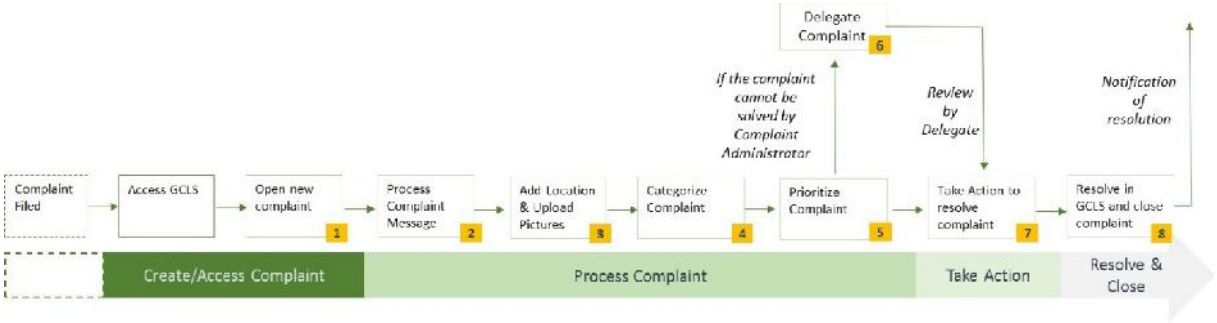
It is the responsibility of the Contractor and Supervision Engineer to ensure that they allocate budget lines to have the necessary tools and equipment for the mitigation and monitoring measures as stipulated in this PESMP. At this stage, it not anticipated that budget needs to be allocated for equipment,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

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, ccommunities 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

9. 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 (SON 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.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.

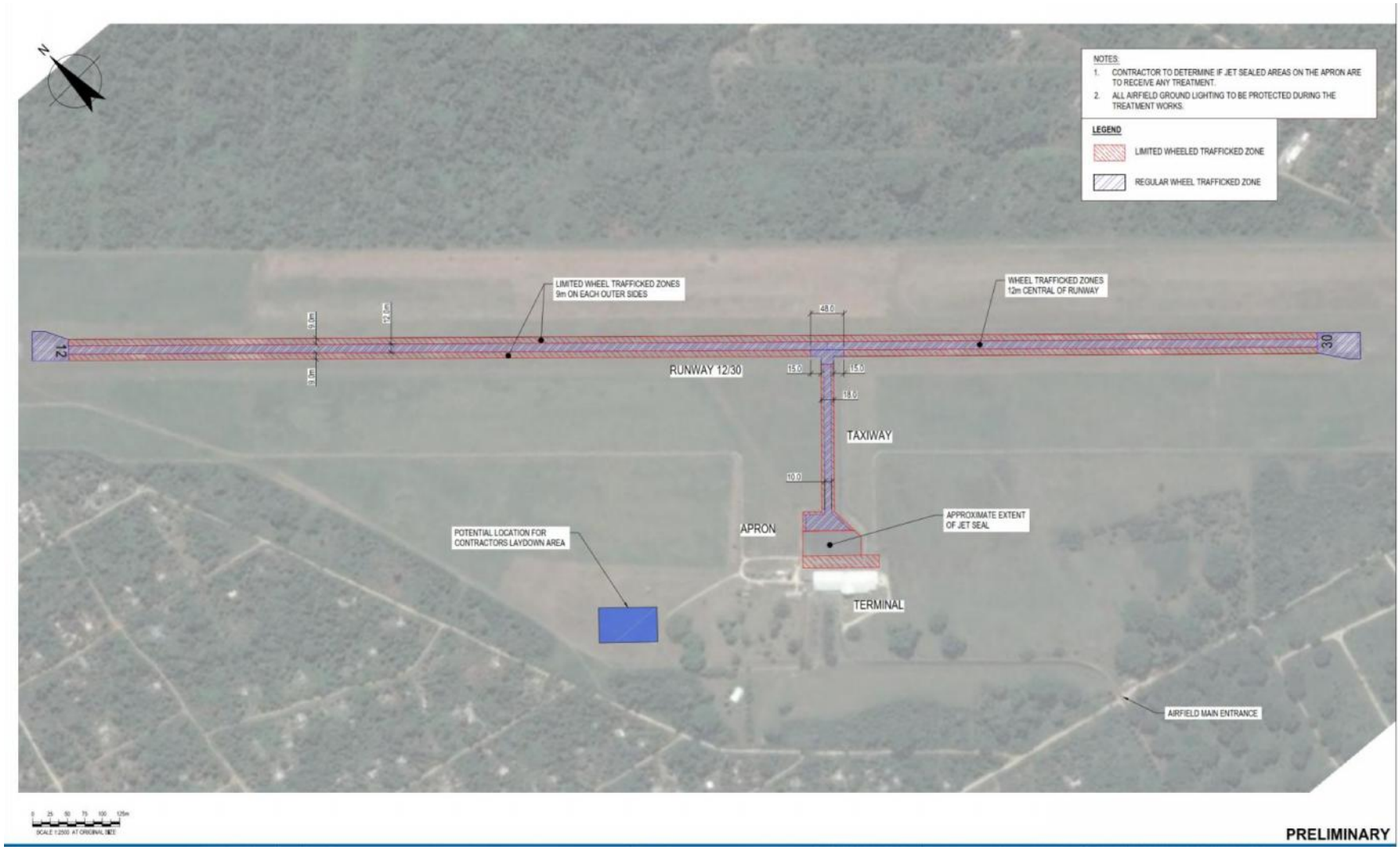
The wet season in Vanuatu is usually November to April which coincides with the cyclone season. While it is preferable, but not compulsory, to undertake construction activities outside of the wet season, it is possible that that construction will commence during this season and it is therefore possible 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


N
NOTES:
1. CONTRACTOR TO DETERMINE IF JET SEALED AREAS ON THE APRON ARE TO RECEIVE ANY TREATMENT.
2. ALL AIRFIELD GROUND LIGHTING TO BE PROTECTED DURING THE TREATMENT WORKS.
LEGEND
LIMITED WHEELED TRAFFICKED ZONE
REGULAR WHEEL TRAFFICKED ZONE
LIMITED WHEEL TRAFFICKED ZONES 9m ON EACH OUTER SIDES
WHEEL TRAFFICKED ZONES 12m CENTRAL OF RUNWAY
12
30
RUNWAY 12/30
TAXIWAY
APRON
TERMINAL
POTENTIAL LOCATION FOR CONTRACTORS LAYDOWN AREA
APPROXIMATE EXTENT OF JET SEAL
AIRFIELD MAIN ENTRANCE
PRELIMINARY

Appendix B: Mitigation Measures

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
DETAILED DESIGN/ PRE-CONSTRUCTION MOBILISATION STAGE					
Road traffic safety	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. 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).	From port to airport (delivery of equipment/ aggregates) To and from the construction lay down area and the quarries	Minimal (requirement of bidding documents)	Design & Build Contractors	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 & Build Contractors	Airports Vanuatu Limited (AVL) / VPMU
Soil erosion	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.	All locations	Minimal (part of standard design practices)	Design & Build Contractors	VPMU

[15] Costs are estimates only and will be calculated during the detailed engineering design.

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	Wherever feasible, schedule excavation works for the dry season months (May to October). Develop Contingency Plan for works to allow for anticipated construction start date during the wet season. Contingency Plan must detail soil erosion prevention measures in event of storm or heavy rain event.			Contractor	VPMU
Dust / Odours / Air Pollution	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. 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. 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.	Construction lay down area	Minimal (part of standard design practices)	Design & Build Contractors	Supervision Engineer
Water and soil pollution	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 fire fighting), The spill response plan should include factors associated with both the construction and operational phases and should be available at all VAIP locations. Ensure bunded areas and hard stands are allocated at construction	All components	Minimal (part of standard design and construction practices)	Design & Build Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	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. 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 commencing. Sanitation treatment system (e.g. removal of waste to landfill, compost or proprietary treatment system) is approved by Supervision Engineer prior to implementation.			Supervision Engineer	VPMU
Water and soil pollution	Soakage pits should not be installed directly into a shallow aquifer. 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 & Build Contractors	Supervision Engineer
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)	Design & Build Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
Sourcing aggregate material	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 re-opened or new quarry sites. Should it be identified that a new quarry site will be required for the VAIP project, the Abbreviated Resettlement Action Plan (ARAP) developed for VAIP under the VLI project works will be applicable to the SON project works and should be updated to reflect any necessary changes. Permitting requirements will need Contractors to include provision for quarry specific plans, including environmental management, health and safety and rehabilitation.	All components	Minimal (part of standard design and construction practices)	Design & Build Contractors	Supervision Engineer / Department of Geology, Mines & Rural Water (DGMRW)
Solid waste generation	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.) The contractor is able to dispose of general waste (including only small amounts of lightweight packaging materials) at local approved landfills, however, the situation at the LMC landfill is fragile and	All locations	Minimal (part of standard design and construction practices)	Design & Build Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	therefore the preferred disposal location of general wastes for SON is off Santo. Port Vila Municipal Council (PVMC) should be contact by the Contractor to assess this possibility of using Bouffa Landfill on Efate for this waste. 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 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. All surplus material from excavations shall be removed from the site area and safely disposed of in compliance with any local				

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	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.				
Hazardous substances	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. 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). 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. Identify suitable area for hardstand and bunded storage areas as per section 7.2. Develop ACM Plan, if appropriate, for handling and disposing of asbestos containing materials where they may occur. All empty asphalt or bitumen drums will be removed offshore and	All locations	Minimal (part of mobilisation and construction planning)	Design & Build Contractors	Supervision Engineer / AVL

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	either returned to supplier or disposed of in a legally approved facility outside Vanuatu.				
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 Supervision Engineer prior to delivery to the site.	All components	Minimal (part of mobilisation and construction planning)	Design & Build Contractors	VPMU
Community grievances	Ensure that public consultation and disclosure communication is completed at regular intervals to ensure that the public are fully aware of the proposed 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. Advertise, maintain and operate a GRM, including publishing statistics on resolutions at www.vaip.vu. Design consultation plan for implementation during the Master Plan development process.	All components	Minimal (part of mobilisation and construction planning)	Supervision Engineer VPMU VPMU	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
CONSTRUCTION STAGE					
Traffic (vehicle and	Implement the traffic management plan (TMP) to ensure smooth	Route from	Safety equipment	Design & Build	Supervision

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
pedestrian) and construction safety	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.	quarries and port to airport	included in construction cost	Contractors	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)	Design & Build Contractors	Supervision Engineer
Waste disposal	Ensure all construction waste material is re-used, recycled, returned 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). Ensure all general waste as define in Section 7.9 is disposed of in an approved manner. Ensure areas for waste collection, recycling and off-site disposal are	All locations	Minimal (part of standard construction practice)	Design & Build Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	clearly marked/sign posted. Segregate waste to avoid cross contamination, such as with contaminated material (hazardous substance). 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. 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 on Santo. 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. With the approval of the Supervision Engineer, organic biodegradable waste may be deposited in designated dumping areas in reasonable quantities. 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				

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	the community. 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 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 compositing toilet facilities).				
Water and soil pollution	Hydrocarbons (lubricants / fuel) shall be collected and recycled, or disposed of according to Vanuatu regulations (removed from country – See Section 7.2). Spill response kits available at all locations where fuel is stored. Spill response plan training completed for all construction workers. Precautions should be in place to prevent wastewater and hazardous substances / materials entering the environment (e.g. fuel spillage, wastewater containing fire retardant during fire fighting), 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,	All locations	Minimal (part of standard construction practice)	Design & Build Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	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. 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). 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.				
Water and soil pollution	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. Sediment laden runoff from excavations or stockpiles must be directed to a settling area or collected for dust suppression provided 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).	All locations	Minimal (part of standard construction practice)	Design & Build Contractors	Supervision Engineer
Generation of dust	Use closed/covered trucks for transportation of construction materials.	All locations	Minimal (part of standard construction	Design & Build Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	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). Cover stockpiles containing fine material (e.g. sand and topsoil) when not actively being used. Keep work areas clean with regular sweeping. Only small areas should be cleared of vegetation at any one time and re-vegetation should occur as soon as practicable. Dust masks and personnel protective equipment must be available for workers during dust generating activities (e.g. pavement milling). Manage speed of transportation trucks on unsealed roads, particularly when passing through settlements.		practice)		

Noise and vibration disturbances	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 outside of advertised hours. Advertise working hours at the site entrance. If possible, use noise barriers / screens or mounds to shield sensitive receptors. It's likely that work at SON 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. Regularly check and maintain machinery, equipment and vehicle conditions to ensure appropriate use of mufflers, etc. Workers in the vicinity of sources of high noise shall wear necessary protection gear rated for the situation they are being used. Signage to outline complaints procedure (GRM) and contact details of recipient of complaints (e.g. phone number, physical address and email). The WB/IFC EHS Guidelines[16] 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.	All locations	Minimal (part of standard construction practice)	Design & Build Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
Accident risks/Impacts on traffic safety	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.) 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.	All locations	Safety equipment included in construction cost Minimal (part of standard construction practice)	Design & Build Contractors	Supervision Engineer
Loss of archaeological artefacts or sites	Chance Find procedure to be followed as per Section 7.1. 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.	All locations	No marginal cost	Design & Build Contractors	Vanuatu National Heritage Registry / AVL / MLNR / Supervision Engineer
Landscape degradation	Contractor to include provision for construction lay down areas and workers camp area rehabilitation following the completion of the construction phase. Restoration of quarries to be completed in accordance with quarry permit and Quarry Management Plan. 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).	All locations	Minimal (part of standard construction practice)	Design & Build Contractors	AVL / Supervision Engineer/ VPMU / DGMRW

[16] 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[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	Use plant species characteristic for the landscape in the course of restoration of the vegetation cover.				
Hazardous substances and safety and pollution	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. Provide hazard specific personnel protective equipment to workers directly involved in handling hazardous substances (e.g. chemical or heat resistant clothing, gloves). 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. Precautions should be in place to prevent wastewater and hazardous substances / materials entering the environment (e.g. fuel spillage, wastewater containing fire retardant during fire fighting), 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. 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	All locations	Safety equipment included in construction cost Minimal (part of standard construction practice)	Design & Build Contractors	Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	pads, and a heavy duty rubbish bag to collect absorbent pads or materials absorbent pads or material. Spill kits must be available at hazardous materials storage location. Waste oil to be collected and removed abroad to an approved facility (for disposal or cleaning) at completion of works. In case of encounters with hydrocarbon product or contamination during construction. 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. Should asbestos containing materials be discovered, the Contractors ACM Plan will be activated.				
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	Design & Build Contractors	AVL / VPMU / DEPC
Occupational Health and safety	Fully implement OHS requirements in PESMP Codes of Practice Have safety officer with suitable qualifications available at all times during construction. Ensure all workers have undergone suitable induction training on OHS with regular training over course of project.	All locations	Included as provisional sum in the bill of quantity	Design & Build Contractors	Supervision Engineer / AVL / VPMU

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	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. Construction lay down area to be fenced to prevent access by unauthorised personnel. 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 transport to hospital. Provide education on basic hygiene practices to minimize spread of diseases. Increase workers' HIV/AIDS and sexually transmitted disease (STD) awareness, including information on methods of transmission and protection measures. Prohibit usage of drugs and alcohol on construction sites and undertake regular alcohol testing. Install lights and cautionary signs in hazardous areas. Enhance safety and inspection procedures. Ensure use of PPE and consider providing for on-site storage of workers allocated PPE.				
Damage to assets and infrastructure	Maintain high standard of site supervision and vehicle and plant operation to reduce risks of damage to water, power and	All locations	Dependent on asset/	Design & Build Contractors	VPMU / AVL

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
	telecommunication lines. Prepare procedures for rapid notification to the responsible authority (VPMU / AVL and service providers). 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. Provide assistance with reinstatement, in the event of any disruption.		infrastructure and level of damage		
Community grievances	Maintain the grievance response mechanism at www.vaip.vu. Ensure that public consultation and disclosure communication is completed at regular intervals to ensure that the public are fully aware 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 Plan development (see Section 5). 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.	All components	Minimal (part of standard construction practice)	VPMU Design and Build Contractor	TFSU Supervision Engineer
Airport concessionaires / local business grievances	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. Signage should be used in public areas around the vicinity of SON advising the complaints procedure and contact details of key project individuals responsible for responding to issues raised.	Airport	Minimal (part of standard construction practice)	VPMU Design and Build Contractor	TFSU Supervision Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[15]	EXECUTING AGENCY	SUPERVISING AGENCY
OPERATION STAGE					
Hazardous substance management	Strictly apply and enforce manufacturer's recommendations for handling and storage. These measures include sealing of drums, and avoiding extreme heat. Compliance with international good practice. Security of storage areas to facilitate transport, handling and placement to be maintained (e.g. fences and locks fixed immediately if broken or vandalised). 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. Staff to wear manufacturers recommended PPE (e.g. gloves and overalls) when handling or mixing hazardous substances. Emergency vehicles are to be serviced and maintained at existing workshop areas.	All airport compounds	No marginal cost (standard operating procedure)	AVL	AVL Management
Fuel storage	All refuelling activities to occur on designated areas at fuel tank farm and ARFF at SON. Precautions should be in place to prevent wastewater and hazardous substances / materials entering the environment (e.g. fuel spillage), however should an incident occur, the 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 spill response plan should be updated on completion of VAIP construction phase.	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[15]	EXECUTING AGENCY	SUPERVISING AGENCY
Airport waste management	Development of AVL Waste Management Plan recommended allowing for recycling or re-using of as much waste as possible. LMC should be consulted for approval to receive material (at LMC Landfill) that cannot be recycled, reused or returned to the supplier.	All airport compounds	No marginal cost (standard operating procedure)	AVL	AVL Management
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 fire fighting), however should an incident occur, the AVL must have a spill response plan must be in place.	All airport compounds	No marginal cost (standard operating procedure)	AVL	AVL Management
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	AVL Management
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.	All locations	No marginal cost (standard operating procedure)	AVL	AVL Management

Appendix C: Monitoring Plan

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
DETAILED DESIGN/ PRE-CONSTRUCTION PHASE				
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
Soil erosion	CESMP documents	Ensure Contingency Plan is completed and approved with provisions for potential provision for start of works during west season. Storm event management and soil erosion prevention measures to be included.	Prior to sign off of final designs	Supervision Engineer
Water supply	Design documents	Suggested water source and supply network to be included in designs	Prior to commencing civil works	VPMU
Stormwater management	Design 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	VPMU
Quarry operations	Quarry	Upon confirmation of which quarries are to supply aggregate verify quarry operations to ensure any required permits or approvals are in place. Ensure TMP is included in procurement documentation for transport of materials from the quarries to the airport.	Prior to commencing civil works	Supervision Engineer

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
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
CONSTRUCTION				
Agreement for waste disposal	Construction Contractor's records	Permits and/or agreements with local waste disposal providers. 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 soil erosion prevention measures 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, 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

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
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. Any encounters with potentially or confirmed contaminated soil (based on PID readings) are reported to VPMU / 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
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

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
Noise	At work sites and two residential sensitive receptors close to active work are and a control site	Site inspections to ensure workers wearing appropriate PPE when required. Measurement of noise level (one hour LAeg) 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. Public signage detailing complaints procedure and contact people/person on display. Noisy machinery is replaced or fixed as soon as problem arises or on instruction by Supervision Engineer.	Weekly inspection as applicable to schedule of works and on receipt of any complaints. 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. Monitoring to be carried out with equipment suitable for measuring LAeq(dBa). 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.	Supervision Engineer
Air pollution	At work sites	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. Bitumen and asphalt plant to the located away from closest communities.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Supervision Engineer

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	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 self-bunded tanks or 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). Codes 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 work sites	Monitor the GRM database for the number and type of grievances and the average number of days to resolve a grievance.	Weekly.	VPMU
Airport concessionaires / local business grievances	At and near SON work sites	Monitor the GRM database for the number and type of grievances and the average number of days to resolve a grievance.	Weekly.	VPMU

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
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
OPERATION (Recommended for Consideration by AVL)				
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, 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

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	RESPONSIBILITY
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

Location:	
Auditor:	
Audit Date/Time (Start):	
Audit Date/Time (Finish):	

Environmental Issue:	Inspection areas:	Requirements met?
1.0 Construction Phase		
1.1 Soil Erosion	- Silt fences and diversion drains in place - Replanting and restoration work completed	Yes ∝ No ∝ If No, details:
1.2 Waste accumulation and Disposal Agreements	- Good housekeeping around the work sites - Waste collected in defined area on impermeable ground or containers - 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.) - Hazardous waste stored in safe and appropriate manner. - Waste management plan in place and operating for proper disposal	Yes ∝ No ∝ If No, details:
1.3 Soil and Water Pollution	- Appropriate spill response plan/kit in place for waste area - No visible spills on soil or uncovered ground - Drainage and soakage systems clear and fit for purpose	Yes ∝ No ∝ If No, details:

Environmental Issue:	Inspection areas:	Requirements met?
1.4 Dust and Materials Transport	- Stockpiles covered or kept wet when not in use - Visual inspection of ambient dust conditions on site and at nearby sensitive locations - Truck transports are covered - No evidence of aggregate spills on haulage route	Yes ∝ No ∝ If No, details:
1.5 Noise	- Workers wearing ear protection as required - Noise level maximum of 45dB between 2200-0700 - Noise monitoring results by Supervision Engineer confirm acceptable noise levels	Yes ∝ No ∝ If No, details:
1.6 Air Pollution	- Equipment operating without excessive emissions - Bitumen and asphalt plant emissions move away from nearby communities	Yes ∝ No ∝ If No, details:
1.7 Fuel, Oil and Bitumen Storage	- Substances stored in self-bunded vessels or within bund on impermeable surface - Spill kit complete and accessible - Spill training completed - No evidence of spills on the ground	Yes ∝ No ∝ If No, details:
1.8 Traffic Management Plan Implementation	- Traffic Management Plan (TMP) under effective implementation	Yes ∝ No ∝ If No, details:
1.9 Occupational Health and Safety	- Workers have access to, and using appropriate, PPE for the task. - All workers have undergone appropriate OHS training - Proper briefing of staff before undertaking work activities	Yes ∝ No ∝ If No, details:

Environmental Issue:	Inspection areas:	Requirements met?
1.10 Community / Airport Concessionaires / Local Business Safety	- Public signage of complaints procedure - Signs and fences restrict or direct pedestrians and public where appropriate.	Yes ∝ No ∝ If No, details:
1.11 Materials Supply	- Quarry establishment and operations in full compliance with Codes of Practice - All quarries licensed to supply materials - All imported materials with appropriate biosecurity clearances	Yes ∝ No ∝ If No, details:
1.12 Workers Camps	- Camp established in accordance with Codes of Practice in PESMP Annex E. - Septic system cleaned and fully operational. - Waste stored in an appropriate location in a clean and tidy manner, segregated by waste type. - Workers living and recreational areas clean and properly equipped. - OHS, HIV/AIDS, GBV and other information available	Yes ∝ No ∝ If No, details:
1.13 Asphalt Plant	- Asphalt plant established on pre-approved sites - Asphalt plant noise levels managed efficiently - Secure fencing correctly installed at asphalt plant - Asphalt plant not causing excessive odours at nearby communities - Notification of asphalt plan noise generating operation times publically displayed - Asphalt plant in clean and orderly condition	Yes ∝ No ∝ If No, details:

Environmental Issue:	Inspection areas:	Requirements met?
1.14 Lay Down Area	- Laydown areas established on pre-approved sites - Laydown areas dust levels managed efficiently - Traffic management plan correctly implemented at lay down site - Water runoff management systems operating correctly - Dust management effectively implemented - PPE present and correctly used	Yes ∝ No ∝ If No, details:

Actions Required:

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

Signoff

Signature: Date:

…… ……..

Appendix E: Codes of Practices

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:

- 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.
- 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.
- 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 runoff 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:

- Operation of magazines for the storage of explosives and for the storage of detonators.
- The quantity of explosive that may be removed from a magazine at any one time.
- The procedure for quarry explosive cases.
- Persons allowed to fire shots.
- Explosives to be carried in securely covered containers.
- Tamping of explosives.
- Diameter of drill holes.
- Time when charges are to be fired.
- Detonation delay.
- Firing warnings.
- Blasting shelters.
- Treatment of misfired charges
- 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.

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-managment-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 is 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 he eliminated. The following preventive and protective measures must be implemented 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:

- the nature of the project activities, such as whether the project will involve hazardous materials or processes;
- 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 vapours, 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, vapours.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapours 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:
    - Occupational accidents and diseases
    - 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
Class 1	Fatality	As soon as possible
	Notifiable Injury, Illness or Incident	As soon as possible
Class 2	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:

Business details			
Business name:			
Contact person:			
Address:		Contact position:	
Contact phone number		Contact email address:	
Job Safety Analysis details			
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	**Insignificant** No injuries or health issues	**LOW**	**LOW**	**LOW**	**LOW**	**MODERATE**
2	**Minor** First aid treatment	**LOW**	**LOW**	**MODERATE**	**MODERATE**	**HIGH**
3	**Moderate** Medical treatment, potential LTI	**LOW**	**MODERATE**	**HIGH**	**HIGH**	**CRITICAL**
4	**Major** Permanent disability or disease	**LOW**	**MODERATE**	**HIGH**	**CRITICAL**	**CATASTROPHIC**
5	**Extreme** 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.

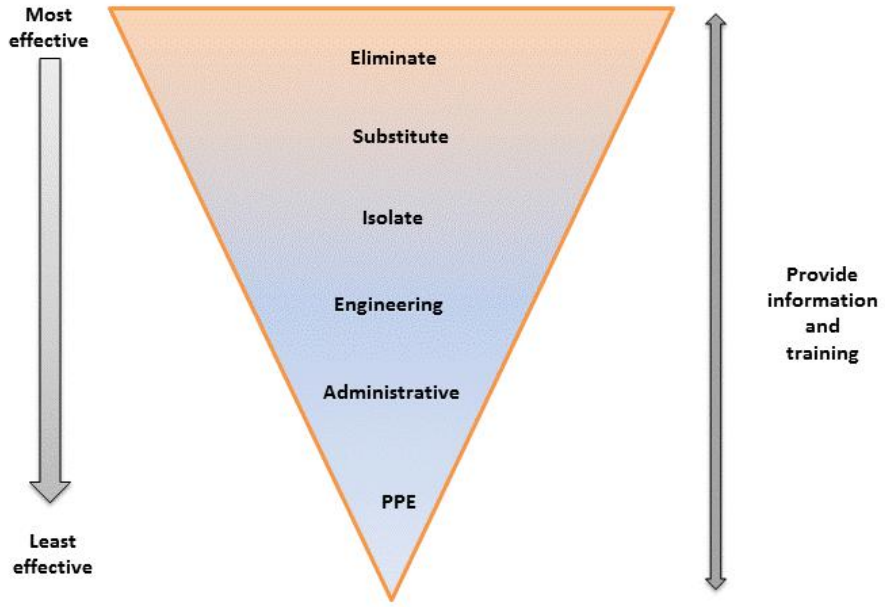
1. **Eliminate** – if it is possible, the hazard should be removed completely. For example, get rid of dangerous machines.

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.



Hierarchy of control

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:		
Print Names:	**Signatures:**	**Dates:**

Review No	**01**	**02**	**03**	**04**	**05**	**06**	**07**	**08**
Initial:								
Date:								

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.

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 and asksustainability@ifc.org

Contents

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.[1] 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

Need assessment	Is there a need for workers' accommodation?	▸ Assess the availability of the local workforce ▸ Assess the availability of existing housing
Impact assessment	What are the expected impacts (positive and negative) on the communities?	▸ Determine specific impacts of the workers' accommodation construction phase (including security and involuntary resettlement) ▸ Assess existing community infrastructures, services and facilities ▸ Understand the local business and employment context ▸ Give special attention to community health and safety issues and social cohesion ▸ Think about the consequences of dismantling and reinstatement
Construction	Which accommodation standards are needed?	▸ Identify and review the international, national, regional and sectoral regulations which address workers' accommodation ▸ Apply mandatory provisions and use non-binding provisions as guidance ▸ Apply at least the minimum requirements set out in this guidance note
Management	What management systems are required?	▸ Design management plans covering health and safety, security, workers' and communities' rights ▸ Appoint the right staff or contract the right companies ▸ Implement management plans ▸ Set up complaint/grievance and conflict resolution mechanisms (for both workers and communities) ▸ Review policies

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.[2] 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.[3] 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.[4] 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 unecessary 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 Off-farm accommodation	Permanent or seasonal Remote	Forestry Agriculture	Worker access Monitoring difficulties
Plantation housing	Worker village Off-farm accommodation	Permanent and long term Families	Agriculture	Need to provide sustainable livelihoods Social infrastructures Living conditions
Construction camp	Worker camp Worker village Mobile worker camp	Temporary Migrant workers Gender separation	Extractives Utilities Infrastructure Manufacturing	Enforcement of standards and monitoring difficulties Relations with the communities Living standards Cost
Mine camp	Company towns Dormitories Integrated within existing communities Commuter (fly-in, fly-out)	Long term Remote location Gender separation	Extractives	Relations with communities Remoteness Living standards 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.[5] 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[6]

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

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[7] 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.[8]

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[9] 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/
8. ibid

9. As per the "Pollution Prevention and Abatement Handbook", World Bank Group, July 1998, available from 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 to 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 accomodation 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.[10]

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

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.[11] 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

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
General regulatory framework				
Have the international/national/local regulatory frameworks been reviewed?				
Are mandatory provisions on workers' accommodation identified?				
Assessing the need for workers' accommodation				
Availability of the workforce				
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?				
Availability of housing				
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
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?				

Standards for workers' accommodation

	Y	N	N/A	Comments
National/local standards				
Have the relevant national/local regulations been identified and implemented?				
General living facilities				
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?				
Drainage				
Is the site adequately drained?				
Heating, air conditioning, ventilation and light				
Depending on climate are living facilities provided with adequate heating, ventilation, air conditioning and light systems including emergency lighting?				
Water				
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
Wastewater and solid waste				
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?				
Rooms/dormitories facilities				
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
Bed arrangements and storage facilities				
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?				
Sanitary and toilet facilities				
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
Toilet facilities				
Is there an adequate number of toilets and urinals?				
Are toilet facilities conveniently located and easily accessible?				
Showers/bathrooms and other sanitary facilities				
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?				
Canteen, cooking and laundry facilities				
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?				
Laundry facilities				
Are adequate facilities for washing and drying clothes provided?				
Canteen and cooking facilities				
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?				

Managing workers' accommodation

Management and staff

	Y	N	N/A	Comments
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
Health and safety on site				
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?				
Security on workers' accommodation				
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?				
Workers' rights, rules and regulations on workers' accommodation				
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
Consultation and grievance mechanisms				
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?				
Management of community relations				
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?				

Acknowledgements

"Workers' accommodation: processes and standards" is a joint publication of the EBRD and IFC, who co-commissioned Ergon Associates to research and draft the document.

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This version of the Guidance Note benefited from valuable input from a number of external parties including Mary Boomgard (OPIC), Melinda Buckland (BHP Billiton), Kerry Connor (Bechtel), Alan Fine (Anglo Gold Ashanti), George Jaksch (Chiquita), Birgitte B. Nielsen (IFU), Roberto Vega (Dole), Karin Verstralen (FMO), Petter Vilsted (Norfund) and Elizabeth Wild (BP). We would also like to thank all companies that agreed to contribute practical examples.

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