PACIFIC AVIATION INVESTMENT PROGRAM

Samoa Aviation Investment Project (SAIP)

Faleolo International Airport (APW) Environmental and Social Impact Assessment & Management Plan, Upolu Island

Version 8 July 2018

Prepared by Samoa Airports Authority
Adapted from AECOM New Zealand Ltd SAIP Integrated Environmental and Social Management Plan – Faleolo International Airport (APW), Revision B, August 2016

Quality Information

Document	Samoa Aviation Investment Project (SAIP) Faleolo International Airport Environmental and Social Management Plan, Upolu Island
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Revision History

Revision	**Revision Date**	**Details**	**Authorised**
			Name/Position
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2	May 2016	TSFU comments	INECO SMEC
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6	April 2016	TFSU Rewrite of SAIP PESMP to include all project elements and update PESMP	Lasale Cocker PAIP Project Manager
7	May 2018	Updates PESMP based on progress since V6.	Rusetaneti Taaloga SAIP Project Manager
8	July 2018	Updates PESMP based on progress since 7.1 including Development Consent conditions	Rusetaneti Taaloga SAIP Project Manager

Contents

Glossary and Abbreviations

AC	Asphalt concrete
ACP	Apia Concrete Products
ACM	Asbestos Containing Material
AGL	Aeronautical Ground Lighting
AGMO	Assistant General Manager for Operations
AP	Affected Person/People
APW	Faleolo International Airport
ARFF	Aircraft rescue and firefighting
ATC	Air Traffic Control
CARs	Civil Aviation Rules
CESMP	Contractors Environmental and Social Management Plan
China Eximbank	Export-Import Bank of China, a state bank solely owned by the Chinese government and under the direct leadership of the State Council
COEP	Codes of Environmental Practice
CEAR	Comprehensive Environmental Assessment Report
CVOR	Conventional VOR
DBA	Decibel
D&B	Design and Build Contract
EA	Executing Agencies
EHS	Environmental and health and safety
EIA	Environmental impact assessment
EIB	European Investment Bank
EMP	Environmental Management Plan
ESMF	Environmental and Social Management Framework
FOD	Foreign Object Debris
GDP	Gross domestic product
GoS	Government of Samoa
Ha	Hectares
HF	High Frequency communication equipment
HMA	Hot mix asphalt
HIV/AIDS	Human Immunodeficiency Virus/ Acquired Immune Deficiency Syndrome
IA	Implementing Agency

ICAO	International Civil Aviation Organisation
IFC	International Finance Corporation
IUCN	International Union for Conservation of Nature
IPCC	Intergovernmental Panel on Climate Change
IESMP	Integrated Environmental and Social Management Plan
ILS	Instrument Landing System
LAeq	Equivalent Continuous Level
LIRL	Low Intensity Runway Edge Lights
LTA	Land Transport Authority
MAF	Ministry of Agriculture and Fisheries
MNRE	Ministry of Natural Resources and Environment
MOWP	Method of Works Plan
MWTI	Ministry of Works, Transport and Infrastructure
NAVAIDS	Navigational Aids
NDB	Non Directional Beacon
NGOs	Non-government organisations
OHS	Occupational Health and Safety
OP	Operational Policy
PAIP	Pacific Aviation Investment Program
PAPI	Precision Approach Path Indicator
PCCSP	Pacific Climate Change Science Program
PEAR	Preliminary Environmental Assessment Report
PESMP	Project Environmental and Social Management Plan
PIB	Public Information Bulletin
PISA	Preliminary Integrated Safeguards Assessment'
PPE	Personal protective equipment
PSC	Project Steering Committee
PST	Project Support Team
PUMA	Planning and Urban Management Agency
PUM Board	Planning and Urban Management Board
PWD	Public Works Department
RCP	Representative Concentration Pathway
RFS	Rescue Fire Service

RWY	Runway
SAA	Samoa Airport Authority
SAA PST	Samoa Airport Authority SAIP Project Support Team
SAIP	Samoa Aviation Investment Project
SCG	Shanghai Construction Group
SDS	Safety data sheets
STD	Sexually transmitted diseases
STEC	Samoa Trust Estate Corporation
SWA	Samoa Water Authority
SWM	Solid Waste Management
SWMP	Solid Waste Management Plan
TFSU	Technical and Fiduciary Services Unit
THR	Threshold
TMP	Traffic Management Plan
TWY	Taxiway
VHF	VHF communications equipment
VOR	VHF Omnirange
WB	World Bank

1 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 Samoa Aviation Investment Project (SAIP) has been established. Through SAIP, the Government of Samoa (GoS) and the WB are working together to improve international airport infrastructure at Faleolo International Airport (APW) on Upolu Island, Samoa.

SAIP will enable air transport infrastructure and operations to meet International Civil Aviation Organisation (ICAO) standards, and will provide a connected interface between the GoS's new international airport terminal and the pavement areas.

The overall SAIP program is anticipated to consist of the following primary tasks:

1. Design and undertake temporary surface repairs to runway and apron pavements;
2. Design and undertake rehabilitation works to increase the life of the airside pavements for a design life of 20 years in line with industry standards, specifically;
    - Replace failed asphalt surfacing materials and improving the bond between asphaltic layers in the aircraft wheel tracking zones;
    - Provide an asphaltic concrete surfacing in the runway, taxiway, apron and turning areas able to withstand Code E mechanical forces without shearing (as presently occurring);
    - structurally enhance the depression areas on the taxilane to the rear of the aircraft parking apron and address what are considered pavement subsoil moisture related issues; and
    - structurally enhance Taxiway A and address what are considered pavement subsoil moisture related issues
    - Design and implement the widening of the RWY 08 turning node suitable for Code E operations
3. Design and implement an upgrade to the airfield drainage system;
4. Design and install the necessary civil infrastructure associated with the airfield lighting upgrade;
5. Make redundant the existing, design and then install a new refuelling system;
6. Design and replace all high mast lighting impacted by the new terminal development aerobridges;
7. Install a new airside road at the proposed terminal frontage; and
8. Upgrade navigational aids, airfield lighting, ATC communication systems and airfield generator and power system.

These works will be tendered in three separate packages: the temporary repair works; the design and build works for full airfield pavement rehabilitation and upgrade (runway, taxiways and apron) and drainage improvements; and the upgrade to NAVAIDS, AGL, communications and power.

In addition to the works under the SAIP contracts, the GoS, through the Samoa Airport Authority (SAA), has recently implemented an additional airport improvement project to replace the terminal building at APW which will interface with the SAIP works on the apron.

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

The PESMP includes information on mitigation, monitoring, responsibilities and institutional capacity. Most potential adverse impacts will occur during the construction phase of the SAIP. However, given the scope and nature of the works, correct implementation of the mitigation measures should be able to alleviate or lessen any potential negative impacts. The key aspects of the project that are being mitigated are associated with:

- Solid waste management;
- Quarrying of aggregates;
- Removal of redundant fuel systems; and
- Airfield drainage upgrades.

These and all other potential impacts are described in detail throughout this PESMP.

The PESMP is designed to address these key areas and all other potential impacts through:

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

2 INTRODUCTION

2.1 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. Among other aviation improvement projects underway in Samoa, the Government of Samoa (GoS) and the WB have prepared a project to improve international airport infrastructure in Samoa and as such the Samoa Aviation Investment Project (SAIP) has been established as part of the PAIP.

The SAIP will implement key investment activities under the project focusing on pavement rehabilitations and upgrades, apron redesign and expansion to interface with new terminal building, improvements to airside drainage systems, upgrades to navigational aids/airfield ground lighting (AGL), and other operational requirements to support ongoing and improved compliance and operational standards. The SAIP works will be subject to the measures stipulated in this PESMP, associated Codes of Practice and the CESMP.

SAIP was formed in August 2014 in response to the deteriorating condition of the runway. Since the inception of SAIP, there has been a round of crack sealing undertaken by SAA with project assistance and further temporary repairs described in this PESMP are in the final stages of approval to be implemented prior to the main pavement rehabilitation works starting.

The primary beneficiaries of the SAIP will be air travellers throughout the Pacific Islands, as well as the national and regional administrative bodies and personnel involved in air transport management, freight and passenger air service providers. The upgrade of the pavements to adequately and safely cater for Code E aircraft and the expansion of the apron area also opens up opportunities for economic development in a number of sectors throughout Samoa, most notably of which is the tourism sector.

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

2.2 PROJECT LOCATION

Samoa is an independent state in the South Pacific Ocean and is approximately a two to three hour flight from ports in Fiji to the south-west, Australia to the west and New Zealand to the south. There are two main islands, Upolu and Savai'i accounting for 99% of the total land area with four smaller islands surrounding the landmasses totalling 2,842 km^2. Apia, the capital of Samoa is located on the eastern island of Upolu which is also the most populated island in Samoa, housing two thirds of the country's population.

APW is located on the western side of Upolu, on the northern coastline approximately 20km to the west of Apia along the Main West Coast Road. It is Samoa's only certified international airport and is the primary access point for international travellers to Samoa. APW has a single asphalt runway with the orientation 08/26 measuring approximately 3,000 by 45m wide, with shoulders 7.5m wide either side. The runway lighting consists of Low Intensity Runway edge lights (LIRL), a Single Row Centreline, a Precision Approach Path Indicator (PAPI) and portable lights. The airport includes day and night scheduled operations and services flights 24/7 as required.

The majority of international services originated in Australia and New Zealand using B737-800, B777-200 and A-320 aircraft and occasionally B777-300ER aircraft during peak season. Services between Fiji and Samoa using ATR72 and B-737-800/700 and American Samoa service is using Dornier 328 and 228 aircraft.

2.3 PURPOSE OF REPORT

The governing environmental legislation in Samoa is the Planning and Urban Management Act 2004 (PUM Act). This act prescribes the framework for planning the use, development, management and protection of land in Samoa. All developments need consent which is provided for as a function of this act. This PESMP is compliant with the provisions in the PUM Act and the associated Codes of Environmental Practice (COEP). It has been agreed by the Planning and Urban Management Authority (PUMA) that this document takes the place of an environmental impact assessments for development consent (DC) applications under the PUM Act for apron and runway works

SAIP 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 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 detailed prescriptions for managing the airport upgrade works in a manner that incorporates the Samoan national requirements and 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 APW as described in Section 3 of this document and addresses impacts and mitigation measures identified at each stage of the project's execution, namely temporary repair works, final detailed design, construction and operation. This PESMP will be included in the bidding documents for construction contractors and form the basis of the Contractor's ESMP (CESMP) and the application for the development consent. 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 Employer's Engineer and disclosed prior to commencing civil works.

2.3.1 Environmental Safeguards Document Hierarchy and Development

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

This PESMP is a dynamic document which will be updated as and when there are changes to the scope or design that many have additional environment or social impacts or are likely to be of public interest. These changes may be instigated by SAA or the Contractor. At any one time, there is only one PESMP which is considered current and applicable to the SAIP subproject. As of July 2018, the current updated PESMP is revision 8 and this version supersedes all previously disclosed versions.

The diagram below shows the hierarchy of environmental and social safeguards instruments culminating in the development of the CESMPs which specifically details how the contractor will implement the requirements of the PESMP and the conditions of the Development Consent for their area of works 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 all conditions set forth in the Development Consent and use it to identify and guide what mitigation measures need to be implemented. The CESMP will document implementation and specific measures that will be used based on their construction methodology (if different from that identified in Section 3). The CESMP is, in turn, a dynamic document and must be updated as and when scope, design or circumstances change, cleared and disclosed as appropriate.

The previous PESMP Revision 6 was included with the Contractor procurement bid documents for the SAIP. The PESMP Revision 7 included updated details required application for Development Consents (DC) for the project elements.

This version of the PESMP (Version 8) sets out the slightly amended approach to the project post contract and includes updated details of the project including requirements of Development Consents (DC) for specific elements of the project and the mitigation measures required for the amendments and DC conditions.

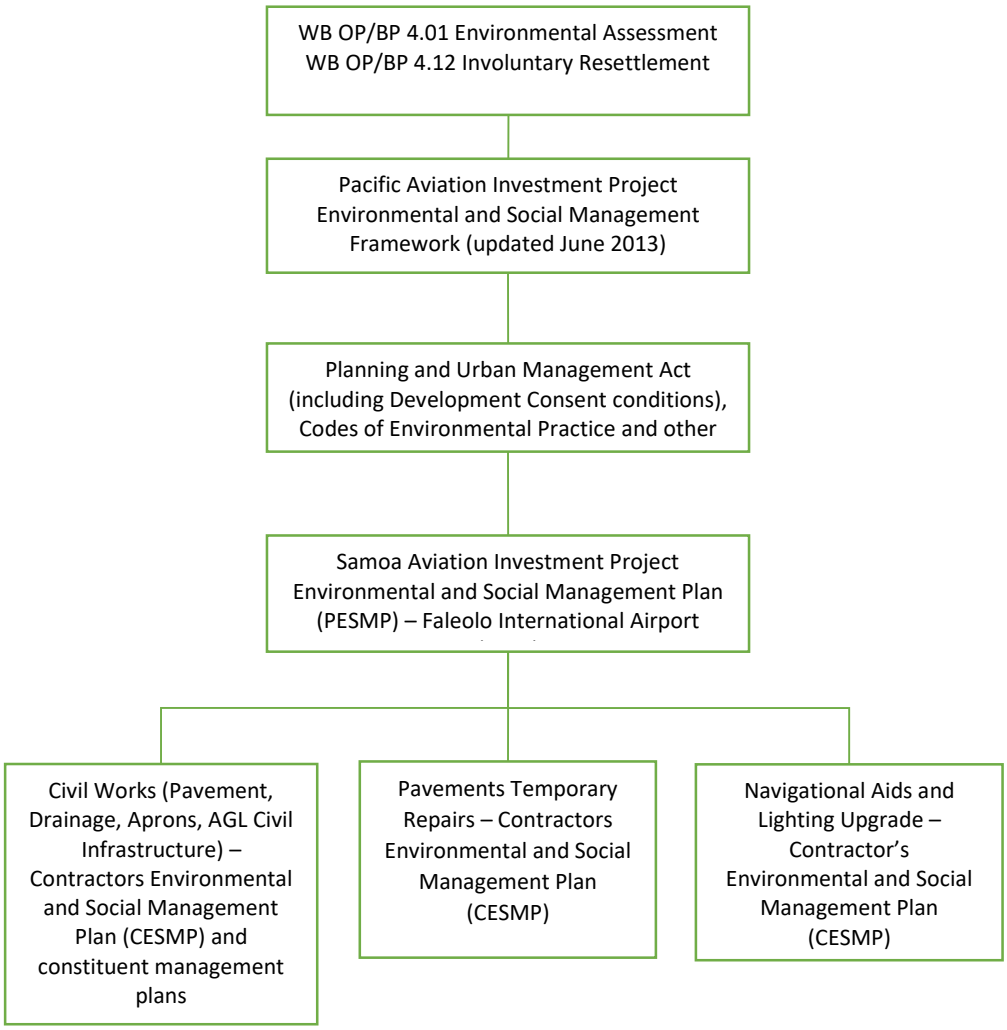


Figure 1: SAIP Safeguard Instrument Hierarchy

2.3.2 PESMP Methodology

The following documents have been reviewed in the process of producing this PESMP:

- INECO-SMEC Environmental Management Plan for Airport Pavements (Version 5) June 2016
- AECOM Integrated Environmental and Social Management Plan – Faleolo International Airport February 2016
- CB Group SAIP PAIP Final Report: Environmental Management Plan (Section 3) and Social Assessment (Section 4) October 2013
- INECO-SMEC Draft Detailed Design Report August 2016
- TFSU Draft SAIP Design and Build Technical Requirements (Section 6 of the Contract for the Design and Build of Faleolo International Airport Pavements) December 2016
- Drainage Study
- Samoa Codes of Environmental Practice, MNRE 2006

- EHS Guidelines

Information from the above documents and technical consultations have been used to assist in identifying the impacts and mitigation measures for this document.

In addition to the above document review, the author met with WB representatives; reviewed comments and feedback to date on environmental and social safeguard documentation; undertook a site visit to Faleolo International Airport; met with Planning and Urban Management Agency (PUMA) and liaised with SAA SAIP Project Support Team (SAA PST).

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 the temporary repair works are completed, the detailed design for the airfield lighting and navigational aids are completed and will be subject to tender and the detailed design work for the main pavement works are partially completed and technical specifications for the completion of the designs have been produced, a design build contract has been awarded and the contractor has commenced deployment in preparation of runway and apron works. The designs are now in the process of completion by the successful Contractor. These final designs will be updated in this PESMP once the plans have now been finalised.

3 DESCRIPTION OF WORKS

This section is informed by the relevant Technical Requirements section of the current Contractors Design and Build bid documentation.

3.1 CURRENT SITUATION – PRE IMPROVEMENTS AND REPAIRS

3.1.1 Pavements

The runway was last resurfaced in 2000 with an asphalt concrete (AC) and the apron was resurfaced with AC and extended at the same time. At the outset of implementation programme, field investigations were undertaken on the runway, taxiways and apron. The AC surface is crowned with a cross fall towards both edges, a steep bank exists on the south side and a slope to the sea and coastline on the north side. In March 2016, the runway was rated 'poor' to 'very poor' in the central zone and on the RWY 08 turning node. Some sample areas of the runway were close to becoming 'serious' due to the severity of the cracking that exists. The outer 15m zones are general rated as being in 'fair' condition. Overall the asphalt surface is oxidised and embrittlement of the surfacing has begun with notable defects such as extensive longitudinal cracking and block cracking. Mechanical defects in the form of slippage and alligator cracking are noted throughout.

There are significant alligator cracks in the proximity of the wheel paths along the full length of the runway, this increase in severity and density in the touchdown zones. Taxiway A is in a 'very poor' condition with low severity alligator cracking evident across the majority of the pavement surface in the wheel track zones. Taxiway B is in a 'fair' condition.

The apron AC surface exhibits a number of defects including block cracking, alligator cracking, slippage cracking and depressions. The passenger apron varies from 'fair' to 'serious' with Bay 2 (the predominant jet parking position) being in 'serious' condition due to excessive slippage cracking. The most significant failures occur in the wheel tracking areas of the taxilane to the rear apron.

Temporary repairs to the worst damage were made under a separate contract and there now remains the permanent repairs and resurfacing to both the runway and apron.

3.1.2 Drainage

The existing drainage system that channels runoff from the inland area to the ocean, under the airport, consist of nine concrete culverts placed at both sides of the runway (see Figure 2) and several open swale drains. The Main West Coast Road surrounds and connects the airport to the rest of the inland. The Main West Coast Road drainage doesn't prevent water flow from the inland to the airport and some drainage for the road uses the open swale drains running through and draining eastern end of the airport.

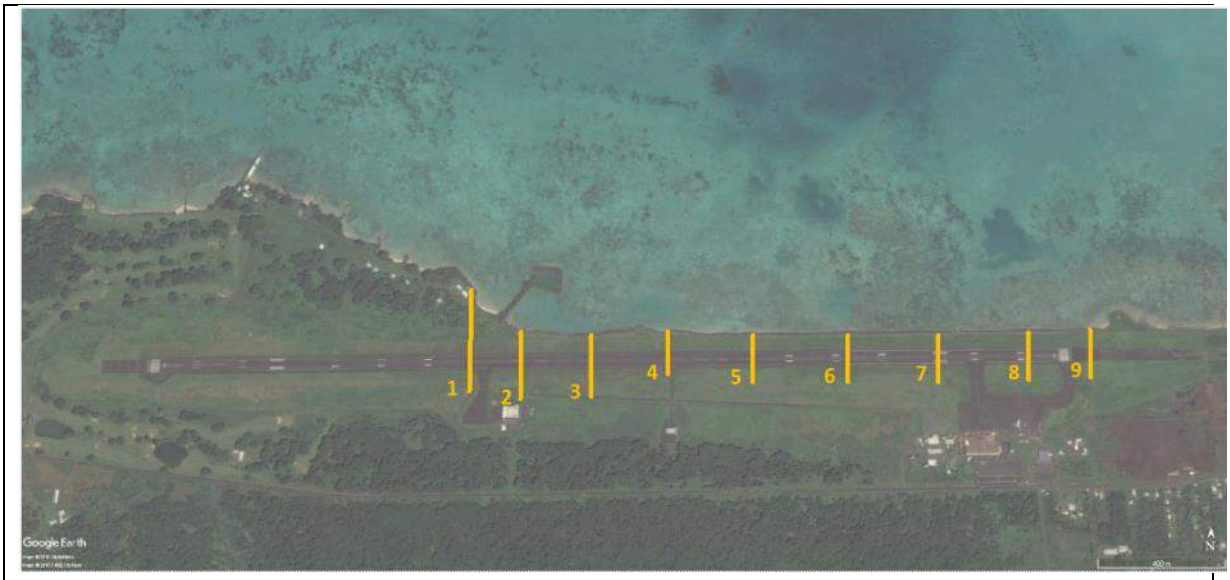


Figure 2: Location of nine current culvert drains under the runway (Source: Google Earth Pro, dated April 2015)

The existing drainage system is considered to have backflow problems during high tidal events due to the proximity of APW to the sea and the low invert levels. Storm water runoff generated during large rainfall events, combined with high tides, is known to cause flooding on the runway from time to time, particularly at the culverts placed close to the centre of the airfield where the lowest runway levels are located.

As a result of the new Terminal Building and the associated increase in impervious surface area, proposed revised levels of the existing apron, and new apron extension area, the apron drainage will require enhancement.

3.2 DESCRIPTION OF WORKS

3.2.1 Overview of Works

The SAIP works program consists of investments entirely within the existing APW airport boundary and consists of the following primary tasks, allocated under three separate lots:

Lot 1 - Temporary surface treatments as these works have been completed, these are presented in Version 6 of the PESMP and excluded from this and any subsequent versions;

Lot 2 – Main Runway Works:

a) Design and undertake rehabilitation airside pavements, specifically:

i. Replace failed asphalt surfacing materials;

ii. Upgrading of existing airport pavements to Code E strength;

iii. Extend apron areas;

iv. Rehabilitate and structurally enhance the taxilane;

v. Rehabilitate and structurally enhance Taxiway A; and

vi. Upgrade RWY 08 turning node suitable for Code E operations.

b) Upgrade to the airfield drainage system;

c) Installation of civil infrastructure for airfield lighting upgrade;

d) Make redundant the existing, design and then install a new refuelling system;

e) Design and replace all high mast lighting impacted by the new terminal development aerobridges; and

f) Install a new airside road at the proposed terminal frontage;

Lot 3 - Upgrade navigational aids, airfield lighting, ATC communication systems and airfield generator and power system.

Design for the pavement works were partially completed prior to December 2016 tendered subject to a design and build contract to complete the design process and undertake the physical construction.

3.2.2 Lot 2: Design and rehabilitate airside pavements

The design for the pavement areas (Figure 3) are still in development and are still subject to completion by the successful D&B Contractor. Designs as they are known to date (December 2016) are described in this section, however, once the final detailed designs are available they will be updated in this PESMP.

Figure 3: APW general existing airport layout (Source: Aerial photography from Google Earth Pro, dated 4 January 2015 via AECOM SAIP IESMP.)

3.2.2.1 Runway

As the runway has varying condition rating levels across its length and width and, as such, the runway has been divided into five sections, each subject to different design concepts:

Section 1: Threshold 08 Runway Stopway Area. The 300m length of stopway is not proposed for asphaltic overlay. This area requires surface rejuvenation treatment to assess and mitigate environmental defects.

Section 2: Runway West Side (chainage 0 to 800m from the runway 08 threshold). It is considered that the pavement in this area will require both a mill and fill and an overlay. The final surface layer will have a minimum thickness of 65mm in wheel tracking areas to mitigate shear forces and potential slippage cracking. On the runway shoulders, an unbound pavement construction with a two coat chipseal and sand emulsion surfacing is expected. Runway strip works will be undertaken to match new levels.

Section 3: Runway Central Section (800m to 1500m). It is considered that the pavement in this area will require both a mill and fill and an overlay. This section of pavement is in better condition than other parts of the runway, possibly due to good sub surface drainage. It is a requirement that the final surface layer will have a minimum thickness of 65mm in wheel trafficking areas to mitigate shear forces and potential slippage cracking. On the runway shoulders, an unbound pavement construction with a two coat chipseal and sand emulsion surfacing is expected. Runway strip works will be undertaken to match new levels.

Section 4: Runway East Section (1500m to 2750m). It is considered that this pavement will require both a mill and fill and an overlay. It is considered that the pavement in this area will require both a mill and fill and an overlay. The final surface layer will have a minimum thickness of 65mm in wheel tracking areas to mitigate shear forces and potential slippage cracking. On the runway shoulders, an unbound pavement construction with a two coat chipseal and sand emulsion surfacing is expected. Runway strip works will be undertaken to match new levels.

Section 5: Runway 26 End Section (2750m to 3000m). It is considered that the pavement in this area will require a mill and fill and an overlay. However, given the aircraft traffic cycling and the likelihood most arrival/departure movements on runway 08 use the Taxiway B, this section is considered to have a reduced number of design movements. The final surface layer will have a minimum thickness of 65mm in wheel tracking areas to mitigate shear forces and potential slippage cracking. On the runway shoulders, an unbound pavement construction with a two coat chipseal and sand emulsion surfacing is expected. Runway strip works will be undertaken to match new levels.

All upgrades to the runway will be consistent with the required specifications for safely accommodating Code E aircraft.

All paint markings will progressively disappear as a consequence of the surfacing works. The Contractor will reinstate the markings throughout the overlay and surfacing of the airfield pavements, appropriate for Code E operations.

3.2.2.2 Apron

Widening of the apron in front of the new terminal development and an extension to the east is required in order to accommodate three nose-in parking for 2 x Code C stands and 1 x Code E (see

Figure 4) stand and Ground Service Equipment (GSE) movements including the passenger boarding bridges (PBB). Initial design estimates require approximately 10,000m^2 of additional apron pavement area and is to be confirmed in the final design layout plans.

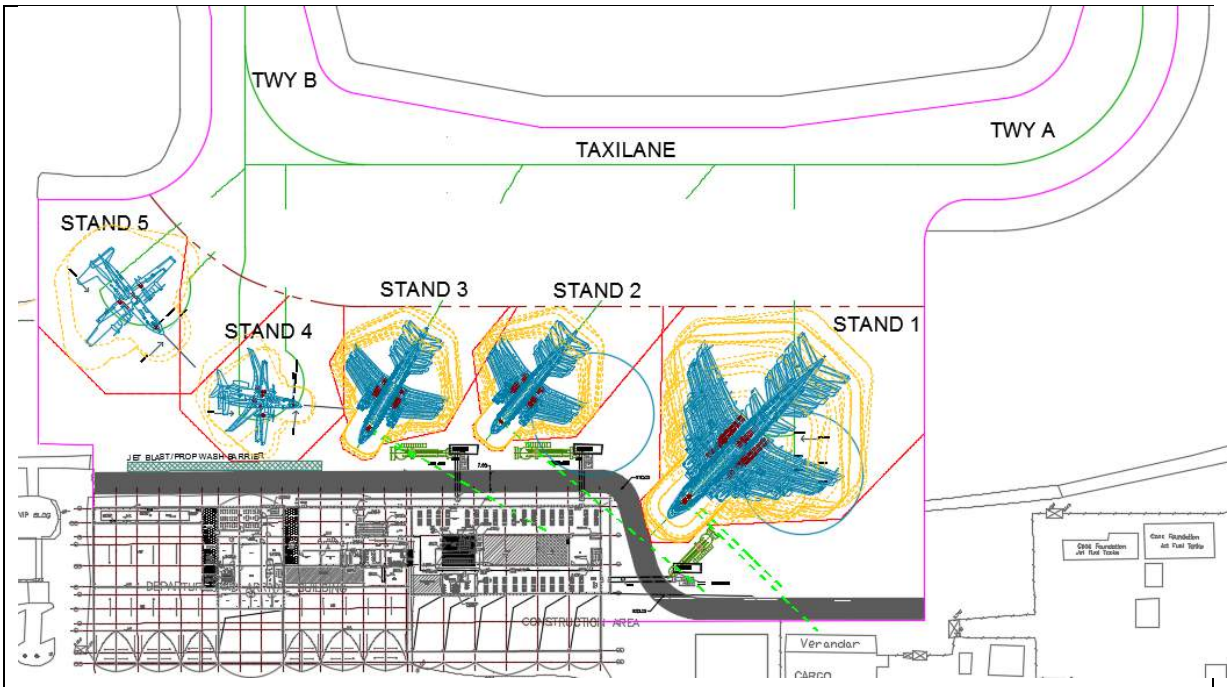


Figure 4: Proposed new configuration of APW apron. (Source: INECO-SMEC Draft Detailed Design Report, July 2016)

A new service road will be provided in front of the new terminal building. It will consist of two lanes of 3.5m width.

3.2.2.3 Taxiway A and Taxilane

Taxiway A and the Taxilane demonstrate defects and the pavement, or its layering makeup in these areas, may not have the required structural performance for the design aircraft and forecast traffic movements. The Contractor is requested to give due consideration to the incorporation of subsoil drainage, re-use of existing pavement materials, and improved geometrics in their design. This will then form the basis upon which a strengthened pavement profile can be adopted.

The Contractor is required to install subsoil drainage throughout the location to improve subgrade and sub-base material performance. The taxiway will also require shoulder design suitable to address jetblast requirements. On the shoulders, an unbound pavement construction with a two coat chipseal and sand emulsion surfacing is expected. Taxiway strip works will be undertaken to match new levels.

3.2.2.4 Taxiway B

It is considered that this area will require an overlay as a minimum.

3.2.2.5 RWY 8 Turning Node

The runway 08 end turning node is to be widened to accommodate a code E aircraft. The turning node requires a shoulder design suitable to address jetblast requirements. On the shoulders, an

unbound pavement construction with a two coat chipseal and sand emulsion surfacing is expected. Runway strip works will be undertaken to match new levels.

3.2.3 Lot 2: Upgrade to Airfield Drainage Systems

Three elements to the upgrades of the drainage system have been proposed for design to alleviate the various flooding issues (see 3.1.2) that APW is subject to. These are:

a) New link from apron to grass island to easternmost outfall. The current design has identified a need for additional discharge capacity at the eastern end of the runway to improve site drainage. The Contractor is required to install a new sump and connection from the grass island between the taxiways to the swale and outfall as shown in Figure 5. The connection is required to have a minimum standard discharge of 0.35m^3/s.

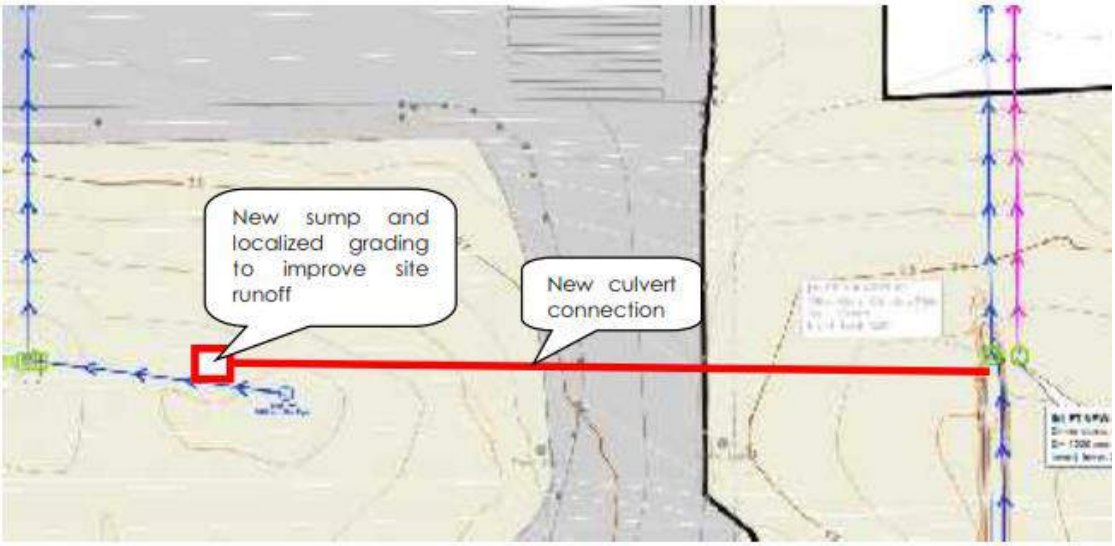


Figure 5: Proposed new connection culvert between existing culverts 8 and 9. (Source: Design and Build Technical Specifications, Dec 2016)

b) The current design has identified there might be a need for additional discharge capacity at the eastern end of the runway to improve site drainage. If confirmed, the Contractor will be required to install a new outfall from the swale. Any new culvert will require suitable headwall and scour protection at either end. The Contractor is required to install tidal check valves at the end of the proposed and existing outfalls in this location.
c) Apron drainage. The new apron configuration will affect the existing drainage system. Therefore, a drainage assessment shall be done by the Contractor and a new design of apron drainage shall be proposed. Water runoff will be directed into the existing drainage systems between taxiway A and B, except for a region of approximately 3,000m2 in front of the new terminal building. As per the current designs, a lot drain is required directly in front of the terminal to capture storm water runoff from the airport parking apron. This is to outlet to the west of the apron to existing swale infrastructure.
d) Extension of the culvert coming from the new terminal building to integrate with the drainage under the extended apron area to the east.

3.2.4 Lot 2: Installation of civil works for airfield lighting

3.2.4.1 AGL

Runway Edge Lights: all elevated and inset edge lights will be raised to the new pavement surface level with new ducts to be installed in the shoulder perpendicular to the runway centreline, from the existing bases to a point at least 1m from the pavement edge. This will be designed in coordination with AGL design consultant (see Section 3.2.7.1). The existing cable is to run through the new duct and the existing fitting and transformer to be reinstated.

Threshold 8 lights and REIL: existing threshold lights are to be raised to the new pavement surface levels. A new duct bank will be installed to facilitate the installation of new light bases and fittings for new lights at a later date.

Turning node 08 edge lights: New light base and ducting to be installed for the widened turning node. Ducting also needs installing to connect inset runway edge lighting and new REIL lighting in this area.

Taxiway, Taxilane and Apron: new light bases and ducting to be installed to cater for the new alignment of these pavements. Guard lights are also to be installed. A new duct bank is to be installed crossing underneath Taxiway A and B to accommodate AGL cabling for the airfield.

Threshold 26 lights and REIL: existing threshold lights are to be raised to new pavement surface levels. New ducting is required in the pavement to connect the threshold lights and REIL to a new chamber, both north and south of the runway edge.

3.2.4.2 Apron Floodlighting

The pavement works on the apron area and changes to apron stand configuration will make all five of the current apron floodlights redundant. The location of new floodlights is to be confirmed by the Contractor and the Contractor shall design and install all infrastructure associated with the new floodlighting (ducting, cabling, foundation, columns, mounting, luminaries, Montrose box, circuit boards, etc).

3.2.5 Lot 2: Refuelling system

The improvement and expansion of the apron will require the removal of existing fuel hydrant pits and the suitable redundancy of the existing infrastructure by filling with. The existing piping system will be purged of fuel and infilled with flowable concrete to make redundant. All stands on the apron are to be provided with fuel pits, the existing apron has a fuel network relative to current aircraft stand configuration.

The existing fuel hydrant pits shall be complete demolished and replaced by a new main fuel line, valves, hydrant fuelling lines and other necessary equipment. Four emergency shut downs will also be provided and shall be accessible quickly by ramp personnel within 25-30m of the aircraft stand.

The number of pits provided per stand is indicated as follows:

Stand 1	Stand 2	Stand 3	Stand 4	Stand 5

3 pits	2 pits	2 pits	1 pit	2 pits

3.2.6 Lot 3: Navigation Aids, Airfield Lighting, ATC Communications Systems and Power Supply

These works are being carried out under a separate contract from the above activities, however the relevant design components (see Section 3.2.5) will be developed in cooperation between the Contractors.

3.2.6.1 Airfield Lighting

A detailed construction methodology for the airfield lighting upgrade project has not been confirmed. However, in general, construction work associated with Airfield Lighting involves, full runway length, narrow gauge trenching at either runway edge, 45m from the centreline or 75 metres from the centreline. Cabling may be direct buried or ducted as per final design.

There will be installation of cable pits at approximately 150m spacing if ducted. There will be smaller pits located near each light or group of lights to house transformers and switching equipment. There will be small volumes of excavated earth, basecourse, sand, soil and concrete used in construction. These materials will be handled in accordance with this PESMP.

Connection of services prior to commissioning will be staged, with each element tested for operational capability beforehand. Disruption to Airline services is not expected. Disruption to Air Traffic Control will be agreed prior.

3.2.6.2 Generators and Power Distribution

Installation of a Generator is expected to be a turnkey installation, constructed offsite and with all health and safety requirements inbuilt. A separate fuel tank meeting all regulations is expected to be an integral part of the installation. As all safety aspects will be constructed and tested offsite, this minimises any potential effects / accidents during installation relating to fuel systems, fuel leakage, contamination etc. It also provides minimum down time in regards to unavailability of a generator during the actual installation process.

Switchboards installed as part of the programme and are expected to cause minimal disruption to operations during installation due to careful time planning to avoid Airline traffic periods. The exact MOWP has not been drafted (design is not yet completed), but the use of temporary portable generators or alternate power sources during switchboard installations is likely.

3.2.6.3 NAVAID Systems

ILS System: New ILS systems are be installed as part of this package. Only minor civil works for antenna and building foundation work will be required.

NDB systems: The Non-Direction Beacon system will require new mast foundations to be constructed to facilitate rotation of the beacon. With the new alignment of the NDB, there may be a requirement to remove some trees/vegetation. The need for and extend of any vegetation removal will be detailed in the CESMP and the justification for this removal will need to satisfy national and bank requirements.

VOR Systems: A new VOR system may be required at APW should the current equipment be determined as needing replacement. Should this design element be included in the final package, a new site for the VOR would be needed as the size of the existing site would require complete removal of the current equipment before the new system could be installed. This would leave the airport with no operating VOR for an unacceptable period. Should it be needed, three potential sites have been earmarked as suitable locations (Figure 6):

1. A preferred option behind the Glidepath. **Green circle** on the photo.
    a. this is a tree free area on the airfield, except for some trees to the north of the airport fence, by the NDB site.
    b. may require a small rise in ground to be "cut into" to reduce the maximum obstruction height of the building given its proximity to the runway. Excavated soil and rock will need to be removed and disposed of offsite.
2. A location midway between Rescue Fire Station (RFS) and Control Tower. **Red circle** on the photo.
    a. this area requires nothing special in the way of foundation excavations being essentially flat ground
    b. may require trees to the south to be removed within 200 metres of the site should them impede on line-of-sight.
3. Reusing the existing CVOR site. This is the least desired location due to:
    a. the proximity of the sea
    b. the small site size, necessitating removal of the existing equipment first.
    c. an unacceptable period of time with no operative VOR on the airport
    d. no trees need removal.

Each will need to be detailed as to earthworks required. All trees within the green / red circles are within the property boundaries of the SAA and are not privately owned.

Figure 6: Potential sites for new VOR installations

3.3 ALTERNATIVES

Alternatives to the proposed methodology of taxi lane A rehabilitation was considered, with the proposal being made to demolish the taxi way and rebuild on a new substrate. This has been rejected due to the associated costs and the availability of a more cost effective and practical long term solution. It is instead proposed that the drainage of the subsoil beneath taxi way A be improved providing a more suitable base for a strengthened pavement profile.

Other design alternatives are subject to the final design stage of the main runway works and will be selected based on appropriate design solutions and budgetary constraints. 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 diminished aviation safety and the further degradation of the airport pavements, increasing the likelihood that airlines would cease to fly into APW. The 'no action' alternative would likely cause negative impacts to the socio-economic environment of Samoa and is not considered an appropriate option.

3.4 CONSTRUCTION METHODOLOGY

The detailed design work for the pavement works was partially developed and subject to completion under the D&B contract for these works. The contract for the D & B has been awarded and the final plans are subject to review and approval. The navigation aids and lighting contract has been awarded and design plans are being finalised.

A detailed construction methodology for APW SAIP works has not been finalised. Where information regarding construction methodology has been provided in the supporting documentation this has been documented and assessed as part of this PESMP development.

3.4.1 Method of Works Plan

The Method of Works Plan (MOWP) is a required document 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.

3.4.2 Equipment

Specialised equipment such as the asphalt plant (including dust scrubber), paver and milling machine will be imported for the SAIP project. The Contractor may either import general construction equipment such as excavators and rollers or source these locally.

All cargo, whether air or ship, will be processed in accordance with Samoan quarantine and customs laws which require fumigation (proof of) of materials and equipment and declarations by personnel (specifically regarding communicable diseases).

3.4.3 Aggregate Supply

Large volumes of aggregate will be needed to complete the pavement works with smaller volumes required for the temporary repairs, runway lighting and air navigational aids, etc. The sources and estimated volumes of the different grades of aggregate (all basalt) and materials required for these works will be stipulated in the relevant CESMPs.

It is expected that basalt aggregate materials will be sourced locally from quarries on Upolu which can potentially supply the necessary materials. It is not anticipated that any aggregates will need to be imported for the SAIP works.

The contractor will require a new Development Consent for reopening any quarry under the Codes of Environmental Practice: Quarry Development and Operations (COEP 8). The COEP 8 provides a

guideline to the Contractors for selecting and renewing quarries which must be, along with the relevant COEP and the requirements in the PESMP, adhered to ensure compliance with WB safeguard policies. Prior to any new or re-opened quarries being used for the SAIP project, public consultation will be completed with any affected parties relating to each quarry site.

QUARRY ASSESSMENT

A quarry assessment report[1] was completed in 2013 for 6 basalt quarries in relation to the West Coast Road project. This report details the quarry site, geotechnical descriptions and processing capability for Ulia, Ott, Lalomanu, Le Mafa, Alafua and Saleimoa quarries.

Further information was provided on the Saleimoa and Alafua quarries in the bid documents, which noted that Saleimoa has been the subject of dust complaints resulting in intervention by PUMA and that rock from Alafua may contain weak particles and that a new Development Consent (with EIA) would be required for it.

Reviewing the history of previous airport works and considering the location of the airfield within the local roading network the contractor identified Olo Quarry as a further quarry option.

Material from Olo was successfully used to make asphaltic concrete for the previous airport runway resurfacing work in 2000. The contractor has decided to reopen Olo Quarry due to it being the best of the quarry options identified through it having good quality rock with an access route that minimises use of the West Coast Road. The intended quarry access route also avoids any villages but does pass by several houses occupied by the landowner's farm workers, standard dust control and traffic management methods will mitigate the effects of traffic along the route.

Figure 7 shows the location of Olo Quarry, which is the closest to Faleolo Airport with only a short section (approx. 200m) of the West Coast Road (WCR) needing to be used to haul aggregate from the quarry to the Contractor's laydown area at the airport site. The selected quarry access route also avoids passing through any villages and is the shortest haul along the WCR of any of the quarries identified.

Samoa Water Authority had previously expressed reservations regarding the use of Olo Quarry due to concern that blast vibration could damage two bore holes it has in the vicinity. The contractor has considered this concern and by using explosives with low vibration effects believes the bore damage risk is addressed. The contractor has also undertaken to insert a specialist camera down the Olo bore to record its condition prior to commencing blasting at Olo Quarry.

[1] Tonkin & Taylor, 2013. Quarry Assessment West Coast Road Project. Prepared for Land Transport Authority Samoa

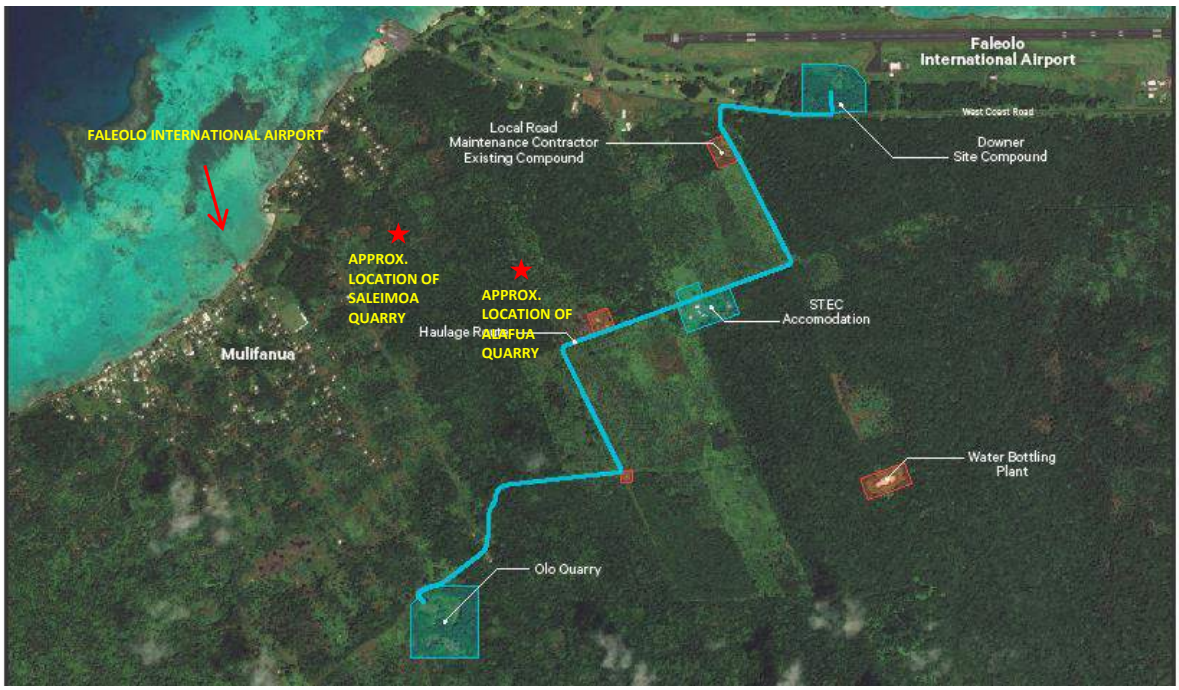


Figure 7: Location of Olo Quarry showing haul route to contractor's laydown area at the airport

The contractor has been awarded a DC by the PUMA (reference DCA 047/18) and a copy of this consent is attached to this PESMP. The contractor has also prepared a Quarry Management Plan (QMP) to ensure that mitigation requirements of both the PUMA and the PESMP. The QMP forms part of the contractor's ESMP (CESMP).

3.4.4 Construction Camps and Laydown Areas

The construction camp or compound consists of the site offices, testing, storage and associated facilities, and includes the asphalt plant required for runway resurfacing and an area for feedstocks of aggregate from Olo Quarry. The construction camp is not a workers residential camp.

The site is at Faleolo International Airport on Samoa Airports Authority (SAA) land west of the terminal and the SAA offices (refer Figure 7).

The site is an existing gated entrance to the airport and is elevated and faces north over the runway. Site drainage is primarily to the east with some local drainage to the north and west at those ends of the site.

The site was previously used as the asphalt plant for the resurfacing of the Faleolo runway in 1999/2000 and some asphalt and internal roads still exist on the site. Site size is the minimum required for a project of this size at 10,000 m2 and coincides with the previous developed part of the site. The remains of previous site drainage, primarily a ditch and bund along the northern side of the site (downhill and towards the runway) can still be seen.

The site has been confirmed as the final construction compound and lay down site and includes the asphalt plant. A DC was applied for and granted by PUMA (Reference DCA 175/18) and the

application included a site specific EMP. The site and controls, including the EMP and DC conditions, have been included in the CESMP.

The construction camp will be utilised by all project Contractors at differing times so the scale of the camp will vary. The greatest land area required will be for the pavement works (runway) component of the SAIP as the equipment and aggregate requirements are the greatest for this set of works.

The construction camp is subject to the prescription in COEP 5 and the description of the construction camps in the CESMP must reflect these requirements as well as those set out in this PESMP. Specifically, section 5.3.3 of COEP 5 defines the minimum facilities that must be provided at the camps. This must be delivered in a Construction Camp Development Plan as per section 5.3.4 and must include dismantling and restoration of the camp.

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.

Vegetation clearance along with temporary or existing hard stand areas for stock pilings and bunded areas (secondary containment) for hazardous substance storage 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 is to be as defined by the International Finance Corporation (IFC), environmental, health and safety guidelines as "appropriate secondary containment structures consist of berms, dikes, or walls capable of containing the larger of 110% of the largest tank or 25% percent of the combined tank volumes in areas with above-ground tanks with a total storage volume equal or greater than 1,000 L and will be made of impervious, chemically resistant material"[2].

Prior to the establishment of the asphalt plant, consideration should be made on where the asphalt plant is to be located as it can produce nuisances such as noise and a mercaptan odour. If located away from communities, the social impacts should be minimal. The location will be clearly noted in the CESMP and subject to WB clearance.

Noise, dust, wastewater production, vibration and increased traffic are impacts that can negatively affect communities and sensitive receptors (settlement to the east, wetlands to the west of and the coastline to the north of APW and groundwater); were considered when identifying the location of the construction camp and laydown areas.

While it is not anticipated that there will be a need for a residential workers camp to be established for the works at APW, it is prudent to be aware of the necessary steps required to install or upgrade an existing workers camps should this become necessary for any reason. These steps include adhering the national minimum standard described in COEP 5 and also adhering the guidelines which have been included Appendix G and either a DC application or variation to the current DC applied for. Should a worker camp be required then these requirements must be implemented and updates made to the PESMP and CESMP as appropriate for approval.

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

3.4.5 Haul Routes

Transport to and from the site and the construction camp, particularly of materials and equipment, must occur on the existing road network and measures undertaken to prevent accidents, dust, spillages, noise and vibration nuisance (e.g. wheel wash, covering of loads, servicing of vehicles). 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 SAA and identified in the MOWP.

It is likely that the West Coast Road (WCR) will be used as part of the aggregate haulage route. To ensure the protection of the road, the Contractor will be required to have a weighbridge or similar (for example an optical load measure) located at the quarry. The weighbridge should be independently operated and the weight of each truck recorded. No overloaded trucks shall be permitted to depart the quarry. The Contractor has developed a haulage route which minimises the use of the WCR.

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 braking and use of speed control in and close to settlements can be implemented to reduce noise, speed and vibration near sensitive receptors (Section 6.4). As the quarry and haul route has been identified, the CESMP assesses these requirements and necessary measures reflected in the Traffic Management Plan (Section 7.3). The TMP is to include provisions for evaluation of haulage route road condition before during and after haulage to determine whether repairs to the road surface by the Contract is required prior to demobilisation. Should peak time transportation of materials be necessary, it is important to communicate this in a meaningful manner to the sensitive receptors along the route, particularly those on any unsealed roads where additional traffic management may be necessary.

3.4.6 Hazardous Substances

Hard stand areas must be available for storage of hazardous substances and other vehicles, machinery or equipment that poses a potential risk to the environment (e.g. leaking lubricant from machinery). All workshop areas and bunded areas should be roofed. 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 or paint) must be stored in a bunded area.

3.4.7 Waste

Solid waste in the form of general waste, recyclable and non-recyclable inorganic waste, organic biodegradable waste, hazardous waste and construction waste will be generated by project activities.

The largest consented landfill on Upolu is the Tafaigata landfill managed by Division of Environment and Conservation of the MNRE, located 10km east of APW in a relatively remote agricultural area and is well connected by feeder roads to Apia and other areas. The facility handles all the municipal waste from Upolu and is relatively large and well laid out covering an area of over 30 hectares[3]. The

[3] ADB 2013, Key Indicators for Asia and the Pacific 2013: Solid Waste Management in the Pacific Samoa Country Snapshot

landfill has recycling materials segregation and storage area, a hazardous waste incinerator, waste water lagoons and a landfill[4].

In addition to the above waste streams, disused material will be generated (from the temporary repair works, the final pavement works, and potentially from the civil works for airfield lighting and NAVAIDS) in the form of asphalt millings concrete rubble and surplus materials from excavations. 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 SAA or PWD and the community. Clean fill materials which are not able to be reused within the timeframe of the project implementation shall be transported to a location approved by the Ministry of Works, Transport and Infrastructure (MWTI) to be stored for future use by the Ministry. This location shall also be subject to approval by the Employer's Engineer. These materials 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.

The Contractor must develop a Waste Management Plan (WMP) (section 8.9) for all generated waste streams, to be submitted as part of the CESMP for clearance by the Supervision Engineer. At all times, the Contractor is responsible for the safe and sound disposal of all wastes generated by the Works.

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

There is no reticulated sewer network on the island, septic tanks are utilised. Therefore, if access to existing airport facilities are not available, any temporary toilets and disposal or treatment of wastewater will need to be in accordance with the MNRE SWM Department, Employer's Engineer and SAA (site location) advice.

3.4.8 Health and Safety

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

Civil works shall not commence until the Employer's Engineer has approved the OHS plan, the Safety Officer is mobilized and on site, and staff have undergone induction training. Details of the expected content of the OHS Plan and expected practices of the Contractor with regards to health and safety are stipulated Code of Practice in Appendix G and summarized in section 7.3.1.

3.4.9 Duration and Timing of Construction Activities

The work has been divided into three contract – the temporary surface treatments (awarded and completed 2017), the airfield lighting and navigational aids (pending tender) and the main pavement and civil infrastructure works (contract awarded).

The contract for the main works and for the AGL and NAVAIDs has been awarded (July 2018), the timing and duration is not yet finalised, however it is anticipated that the main runway works will commence in June 2018 for 12 months and the third contract will start in late 2018 for 8 months. These tentative schedules are subject to change.

Normal working hours in Samoa 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 Employer's Engineer and PUMA. The runway pavement works will need to be completed outside of normal working hours, including overnight, 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 through SAA as documented in the MOWP.

For works outside normal hours, approval must be obtained from SAA/MNRE and any residents within 100 m of APW must be notified 5 days before works take place. Careful consideration must be given to keeping nearby communities informed of any night works with regard to nature of noise and likely duration.

4 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

4.1 NATIONAL REQUIREMENTS

Table 1 presents a summary of national legislation that is relevant to the SAIP and all components. The primary piece of environmental legislation in Samoa is the Planning and Urban Management Act 2004 (PUM Act 2004). Part V of the PUM Act 2004, specifically Section 37, requires consent for development within Samoa (a Development Consent). The process for determining whether a Development Consent is required and the application process are detailed in the Planning and Urban Management (Environmental Impact Assessment) Regulations (2007). This defined further in Section 3.2. The application for consent is required to be submitted once the final design of the works has been confirmed.

A series of Codes of Environmental Practice (COEPs) have been developed which provide the standards for avoiding or mitigating adverse environmental impacts associated with development project planning, design, construction and maintenance.

4.2 DEVELOPMENT CONSENTS

All developments in Samoa require Development Consent and shall be submitted to PUMA for assessment before a determination is made. No works are to be undertaken until a Development Consent is secured. The Development Consent application form is available from the PUMA offices in Apia. Information to be included with a Development Consent application is:

1) Design drawings of the proposed development activity.
2) Site plan that will indicate the proposed activity on site, including setback(s) from the nearest boundary lines and the main road as well as any existing building structures on site.
3) If the development is on freehold land a computer folio certificate and certified survey plan are to be submitted. Development on customary land must have written consent from the family Sa'o. Development on government land requires a copy of the lease agreement and a certified survey plan be submitted.
4) EIA report. The type of EIA report is determined by the nature of the proposed activity as well as its potential and actual impacts likely to be generated. There are two types of EIA report under the EIA regulations and these include the Preliminary Environmental Assessment Report (PEAR) and a Comprehensive Environmental Assessment Report (CEAR).
5) Consent fee that is determined by the estimated cost of works.

All construction components of the SAIP will require assessment for a Development Consent. As airport operator and land owner/ lessee, SAA is responsible for applying for all Development Consents (with applications supported by information supplied by design consultants and contractors as required). The approval of the Development Consent will include a series of conditions that the project must comply with. The development applicant (land owner or occupier) are responsible for ensuring their activity complies with the conditions the Development Consent. PUMA is responsible for monitoring compliance with the conditions of the Development Consents. If significant changes

are made to the design or scope of works, these may require amendments to the original Development Consent.

Development Consents applied for and granted for the project include:

1. Extract Aggregates for the Airport Runway Development and Undertake Crushing Activities (PUMA (Reference DCA 047/18) Granted 14 February 2018
2. Clear Land for a Laydown Area and Asphalt Plant (PUMA Reference DCA 175/18) Granted 26 March 2018
3. Upgrade Existing Runway and Apron (PUMA Reference DCA 239/18) Granted 28 May 2018

Copies of these DCs can be found at Appendix H to this ESMP

Table 1 National Legislation Relevant to the Proposed Project

Classification	Policy, Legal and Administrative Framework	Details
General environmental legislation	Planning and Urban Management Act (2004)	An Act to establish the PUMA within the MNRE. PUMA is the lead agency in environmental management, which includes social impact issues (IP and IR) and is responsible for setting the criteria for the requirements of an EIA format, structure, as well as a review and consideration of findings in decisions relating to development consents. Establishes a planning agency with responsibility for implementation of a framework for planning the use, development, management and protection of land in Samoa. Part 5 Section 37 states that all development that takes place in Samoa needs consent unless a sustainable management plan or regulations provides otherwise. It specifies that a development shall not be carried out unless development consent has been obtained or unless the development is carried out in accordance with the consent. Section 42 states that PUMA may require an applicant under section 37 to provide an EIA. Initially, all projects are required to be registered with PUMA and a preliminary assessment is done to assess whether a full EIA is to be prepared. Furthermore, the development consent system requires an EIA to be prepared for large scale developments that cost above SAT$1,000,000. For these projects a PEAR is prepared and submitted to PUMA for review to determine whether a CEAR is required. All applications that do not require EIA submission will be approved by the ACEO of PUMA who is the Secretariat of the Planning and Urban Management Board (PUM Board). For applications that require EIA as supporting information, it will be publicly notified and referred to relevant authorities for assessment before it is approved by the PUM Board.
EIA regulations	Planning and Urban Management (Environmental Impact Assessment) Regulations (2007)	Under the EIA Regulations, environmental assessments are required for any public or private development proposal that triggers qualifying criteria. Key criteria relate to potential negative impacts on people, places, habitats and conservation. Depending on the nature and scope of the development either a PEAR or a CEAR is required. A PEAR is required when PUMA does not consider that significant adverse impacts are likely, whilst a CEAR is required where likely and significant adverse impacts.
Environmental standards	Codes of Environmental Practice(2007) (COEP)	While not all COEPs listed are applicable to the SAIP they cover: 1) Administration Procedures 2) Road Planning, Design and Construction 3) Consultation 4) Land Acquisition and Compensation 5) Construction Camps 6) Road Construction Erosion Control 7) Slope Stability 8) Quarry Development and Operations 9) Gravel Extraction 10) Coastal Protection 11) Drainage 12) Traffic Control During Construction 13) Earthworks 14) Cellular Telecommunications Facilities While not a COEP, PUMA's *Planning Policy for Noise Standards (Revised) 2011* provides the details of permitted noise levels during construction and operation phases of the project. The underlined COEPs are the ones applicable to this project.
Aviation	Civil Aviation Act (1998)	To establish rules of operation and divisions of responsibility within the Samoa civil aviation system in order to promote aviation safety; and to ensure that Samoa's

Classification	Policy, Legal and Administrative Framework	Details
		obligations under international aviation agreements are implemented; and to consolidate and amend the law relating to civil aviation in Samoa.
	Civil Aviation Rules (CARs) & Regulations (2000)	International flights into, from or over Samoa territory shall be subject to the current Samoa regulations relating to civil aviation. These regulations correspond in all essentials to the Standards and Recommended Practices contained in Annex 9 to the Convention on International Civil Aviation.
Health and safety	Occupational Safety and Health (OH&S) Act (2002) Labour and Employment Relations Act (2013)	Application of international standards in relation to workplace safety and fair treatment of workers.
Mining	Land Transport Authority Act (2007)	Addresses operation and management of quarries, gravel pits, access roads, roadworks or any works within a public road reserve.
Natural resources and conservation	Lands, Surveys and Environment Act (1989)	The Act manages land allocation and management, specifically manages forest protection and regulates land use activities and diversity conservation. Establishes the principal functions of the MNRE which include advising the Minister on all aspects of environmental management and conservation including: (i) the potential environmental impact of a public or private development proposal; and (ii) to act as the advocate of environmental conservation at Government, its agencies, and other public authorities with advice on procedures for the assessment and monitoring of environmental impacts.
Waste management	Waste Management Act (2010)	Provides for the collection, disposal and management of solid waste in Samoa including licensing of all operators (collection and disposal) and landfill/ dump sites, designation of the wastes and waste disposal sites and
Water resources	Water Resources Management Act (2008)	Provides for the management, protection and conservation of the water resources (being surface and ground water and includes coastal waters where fresh and marine waters mix) of Samoa. It gives authority to Samoa Water Authority (SWA) to monitor and enforcement of water resource management.

4.3 International Obligations

This section provides a list of all applicable international conventions and treaties that Samoa is a signatory to, or has endorsed. These international agreements are governed by international law and are legally binding for countries that have formally ratified them. Applicable obligations include:

- United Nations Framework Convention on Climate Change 1992;
- Kyoto Protocol to the Framework Convention on Climate Change 2005;
- Convention on Biological Diversity 1992;
- Nagoya Protocol;
- Vienna Convention for the Protection of the Ozone Layer 1985;
- Montreal Protocol on Substances that Deplete the Ozone Layer 1987;
- United Nations Convention to Combat Desertification 1994;

- Convention on the Protection of World Heritage and Natural Heritage 1972;
- Convention on the Prior Informed Consent Procedure for Hazardous Chemicals and Pesticides in International Trade;
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal;
- Convention on Persistent Organic Pollutants;
- Convention of Wetlands of International Importance;
- Convention on Migratory Species of Wild Animals;
- Conventional on International Trade in Endangered Species of Wild Fauna;
- United Nations Convention on the Law of the Sea;
- Cartagena Protocol on Biosafety to the Convention of Biological Diversity;
- International Treaty on Plant and Genetic Resources for Food and Agriculture;
- Minamata Convention;
- Plant Protection Agreement for the South East Asia & Pacific Region; and
- Strategic Approach to International Chemicals Management.

4.4 World Bank Policy

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

The PESMP is a dynamic document which must be updated as consultation and detailed designs of the project components are finalised to ensure currently unanticipated impacts and revised mitigation measures are addressed. Effective implementation of the PESMP is a requirement of the funding agencies and local legislation so monitoring is an integral component of implementation. A Monitoring Plan is included in Section 10 (and Appendix C) of this PESMP. This PESMP is to form part of the bidding documents for contract(s) awarded under the SAIP and will form the basis of the CESMP.

All works completed for the SAIP 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) [4].

[4] 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

5 NATURAL AND SOCIAL ENVIRONMENT

This section is adapted from the Integrated Environmental and Social Management Plan – Faleolo International Airport (AECOM, Feb 2016)

5.1 PHYSICAL ENVIRONMENT

5.1.1 Location and Geography

Samoa, formerly known as Western Samoa, is a small island developing nation located in the South Pacific between latitudes 13º and 14º south and longitude 171º and 173º west. It is an archipelago consisting of two large islands, Savai'i (1,802 km²) and Upolu (1,113 km²), and six small islets (total land area of 2,944 km²). The island group formed as a chain of shield volcanoes extend over a mild northwest to southeast axis.

Figure 8: Geographic location of Samoa. (Source: http://www.geographicguide.com/oceania-maps/samoa.htm)

Upolu the most populated of the island in the archipelago and features the county's capital Apia. Upolu has four topographic regions: lowland regions characterised by undulating terrain which extends from sea level to 225 m; strongly sloping foothills, the uplands occurring at 600 m elevation and the highlands (up to 1,200 m).

APW (Figure 9) is located on the north-west coast of Upolu, 32 km west of Apia and covers an area of approximately 3.44 km² of relatively low-lying topography, with average elevations of 3.8 m above mean sea level. Southern and western sections of the site are higher in elevation. The site is characterised by silty to sandy clay soils of mainly basalt olivine origin, weathered to depths of 20 m.

Figure 9: Faleolo International Airport (APW) on Upolu Island shown in relation to Apia and the Main West Coast Road. (Source: Google Earth Pro, date April 2015)

5.1.2 Climate

Upolu has a very wet tropical climate, with weak seasonality in temperature and precipitation. Hot, wet summer seasons last from October to March, a slightly cooler, drier winter season occurs between April and September. Winds are predominantly north easterlies throughout the year. Average temperatures recorded at the Faleolo climate station in 2014 ranged between 18.4ºC and 36.9ºC. Precipitation levels ranged between maximum of 672.7 mm and a minimum of 22.2 mm in the same year. The cyclone season is from November to April however tropical storms and cyclones may occur at other times of the year.

5.1.3 Soil and Geology

The geology of Upolu is comprised of two main groups of volcanic rock, the Salani and Falagaloa volcanics. These are moderately to highly weathered olivine basalts and basaltic andesite rocks. Coastal plains and river floodplains in northern Upolu are comprised of recent alluvium. Soils range from silt loams to sandy clays of high natural fertility.

The topography at the APW and the immediate vicinity is composed of generally low-lying land, with average elevations of 3.8 m above mean sea level. Higher elevations occur along the southern perimeter of the site and the western end of the runway. Soils of the area are clay to silty clay textures of mainly olivine basaltic origin, weathered up to depths of 20 m.

Samoa is located in a seismically active region and therefore vulnerable to seismic events (and tsunamis).

5.1.4 Water Resources

Surface water and groundwater sources exist across most of Samoa, although their distribution is not uniform. Upolu Island has about 15 more or less perennial rivers and river flow is good during the wet season whereas in the dry season, ephemeral rivers and streams begin to dry up and

perennial river systems experience low flows. Upolu water resources are obtained from both surface water intakes and groundwater with the urban water supply for Apia being supplied almost entirely from surface water intakes from the Vaisigano and Fuluasou rivers. Commercial and industrial uses are limited in Samoa, and rely on the most part on the urban water supply. Rainwater catchment is less common in Samoa than in other Pacific Island countries with rainwater harvesting only practiced widely on the Falelupo Peninsula (north-west Savaii) and in otherwise isolated and rural households[5].

Aquifers are readily available within the project site area and water supply for the airport relies solely on a borehole located near the west of the terminal from which Samoa Water Authority (SWA) operates a reticulated water supply.

5.1.5 Land Use Around APW

The area surrounding APW is predominantly used for agriculture; some residential, educational and administration properties are also in the vicinity. The northern side is composed of coastal and marine environments adjoining the Pacific Ocean further offshore. A fisheries aquaculture and nursery facility managed by the Ministry of Agriculture and Fisheries (MAF) has recently been established on the north-western coast. The village of Satapuala is located to immediately east of APW and consists of a mixture of residential, hospitality and retail properties. Immediately to the west is a popular tourist destination, the Sheraton Samoa Beach Resort (formerly Aggie Grey's Lagoon Resort and Golf Course); the village of Mulifanua is located further to the west. West Coast Road to the south runs parallel between the facilities and Satapuala forest/bush land.

A number of land use types exist close to southern parts of the APW (refer to Figure 10), including Satapuala Police Station, a district school 400 m away and a district-level hospital 500 m away. Industrial and municipal supply properties are also in the vicinity, namely SWA boreholes and water pump properties about 4.6 km away; an oil processing plant and the Olo quarry both located about 4 km and 7 km respectively. Approximately 2,800 hectares (ha) of government owned land (Samoa Trust Estates Corporation) directly to the south is leased to local villagers and is mainly used for coconut plantations and agriculture.

[5] FAO. 2016. *AQUASTAT website*. Food and Agriculture Organization of the United Nations (FAO). Website accessed on 2016/12/14

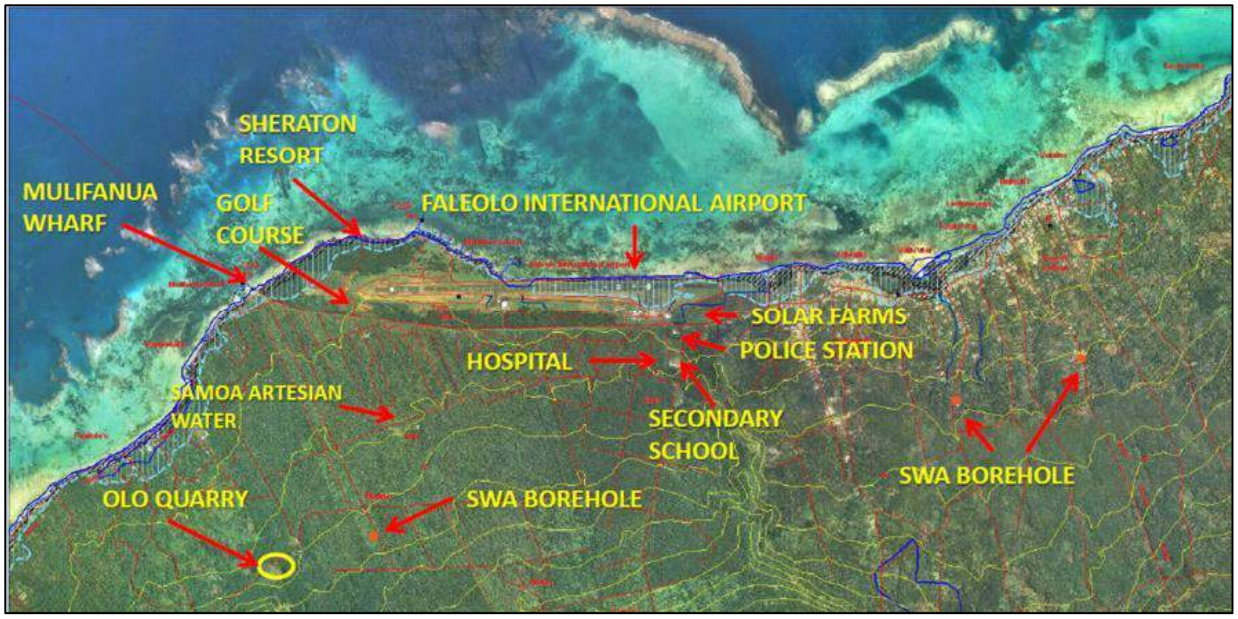


Figure 10: Land use types in the area surrounding Faleolo International Airport (APW). (Source CB Group 2015 via AECOM SAIP IESMP)

5.1.6 Coastal Flood Hazard Zone

A significant amount of APW is close to sea level with elevations between 2 and 4 m. The area of the runway near Threshold 26 and apron are within the coastal flood hazard zones i.e. are likely to be subject to flooding either by sea or from freshwater runoff during heavy rains (CB Group, 2015). The runway and apron area is located in the lowest part of the site and there are nine cross airfield culverts and six open swale drains which form part of the drainage catchment of the area and drain water from the road, paved surfaces, inland slopes and surrounding land, to the coast (Ineco/SMEC, 2015).

Potential for flooding due to storm surges and king tides exists along the low-lying northern margins and extends over the apron area towards the northern section of the terminal building (refer Figure 11). Figure 11 has been reproduced by CB Group (2015) based on the Coastal Infrastructure Management Plans produced by MNRE and BECA International Consultants in April 2007 for Aana Alofi III District where Faleolo International Airport is located. The runway is also at risk from stormwater runoff channelled towards the coast from the parking areas, terminal, hangar, main road and inland slopes due to the difference between heights

With the exception of some sections to the west, most of the runway is within close proximity of the coast, although an engineered seawall was constructed to mitigate flood and erosion risk, it is unlikely to withstand the effects of cyclones and storm surges which can result in flooding. These events often arise rapidly with low onset predictability and can be exacerbated by the small catchment and steep slopes on Upolu which respond rapidly to heavy precipitation. SAA will be addressing the vulnerability of this seawall through a redevelopment project in the near future, however at the time of writing this report further detail on this was not available. Confirmation on the timing of the seawall redevelopment should be finalised before the end of the SAIP works with a view to long term protection of the investments.

Drainage systems diverting overland flow from the surrounding upper catchment to the ocean currently flow over and under the runway. Flooding occurs on both sides of the runway, from coastal

inundation and runoff from the inland catchments. The extent and risks of flooding have been assessed in a hydrology study undertaken as part of the pavement detailed design development (Section 3.1.2).

Associated with floods is the risk of elevated levels of sediment, which can exacerbate flooding and land degradation. Water quality and the marine ecology within the receiving marine environment is also adversely affected by sediment laden flood waters.

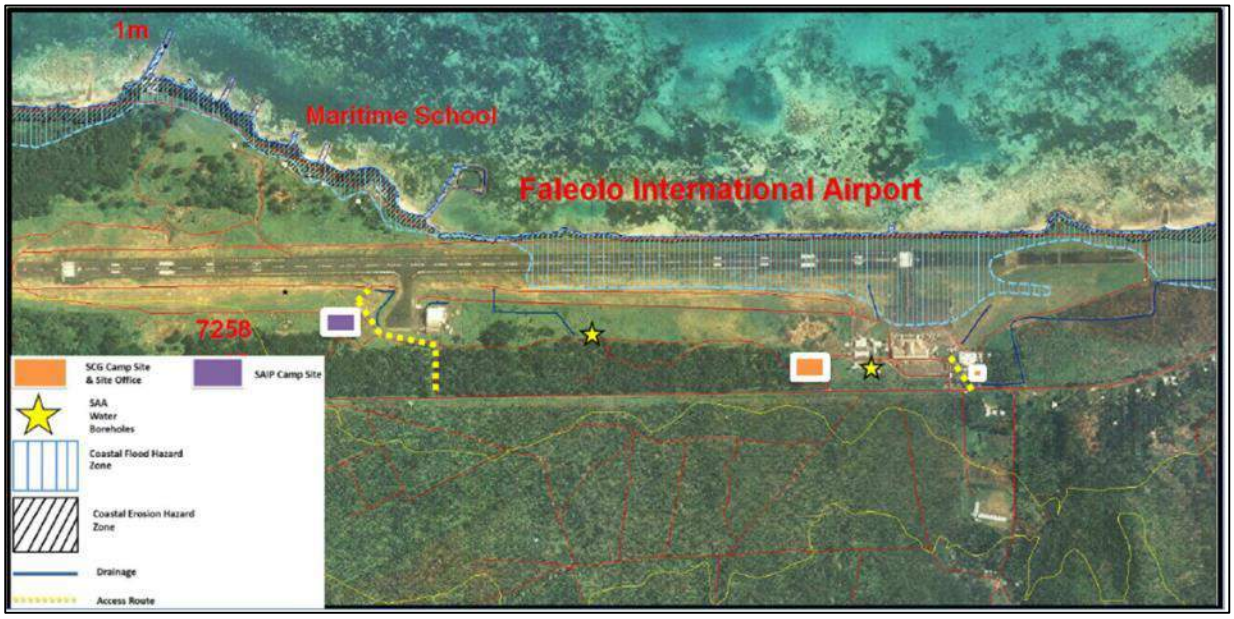


Figure 11: The potential coastal flood hazard at the Faleolo International Airport (APW) (Source: CB Group, 2015 via AECOM SAIP IESMP.)

5.2 BIOLOGICAL ENVIRONMENT

5.2.1 Marine Biodiversity

The coastline is approximately 50 m to the north of the runway. The fringing coral reef, sea grass beds, sea water surface and beach are the main ecosystems and habitats of Satapuala/Faleolo marine area. This area is known for its diversity of coral and fish communities, and other marine life which contribute to supporting tourism in the area. Fish and invertebrate resources form the basis for subsistence and artisanal lifestyles for the local people. A part of this area has been marked a conservation area for community based fishing.

Healthy coral assemblages provide natural protection from cyclonic waves reaching the shore and are composed of mainly the *Acroporas* and dense stands of plate corals. Shallow lagoons (average depth of 1.5 m) support abundant marine biodiversity. Common fish species include surgeonfish (*Acanthurids*), parrotfish (*scarids*), emperors and snappers (*Lethrinids* and *lutjanids*). Gastropod snails (*Nerita* and *Littorina*), zanthid crabs, bryozoans and ascidians are common in the intertidal zone. Past surveys recorded an increase of fish species richness with depth and with deeper habitats having more species than shallower sites.

5.2.2 Terrestrial Biodiversity

The APW is heavily modified to meet airport spatial requirements, with the majority of vegetation cleared to make way for infrastructure and grassed areas. Certain areas consist of ornamental plants

and trees and dense secondary vegetation is present towards the western and northern boundaries. This vegetation consists largely of coconuts and common coastal trees, shrubs and weeds characterise disturbed lands. The ornamental plants growing in and around the project area still provide shelter for many bird species, including common species (*Acridotheres spp.*) and migratory waders (including *Pluvialis fulva* and *Heteroscelus incanus*), as well as other underground terrestrial life.

The following species are known to congregate on the runway and surrounds: the Pacific Golden Plover or Tule (*Pluvialis fulva*) and the Wandering Tattler or Tuli Alomamala (*Heteroscelus incanus*) both of which are migrant waders; and one land bird, the Pacific Black Duck or Toloa (*Anas superciliosa*). Their use of the airport area could potentially pose a bird strike risk to arriving or departing aircraft.

5.2.3 Conservation Areas on Upolu

A number of natural conservation areas are located in Upolu, including O le Pupu-Pue National Park and Sa'anapu Conservation area located south-east of the APW and Uafato Conservation Area in the east. O le Pupu-Pue National Park is the largest protected land area on the island and protects a wide area and a range of environments, including Palolo Deep National Marine Reserve which encompasses an area of 1.4 km² and is comprised of the deep, a small land area, a fringing reef and shallow inshore fiats. However none of these areas are in close proximity to APW and will not be affected by APW upgrade works.

5.2.4 Rare or Endangered Species

The 2008 International Union for Conservation of Nature (IUCN) Redlist of endangered species monitors 15 Samoan endemic and native species. Of the eight land bird species listed, one is critically endangered and possibly extinct (*Gallinula pacifica*). Two others are endangered and the remaining five are vulnerable. One mammal (sheath-tailed bat) is considered critically endangered; with only five individuals sighted following an extensive search after recent cyclones, their status is unconfirmed. Three turtle species, which frequent the local marine environment, are considered vulnerable.

All three of the bird species (Pacific Golden Plover, Wandering Tattler and Pacific Black Duck) known to congregate on the runway and surrounds are listed as 'least concern' on the IUCN Redlist of endangered species. Least concern is defined by the IUCN as evaluated but not qualified for any other category; as such they do not qualify as threatened, near threatened, or (prior to 2001) conservation dependent.

5.3 Socio-Economic Conditions

5.3.1 Population and Demographics

At the last census in 2011, the population was 187,826. It was estimated that by 2014 the population would have grown to 195,000. The 2011 census found 96% of the population held full Samoan citizenship with 2% holding dual citizenship and the remaining 2% not holding Samoan citizenship. Approximately 75% of the total Samoan population live on Upolu. The population is relatively young with a median age of 21 years.

5.3.2 Education and Health

Formal education is provided by the Department of Education and religious missions by way of a uniform syllabus and common examinations. In 2003 primary school enrolments were estimated to be about 98% of age-eligible and secondary school enrolments were about 62% of age-eligible students. It is estimated that nearly all students complete their primary education. In the same year, public expenditures on education were estimated at 4.8% of gross domestic product (GDP), or 14.6% of total government expenditures.

The Department of Health oversees health care on the islands is divided into 14 health districts. Diabetes and heart disease are common amongst Samoans and is largely contributed to the westernisation of the Samoan diet. Despite having a holistic view on health, immunisation rates are between 91% and 98%. Life expectancy at birth is 73.2 years.

5.3.3 Livelihoods and Economic Activities

Approximately two-thirds of the labour force is engaged in agriculture, which provides 90% of the exports (coconut cream, coconut oil and copra). Limited manufacturing concentrates on refining some of the agricultural products. Traditional revenue sources were fish stocks, however, declining fish stocks challenge its reliability. Tourism is growing and now represents 25% of the GDP. The economy of Samoa has traditionally been dependent on development aid and family remittances from overseas but Samoa has recently achieved significant development progress, and now ranks highest in the region in United Nations Development Programme's Human Development Index. GDP growth averaged 4% per annum between 1997 and 2007 and GDP per capita has increased by 50% since 1990.

5.3.4 Land Tenure and Rights

Like most South Pacific island nations traditional land tenure systems are predominantly customary. The Land Titles Registration Act of Samoa was passed in 2008 and created a registration system described as a hybrid system which I s an amalgam of old deeds registration principles with more modern title registration practices. The Act adopts the Torrens registration of title system and requires the registration of public land, freehold land and customary land leases and licences, and allows the registration of customary land based on Land and Titles Court judgment.

5.4 PROJECTED CLIMATE CHANGES AND IMPACTS

There are no clear trends in temperature records in Apia since records began in 1957 due to missing data. However it is probable that over the past 50 years there has been a warming air temperature trend at Apia in line with regional and global trends, partly due to the warming ocean temperatures around Samoa. Temperature increased at a rate of 2.2ºC per decade; although there has been no trend in changes to annual rainfall, year to year rainfall has become more variable. Satellite data indicates that sea level near Samoa has risen by about 4 mm per year since 1993; a figure slightly larger than the global average of 2.8 to3.6 mm per year.

Scientists from the Pacific Climate Change Science Program (PCCSP) have assessed 26 global models[6]; 24 of these were found to best represent the climate of the Samoa region and western tropical Pacific and have been used to develop climate projections for Samoa. The climate

[6] Source: Pacific-Australia Climate Change Science and Adaptation Planning Program, 2015. *Current and future climate of Samoa*. Available from http://www.pacificclimatechangescience.org/wp-content/uploads/2013/06/3_PACCSAP-Samoa-10pp_WEB.pdf

projections for Samoa are based on four Intergovernmental Panel on Climate Change (IPCC) emissions scenarios called Representative Concentration Pathways (RCP): very low (RCP2.6), low (RCP4.5), medium (RCP6.0) and very high (RCP8.5), for time periods around 2030, 2050, 2070 and 2090 (refer Figure 12).

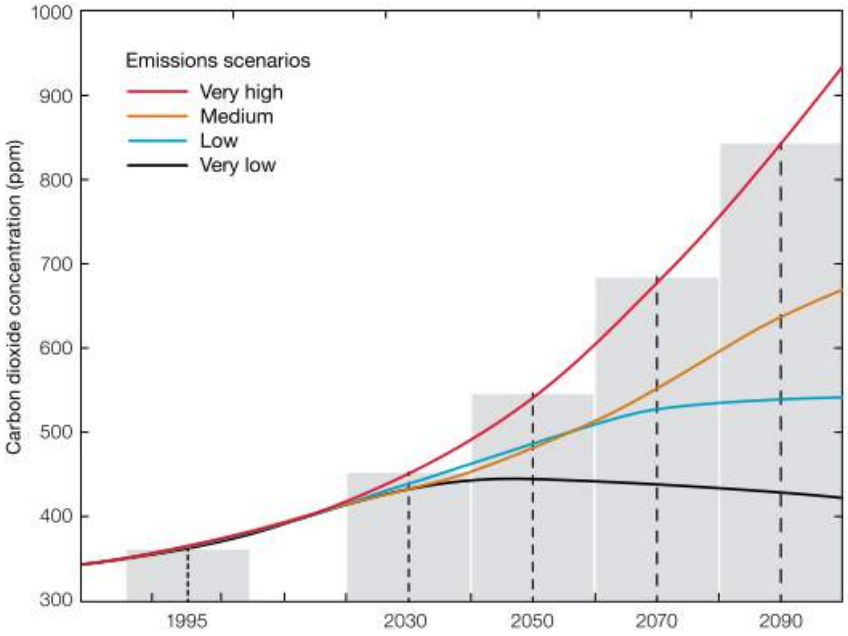


Figure 12 Carbon dioxide (CO2) concentrations (parts per million, ppm) associated with the very low (RCP2.6), low (RCP4.5), medium (RCP6.0) and very high (RCP8.5) emissions scenarios for 20-year time periods (shaded) centred on 1995 (the reference period), 2030, 2050, 2070 and 2090.

Projections across all emission scenarios indicate Samoa will experience increases in average annual air temperature and sea surface temperature (refer Table). Under a very high emission scenario temperature increases are projected to be between 0.5 and 1.1ºC higher by 2030. Sea level rise is expected to continue, with projections ranging between 7 and 17 cm under very high emission scenarios in 2030. Rainfall projections suggest little change is annual rainfall however more extreme rainfall events would be expected. According to projections Samoa is likely to experience a decline in the frequency of cyclones; however, an increase in storm intensity is probable by the late 21st century.

Table 2 Projected annual average air temperature changes (left) and sea level rise (right) for Samoa for three emissions scenarios and three time periods. Values represent 90% of the range of the models and changes are relative to the average of the period 1986-2005.

	Annual Average Air Temperature Projection				Annual Average Sea Level Rise Projection			
	2030 (°C)	2050 (°C)	2070 (°C)	2090 (°C)	2030 (cm)	2050 (cm)	2070 (cm)	2090 (cm)
Very low emissions scenario	0.4-0.9	0.5-1.1	0.4-1.1	0.3-1.2	8-17	13-30	18-44	23-59
Low emissions scenario	0.4-1.0	0.7-1.4	0.9-1.8	0.9-2.1	7-17	13-30	21-47	28-66
Medium emissions scenario	0.4-0.9	0.6-1.4	0.9-1.9	1.1-2.5	7-17	13-29	21-46	29-67
Very high emissions scenario	0.5-1.1	1.0-1.9	1.5-2.9	2.0-4.0	7-17	16-33	27-56	40-87

The projected design life is 20 years for the pavements, therefore climate projections for 2030 reflect the SAIP most appropriately. At APW, the airfield drainage comes under pressure from storm water events and currently floods during heavy rain at high tide as the culverts are also vulnerable to backflow during high tides. The projected increases in intensity of rain fall events combined with project increases in sea levels will have a bearing on the design of the improvements to the drainage system.

In addition to this, the current condition of the seawall is vulnerable to projected increasing intensity of cyclonic events and rising sea levels which, in turn, renders the SAIP investment vulnerable to these conditions. SAA have plans in process to upgrade the seawall which will provide longer term security of the investment for its projected design life. At the time of writing this PESMP version 8, the details of the seawall upgrade are not known.

6 CONSULTATION AND STAKEHOLDER ENGAGEMENT

6.1 BACKGROUND AND APPROACH

As required by WB Safeguards Policies consultation and disclosure of Category B projects must be undertaken with project affected groups (stakeholders) and non-government organisations (NGOs). The potential environmental and social impacts of the project require the opportunity for discussion and review during the environmental assessment/ ESMP process to inform detailed design and mitigation measures. The original EMP (CB Group, 2013) was subject to a round of public consultations conducted by CB Group in September 2013. Further to this, a round of public consultations were carried out during September 2015 by the SAA for both the SAIP works and the concurrent terminal upgrade works being undertaken by Shanghai Construction Group (SCG). Ongoing consultations will be needed to inform the communities of upcoming works and their schedules.

The scope for undertaking these future consultations for the project should include the following tasks:

- Develop the stakeholder matrix and engagement plan to identify all parties and appropriate consultation mode (e.g. interviews, focus group meetings, public meetings) for the respective stakeholders.
- Consult with institutional stakeholders to ensure a whole of Government approach to the project development. This will ensure that the project plans and communication documents presented to the wider stakeholder group (e.g. local community) take into account and optimise other Government plans and priorities.
- Schedule consultation with stakeholders according to the most suitable communication method and involve members of the project delivery team (e.g. design engineers, safeguards specialists) as required and dependent on the level of information required by the stakeholder group.
- Document all consultation including:
    - Manner in which notification of the consultation was announced: media(s) used, date(s), description or copy of the announcement.
    - Date(s) and location(s) consultation(s) was (were) held.
    - Invitation and attendance lists. (Name, Organization or Occupation, Telephone/Fax/e-mail number/address (home and/or office).
    - Meeting agenda/ program/ schedule including list of presenters and discussion topics.
    - Summary meeting minutes (comments, questions and response by presenters), actions and decisions.
- Collate and assess all consultation outcomes in a report to feed into subsequent development of the PESMP, CESMPs and detailed designs.

6.2 OUTCOMES OF CONSULTATIONS TO DATE

Institutional stakeholders in safeguards compliance are the implementing agency (MWTI), SAA, and PUMA. Local stakeholders are the communities surrounding the Government owned buffer zones around the airports and airport concessionaires.

Reports summarising the key outcomes of the initial public consultation lead by CB Group in September 2013 in Appendix E. The key agencies consulted included the following:

- Samoa Land Corporation (2013)
- STEC (2013)
- MWTI (2013)
- MNRE (2013)
- PUMA (2013)
- IPA (2013)
- MoF (2013)
- ANZ Bank (2013)
- Westpac Bank (2013)
- Seleck Global Services (2013)
- ASCO Motors (2013)
- PPS (2013)
- Polynesian Airlines (2013)
- Samoa Water Authority (2013)
- Samoa Chamber of Commerce (2013)
- Ministry of Police (2013)
- Eveni Carruthers (2013)
- Inter Island (2013)
- EPC (2013)
- Seal & Strap (2013)
- PPPS (2013)
- Nuanuaolealofa (NOLA) (2013)
- Land Transport Authority (2013)

Representatives from the following communities in the vicinity of APW (see Figure 13) were also consulted:

- Satapuala
- Satui/Safafili
- Mulifanua
- Satuimalufilufi

Figure 13: Location of village consultations (excl Satui/Safafili). (Source Google Earth Pro April 2015)

Further consultation by SAA took place in September 2015 regarding the runway upgrade and in particular the terminal upgrade. Stakeholders included: World Bank, Shanghai Construction, LTA, SWA, Samoa Air and representatives from communities of Satuimalufilufi and Satapuala.

Main issues in the 2015 consultation raised were to do with employment opportunities for the terminal works and some biosecurity issues were also raised.

An additional set of community, public and GoS agency consultation was undertaken in March and April 2018 by the contractor for the runway works and covered issues regarding the reopening of Olo Quarry, haulage route and traffic management. Further consultation is planned for residents adjacent to AWP on aspects of the runway and apron works as the project progresses. Details and results of the consultation are included in the CESMP documents.

Community consultation and validation will be undertaken by the EE and contractor over the life of the project works through to demobilisation.

6.2.1 Key Outcomes

All key outcomes and concerns that were raised during the meetings are summarized below.

Samoa Land Corporation – 9 September 2013

- Samoa Land Corporation is a Samoan Government Corporation which is charged with overseeing Samoan Government-owned lands.
- Full support for the project was noted and recognition of the opportunities for other developments in Samoa to be triggered by the development of this project.
- SAA could consider possible land purchase from STEC for the selected quarry site
- Requested that SAA include a requirement for Contractors to outline, during the EOI process, how they will deal with restoration of quarry sites after completion of works to prevent future quarry site being left in a condition not suitable for future land uses or development as with previous infrastructure projects.

Samoa Trusts Estate Corporation (STEC) – 9 September 2013

- Had initial concerns that the planned airport works were planned to be undertaken on STEC lands across from the airport and would therefore put STEC developments in that area on hold.
- Voiced concerns that Olo would not be a suitable quarry site as the population surrounding the quarry has become quite large and there are now several larger companies utilising the area (SWA, bottle water company, STEC coconut oil production company). Suggested alternate site ‘Afolau’ as having the same rock type as Olo and is removed from settlements.

Ministry of Works, Transport and Infrastructure – 9 September 2013

- Concerns were highlighted of poor drainage next to the runway and run-off issues.

- Questioned whether a full EIA was more appropriate that an EMP. CB Group advised that advice would be sought from MNRE
- It was noted by the Acting CEO that the villages surrounding APW are sensitive to government development and can sometimes demonstrate a lack of support. Particular reference was made to Satapuala village and ongoing disagreements with government over land alienation.
- Previous runway extension works dumped leftover bitumen behind the hangar area which has had negative impacts. Advice was given to ensure that this is not repeated.
- Acting CEO also pointed out that the wildlife at the airport should be considered although he noted that wildlife is generally of a low priority in airport given the potential safety hazards of birds, etc.

Satapuala, Satui/Sagafili and Mulifanua Airport Satellite Village Mayors – 17th September 2013

- Village representatives were advised that SAIP public awareness campaign would include a press release, Public Information Bulletin for distribution and public display.
- It was stressed that there will be no land acquisition for these works as the planned improvements are all within APW boundaries.
- Mayor of Satui voiced the village's strong support for the project as they understand the urgency of the need for repairs. He also stated that wider consultations need to be carried out because whatever the matai (chiefs) agree to, the rest of the village will follow suit.
- Mayor of Satapuala also voiced his villages support for the project especially as there are no plans to take more land which was their main concern. He offered to provide security implementation phase of the project.
- Mayor of Mulifanua suggested that before construction starts, the roads to and from the quarry need to be widened and fixed to reduce noise and dust pollution. It was also requested for SAA to ensure that the contractors rehabilitate quarry sites and not leave the land with gaping holes unsuitable for further development. He also requested that the design of the pavements look at the lifespan in relation to climate change issues given that the runway is so close to the sea.
- The matter of village curfews for evening prayer was raised and it was requested that SAA work closely with the mayors to ensure that the haulage of aggregates was done at times in consultation with the villages so that both parties can ensure that either the times of evening prayer are adjusted or the haulage times are planned to avoid socially sensitive times.

Ministry of Natural Resources and the Environment – 17th September 2013

- The urgent need to upgrade the seawall along the runway was raised by the MNRE CEO. This will enable better drainage to the sea and will protect the runway from rising sea levels and possible tsunami events.
- The potential contamination of a pristine aquifer was raised as a real concern should the Olo quarry be reopened for these works.
- The poor condition that quarries are left in was again raised. There is no proper landscaping afterwards to allow the area to be used for other uses, for example, a sports field or another prison, etc.

- The need to ensure waste from machinery and spillage to be managed and properly addressed was raised.
- Code of Environmental Practice for quarry activities exists in Samoa.
- The CEO advised that an EIA is required for project such as SAIP and he further advised that EIAs have previously been prepared for upgrading works for the runway as well as for the quarry. CB Group were to make recommendations to WB that an EIA would be needed before commencement of the project.

Cluster Consultation – 18th September 2013

- Present at this consultation were representatives from various Government Ministries, Corporations, Commercial Banks, Airport Tenants, and the Private Sector.
- Q&A session is summarised:
    - PUMA advised SAA that Olo quarry would no longer be an option for extraction for any projects.
    - Participants were advised that no additional land would be required
    - Erosion at the seawall was noted and SAA advised that part of these works would be looking at that issue.
    - Samoa Chamber of Commerce voice gratitude for the project and welcomed the opportunities for local companies to be involved in the construction. Requested that it be made a requirement for overseas companies to partner with a local provider in their bids.
    - Questions raised about the timing of works and response was that no night works would be carried out for the project
    - SAA will meet with operational airlines to discuss scheduling of daytime works to provide for their schedules.
    - SAA quoted a timeframe of 6-8 months for completion of works but this is dependent on weather conditions.
    - PUMA wanted to understand how SAA would deal with so much activity and movement during the implementation phase of construction – SAA responded that there would be extensive awareness programs and coordinated timetables.
    - PUMA wanted to know why an EMP was being prepared and not an EIA. Response was given that the EMP was a requirement for the final appraisal by WB however, once firm decisions, have been made and designs and final decisions are made on sites for excavations and quarries it is assured that an EIS would follow to ensure compliance with local legislation, policies, etc.
    - Need for landscaping of quarries following completion of extraction again raised.
    - Suggested that SAA needs to look at a 20 year plan to relocate the airport given the coastal flood zone issues.
    - SAA should consider raising the Eastern side of the runway strip to enable drains to flush properly given and avoid them being submerged at high tide.
    - Request that with any sites being identified for excavation and quarrying that there is a need to identify historical, culturally sensitive and significant areas.

Samoa Water Authority – 23 September 2013

- Project supported in general but concerns over the contamination of the water aquifer should Olo quarry be reopened. Requested that all potential quarry sites be surveyed prior to opening to identify threat level to aquifers.
- Water lens currently being used by bottled water company at Olo quarry is only 100m from surface.
- Request for consistent monitoring of this pristine aquifer should Olo quarry be reopened.

NOLA (NGO) – 23rd September 2013

- Discussions revolved around ground handling operational issues which included:
    - Accessibility – ramps for wheelchairs and proper embarking and disembarking from aircraft
    - More sensitive customer service from airport staff
    - Improved training for ground staff on systems designed to support disabled travellers
    - NOLA requested that they can provide training to airport staff

Satapuala, Satuimalfiluli and Mulifanua Airport Satellite Villages – 24th September 2013

- Support was voiced for the project and the benefits it will bring to Samoa
- It was suggested that Satapuala village was a better quarry site that Olo quarry but the roads to the quarry in this village would need repairing.
- It was requested that SAA review their decision to rehabilitate the runway in its current location due to the impact sea level rises would have on it.
- Requested by matai of Mulifanua that Contractors be required to abide by Samoa's Sunday rest day.
- Requested that haulage trucks take measures to avoid leaving the roads dirty
- Question was asked whether there would be a committee who can be approached to address any issues which arise during implementation and which they can bring their grievances to. SAA advised that there will be contact people within SAA for registering grievances.
- Safety at quarry site, particularly the use and secure storage of dynamite, was raised as a concern.
- It was again raised that the best people for security of sites are the village matai as they are the ones who the youth best respond to and this area has been problematic in the past.
- Satapuala requested footpaths on the roads for the village children going to and from school – the concern was relating to haulage traffic. Concerns were also raised over materials falling from overloaded or incorrectly secured trucks.
- The high level of unemployment of youth in the airport satellite villages was raised as an issue that the project might help to address by stipulating that local villages be used as one of the sources of employment for the project.

Land Transport Authority – 27th September 2013

- No major plans for airport relocation

- There are no plans for any new roads along the Faleolo area in the near future as they are concentrating on upgrading and maintaining existing roads.
- A recent (to 2013) study of quarries pinpointed safety and management of them as a major short fall with the only quarry seeming to be on a par with standards was the ACP quarry in Saleimoa.

6.2.2 Summary

A number of concerns were raised as part of the three sets of public consultation process, they included potential impacts from reopening Olo quarry, management of heavy traffic along routes, restoration of quarry sites, safety of work sites, employment opportunities, safeguards instrumentation, sea wall erosion, complaints procedure, additional land needs and long terms vulnerability of the runway to sea level rises. These concerns have either been addressed during the consultation, or in the mitigation section of the PESMP (Section 8 and Appendix B), or have been addressed through final design changes or will be addressed as part of the continuing public consultation process.

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

Stakeholders will continue to be consulted at other times during implementation (for example to announce the start of works or to advise of traffic management plans during the construction phase). Neighbouring communities will be made aware through these media of the procedure for registering any complaints or grievances in relation to the project.

6.3 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 the PESMP is available on the project web site (www.saip.vws) and the WB Infoshop. It will also be available from other GoS websites and hard copies available at GoS offices (most applicable and accessible), PUMA office in Apia, SAA office at APW, and community centres surrounding APW. Final PESMP, and any updates, as well as the CESMP, will be further disclosed at the same locations.

6.4 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 these communities before and during construction activities to ensure impacts are minimised and community safety in ensured. This is particularly important for the transport of materials and equipment to and from APW. 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.

The CB Group PISA provided an assessment of the six villages located within the airport's zone of influence (reference Section 3.1 of the PISA). The zone of influence encompasses Satapuala to the east and south of the Airport), Samea, Paepaeala, Fuailoloo, and settlements of Olo and Sagafili (all to the south and west of the Airport). While the construction will occur within the boundaries of APW some effects, particularly related to transport of materials and effects that can extend beyond property boundaries (e.g. noise and dust) could affect the neighbouring communities. Consultation and assessment of effects on the communities adjacent to the haul and transport routes for the project (e.g. from port or quarry) will need to be undertaken once the routes have been identified.

There are three primary schools, one large secondary school and many community churches in the zone of influence. The Sheraton Samoa Beach Resort, Le Vasa Resort, Airport Lounge and the Transit Motel are tourist accommodation venues near the airport.

7 ENVIRONMENTAL AND SOCIAL IMPACTS

7.1 OVERVIEW OF IMPACTS

The SAIP APW scope is to rehabilitate the existing runway and taxiways, rehabilitate and extend the apron, rehabilitate and extend RWY 08 turning node, upgrade the airfield drainage system, and upgrading navigational aids and lighting. The project is unlikely to cause any major negative environmental or social impacts as the work is providing maintenance to and improving existing infrastructure. While there will be some short term localised negative impacts to the surrounding communities during construction, overall the social outcomes of the SAIP APW works are expected to be positive by improving safety, accessibility and mobility of island communities. No land acquisition is required thus no physical resettlement will be necessary.

7.2 ENVIRONMENTAL IMPACTS

7.2.1 Solid Waste

Replacement of pavement material, upgrades of drainage system and replacement of lighting and air navigation aids will lead to the generation of excess soil and demolition waste. Other types of solid waste such as general waste, non-recyclable inorganic waste, organic biodegradable waste and construction waste will be generated from other project activities. Impacts associated with solid waste can arise from on-site waste storage, transportation of waste and off-site disposal of waste.

On-site storage of waste materials prior to disposal has the potential to cause Foreign Object Debris (FOD) generation on the airfield if not correctly stored in an appropriate location. Impacts associated with the storage and disposal of organic biodegradable waste include leachate from decomposing materials contaminating the surrounding soils and aquifers.

Transportation of solid waste in trucks without the correct equipment such as coverings or functioning tail gates can lead to waste spills on the haulage route. Spilled waste is a safety hazard to vehicle and pedestrian traffic as well as an environmental pollutant.

To avoid any potential adverse impacts from the storage of waste or the introduction of waste into the environment, a Waste Management Plan (WMP) will be developed (see section 8.9) by the Contractor and submitted for clearance along with the CESMP. The WMP shall describe solid and other waste streams generated by the works and detail the approved disposal methods along with permissions. At all times, the Contractor is responsible for wastes generated by the Works in accordance with the Waste Management Act 2010.

7.2.2 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 SAIP project will utilise the airports reticulated water supply from the Samoa Water Authority (SWA). The Contractor should also consider opportunities for rain water harvesting as this a sustainable option given the rainfall levels

in Samoa. The Contractors are responsible for securing water access that is adequate and continuously supplied throughout the construction phase.

At all times water efficiency, conservation and reclamation practices will be adopted.

7.2.3 Biological Resources

The APW SAIP and terminal upgrade 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 (coconuts, coastal trees and shrubs) in areas outside of the runway strip, where the construction camp and lay down areas will be located (west of the hangar). Habitat loss or disturbance will be related to the construction phase. There is the possibility that in the process of construction works fauna (e.g. nesting birds) could be impacted or the removal of vegetation (e.g. for construction lay down area) could impact on potential habitats.

The impacts on vegetative cover will be short-term and reversible through natural regeneration. Where topsoil is required to be cleared this will be set aside for use in restoration of disturbed areas.

In the event a new primary Navaid is required, the preferred locations (see Section 3.2.7) would likely require removal of mature trees and vegetation. This is required to provide 'line of sight' horizon coverage for the installed Navaid to gain maximum radio signal coverage. It would be anticipated the final determined Navaid location will be a result of balancing site obstruction clearances from the runway centreline and operational areas as well as minimising Navigation errors caused by proximity of buildings such as hangars and the Rescue Fire garage.

Consideration shall be given to extent of any tree / vegetation clearance and the ability of nearby drainage to cope with additional potential rainwater runoff.

All trees identified for potential removal fall under SAA responsibility and are not privately owned. Should the removal of mature trees be necessary, WB OP 4.12 should be assessed for applicability and the ownership of these trees will be formally documented. Written approvals will be needed prior to any tree removal.

The habitats surrounding the runway (outside the perimeter fence) are primarily forest/bush land to the south, coastal and marine environments to the north, Satapuala village to the east, the Sheraton Samoa Beach Resort and Mulifanua village to the west.

The Pacific grey duck or Tolo'a and wandering tattler or Tuli are wading birds with habitats adjacent to the airport and they are often observed in abundance in the vicinity of the airport between September and April. SAA have standard practices in place to discourage animals from the airfield for aircraft safety reasons and these practices will continue through the project implementation. Mitigation measures will include liaison with MNRE should any fauna (e.g. reptile, avian, amphibian or mammal) be encountered that affect construction activities (e.g. nesting bird).

7.2.4 Hazardous Substances and Materials

Potential soil and water pollution from construction run-off with fuel and lubricants are expected to be temporary and minor. Work practices and mitigation measures for spills will be implemented,

including a spill response plan and bunded areas for storage (for all project locations during construction and operation phase) and the specifications call for self bunded tanks to be used.

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

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

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

As part of the upgrades to the power generation system, there is the potential for impacts to occur from diesel fuel spillage during the operation of this equipment. Fuel spillage can be one of two types: equipment breakage resulting in a large fuel spill in short timeframes; or undetected leakages resulting in long term seepage into the soil. Fuel spill containment and spillage control of the existing generators is inadequate and outdated. Any new installation will be required to meet NZ HSNO requirements to prevent contain fuel spillage by prevention firstly and containment secondly:

- Accidental Tank overfill (unattended filling)
- Tank rupture (due to age, corrosion, earthquake, vehicle damage)
- Fuel system tampering (unlocked valves, tamper proof fuel line connections etc)
- Fuel line rupture (vibrational cracking, joint failure, corrosion)
- Engine fire (automatic fuel shut-off)
- Smaller fuel tank(s) resulting in a much reduced maximum contamination risk.

In addition to fuel storage, containment of generator engine fluids needs to be undertaken to contain accidental spillage of cooling fluids and engine lubrication oil. This is generally achieved by containment of the generator fluids in a bund wall or bath. Maintenance materials also need to be suitably contained. (drums of oil etc).

7.2.5 Noise and Vibration

Noise and vibration disturbances are particularly likely during construction related to the transportation of construction materials from the quarries 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 aggregate. These impacts will be short-term and affect different people at different times. Impacts include noise during pavement resurfacing works and possible effect of vibration caused by operation of heavy machinery, increased traffic in some sections of roads, etc. 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). As the airport represents existing infrastructure any noise or vibration impacts are likely already being experienced by the local community. Effective communication of working hours will go towards alleviating any impacts during the construction phase.

The WB/IFC EHS Guidelines[7] Section 1.7 – Noise Management shall be applied for the duration of construction works. Noise impacts should not exceed the levels at the closest residential or other sensitive social receptors for one hour LAeq of 55 dBA between the hours of 0700-2200 or 45 dBA outside of these hours for night works, or result in a maximum increase in background noise levels of 3dBA at the nearest receptor location off site. The nearest sensitive receptors are expected to change as the work moves along the pavements and will be determined the closest residences to the active works and to the construction camps and/or asphalt plan. In addition to the WB/IFC Guidelines there is the GoS's PUMA 'Planning for Noise Standards', however as the WB/IFC Guidelines stipulate the lower noise level, these shall be the standards applied.

7.2.6 Erosion and Sediment Control

The majority of the airport site is either sealed by the pavement and buildings or grassed to ensure visual clearance and security. The grassed areas are regularly mown to meet necessary airport standards. Scrub vegetation does exist around some areas of the airport perimeter. The location of the SAIP works will require removal of some small shrubs and vegetation to establish lay down areas. During resurfacing, and restoration of pavement areas and drainage, areas of bare soil may be exposed. For small areas of exposed soil, any soil that is suspended will either be captured by the swale drains around the pavements or will be captured by the vegetated habitat of the airfield. Due to the effective soil retention role played by grasses, it is anticipated that any eroded soil will be captured locally and will not cause any long term impacts on the surrounding environment and mitigation measures stipulated in Section 8 will strengthen this. Division bunds may be required for larger areas of exposed soil or for areas where the topography drains towards flood prone parts of the airfield. The impacts on vegetative cover will be short-term and reversible through natural regeneration.

Sediment has the potential to be generated during any vegetation clearance and excavations. The main areas of disturbance will be the main runway (runway west and east sides), turning node RWY 08, taxiway A and inner, taxiway B, and apron including the 10,000m^2 (initial estimation) area of apron extension. Excavation will be required for the navigational aids and lighting upgrades (concrete pads and cable trenches) and details of these excavations have yet to be defined as these components are at the design stage. Once these details are known, they will be defined in the CESMP along with the appropriate management measure.

APW is within coastal flood hazard zones (as described in Section 5.1.6). Storm water runoff generated during large rainfall events, combined with high tides, is known to cause flooding on the runway, and in particular at the culverts placed close to the centre of the airfield where the lowest runway levels are. Flooding during construction works increases the risk of sediment laden run-off being generated and transported to the receiving marine environment. While the potential impacts of uncontrolled sediment laden run-off can adversely affect the receiving environment, they can be easily mitigated through planning and implementation of the mitigation measures stipulated in this PESMP.

7.2.7 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

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

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. The nearest villages to the construction sites are approximately 500m therefore the impacts of airborne particles from works are likely to be negligible, however consideration needs to be given to community comments regarding dust levels through all villages along the haulage routes for materials and aggregate deliveries.

No ongoing impact to air quality is expected as this is upgrade of existing infrastructure.

7.2.8 Traffic and Airport Operations

Traffic impacts will occur in transporting equipment and materials from quarries and for equipment delivery from the port. The quarry for aggregate supply is Olo Quarry located south west of APW (refer Figure 7). Community consultation has been undertaken including the recommended haul route which is routed to avoid villages or sensitive receptors (refer Figure 7). The WCR road condition has been assessed for suitability of heavy vehicles and increased traffic. Any upgrades or repairs will be the responsibility of the contractor using the haul route or as agreed with LTA and SAA.

These impacts will mostly be short-term and through good mitigation and traffic management the impacts should be low. As part of the CESMP, the Contractor is responsible for developing and implementing a Traffic Management Plan (TMP). The TMP considers pedestrian traffic and as well as vehicle traffic management, and particular attention will need to be given to management near sensitive receptors (schools, residential dwellings, markets, churches etc.) and the management of increased heavy load traffic associated with aggregate transportation from the loading points. Upon completion of the construction phase of works, traffic and road safety impacts caused by the SAIP works 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, FOD protection, airfield security, and responsibility hierarchy and communication methods.

7.2.9 Wastewater Discharges

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

Uncontrolled wastewater (e.g. sewage, grey water, wash water, water containing fire retardants used during emergency activities) discharges have the potential to contaminate soil, water and spread disease. Impacts may include sedimentation and an increase in nutrients impacting water quality and aquatic life in the adjacent lagoon and coral reef habitats, and contamination due to an accidental release of hazardous substances, refuse or other waste materials into the marine ecosystem. 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.

The significance of the impacts depends on the scale of the release, duration of earthworks, local worksite topography, soil type, rainfall levels, adequacy of sewage treatment facilities, and the

sensitivity of the receiving water environment. The runway is located approximately 50 m south of the receiving marine environment, therefore any release could be significant. It is vital to plan and carefully manage works adjacent to the marine environment. Furthermore, consideration should be given to works completed during the wet season (October to March). 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 8).

7.2.10 Local Quarry and Aggregate Supply

For 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.
- Dust can be a major issue at quarry sites and can travel some distance and affect a large number of people if not properly managed however the isolated location of Olo Quarry means this is unlikely to occur however a water truck will be available for any dust from vehicles travelling along the aggregate haulage route.

Only consented quarry operations will be used to source suitable aggregate and a DC has been obtained for Olo Quarry.

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. A more detailed assessment of impacts has been completed by the Contractor in their CESMP along with mitigation measure suitable for the location and activities within the quarry. Consideration and planning will also be implemented on quarry rehabilitation following the completion of the works in line with DC conditions.

7.2.11 Biosecurity

Samoa has strict quarantine regulations covering the safe importation of plant and equipment to avoid bringing any non-native, harmful plant or animal species into the country. During the mobilisation phase of Works, there will be a requirement for some equipment and/or materials to be imported. All imported materials will be required to have the appropriate biosecurity clearance certificates.

7.2.12 Impacts of Cultural Property

Should any areas of potential cultural importance or artefacts be identified during the SAIP, works should stop and the Ministry of Education, Sports and Culture should be contacted. No work should continue until approval has been sought from the above-mentioned agency. Furthermore COEP

9.3.11 (Archaeological Sites) and COEP 13.4 (Cultural Preservation measures) should be implemented.

7.2.13 Coastal and Marine Impacts

A number of activities have the potential to have a negative impact on the receiving marine environment, including uncontrolled discharges (e.g. stormwater, erosion, wastewater, spills). Potential sediment and contaminant laden run-off issues could result from poorly managed land clearance sites and the improper siting of stockpiles and aggregate storage (sand, gravel, cement and bitumen) in laydown areas and construction camps. During heavy rainfall events this could wash into the adjacent marine environment and could result in water and habitat contamination, increased water turbidity, and the sedimentation of sensitive ecosystems (e.g. coral reefs).

7.2.14 Secondary and Cumulative Impacts

Secondary and cumulative impacts tend to be triggered by impacts to environmental resources that function as integral parts of a larger system over time and space, and can initially be 'invisible' to the normal present time impact assessment. Secondary impacts can include land use changes due to improved accessibility which in turn can impact habitats and pressure on existing resources and utilities (e.g. water supply). Secondary and cumulative impacts also often cannot be managed solely by the project executors (MWTIMWTI/SAA). 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.

The airport is existing infrastructure which has existing impacts (e.g. noise and dust generation). In most cases the SAIP will not be able to remedy these impacts however the designs can lessen and in some cases mitigate some of the impacts.

Both positive and negative secondary and cumulative impacts may be triggered by other infrastructure and construction projects in the vicinity of APW. The upgrade of West Coast Road, a project which is likely to run in parallel with SAIP and the terminal upgrade is the main access road to APW. An improved road may result in an increase of traffic (including trucks) using this road and travelling through settlements increasing noise and vibration nuisance and road safety for pedestrians. However, the road upgrade will increase the accessibility of the north-west section of the island between Apia and APW for road users.

7.3 SOCIAL IMPACTS

Social implications with the regard to safeguarding sensitive receptors such as airport satellite villages and communities on the haul routes will be addressed through the public consultation process throughout the life of the project.

7.3.1 Occupational Health and Safety

The primary hazards identified are traffic management, construction works involving hot bituminous products (up to 165 °C) and working in high ambient temperatures.

During construction and operation health and safety is to be managed through a Site Specific OHS Plan (to be developed by the contractors using the codes of practice attached to this PESMP in

Appendix G) 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 Employer's 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) and child abuse and exploitation (CAE) training.
- Expenses related to HIV/AIDS, GBV and CAE 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, CAE, 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) CAE 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 contractor 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 has specified the occupational health and safety standards are to be applicable to the project, being formally certificated to Australian & New Zealand Standard AS/NZS 4801:2001 a copy of which is included in the contractor's approved Safety Management Plan. '

Civil works shall not commence until the Employer's Engineer has approved the OHS plan, the Safety Officer is mobilised 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 Employer's 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 Employer's 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 Employer's 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.

7.3.2 HIV/AIDS, Gender Based Violence, and Child Abuse and Exploitation

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 HIV/AIDS, gender based violence (GBV) and child abuse and exploitation (CAE).

All employees (including managers) will be required to attend training prior to commencing work to reinforce the understanding of HIV/AIDS, GBV and CAE. Subsequently, employees must attend a mandatory training course at least once a month for the duration of mobilization.

Managers will be required to attend an additional manager training prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in ensuring the HIV/AIDS, GBV and CAE standards are met on the project. This training will provide managers with the necessary understanding and technical support needed to begin to develop a plan for addressing HIV/AIDS, GBV and CAE throughout the life time of the civil works, including monitoring and reporting.

HIV-AIDS Prevention. While mobilized for work, the Contractor shall produce a conduct an HIV-AIDS Information, Education and Consultation Communication (IEC) campaign via an approved service provider approved by the Employer's 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 Employer's 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 Employer's 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 Employer's 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/CAE: As required in the bid documents, the Contractor will implement the SAIP Codes of Conduct and Action Plan to Prevent Gender Based Violence as Well as Child Abuse/Exploitation (Appendix F). The Codes of Conduct aim to prevent and/or mitigate the risks of GBV and CAE within the context of SAIP. These Codes of Conduct are to be adopted by the civil works contractors, as well as supervision consultants.

The Employer's 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 Employer's Engineer for approval.

7.3.3 Community Health and Safety

Project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition to the impacts already identified throughout this section, the impacts of an imported work force must be considered.

While it is not anticipated that there will be a need for a workers camp to be established for the works, it is probable that there will be a need for additional workers to be bought to the project site for the completion of works. These workers are likely to be from both overseas and from other areas of Samoa and the Contractor must therefore be aware of the potential impacts that this influx of outside labour can have on the local community, and manage these impacts and interactions appropriately.

In terms of the vulnerability of the airport satellite communities to external influences, in the context of Samoa, these communities can be considered to be low-risk and peri-urban due to their proximity to and integration with Apia and the international airport and the ease of access to these communities via the main highway. Having said this, this communities may still be vulnerable to increased social pressures from any uncontrolled influx of labour. Section 8.10.1 provides for mitigation measures against these potential impacts.

The exact division of labour force and recruitment strategy has yet to be determined, but will be described in the CESMP.

7.3.4 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.

8 MITIGATION MEASURES

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

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

8.1 AGGREGATES, MATERIALS AND EQUIPMENT

Aggregate will be sourced from licenced and consented quarry sites on Upolu. The Employer's Engineer, SAA and LTA are responsible for reviewing site operations to ensure that the operation is a consented site which is approved for supply of aggregate (under Samoan 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 SAIP 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, development consents and completing environmental assessments. An EIA and quarry management plan may be required to support any consent application. The Contractor should adopt the COEP for Quarry Development and Operations and the specific measures stipulated this PESMP. Key mitigation measures from this document are outlined below. Consenting requirements will need Contractors to include provision for quarry specific plans including environmental management, health and safety and rehabilitation. If a Development Consent is required, an EIA will need to be developed for the selected quarry site.

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. 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). The source for quarries will be declared and approved by the quarry consenting system. 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.

All imported vehicles and machinery are required to be inspected by Quarantine Inspectors on arrival and undergo disinfectant treatment. The Contractor is advised to arrange for their vehicles and machinery to be thoroughly cleaned of all contamination prior to shipping (e.g. soil, rocks, plant material, seeds, etc). Items shipped inside containers must also have the inside of the container thoroughly cleaned of all previous cargo residues, including dunnage. Import permits are issued by Samoa Customs Department under the Ministry for Revenue and quarantine certificates are issued by the Samoa Quarantine Department under the Ministry of Agriculture and Fisheries.

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

The transport of material from the quarry will be managed through a TMP which identifies the route, maximum load limits, required transport permits and required measures to reduce dust and spillages. The TMP will be submitted with the CESMP for approval. 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 TMP; this can include prohibiting the use of engine braking for noise reduction, speed control measures in and near settlements with particular attention to any unsealed roads or roads in poor repair through villages (e.g. introduction of speed bumps), and regulating working hours for the haul trucks.

It is likely that the West Coast Road (WCR) will be used as part of the aggregate haulage route. To ensure the protection of the road, the Contractor will be required to have a weighbridge or load measurement system located at the selected quarry. The weighbridge should be independently operated and the weight of each truck recorded. No overloaded trucks shall be permitted to depart the quarry. As the WCR is undergoing rehabilitation works the Contractor has developed a haulage route which minimises the use of the WCR.

The Contractor shall maintain public roads used by construction traffic during the construction phase of the works. The Contractor shall allow for maintaining roadways used, to existing condition. Prior to commencing works, the Engineer shall undertake a detailed Photographic Condition Survey and submitted to the Engineer to confirm condition of all roads it plans to use during construction of the physical works. At completion of the works all access ways, haul routes and public roadways are to be re-inspected and remedial maintenance agreed. The Contractor is to complete all required remedial maintenance works before demobilization from site.

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 SAIP pavement Contractor. For example chance find of archaeological artefacts or loss of biodiversity, damage to assets and infrastructure,

erosion and sediment control measures (e.g. clean water diversion), wastewater treatment, noise and vibration mitigation etc.

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

Before commencement of earth works, contractor will receive instructions from the Employer's Engineer acting for the client, under advice from The Museum of Samoa, 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 Employer's Engineer and follow their further guidance. Works should resume only after receiving a formal clearance from the Employer's Engineer.

A representative of The Museum of Samoa shall be invited to carry out training in connection with archaeological questions.

8.2 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 Employer's Engineer—non-bunded vessels are used, the materials must be stored within hardstand and bunded areas to prevent runoff to surrounding permeable ground. Bunded areas (secondary containment) must contain the larger of 110% of the largest tank or 25% of the combined volumes in areas with a total storage volume equal or greater than 1,000 L. Bunded areas are to be impervious (water tight), constructed from chemically resistant material, and be sheltered from the rain as rain water allowed to collect within the bund could be contaminated if there is any hazardous substance residue on storage containers or spilt product within the bund.

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

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

There is potential that hydrocarbon product or contamination may be encountered during construction work. A photoionization detector (PID) should be available to monitor the worker breathing zone. Parts per million (ppm) concentrations of volatile organic compounds (VOCs) should be used to quantify the potential risk to workers. If the breathing zone concentration exceeds 5 ppm, workers should move to an upwind location until vapours clear. If any soil staining is observed or odour experienced a sample of the affected soil material should be collected and measured using

the PID. If the PID returns readings greater than 10 ppm the material should be treated as contaminated fill. Depending on the volume of material it may be appropriate to excavate the affected soils and prepare for transport to a facility licensed to accept hazardous waste. Material should be secured in airtight containers for transport (as per Waigani Convention requirements for the trans-boundary movement of hazardous waste material).

8.3 Safety and Traffic Management

The airport is protected by a patrolled perimeter security fence. All planned 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 SAA 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 to be submitted with the CESMP which will specify how traffic (vehicle and pedestrian) will be managed, including transport times (outside peak hours), maximum speed and loads of trucks, use of flag controls at site entrances (construction lay down area), use of unsealed roads through sensitive communities, and around specific work areas.

8.4 Stormwater and Water Management

8.4.1 Stormwater Management

The runway is located within the coastal flood inundation zone; THR 26 is the lowest point of the runway and is most vulnerable to flooding. A drainage study has been completed to assess local flooding including peak flow (see Section 3.1.2 for more detail). The results of this study along with geotechnical, LIDAR and topological survey data will be used for the design of the drainage system upgrade infrastructure. At this stage the final solution for drainage is unknown, however impacts of climate change on sea levels, increases in cyclonic activity and increases in intensity of heavy rain events should be considered in the design to ensure the suitability of the drainage system over the course of the lifecycle of the investment. Drainage design must also be compliant with COEP 11: Drainage. Among other requirements, this COEP specifies that all permanent drainage channels must be lined to mitigate against erosion and where practicable, grass should be used as the liner. The COEP also requires that all culvert inlets and outlets shall be protected against erosion through the design of appropriate aprons, wing walls and head walls. Once the final COEP compliant drainage designs have been completed, they should be updated in this PESMP and assessed for any potential climactic vulnerabilities or ecological impacts.

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. The nearest water body is the Pacific Ocean to the north of the runway. Runoff whether clean or treated should not be allowed to discharge directly to the coast as this can

cause erosion. Soakage pits for stormwater will not be installed directly into a shallow aquifer and will be located under advisement from SAA and SWA.

8.4.2 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.

The airport has a number of bores used to extract water for the terminal and ARFF operations. Due to the proximity of these bores, monitoring should be completed prior to construction works commence, during construction works and at completion of all construction works to confirm no contamination of groundwater as a result of the works. Different bores may be selected to provide information on groundwater quality at any given time in that area. Bores may also be identified by SWA as requiring monitoring to determine effects from construction and or operational activities.

Parameters that should be monitored include pH, electrical conductivity, total nitrogen and total petroleum hydrocarbons (TPH) or as agreed with PUMA and SWA.

8.5 Bitumen, Asphalt Plant

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

The asphalt plant will be located to the south and west of the hangar adjacent to Taxiway D. The Contractor shall detail this location in their CESMP and the location shall be subject to approval by the Employer's Engineer and compliant with this PESMP. Although the use of this machinery will be short-term (12 months), it can create nuisances such as noise and a mercaptan odour. The bitumen and asphalt plant should be located at least 300 m downwind of any settlements or inhabited areas and 150 m away from any water bodies, streams or rivers. The asphalt plant should be equipped with either bag house or wet scrubber particulate removing system to reduce dust and odour emissions.

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

Hard stands with covered, bunded areas shall be available at the plant for the storage of other hazardous materials such as those used in the preparation of the seal coats for the pavement.

The project will require limited concrete production for the civil infrastructure associated with the airfield lighting and adjacent to the terminal building. There are existing concrete production plants on Upolu and these are the preferred source for concrete. All equipment used in concrete production must be cleaned in designated wash down areas in the construction laydown area, away from surface water, in a bunded impermeable area and shall not be allowed to permeate to ground. Wastewater from concrete cutting, washing equipment or production must be collected and treated (settling and neutralisation through pH adjustment) before disposal (see Section 7.2.9).

8.6 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 as such there are a number of potential hazards associated with the equipment and materials. The construction lay down area will 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 avoids 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 and will be compliant with COEP 5: Construction Camps. 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. 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. Foreign contract and project staff are expected to utilise existing local accommodation. While it is not anticipated that there will be a need for a residential workers camp to be established for the works at APW, it is prudent to be aware of the necessary steps required to install or upgrade an existing workers camps should this become necessary for any reason. These steps have been included within the codes of practice in Appendix G. Should a worker camp be required then these COEP 5 and these guidelines must be adhered to and updates made to the PESMP and CESMP as appropriate.

8.7 EROSION AND SEDIMENT CONTROL

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

It is most likely that the largest stockpiles will be within the construction laydown areas for the aggregate. These stockpiles will 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.

Discharges from any activity are prohibited from discharging directly to the marine and coastal environment or discharging directly into the flood prone areas of the airfield. 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).

These erosion and sediment control measures must also be applied to the quarry sites.

8.8 WASTE WATER MANAGEMENT

There are a number of activities during construction and operation phases of the project which will generate wastewater. During construction wastewater will be generated by the sanitation facilities provided for workers and as there is no reticulated wastewater treatment system at APW, 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 installation of a septic tank (to be approved by SAA and PUMA), using an existing waste removal contractor to remove the waste to Tafaigata, 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 SAA and PUMA and approved by Employer's 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. All wash down areas and wastewater treatment areas should be located within the construction lay down areas.

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

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

There is no reticulated sewer network on the island, septic tanks are utilised. If access to the airport existing facilities are not available, any temporary toilets and disposal or treatment of septic waste water will need to be in accordance with the MNRE SWM Department, Employer's Engineer and SAA (site location) advice.

8.9 SOLID WASTE MANAGEMENT

The Contractor will develop a Waste Management Plan (WMP) to be submitted as part of the CESMP for clearance by the Client Consulting Engineer. At all times, the Contractor is responsible for the safe and sound disposal of all solid waste generated by the Works.

The SWMP should adhere to the Samoa Waste Management Act (2010) and follow the guidelines provided in Appendix G. As a minimum the SWMP will make provisions for the following:

- Describe the solid waste streams generated by the works along with estimated quantities.
- Develop a plan for safe storage and handling of waste stored on the project site as per the stipulations in this PESMP.
- Identify approved service providers for collection and disposal of waste and stipulate conditions of carriage.
- Detail the approved disposal methods along with appropriate permissions.
- Solid waste and septic waste water can be disposed of at Tafaigata Landfill, subject to MNRE SWM Department approval.
- Contractor shall determine whether any quantities of hazardous waste materials generated by the project are suitable to be handled at the Tafaigata incinerator and obtain any permissions necessary.
- Contractor shall determine an MNRE approved site for the disposal of organic biodegradable waste in a suitable facility which is equipped to safely handle this type of waste.
- Recyclable waste may be supplied to a local receiver licensed to process such waste.
- Contractor to identify shipping route and licensed disposal facilities for all exported waste.
- Contractor to identify any export permits or conditions for export of waste.
- Identify those persons responsible for implementing and monitoring the SWMP.

Any waste which cannot be safely and correctly disposed of in Samoa 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 Employer's 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 (from the temporary repair works, the final pavement works, and potentially from the civil works for airfield lighting and NAVAIDS) in the form of asphalt millings concrete rubble and surplus materials from excavations. 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 SAA or PWD and the community. Clean fill materials which are not able to be reused within the timeframe of the project implementation shall be transported to a location approved by the Ministry of Works, Transport and Infrastructure (MWTI) to be stored for future use by the Ministry. This location shall also be subject to approval by the Employer's Engineer. These materials 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 Employer's Engineer, other surplus materials not needed during the defects liability period shall be removed from the site and the country.

8.10 Social Impact Measures

8.10.1 Labour Influx

In addition to the Codes of Conduct that the Contractor will prepare for GBV/CAE, the Contractor will also prepare a Code of Conduct to describe the expected behaviours of their project worker in relation to the local communities and their social sensitivities.

For recruitment of Samoan nationals which cannot be fulfilled by the local community, it is preferred that it is undertaken through a formal recruitment process which ensures that only people who are already employed are travelling to the project site. Employment of casual labour through an ad hoc process at the project site may encourage potential workers from across Samoa to migrate to the project site for the possibility of work and this should be avoided. This opportunistic influx would have the potential to create a negative burden on the local communities in terms of their available resources and increases in anti-social or insensitive behaviour.

Any project staff who are recruited from overseas are subject to visa approval. As part of the visa application process, all workers are required to submit a medical report (Government of Samoa form MPMC102), an element of which is a HIV test. All oversea workers must complete this test and submit their medical report to the immigration department before appropriate visas can be issued.

In addition to this medical requirement, the Contractor is to ensure that all overseas project staff undergo a cultural familiarisation session as part of their induction training. The purpose of this induction will be to introduce the project staff to the cultural sensitivities of the local communities and the expected behaviours of the staff in their interactions with these communities. The Employer's Engineer shall provide to the Contractor a list of approved service providers which shall include recognized NGOs and others for conducting this training.

As per the Samoan Labour and Employment Relations Act 2013, Part VII Terms and Conditions of Employment article 51 – Employment of Children "(1) A person must not employ a child under the age of 15 in a place of employment except in safe and light work suited to his or her capacity, and subject to conditions as may be determined by the CEO. (2) A person must not employ a child under the age of 18 years on dangerous machinery or in any occupation or in any place under working conditions injurious or likely to be injurious to the physical or moral health of such child." Due to the OHS considerations of working on this type of project, the Contractor shall ensure that no children under the age of 18 are employed to work in a construction or physically demanding role.

8.10.2 General Social Mitigations

Any impacts or concerns from communities close to APW, the quarries or haul routes will be addressed throughout the SAIP life through the disclosure and public consultation process (refer Section 5). Where possible local labour and businesses will be used to provide services and building supplies for the SAIP works. This includes supply of fuel and hire of machinery and hiring of local security contractors.

9 PESMP IMPLEMENTATION

9.1 ROLES AND RESPONSIBILITIES

The following are the roles and responsibilities:

- **SAA PST:** The SAA PST manages the project on behalf of the GoS. The PST:
    - Acts on behalf of the client and works closely with SAA and all contracted parties to ensure that SAIP objectives are delivered in a compliant manner consistent with client and SAA requirements.
    - Conducting quarterly safeguard audits with the Employer's Engineer's environmental specialist and other staff
    - Responsible for working with SAA and Employer's Engineer (and contractors where appropriate for CESMP) to implement consultation plans for the SAIP upgrade works.
    - Monitors and manages of complaints/incidents logged via the GRM mechanism on www.saip.ws.
    - During the construction phase, PST receives reporting from the Employer's Engineer and shares these reports with the SAA, MWTIMWTI, PUMA (to comply with permit monitoring requirements) and TFSU.
    - PST is responsible for managing recurring instances of non-compliance by the contractor as they are reported by the Employer's Engineer and all instances of non-compliance by the Employer's Engineer. PST will conduct their own quarterly on-site audit of construction works, to supervise CESMP and PESMP implementation.
- **TFSU:** The TFSU provides technical assistance with project implementation to SAA PST. TFSU receives the Employer's Engineers reporting via PST 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. TFSU safeguard specialist provides periodical in-country inspection of project site for PESMP compliance.
- **Employer's Engineer**: is responsible for the day to day oversight of the construction works for the project, including safeguard compliance. The Employer's Engineer is the only party who is contractually able to provide instruction to the Contractor. The Employer's Engineer will work closely with the Contractor on a daily basis to ensure that APW 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 PST. As part of their CESMP monitoring responsibilities, the Employer's Engineer will ensure that a suitably qualified and experience safeguard specialist is resourced to provide at least monthly site inspections to APW 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 Employer's Engineer must ensure that all current safeguard instruments have been reviewed internally as well as by PST, 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 PST 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 PST. They are also responsible for escalating recurring instances of non-compliance by the Contractor to PST for action.
- Managing and responding to all direct complaints/incidents received by their representatives as per the GRM process in Section 9.3 and reporting all instances to PST for inclusion into statistical database.

- **Contractor:** It is the contractors responsibility to:
  - Prepare and have cleared by the Employer's Engineer the CESMP in accordance with this PESMP.
  - Carry out the APW 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 Employer's 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 Employer's 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 Employer's Engineer for any action.
- **SAA:** As the site owner and airport operator, SAA have a role in ensuring stipulated OHS measures are being implemented as they relate to airport operations, such as the location and timing of works, signing off on the MWOP etc. They also have a role in approving uses of areas of their site for particular uses as they may relate or impact on airport operations (e.g. laydown sites). They will be involved in consultations and any publication of information relating to the works. There will also be ongoing airport operational monitoring requirements of SAA.

The Figure 14 below shows the safeguard reporting responsibilities for APW as described in this PESMP.

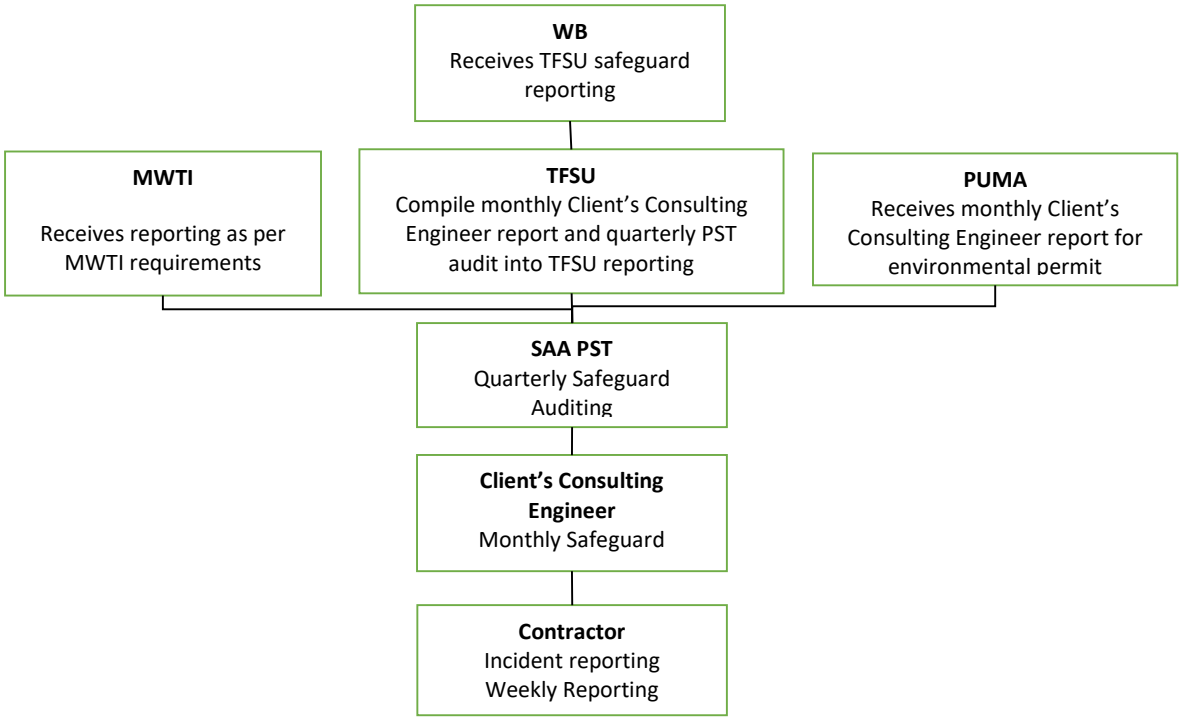


Figure 14: Safeguard Reporting Responsibilities for APW

9.2 INSTITUTIONAL CAPACITY

The GoS has delegated the delivery and management of SAIP to the SAA Project Support Team which has been resourced with personnel specifically tasked to manage project implementation. As such, the PST carries much of the institutional capacity required by the GoS to implement the project and to monitor the works for compliance. The PST does not current have in-house safeguards specialists therefore capacity building may be necessary to ensure that they are able to monitor for compliance with the PESMP, World Bank policies and Samoan legislation. For any additional support in areas of expertise that may be required by PST, 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 (Employer's Engineer, Contractor) are required to be resourced with suitably experienced and qualified safeguards specialists.

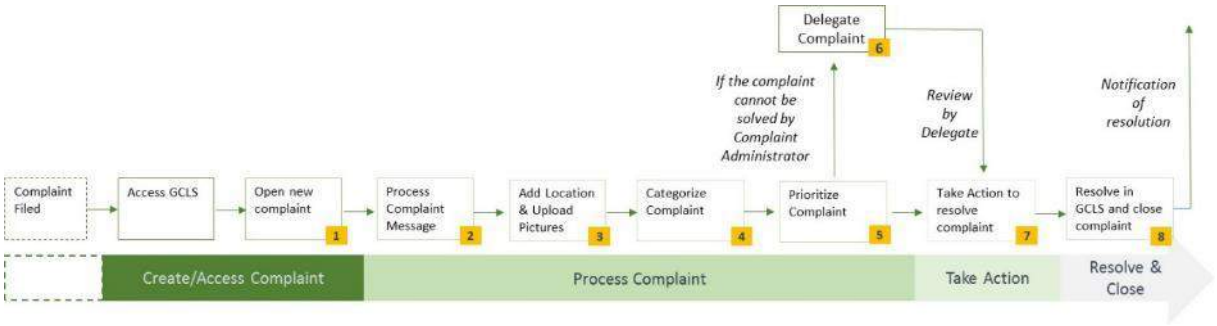
It is the responsibility of the Contractor and Employer's Engineer to ensure that they allocate budget lines to have the necessary tools and equipment for the mitigation and monitoring measures as stipulated in this PESMP. At this stage, it not anticipated that budget needs to be allocated for equipment,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

9.3 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 the SAA PST, the Contractor and/or the Employer's Engineer.

All grievances are to be logged by the SAA PST 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.saip.vws.

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 first escalated to PUMA division of MNRE and, if still unable to be resolved, it may be referred to legal proceedings in accordance with Samoan 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. Signage layout, format, language and content is to be agreed in consultation with SAIP PST.

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.

There may be instances where the grievance may be of a very personal or sensitive nature. In these case the above project level GRM may not be the most appropriate method of reporting. The SAA PST should identify a local organisation such as a social welfare NGO or intermediary who would be an appropriate first point of contact for these types of grievances. This intermediary will then act on behalf of the complainant to submit the grievance to the formal process described in this section

and, if necessary, continue to act as the intermediary for any communications or rectification measures which may be applicable. The contact details of the intermediary shall be provided in all GRM related communication materials.

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.

10 COMPLIANCE AND MONITORING PLAN

10.1 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 Employer's 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 SAA PST for follow up action.

10.2 MONITORING PLAN REPORTING

Throughout the construction period, the Employer's 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 SAA PST 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; and
- 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 SAIP 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 SAA processes. This PESMP should be updated to reflect the SAA environmental and social monitoring and reporting processes before the completion of the project.

SAA PST 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;
- Public notification and communications;
- Schedule for completion of project works; and
- Summary of any complaints received, actions taken and complaints closed out.

11 CONTINGENCY PLANNING

The SAA Assistant General Manager for Operations (AGMO) is the contact person for emergency situations that may arise during the implementation of the SAIP and terminal upgrade projects. The SAA AGMO will be available 24 hours a day, seven days a week, and has delegated authority to stop or direct works. In the event of an environmental emergency, the procedures outlined below are recommended for SAA to consider for implementation.

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 Samoa is usually November to April which coincides with the cyclone season. While it is preferable to undertake construction works outside of the wet season, it is currently anticipated that construction will take 6-8 months to complete and it is therefore probable that storm and heavy rain events will occur while works are underway.

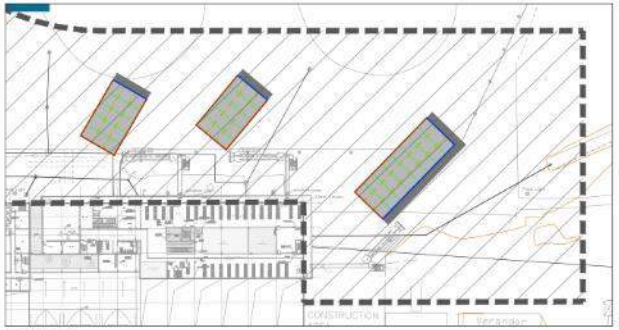
The Contractors are responsible for monitoring weather forecasts, inspecting all erosion and sediment control measures and undertaking any remedial works required prior to the forecast rain or storm event.

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 Employer's Engineer if there are any concerns associated with the measures in place.

APPENDIX A: DESIGN PLANS

AIRFIELD AREA	TYPE OF NEW PAVEMENT			
	OVERLAY / REPLACEMENT OF CURRENT RWY / TWY / APRON RESISTANT PAVEMENT		NEW RESISTANT PAVEMENT	SHOULDER
	TYPE OF PREVIOUSLY DEMOLISHED PAVEMENT			
	RESISTANT PAVEMENT	SHOULDER PAVEMENT		
STOPWAY 26	• Demolition and removal of GWY resistant pavement - 10 cm • HMA AC 3 - 15 cm (paver placing lanes - 4x9 m in width) • HMA AC 2 - 10 cm (paver placing lanes - 4x9 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 4x9 m in width) • Demolition and removal of overall GWY resistant pavement - 10 cm • Excavation of aggregate / top soil - 45 cm (mean value) • Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)			
THRESHOLD 08	• Demolition and removal of RWY resistant pavement - 10 cm • HMA AC 3 - 15+15 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 10 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Demolition and removal of overall TWY shoulder pavement - 5 cm • Excavation of aggregate / top soil- 50 cm (mean value) • Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• HMA AC 3 - 15 cm (paver placing lanes - 4+3.5 m in width) • HMA AC 2 - 10+10 cm (paver placing lanes - 4+9.5 m in width)
RUNWAY - WEST SIDE CENTRAL AREA	• Demolition and removal of RWY resistant pavement - 10 cm • HMA AC 3 - 15+15 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 10 cm (paver placing lanes - 4x5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 4x5 m in width)			• HMA AC 3 - 15 cm (paver placing lanes - 4+3.5 m in width) • HMA AC 2 - 10+10 cm (paver placing lanes - 4+3.5 m in width)
LATERAL AREA	• Milling of RWY resistant pavement - 1 cm • HMA AC 3 - 15+15 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 10 cm (paver placing lanes - 4x5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 4+4+4.5 m in width)			
RUNWAY - EAST SIDE CENTRAL AREA	• Demolition and removal of RWY resistant pavement - 10 cm • Excavation of aggregate - 5 cm • HMA AC 3 - 15+15 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 10 cm (paver placing lanes - 4x5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 4+4+4.5 m in width)			• HMA AC 3 - 15 cm (paver placing lanes - 4+3.5 m in width) • HMA AC 2 - 10+10 cm (paver placing lanes - 4+3.5 m in width)
LATERAL AREA	• Milling of RWY resistant pavement - 1 cm • HMA AC 3 - 15 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 10 cm (paver placing lanes - 4x5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 4+4+4.5 m in width)			
TAXIWAY A	• Demolition and removal of overall TWY resistant pavement - 10 cm • Excavation of aggregate / top soil- 45 cm (mean value) • Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Demolition and removal of overall TWY shoulder pavement - 5 cm • Excavation of aggregate / top soil- 50 cm (mean value) • Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Milling of TWY shoulder pavement - 1 cm • HMA AC 3 - 15 cm (paver placing lanes - 3.5+3.5+3.5 m in width) • HMA AC 2 - 10+10 cm (paver placing lanes - 3.5+3.5+3.5 m in width)
TAXILANE	• Demolition and removal of overall TWY resistant pavement - 10 cm • Excavation of aggregate / top soil- 45 cm (mean value) • Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • Asphalt reinforcement grid • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Demolition and removal of overall TWY shoulder pavement - 5 cm • Excavation of aggregate / top soil- 50 cm (mean value) • Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • Asphalt reinforcement grid • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • Asphalt reinforcement grid • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Milling of TWY shoulder pavement - 1 cm • HMA AC 3 - 15 cm (paver placing lanes - 3.5+3.5+3.5 m in width) • HMA AC 2 - 10+10 cm (paver placing lanes - 3.5+3.5+3.5 m in width)
TAXIWAY B	• Demolition and removal of TWY resistant pavement - 10 cm • HMA AC 3 - 15+15 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 10 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width) • Demolition and removal of overall TWY resistant pavement - 10 cm • Excavation of aggregate / top soil- 45 cm (mean value) • Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Demolition and removal of overall TWY shoulder pavement - 5 cm • Excavation of aggregate / top soil- 50 cm (mean value) • Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)		• HMA AC 2 - 10+10 cm (paver placing lanes - 3.5+3.5+3.5 m in width)
APRON	• Milling of apron resistant pavement - 1 cm • HMA AC 3 - 15 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 10 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Demolition and removal of overall apron shoulder pavement - 5 cm • Excavation of aggregate / top soil- 50 cm (mean value) • Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• Crushed aggregate - 25 cm • HMA AC 3 - 12+13 cm (paver placing lanes - 5 m in width) • HMA AC 2 - 5 cm (paver placing lanes - 5 m in width) • HMA AC 1 - 5 cm (paver placing lanes - 5 m in width)	• HMA AC 2 - 10 cm (paver placing lanes - 4+3.5 m in width)



SCALE 1/1000

NEW APRON SLABS

- Fuel resistant sealer
- Demolition and removal of apron pavement - 70 cm
- Crushed aggregate - 20 cm
- Econcrete base course - 20 cm
- PCC surface course - 45 cm (5x9 m slabs)
- Transition slab
- Doweled isolation joint between slab and transition slab
- Isolation joint between slab and HMA
- Doweled construction joint
- Doweled contraction joint

		ISSUED FOR CONSTRUCTION
Nº	DATE	REVISION

FALEOLO INTERNATIONAL AIRPORT, SAMOA

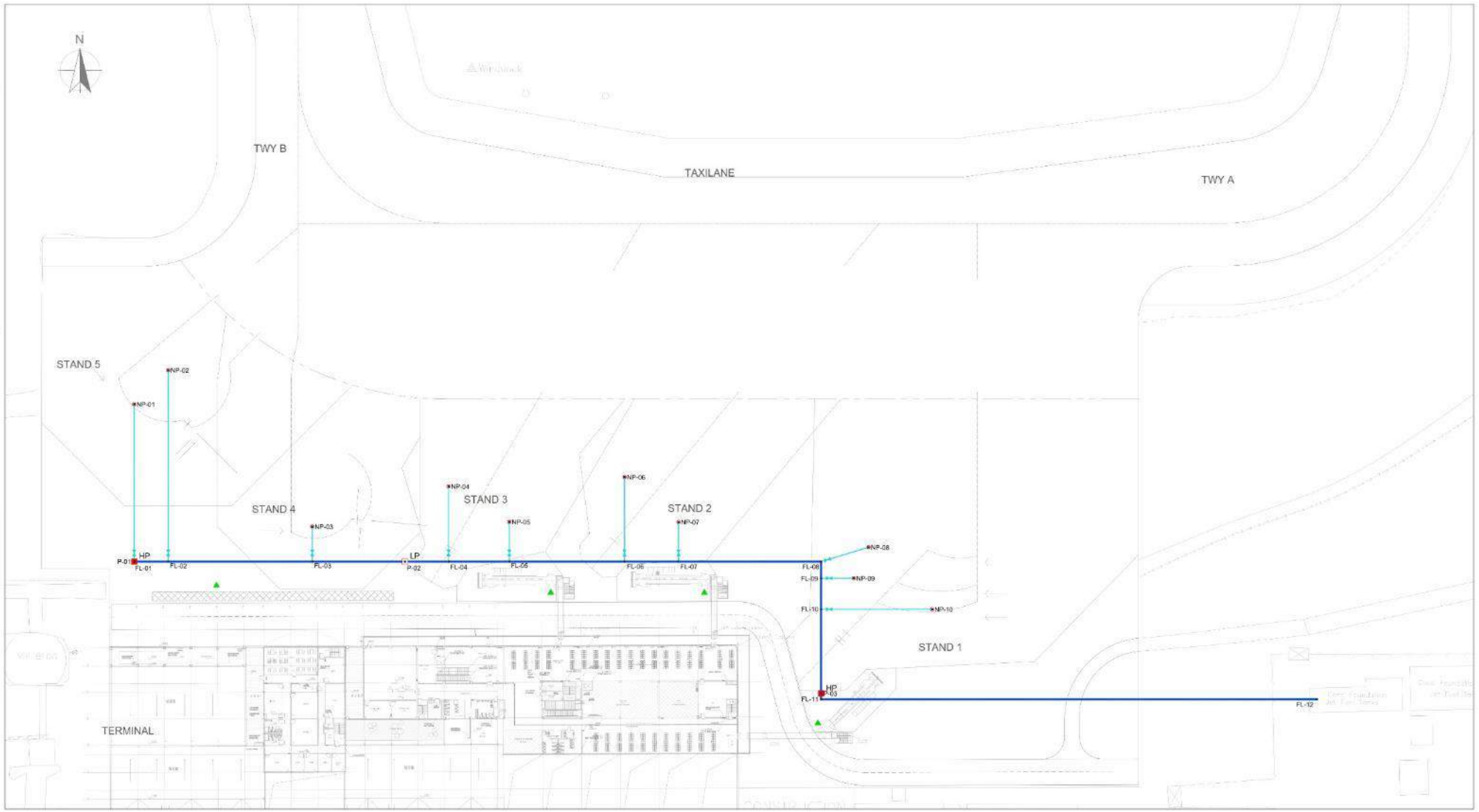
DESIGNED BY: ineco, SIMEC

DESIGN & SUPERVISION SERVICES - FALEOLO INTERNATIONAL AIRPORT PAVEMENTS

PAVEMENT SECTIONS

DRAFT

PLAN No.	SHEET	DATE	SCALE	DWG FILE
5.1	1 OF 1	AUGUST 2016	1/5000	05010S031V02



LEGEND

- MAIN FUEL LINE
- HYDRANT FUEL LINE
- NEW HYDRANT PIT
- ISOLATION VALVE
- HIGH POINT PIT
- LOW POINT PIT
- EMERGENCY STOP POST

POSITION FUEL NETWORK		
NÚMERO	Posición X	Posición Y
FL-01	392164.5212	8470624.8470
FL-02	392173.7129	8470624.9609
FL-03	392212.8206	8470625.4431
FL-04	392249.4651	8470625.8995
FL-05	392285.8584	8470626.1029
FL-06	392296.9535	8470626.4884
FL-07	392311.5558	8470626.6693
FL-08	392350.0771	8470627.1467
FL-09	392350.1329	8470622.6471
FL-10	392350.2389	8470614.2545
FL-11	392350.5382	8470589.8471
FL-12	392484.4592	8470591.6089

POSITION FUEL NETWORK		
NÚMERO	Posición X	Posición Y
NP-01	392163.9947	8470667.3255
NP-02	392173.0725	8470676.8311
NP-03	392212.5038	8470634.8682
NP-04	392249.2034	8470646.2976
NP-05	392285.7355	8470636.8256
NP-06	392296.6766	8470649.3170
NP-07	392311.4236	8470637.3368
NP-08	392362.8008	8470631.1644
NP-09	392368.9470	8470622.7564
NP-10	392380.1944	8470614.8256
P-01	392164.5212	8470624.8470
P-02	392257.6640	8470625.7535

KEY

Nº	DATE	REVISION
		ISSUED FOR CONSTRUCTION

FALEOLO INTERNATIONAL AIRPORT, SAMOA

DESIGNED BY: ineco, SMEC

DESIGN & SUPERVISION SERVICES - FALEOLO INTERNATIONAL AIRPORT PAVEMENTS

AFFECTED SERVICES
FUEL NETWORK
GENERAL PLAN

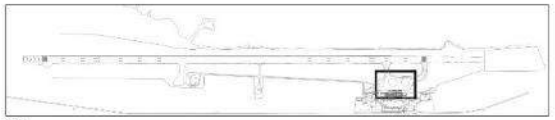
DRAFT

PLAN No	SHEET	DATE	SCALE	DWG FILE
6.1.1	1 OF 1	AUGUST 2018	1:500	060101301V02

LEGEND

- GRATED DRAIN CHANNEL S300, 45 CM HIGH, 30CM WIDE, LONG 1M, C250, INVERT ELEVATION:420 MM
- Ø400 MM CONCRETE DRAIN PIPE
- Ø500 MM CONCRETE DRAIN PIPE
- Ø300 MM CHANNEL-DRAIN PIPE LINK
- MANHOLE
- GRATED DRAIN CHANNEL DISCHARGE
- CULVERT

POSITION APRON DRAINAGE		
POINT	COORD. X	COORD. Y
DR-01	392113.7736	8470699.7493
DR-02	392158.5185	8470693.6694
DR-03	392159.5366	8470693.1273
DR-04	392245.0842	8470685.0082
DR-05	392245.0868	8470683.5149
DR-06	392328.0864	8470674.8324


KEY

		ISSUED FOR CONSTRUCTION
N°	DATE	REVISION

FALEOLO INTERNATIONAL AIRPORT, SAMOA

DESIGNED BY: ineco, SMEC

DESIGN & SUPERVISION SERVICES - FALEOLO INTERNATIONAL AIRPORT PAVEMENTS

APRON DRAINAGE GENERAL PLAN

DRAFT

PLAN NO	SHEET	DATE	SCALE	DWG FILE
7.1	1 OF 1	AUGUST 2016	1/500	07013030101V02

APPENDIX B: MITIGATION MEASURES

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	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/ materials) To and from the construction lay down area and the quarries	Minimal (requirement of bidding documents)	Design Consultant (Pavements)	Samoa Airport Authority Project Support Team (SAA PST)
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 Contractors are 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 Consultants (all contracts)	SAA PST
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. 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. Works should be in accordance with Codes of Environmental Practice (COEP) 11 and 13.	All locations	Minimal (part of standard design practices)	Design Consultants (all contracts) Contractor	SAA PST SAA PST SAA PST/PUMA

[8] 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[8]	EXECUTING AGENCY	SUPERVISING AGENCY
Dust / Odours / Air Pollution	Identify and locate waste disposal sites, stockpile sites and equipment (e.g. asphalt 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. Works should be in compliance with COEP 8. 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 Employer's Engineer and/or the PUMA.	All components	Minimal (part of standard design practices)	Contractor	Employer's Engineer / PUMA
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. Minimise risk to groundwater and surrounding soil by developing a spill response plan and provide training to all contract workers on how to implement the spill response plan. Precautions should be in place to prevent wastewater and hazardous substances or materials entering the environment (e.g. fuel spillage, wastewater containing fire retardant during firefighting), The spill response plan should include factors associated with both the construction and operational phases and should be available at all SAIP locations. Ensure bunded areas and hard stands are allocated at construction lay down area for the storage of fuel, lubricants and other potential substances required for the project. Water tight bunds to be able to contain 110% of volumes being stored or 25% if total volume greater than 1,000 L. 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.	All components	Minimal (part of standard design and construction practices)	Design Consultants Contractor	SAA PST Employer's Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	Sanitation treatment system (e.g. removal of waste to landfill, compost or proprietary treatment system) is approved by the Employer's Engineer prior to implementation. Employer's Engineer to undertaken groundwater monitoring prior to any site establishment or construction activities at bores within 100 m of APW (to be coordinated with SWA and bore owner) to determine base line conditions. Measure depth to groundwater and analyse samples for concentrations of pH, electrical conductivity, total petroleum hydrocarbons (for potential petroleum contamination), and total nitrogen (for potential sewage contamination), or as agreed with SWA.			Employer's Engineer	SAA PST / SWA
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.	All components	Minimal (part of standard design practices)	Contractor	Employer's Engineer & SWA
Sourcing aggregate material	Ensure aggregate is sourced from approved/ permitted quarry sources and are operating in accordance with Samoa law. Prior to any quarries being selected for the SAIP project, public consultation will be completed with any affected parties relating to new or re-opened quarry sites. Should it be identified that a new quarry site will be required for the SAIP project, the requirements of the World Bank Involuntary Resettlement Operational Policy (OP 4.12) will need to be implemented. Under Samoan law a Development Consent is required prior to the commencement of any new quarry enterprise. Consenting requirements will need Contractors to include provision for quarry specific plans including environmental management, health and safety and rehabilitation. All quarry development and operations must be in compliance with COEP 8	All components	Minimal (part of standard design and construction practices)	Contractor	Employer's Engineer & PUMA /MNRE
Solid waste generation	Solid waste includes: • General waste (i.e. office type waste, household waste (from any workers camps), lightweight packaging materials).	All locations	Minimal (part of standard design and construction practices)	Contractor	Employer's Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	• 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 will develop a Waste Management Plan (WMP) to be submitted as part of the CESMP for clearance by the WB. At all times, the Contractor is responsible for the safe and sound disposal of all solid waste generated by the Works. The WMP should, as a minimum make provisions for the following: • Describe the solid waste streams generated by the works along with estimated quantities. • Develop a plan for safe storage and handling of waste stored on the project site as per the stipulations in this PESMP. • Identify approved service providers for collection and disposal of waste and stipulate conditions of carriage. • Detail the approved disposal methods along with appropriate permissions. • General waste and septic waste water can be disposed of at Tafaigata Landfill, subject to MNRE SWM Department approval. • Contractor shall determine whether any quantities of hazardous waste materials generated by the project are suitable to be handled at the Tafaigata incinerator and obtain any permissions necessary.				

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	• Contractor shall determine an MNRE approved site for the disposal of organic biodegradable waste in a suitable facility which is equipped to safely handle this type of waste. • Recyclable waste may be supplied to a local receiver licensed to process such waste. • Contractor to identify shipping route and licensed disposal facilities for all exported waste. • Contractor to identify any export permits or conditions for export of waste. • Identify those persons responsible for implementing and monitoring the SWMP. 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 Employer's 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 (from the temporary repair works, the final pavement works, and potentially from the civil works for airfield lighting and NAVAIDS) in the form of asphalt millings concrete rubble and surplus materials from excavations. 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 SAA or PWD and the community. Clean fill materials which are not able to be reused within the timeframe of the project implementation shall be transported to a location approved by the Ministry of Works, Transport and Infrastructure (MWTI) to be stored for future use				

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	by the Ministry. This location shall also be subject to approval by the Employer's Engineer. These materials 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 Employer's 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 SAIP 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 SAIP 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 8. All empty asphalt or bitumen drums will be removed offshore and either returned to supplier or disposed of in a legally approved facility outside Samoa.	All locations	Minimal (part of mobilisation and construction planning)	Contractors	SAA PST

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
Fuel Storage (permanent and fixed installations)	For all new permanent or fixed fuel storage installations: • Accidental Tank overfill alarm to warn of spill during unattended tank filling • All fuel system components to have tamperproof devices such as locks. • Fuel line to be adequately protected and supported to prevent rupture due to vibrational cracking, joint failure, corrosion. • Engine fire protection shall cause immediate fuel shut off to assist in fire extinguishing and stop fuel spill. • Smallest fuel tank(s) to be installed that meet ICAO operational requirements for genset endurance time. This limits the maximum quantity of fuel that can be split. • Engines to be enclosed in containment bath. • Fuel tanks to be double walled or double skinned.	PC1 and associated diesel genset fuel tanks	Minimal (part of design and inherent procurement)	Design Engineers	SAA PST
Importation of equipment and materials	The Contractor is to arrange for their vehicles and machinery to be thoroughly cleaned of all contamination prior to shipping (e.g. soil, rocks, plant material, seeds, etc). Items shipped inside containers must also have the inside of the container thoroughly cleaned of all previous cargo residues, including dunnage. 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 Inspectors and approved by the Employer's Engineer prior to delivery to site.	All components	Minimal (part of mobilisation and construction planning)	Contractor	Employer's Engineer
Community grievances	Ensure that public consultation and disclosure communication is completed at regular intervals to ensure that the public are fully aware of the SAIP works. Consultation should include all aspects of the project including the airport site, quarries and transport routes. 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. Consultations shall be carried out in line with COEP 3.	All components	Minimal (part of mobilisation and construction planning)	Employer's Engineer SAA PST	SAA PST & TFSU

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	Advertise, maintain and operate a grievance response mechanism, including publishing statistics on resolutions, at www.saip.ws.				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)	Employer's Engineer	SAA PST & TFSU
CONSTRUCTION STAGE					
Traffic (vehicle and pedestrian) and construction safety	Implement the traffic management plan (TMP) to ensure smooth traffic flow and safety for workers, passing vehicles and pedestrian traffic. Where appropriate, employ flag operators on the road to prevent traffic accidents. The workers shall have relevant safety equipment and training. The TMP should prohibit the use of engine breaking close to and through communities and inhabited areas, it should also regulate the working hours for the haul trucks.	Route from quarries and port to airport	Safety equipment included in construction cost	Construction Contractors	Employer's Engineer
Soil erosion	Minimise time and size of ground disturbing activities to workable size at any one time. Earthworks to be in accordance with COEP 13; ensure sediment traps are in place prior to works commencing. 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). No land disturbance should occur directly adjacent or in the receiving marine environment which is located approximately 100 m north of APW.	All locations	Minimal (part of standard construction practice)	Construction Contractors	Employer's 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	All locations	Minimal (part of standard construction practice)	Construction Contractors	Employer's Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	country depending on accepted waste streams at each facility (see Section 8.9). Ensure all general waste (as defined in section 3.4.7) is disposed of at the Tafaigata Landfill Ensure areas for waste collection, recycling and off-site disposal are clearly marked/sign posted. Segregate waste to avoid cross contamination, such as with contaminated material (hazardous substance). 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. If access to airport facilities is not available, workers must be provided with a sanitary system to prevent fouling of surrounding soils. Sanitary system must be of sufficient size for the number of workers and must take into account the disposal situation at Tafaigata landfill. Some hazardous waste may be eligible for incineration at Tafaigata landfill. All other 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 Employer's Engineer of proper disposal of waste at the final location. With the approval of the Employer's Engineer, organic biodegradable waste may be deposited in designated dumping areas in reasonable quantities, preferably at Tafaigata landfill or other such suitable facilities which do not lead to FOD generation or allow for leachate to reach soils or groundwater. 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				

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	general use by SAA or PWD and the community. Clean fill materials which are not able to be reused within the timeframe of the project implementation shall be transported to a location approved by the Ministry of Works, Transport and Infrastructure (MWTI) to be stored for future use by the Ministry. This location shall also be subject to approval by the Employer's Engineer. 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 Employer's 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. The Contractor is responsible for the collection and treatment of the septic waste. Temporary toilets and disposal or treatment of wastewater will need to be in accordance with the PUMA and SAA 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 Samoan regulations (incinerated or removed from country, potentially using local licensed contractors – see section 8.2). 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 firefighting), however should an incident occur, the Contractor must have a spill response plan must be in place. The response plan should include details on the use of spill kits and absorbent items to prevent spills entering the receiving sensitive environment (ground, surface water). This spill response plan should be	All locations	Minimal (part of standard construction practice)	Construction Contractors	Employer's Engineer & PUMA/MNRE

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	applicable to all SAIP 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. Hydrocarbon impacted soil may be identified. Any material excavated which has a PID reading of 10 ppm shall be treated as contaminated fill and, should the soil be unsuitable for incineration at Tafaigata landfill, it must be disposed of internationally at an approved facility able to handle contaminated fill. Any course of action must be approved of by the Employer's Engineer and the SWD of PUMA, if appropriate. Minimise areas cleared of vegetation and stabilise slopes to prevent erosion. Cleared areas will be promptly revegetated. Works should be in accordance with COEP 7. Regular cleaning of access points to prevent dirt build-up on roads. Control overland drainage to prevent channelling and sediment transport by diverting flows away from exposed areas. 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).				

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	If required by MNRE and bore owner (SWA), during construction activities, sample groundwater at potable bores within 100 m of APW (to be coordinated with MNRE, SWA and PUMA) to indicate whether construction activities have adversely affected groundwater quality. Measure depth to groundwater and analyse samples for concentrations of pH, electrical conductivity, TPH (for potential petroleum contamination), and total nitrogen (for potential sewage contamination), or as agreed with MNRE and PUMA.				
Generation of dust	Use closed/covered trucks for transportation of construction materials that may cause dust nuisance. 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 or wet down stockpiles containing fine material (e.g. sand and topsoil) when not actively being used. Wetting of stockpiles is allowed but due to freshwater constraints should be kept to a minimum. All surfaces should be constructed to their final design solution as quickly as practicable. 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.	All locations	Minimal (part of standard construction practice)	Construction Contractors	Employer's Engineer
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	All locations	Minimal (part of standard construction practice)	Construction Contractors	Employer's Engineer, SAA PST & PUMA

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	and number of work equipment at outside of advertised hours. Advertise working hours at the site entrance. If possible, use noise barriers / screens or mounds to shield sensitive receptors if required. It's likely that work at APW will be completed at night, this will require approval by the SAA PST 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. For works outside normal hours, approval must be obtained from SAA/MNRE and residents within 100 m of APW must be notified 5 days before works take place. 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[9] 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				

[9] 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[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	determined the closest residences to the active works and to the construction camps and/or asphalt plant.				
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)	Construction Contractors	Employer's Engineer
Loss of archaeological artefacts or sites	Chance Find procedure to be followed as per Section 8.1 Work to stop in specific location of unearthed artefacts or site. Fence the area to limit access and notify The Museum of Samoa, SAA PST and Employer's Engineer immediately for instruction to proceed.	All locations	No marginal cost	Construction Contractors	The Museum of Samoa / SAA / Employer's Engineer
Landscape degradation	Contractor to include provision for construction lay down area rehabilitation following the completion of the construction phase. Restoration of quarries to be completed in accordance with quarry development consent and COEP 8 as required. 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) to be to the satisfaction of the land owner. Use plant species characteristic for the landscape in the course of restoration of the vegetation cover. Should the removal of mature trees be necessary for operational safety, determine whether OP4.12 would be triggered and ensure all appropriate measures and permissions are in place before removal of trees.	All locations	Minimal (part of standard construction practice)	Construction Contractors	SAA PST/ Employer's Engineer / PUMA

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
Hazardous substances and safety and pollution	Store and handle hazardous substances self-bunded tanks or drums. With the Employer's 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 SAIP. 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 firefighting), however should an incident occur, the Contractors spill response plan must be in place. The response plan should include details on the use of spill kits and absorbent items to prevent spills entering the receiving sensitive environment (ground, surface water). This spill response plan should be applicable to all SAIP 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 pads, and a heavy duty rubbish bag to collect absorbent pads or material. Waste oil to be collected and removed abroad to an approved facility (for disposal or cleaning) at completion of works.	All locations	Safety equipment included in construction cost Minimal (part of standard construction practice)	Construction Contractors	Employer's Engineer
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	All locations	No marginal cost	Contractors	Employer's Engineer / SAA PST / PUMA

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	clearance) work is to stop in the specific location of the find and the MNRE, PUMA and SAA PST be notified immediately for instruction to proceed.				
Health and safety	Fully implement OHS requirements in PESMP Code 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. 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.	All locations	Included as provisional sum in the bill of quantity	Contractor	Employer's Engineer / SAA PST

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	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 telecommunication lines. Prepare procedures for rapid notification to the responsible authority (SAA and service providers). As a result of SAIP construction activities any damage to assets or infrastructure (including public roads) must be reported to the SAA and rectified at the expense of the Contractors. Provide assistance with reinstatement, in the event of any disruption.	All locations	Dependent on asset/ infrastructure and level of damage	Contractors	Employer's Engineer / SAA PST
Community grievances	Maintain the grievance response mechanism at www.saip.ws. Ensure that public consultation and disclosure communication is completed at regular intervals to ensure that the public are fully aware of the SAIP project program of activities and the GRM process. Consultation should include all aspects of the project including the airport site, quarries and transport routes. (see section 6). All consultations will be in line with COEP 3. Signage should be used in public areas around the SAIP 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)	SAA PST Employer's Engineer Contractor	TFSU SAA PST Employer's 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 APW advising the complaints procedure and contact details of key project individuals responsible for responding to issues raised.	Airport	Minimal (part of standard construction practice)	Employer's Engineer Contractor	SAA PST Employer's Engineer

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	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)	SAA	SAA Management
Fuel storage (dispensing)	All refuelling activities to occur on designated areas at APW. Store oils, hydrocarbons and other hazardous materials in designated locations with specific measures to prevent leakage (i.e. set storage areas away from water drains and on impermeable base with an impermeable containment with no outflow that has the capacity to hold 110% of the contents. Precautions should be in place to prevent wastewater and hazardous substances / materials entering the environment (e.g. fuel spillage), however should an incident occur, updated SAA 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 SAIP construction phase.	All airport compounds	No marginal cost (standard operating procedure)	SAA	SAA Management

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
Fuel Storage (permanent or fixed installations)	3 yearly inspection of tanks for recertification requirements. Check for corrosion, leaks.	Diesel genset fuel tanks	No marginal cost (standard operating procedure)	SAA	SAA Management
Airport waste management	Development of SAA Waste Management Plan recommended to allow for recycling or re-using of as much waste as possible. PUMA should be consulted for approval to receive material (at Tafaigata Landfill) that cannot be recycled, reused or returned to the supplier.	All airport compounds	No marginal cost (standard operating procedure)	SAA Management	MWIT
Use of fire retardant in ARFF	Spill response plan training to be completed for SAA workers. Precautions should be in place to prevent potentially hazardous substances entering the environment (e.g. wastewater containing fire retardant during firefighting), however should an incident occur, SAA must have a spill response plan must be in place.	All airport compounds	No marginal cost (standard operating procedure)	SAA Management	MWIT
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)	SAA Management	MWIT
Maintenance of drainage and soakage systems	Drainage systems shall be periodically cleared of sediment and organic matter build up to ensure appropriate flows and soakage. Material to be disposed at approved site (e.g. landfill or used as clean fill) or composted if organic. Drainage systems should also be periodically visually inspected for signs of contamination (e.g. hydrocarbons from airstrip runway) to ensure that the designed system is operating appropriately. Vegetation to be cleared from drainage channels and soakage pits and disposed of. Grass in drainage swales to be maintained at a height slightly higher than the surrounding grass on the shoulders.	All locations	No marginal cost (standard operating procedure)	SAA	SAA Management

POTENTIAL NEGATIVE IMPACT	ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	IMPLEMENTING LOCATION	ESTIMATED MITIGATION COSTS[8]	EXECUTING AGENCY	SUPERVISING AGENCY
	Ongoing monitoring of erosion and stormwater impacts on the seawall should be carried out.				

APPENDIX C: MONITORING PLAN

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

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING 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.	Employer's Engineer
CONSTRUCTION PHASE				
Agreement for waste disposal	Construction Contractor's records	Permits and/or agreements with local waste disposal providers (e.g. Tafaigata Landfill) and licensed recycling operators. Inspection of disposal sites.	Documentation viewed prior to construction works starting Weekly as applicable to schedule of works.	Employer's Engineer
Soil erosion	Areas of exposed soil and earth moving	Inspections at sites to ensure silt fences, diversion drains etc. are constructed as needed. Inspection to ensure replanting and restoration work completed.	Weekly inspection as applicable to schedule of works and after site restoration.	Employer's 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 (Tafaigata Landfill), removal from Samoa if required, 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.	Employer's Engineer

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING 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 SAIP locations. Complete spill kits available where hazardous substances sorted and handled. All results from groundwater sampling are submitted to MRNE, owner (SWA) and PUMA with remedial action points if background/baseline conditions are exceeded. Any encounters with potentially or confirmed contaminated soil (based on PID readings) are reported to SAA / PUMA. 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	Employer's 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.	Employer's Engineer
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.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Employer's Engineer

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING RESPONSIBILITY
		Noisy machinery is replaced or fixed as soon as problem arises or on instruction by Employer's 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 Employer's Engineer. Bitumen and asphalt processes plants to be located away from closest communities	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Employer's Engineer
Storage of fuel, oil, bitumen, etc.	At work sites and construction camp. Contractors training log.	Regular site inspections to ensure material is stored within bunded area and spill response training for workers completed. Visual inspection of spill kit for completeness and accessibility. Checking that staff are trained on use of spill kits.	Weekly as applicable to schedule of works and on receipt of any complaints.	Employer's 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.	Employer's Engineer
Construction workers and staff safety (personal protective equipment)	At work sites	Inspections to ensure workers have access to and are wearing (when required) appropriate personnel protective equipment (e.g. for handling hazardous materials). Code of Practice in PESMP implemented.	Weekly inspection as applicable to schedule of works and on receipt of any complaints.	Employer's 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.	Employer's Engineer

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING RESPONSIBILITY
Community grievances	At all locations	Monitor the GRM database for the number and type of grievances and the average number of days to resolve a grievance.	Weekly	SAA
Airport concessionaires / local business grievances	At and near APW work sites	Monitor the GRM database for the number and type of grievances and the average number of days to resolve a grievance.	Weekly	At and near APE work sites
Materials supply	Quarry and work sites	Evidence that trucks are not overloaded and loads are covered e.g. complaints register, evidence of debris on the road.	Weekly visual inspection as applicable to schedule of works and on receipt of any complaints.	Employer's Engineer
OPERATION (Recommended for Consideration by SAA)				
Accidents with hazardous materials or wastes	Airport sites	Accident report.	Immediately after accident	MWIT
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.	SAA
Waste disposal	Airport sites	Inspection to ensure waste is not accumulating and evidence waste has been stockpiled for removal to licensed landfill (Tafaigata Landfill), removal from Samoa 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.	SAA / PUMA
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 SAIP 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	SAA

PARAMETER TO MONITOR	LOCATION	MONITORING	FREQUENCY	MONITORING RESPONSIBILITY
Storage of fuel, oil, bitumen, etc.	Airport sites SAA training log.	Regular site inspections to ensure material is stored within bunded areas and spill response training for SAA 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.	SAA

APPENDIX D: PESMP AND CESMP MONITORING PLAN CONSTRUCTION INSPECTION CHECKLIST

Appendix D PESMP and CESMP Monitoring Plan Inspection Checklist

PESMP and CESMP Monitoring Plan Checklist for all Work Site Areas

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 Employer's 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:
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:

Environmental Issue:	Inspection areas:	Requirements met?
1.11 Materials Supply	- Quarry establishment and operations in fully compliance with Code of Practice - All quarries licensed to supply materials - All imported materials with appropriate biosecurity clearances	Yes ☐ No ☐ If No, details:
1.12 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:
1.13 Lay Down Area	- Laydown areas established on pre-approved sites - Laydown areas dust levels managed efficiently - Traffic management plan correctly implemented at laydown site - Water run off management systems operating correctly - Dust management effectively implemented - PPE present and correctly used -	Yes ☐ No ☐ If No, details:
1.14 Workers Camp (if applicable)	- Camp established in accordance with Code of Practice in PESMP Annex G. - 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:

Actions Required:

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

Signoff

Signature: Date:

…… ……

APPENDIX E: CONSULTATION REPORT 2015

APPENDIX F: CODES OF CONDUCT FOR GBV AND CAE

SAMOA AVIATION INVESTMENT PROJECT (SAIP)

CODES OF CONDUCT AND ACTION PLAN TO PREVENT

GENDER BASED VIOLENCE AS WELL AS CHILD ABUSE/EXPLOITATION

1. Background

The purpose of this *Samoa Aviation Investment Project (SAIP) Codes of Conduct and Action Plan to Prevent Gender-based Violence (GBV) and Child Abuse/Exploitation (CAE)* is to introduce a set of key definitions, core Codes of Conduct and guidelines that establish mechanisms for reporting, addressing, monitoring and sanctioning GBV and CAE within the work site and in its immediate surrounding communities.

The Codes of Conduct aim to prevent and/or mitigate the risks of GBV and CAE within the context of infrastructure development interventions for the Government of Samoa (GoS) to be funded under the World Bank financed Samoa *Aviation Investment Project (SAIP)*. These Codes of Conduct are to be adopted by the civil works contractors, as well as supervision consultants.

Mutual respect and fair treatment by all parties, that include an understanding of the impact their presence has on the communities living in the areas targeted by the project, are deemed of utmost importance to create a respectful, pleasant and productive work environment. This will help prevent issues of GBV and CAE, thereby guaranteeing a safe environment to work in and around. The Codes also present clear guidelines for sanctions of staff should they be warranted. By ensuring that the project's staff respect the project environment and its communities, a successful attainment of the project objectives will be achieved.

2. Definitions

The following definitions apply:

- **Gender-Based Violence (GBV)** – is an umbrella term for any harmful act that is perpetrated against a person's will and that is based on socially ascribed (i.e. gender) differences between males and females. It includes acts that inflict physical, sexual[10] or mental harm or suffering, threats of such acts, coercion, and other deprivations of liberty. These acts can occur in public or in private.
- **Child Abuse and Exploitation (CAE)** – is defined as physical, sexual or psychological harm of minor children (i.e. under the age of 18) including using for profit, labor, sexual gratification, or some other personal or financial advantage. This also includes other activities such as using computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any mediums.
- **Child Protection (CP) -** An activity or initiative designed to protect children from any form of harm, particularly arising from CAE.
- **Child** – is used interchangeably with the term 'minor' and refers to a person under the age of 18.[11] This is in accordance with Article 1 of the United Nations Convention on the Rights of the Child.
- **Grooming** – is defined as behaviors that make it easier for a perpetrator to procure a child for sexual activity. For example, an offender might build a relationship of trust with the child, and then

[10] Sexual favors or other forms of humiliating, degrading or exploitative behavior is prohibited.
[11] The Government of Samoa is party to this convention. http://www.pseataskforce.org/uploads/tools/1478613357.pdf

seek to sexualize that relationship (for example by encouraging romantic feelings or exposing the child to sexual concepts through pornography).

- **Online Grooming** – is the act of sending an electronic message with indecent content to a recipient who the sender believes to be a minor, with the intention of procuring the recipient to engage in or submit to sexual activity with another person, including but not necessarily the sender. For further details, refer to the *Criminal Code Act 1995*, Division 474 (telecommunications offences, subdivision C).
- **Survivor/Survivors** – is defined as the person(s) adversely affected by GBV or CAE. Women, men and children can be survivors of GBV; children can be survivors of CAE.
- **Perpetrator** – is defined as the person(s) who commit(s) or threaten(s) to commit an act or acts of GBV or CAE.
- **Work site** – is defined as the area in which infrastructure development works are being conducted, as part of interventions planned under the World-Bank funded Samoa Aviation Investment Project (SAIP).
- **Work site surroundings** – are defined as the 'Project Area of Influence' which are any area, urban or rural, directly affected by the project, including all human settlements found on it.
- **Consent** – is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the code of conduct is introduced has a lower age[12]. Mistaken belief regarding the age of the child and consent from the child is not a defense.
- **Contractor** – is defined as any firm, company, organization or other institution that has been awarded a contract to conduct infrastructure development works in the context of the SAIP and has hired managers and/or employees to conduct this work.
- **Consultant** – is defined as any firm, company, organization or other institution that has been awarded a contract to provide consulting services in the context of the SAIP, and has hired managers and/or employees to conduct this work.
- **Manager** – is defined as any individual offering labor to the contractor or consultant, on or off the work site, under a formal employment contract and in exchange for a salary, with responsibility to control or direct the activities of a contractor's or consultant's team, unit, division or similar, and to supervise and manage a pre-defined number of employees.
- **Employee** – is defined as any individual offering labor to the contractor or consultant within country on or off the work site, under a formal or informal employment contract or arrangement, typically but not necessarily in exchange for a salary (e.g. including unpaid interns and volunteers), with no responsibility to manage or supervise other employees.
- **Grievance Response Mechanism (GRM) –** the process established by the SAIP project to receive and address complaints (see www.saip.ws).
- **GBV and CAE Allegation Procedure** – is defined as the prescribed procedure to be followed when reporting incidents of GBV or CAE.
- **Accountability Measures** – is defined as the measures put in place to ensure the confidentiality of survivors and to hold contractors, consultants and the client responsible for instituting a fair system of addressing cases of GBV and CAE.

[12] For example, under Section 59 of the Crimes Act (2013) the age of legal consent in Samoa is 16 (http://www.paclii.org/ws/legis/consol_act/ca201382/) However, he World Bank follows the United Nations for the age of consent (18 years) so this applies on World Bank financed projects.

- **Response Protocol** – is defined as the mechanisms set in place to respond to cases of GBV and CAE.
- **GBV and CAE Compliance Team**: A team established by the contractor and/or consultant to address GBV and CAE issues with the work force.

3. Codes of Conduct

This chapter presents three Codes of Conduct for use:

- **Company Code of Conduct:** Commits the company to addressing GBV and CAE issues;
- **Manager's Code of Conduct:** Commits managers to implementing the Company Code of Conduct, as well as those signed by individuals; and,
- **Individual Code of Conduct:** Code of Conduct for everyone working on SAIP, including managers.

Company Gender Based Violence and Child Protection Code of Conduct

The company is obliged to create and maintain an environment which prevents gender based violence (GBV) and child abuse/exploitation (CAE) issues, and where the unacceptability of GBV and actions against children are clearly communicated to all those engaged on the project. In order to prevent GBV and CAE, the following core principles and minimum standards of behavior will apply to all employees without exception:

1. GBV or CAE constitutes acts of gross misconduct and are therefore grounds for sanctions, penalties and/or termination of employment. All forms of GBV and CAE including grooming are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or CAE will be pursued if appropriate.
2. Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
3. Do not use language or behavior towards women, children and men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
4. Sexual activity with children under 18—including through digital media—is prohibited. Mistaken belief regarding the age of a child and consent from the child is not a defense.
5. Sexual favors or other forms of humiliating, degrading or exploitative behavior is prohibited.
6. Sexual interactions between the company's employees at any level and member of the communities surrounding the work place that are not agreed to with full consent[13] by all parties involved in the sexual act are prohibited. This includes relationships involving the withholding/promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex – such sexual activity is considered "non-consensual" within the scope of this Code.
7. All employees, including volunteers and sub-contractors are highly encouraged to report suspected or actual GBV and/or CAE by a fellow worker, whether in the same company or not. Reports must be made in accordance with GBV and CAE Allegation Procedures.
8. All employees are required to attend an induction training course prior to commencing work on site to ensure they are familiar with the GBV and CAE Code of Conduct.
9. All employees must attend a mandatory training course once a month for the duration of the contract starting from the first induction training prior to commencement of work to reinforce the understanding of the institutional GBV and CAE Code of Conduct.
10. All employees will be required to sign an individual Code of Conduct confirming their agreement to support GBV and CAE activities.

I do hereby acknowledge that I have read the foregoing Code of Conduct, and on behalf of the company agree to comply with the standards contained therein. I understand my role and responsibilities to prevent and respond to GBV and CAE. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action.

Company name: _____ Signed by: _____

Title: _____ Date: _____

[13] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the code of conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

Manager's Gender Based Violence and Child Protection Code of Conduct

Managers at all levels have particular responsibilities to create and maintain an environment that prevents GBV and CAE. They need to support and promote the implementation of the Company Code of Conduct. To that end, they must adhere to the Manager's Code of Conduct and also sign the Individual Code of Conduct. This commits them to support and develop systems that facilitate the implementation of this action plan and maintain a GBV-free and child-safe work environment. These responsibilities include but are not limited to:

Compliance Team and Development of Action Plan

1. Appoint the Contractor's GBV and CAE Focal Point. This will typically be the contractor's occupational health and safety manager. This person will:
    a. Represent the Contractor on the GBV and CAE Compliance Team (GCCT) which is comprised of representatives from SAA, contractor(s), the supervision consultant, and local service provider.
    b. Participate in training of staff to sensitize them to their responsibilities the Individual Code of Conduct; and,
    c. Be trained and empowered to undertake any investigations of staff members alleged to have minor violations of the Code of Conduct and ensure sanctions are applied as appropriate. For major violations the Focal Point must appropriately refer the complaint to: (i) a local service provider; (ii) the authorities; and/or, (iii) management for further action.

   Work on GBV and CAE will be recognized in employee's scope of work and performance evaluations.

2. The GCCT will prepare an **Action Plan** for implementation by the contractor, based on the outline plan in Section 4 below. The Action Plan shall, as a minimum, include:
    a. **GBV and CAE Allegation Procedure** to report GBV and CAE issues through the project Grievance Response Mechanism (GRM);
    b. **Accountability Measures** to protect confidentiality of all involved; and,
    c. **Response Protocol** applicable to GBV survivors/survivors and perpetrators.
3. The Contractor shall submit the Action Plan for clearance by the TFSU safeguards teams, as well as the World Bank prior to full mobilization.

Implementation

1. Ensure that all staff receive a clear written statement of the company's requirements with regards to preventing GBV and CAE in addition to the training.
2. To ensure maximum effectiveness of the Company and Individual Codes of Conduct
    a. Prominently display the Codes of Conduct in clear view in public areas of the work space. Examples of areas include waiting, rest and lobby areas of sites, canteen areas, health clinics.
    b. All posted and distributed copies of the Company and Individual Codes of Conduct should be translated into the appropriate language of use in the work site areas (ex. Bislama, French, English).
3. Verbally and in writing explain the Company and Individual Codes of Conduct to all staff.
4. Promote internal sensitization initiatives (e.g. workshops, campaigns, on-site demonstrations etc.) throughout the entire duration of their appointment in collaboration with the GCCT and in accordance to the Action Plan.

5. Ensure that:
    a. All managers and employees sign the 'Individual Code of Conduct for GBV and CAE', including acknowledgment that they have read and agree with the code of conduct;
    b. Staff lists and signed copies of the Individual Code of Conduct are provided to the GCCT and SAA;
    c. Participate in training as outlined below;
    d. Staff are familiar with the SAIP GRM and that they can use it to anonymously report concerns over GBV and CAE (See Section 4.2 in the Action Plan).
    e. Staff are encouraged to report suspected or actual GBV and/or CAE through the GRM.
6. In compliance with applicable laws and to the best of your abilities, prevent perpetrators of sexual exploitation and abuse from being hired, re-hired or deployed. Use background and criminal reference checks for all employees.
7. Ensure that when engaging in partnership, sub-grant or sub-recipient agreements, these agreements:
    a. incorporate the SAIP Codes of Conduct as an attachment;
    b. include the appropriate language requiring such contracting entities and individuals, and their employees and volunteers, to comply with the SAIP Codes of Conduct; and,
    c. expressly state that the failure of those entities or individuals, as appropriate, to take preventive measures against GBV and CAE, to investigate allegations thereof, or to take corrective actions when GBV and/or CAE has occurred, shall constitute grounds for sanctions and penalties in accordance with the SAIP Codes of Conduct.
8. Provide support and resources to the GCCT to create and disseminate the internal sensitization initiatives through the Awareness-raising strategy under the Action Plan.
9. Any major issue with regard to GBV or CAE warranting police action shall be reported to SAA and the World Bank immediately.

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Training

1. All managers are required to attend an induction manager training course prior to commencing work on site to ensure that they are familiar with their roles and responsibilities in upholding the GBV and CAE Codes of Conduct. This training will be separate from the induction training course required of all employees and will provide managers with the necessary understanding and technical support needed to begin to develop the Action Plan for addressing GBV and CAE issues.
2. Ensure that time is provided during work hours and that staff attend the mandatory SAIP facilitated induction GBV and CAE training required of all employees prior to commencing work on site.
3. Ensure that staff attend the monthly mandatory refresher training course required of all employees to combat increased risk of GBV and CAE during civil works.
4. Managers are required to attend and assist with the SAIP facilitated monthly training courses for all employees. Managers will be required to introduce the trainings and announce the self-evaluations.
5. Collect satisfaction surveys to evaluate training experiences and provide advice on improving the effectiveness of training.

Response

1. Managers will be required to provide input, final decisions and formal adoption of the **GBV and CAE Allegation Procedures** and **Response Protocol** developed by the GCCT as part of the final cleared Action Plan.
2. Once adopted, managers will uphold the **Accountability Measures** set forth in the Action Plan to maintain the confidentiality of all employees who report or (allegedly) perpetrate incidences of

GBV and CAE (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law).

3. If a manager develops concerns or suspicions regarding any form of GBV or CAE by one of his/her direct reports, or by an employee working for another contractor on the same work site, s/he is highly encouraged to report the case using the identified reporting mechanism.
4. Once a sanction has been determined, the relevant manager(s) is/are expected to be personally responsible for ensuring that the measure is effectively enforced, within a maximum timeframe of 14 days from the date on which the decision was made.
5. Managers failing to comply with such provision can be in turn subject to disciplinary measures, to be determined and enacted by the company's CEO, Managing Director or equivalent highest-ranking manager. Those measures may include:
    a. Informal warning
    b. Formal warning
    c. Additional Training
    d. Loss of up to one week's salary.
    e. Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
    f. Termination of employment.
6. Ultimately, failure to effectively respond to GBV and CAE cases on the work site by the contractor's managers or CEO may provide grounds for legal actions by authorities.

I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and CAE. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action.

Company name: _____

Signed by: _____

Title: _____

Date: _____

Individual Gender Based Violence and Child Protection Code of Conduct

I, _____, acknowledge that preventing gender based violence (GBV) and child abuse/exploitation (CAE) are important. GBV or CAE activities constitute acts of gross misconduct and are therefore grounds for sanctions, penalties or potential termination of employment. All forms of GBV or CAE are unacceptable be it on the work site, the work site surroundings, or at worker's camps. Prosecution of those who commit GBV or CAE may be pursued if appropriate.

I agree that while working on the SAIP project, I will:

- Consent to police background check.
- Treat women, children (persons under the age of 18), and men with respect regardless of race, color, language, religion, political or other opinion, national, ethnic or social origin, property, disability, birth or other status.
- Not use language or behavior towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- Not participate in sexual activity with children—including grooming or through digital media. Mistaken belief regarding the age of a child and consent from the child is not a defense.
- Not engage in sexual favors or other forms of humiliating, degrading or exploitative behavior.
- Not have sexual interactions with members of the communities surrounding the work place and worker's camps that are not agreed to with full consent[14] by all parties involved in the sexual act. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" within the scope of this Code.
- Attend and actively partake in training courses related to HIV/AIDS, GBV and CAE as requested by my employer.
- Report through the GRM or to my manager any suspected or actual GBV and/or CAE by a fellow worker, whether in my company or not, or any breaches of this Code of Conduct.

- With regard to children under the age of 18:

  - Wherever possible, ensure that another adult is present when working in the proximity of children.
  - Not invite unaccompanied children into my home, unless they are at immediate risk of injury or in physical danger.
  - Not sleep close to unsupervised children unless absolutely necessary, in which case I must obtain my supervisor's permission, and ensure that another adult is present if possible.
  - Use any computers, mobile phones, or video and digital cameras appropriately, and never to exploit or harass children or to access child pornography through any medium (see also "Use of children's images for work related purposes").
  - Refrain from physical punishment or discipline of children.

[14] **Consent** is defined as the informed choice underlying an individual's free and voluntary intention, acceptance or agreement to do something. No consent can be found when such acceptance or agreement is obtained through the use of threats, force or other forms of coercion, abduction, fraud, deception, or misrepresentation. In accordance with the United Nations Convention on the Rights of the Child, the World Bank considers that consent cannot be given by children under the age of 18, even in the event that national legislation of the country into which the code of conduct is introduced has a lower age. Mistaken belief regarding the age of the child and consent from the child is not a defense.

- Refrain from hiring children for domestic or other labor which is inappropriate given their age or developmental stage, which interferes with their time available for education and recreational activities, or which places them at significant risk of injury.
- Comply with all relevant local legislation, including labor laws in relation to child labor.

Use of children's images for work related purposes

When photographing or filming a child for work related purposes, I must:

- Before photographing or filming a child, assess and endeavor to comply with local traditions or restrictions for reproducing personal images.
- Before photographing or filming a child, obtain informed consent from the child and a parent or guardian of the child. As part of this I must explain how the photograph or film will be used.
- Ensure photographs, films, videos and DVDs present children in a dignified and respectful manner and not in a vulnerable or submissive manner. Children should be adequately clothed and not in poses that could be seen as sexually suggestive.
- Ensure images are honest representations of the context and the facts.
- Ensure file labels do not reveal identifying information about a child when sending images electronically.

Sanctions

The project has established a 'GBV and CAE Compliance Team' (GCCT) which is comprised of representatives from SAA, contractor and supervision consultant. The GCCT and/or the local service provider will oversee any investigation of grievances against the employee with regard to GBV and CAE, according the accused procedural fairness and within the local laws. If an employee has breached the Code of Conduct, the employer will take disciplinary action which could include:

- Informal warning;
- Formal warning;
- Additional Training;
- Loss of up to one week's salary;
- Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months; or,
- Termination of employment.

In addition to the above, if warranted, report the employee to the Police as per local legal paradigms.

I understand that it is my responsibility to use common sense and avoid actions or behaviors that could be construed as GBV or CAE or breach this Code of Conduct. I do hereby acknowledge that I have read the foregoing Code of Conduct, do agree to comply with the standards contained therein and understand my roles and responsibilities to prevent and respond to GBV and CAE. I understand that any action inconsistent with this Code of Conduct or failure to take action mandated by this Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Company name: _____ Signed by: _____

Title: _____ Date: _____

4. Action Plan

Implementation Roles & Responsibilities

Prevention

4.1 GBV and CAE Compliance Team & Code of Conduct Action Plan

The project shall establish a 'GBV and CAE Compliance Team' (GCCT) to create a **Code of Conduct Action Plan** to coordinate and monitor the contractor's and consultant's response to impacts of GBV and CAE in the workplace. The GCCT will include, as appropriate to the business, at least four representatives from the following:

a. A safeguards specialist representing SAA or another representative of the GoV;
b. The occupational health and safety manager from the contractor[15];
c. The supervision consultant's Resident Engineer; and,
d. A representative from a local service provider with experience in GBV and CAE.

The terms of reference for the GCCT shall, among others, clearly indicate roles and responsibilities for the GCCT members. It will be the duty of the GCCT with support from the management to inform employees about the activities and responsibilities of the GCCT. GCCT members must undergo training by the local service provider prior to the commencement of their assignment.

The GCCT will be required to:

a. Finalize the draft **GBV and CAE Codes of Conduct** contained in this document.
b. Prepare the **Action Plan** which includes:
    i. **GBV and CAE Allegation Procedures** (See 4.3)
    ii. **Accountability Measures** (See 4.4)
    iii. An **Awareness raising Strategy** (See 4.5)
    iv. A **Response Protocol** (See 4.6)
c. Obtain approval of the Action Plan by company management;
d. Obtain SAA and World Bank clearances for the final Codes of Conduct and Action Plan prior to full mobilization;
e. Receive and monitor resolution and sanctions with regard to complaints received related to GBV and CAE associated with the SAIP Project; and,
f. Ensure that GBV and CAE statistics are updated and included in the regular project reports.
    -

The GCCT shall hold quarterly update meetings to discuss ways to strengthen resources and GBV and CAE support for employees and community members.

[15] Where there are multiple contractors working on the project each shall nominate a representative as appropriate.

4.2 Grievance Response Mechanism (GRM)

GRM GBV and CAE Focal Point

SAIP operates a grievance response mechanism (GRM) with an online portal at www.saip.ws. Reports of GBV, complaints, or other concerns may be submitted online, via telephone or mail, or in person.

The GRM operator will refer grievances to the appropriate party to resolve them. If a complaint on GBV or CAE is made through the GRM, it will be referred to the GCCT who will investigate the complaint and provide the GRM operator with a resolution to the complaint according to the Action Plan. The GRM operator will, upon resolution, advise the complainant of the outcome, unless it was made anonymously. Complaints made to managers or the local service provider will refer to the GRM process for further action.

While the local service provider is available at all times to provide support, grievance resolution involving Contractor's staff will be the responsibility of the **Contractor's GBV and CAE Focal Point[16].** The GCCT will refer the grievance to the focal points for resolution and will advise on potential resolutions.

The Focal Point must be trained and empowered to resolve minor GBV and CAE issues. In major cases of GBV and CAE, the GBV and CAE Focal Point must appropriately refer the complaint to: (i) a local service provider; (ii) the authorities; and/or, (iii) management for further action. For client staff, the SAA safeguards appointee to the GCCT (or their delegate) will be responsible for resolving grievances.

It is essential that all staff of the GRM, GCCT and Focal Points understand the guiding principles and ethical requirement of dealing with survivors of GBV and CAE. All reports should be kept confidential and referred immediately to local service providers[17].

Local Service Provider

The client, the Contractor and Consultant must establish a working relationship with a local service provider, so that GBV and CAE cases can safely be referred to them, and for support to their Focal Points. The local service provider will be invited to nominate one representative who will also form part of the GCCT established by the project.

The GRM will automatically record information on grievances as part of the project GRM reporting framework. The GRM operator and local service provider will collect reports/complaints made/lodged by community members on potential GBV and CAE cases experienced in the work site surroundings, and submit them through the GCCT for further action, or the police if necessary.

4.3 GBV and CAE Allegation Procedures

All staff, volunteers, consultants and sub-contractors are highly encouraged to report suspected or actual GBV and/or CAE cases. The company will provide information to employees and the community on how to report cases of GBV and CAE code of conduct breaches through the GRM. The GCCT will follow up

[16] The Contractor's GBV and CAE Focal Point will be identified by the Contractor and will typically be the contractor's occupational health and safety manager.

[17] Survivors of GBV and CAE may need access to police, justice, health, psychosocial, safe shelter and livelihood services to begin on a path of healing from their experience of violence.

on cases of GBV, CAE and code of conduct breaches reported through the GRM. Reporting outcomes must be included in the Supervision Engineer's Weekly, Monthly and Quarterly progress reports which are supplied to the World Bank. Any major issue with regards to GBV or CAE warranting police action shall be reported to the VPMU and the World Bank immediately.

4.4 Accountability Measures

All reports of sexual exploitation and sexual abuse shall be handled in a confidential manner in order to protect the rights of all involved. To ensure that survivors feel confident to disclose their experience of GBV or CAE, the client, Contractor and Consultant must maintain the confidentiality of employees who notify any acts or threats of violence, and of any employees accused of engaging in any acts or threats of violence (unless a breach of confidentiality is required to protect persons or property from serious harm or where required by law). Contractor/Consultants must prohibit discrimination or adverse action against an employee on the basis of survivor's disclosure, experience or perceived experience of GBV or CAE. (See Annex 1 for examples of actions to maintain accountability).

Monitoring & Evaluation Strategy

The GCCT must monitor the follow up of cases that have been reported and maintain all reported cases in a confidential and secure location. Monitoring must collect the number of cases that have been reported and the share of them that are being managed by police, NGOs etc.

These statistics shall be reported to the GRM and the Supervision Engineer for inclusion in their reporting.

4.5 Awareness-raising Strategy

Create an **Awareness-raising Strategy** with activities aimed to sensitize employees on GBV and CAE on the work site and its related risks, provisions of the **GBV and CAE Codes of Conduct, GBV and CAE Allegation Procedures**, **Accountability Measures** and **Response Protocol.** The strategy will be accompanied by a timeline, indicating the various sensitization activities through which the strategy will be implemented and also the related (expected) delivery dates. Awareness-raising activities may be linked with trainings provided by local service providers.

Response

4.6 Response Protocol

The GCCT will be responsible for developing a written response[18] protocol in accordance to national laws and protocols. The response protocol must include mechanisms to notify and respond to perpetrators in the workplace (See 4.8 for Perpetrator Policy and Response). The response protocol will include the GRM process to ensure competent and confidential response to disclosures of GBV and CAE. An employee who

[18] Develop appropriate protocol for written recording of GBV issues and CAE raised in case the notes are subpoenaed. Develop processes for record keeping including activities undertaken by the GCCT.

discloses a case of GBV or CAE in the workplace shall be referred to the GRM for further action.

4.7 Survivor Support Measures

Appropriately respond to the survivor's disclosure by respecting the survivor's choices to minimize the potential for re-traumatization and further violence against the survivor. Refer the survivor to the local service provider to obtain appropriate support services in the community – including medical and psychosocial support, emergency accommodation, security including police protection and livelihood support – by facilitating contact and coordination with these services. The client, Contractor or Consultant may, where feasible, provide financial and other supports to survivors of GBV or CAE for these services. (See Annex 1 for examples of financial support)

If the survivor is an employee, in order to ensure the safety of the survivor and the workplace in general, the client, Contractor or Consultant, in consultation with the survivor, will assess the risk of ongoing abuse, to the survivor and to the workplace, and make reasonable adjustments to the work schedule and work environment as deemed necessary. (See Annex 1 for examples of safety measures). The Contractor/Consultant will provide adequate leave to survivors seeking services after experiencing violence. (See Annex I for details).

4.8 Perpetrator Policy and Response

Encourage and accept notification through the GRM from employees and community members about perpetrators in the workplace. Through the GCCT and/or the local service provider, oversee the investigation of these grievances, according the accused procedural fairness and within the local laws. If an employee has breached the Code of Conduct, the employer will take action which could include:

1. Undertake disciplinary action up in accordance with sanctions developed by Contractor/Consultant.
2. Report the perpetrator to the Police as per local legal paradigms.
3. If feasible, provide or facilitate counselling for the perpetrator.

4.9 Sanctions

In accordance with the Code of Conduct, any employee identified as a potential GBV and/or CAE perpetrator shall be considered for disciplinary measures in line with sanctions and practices as agreed in the Individual Code of Conduct. (See Annex 1 for examples of sanctions). It is important to note that, for each case, disciplinary sanctions are intended to be part of a process that is entirely internal to the employer, is placed under the full control and responsibility of its managers, and is conducted in accordance with the applicable national labor legislation.

Such process is expected to be fully independent from any official investigation that competent authorities (e.g. Police) may decide to conduct in relationship to the same case, and in accordance with the applicable national law. Similarly, internal disciplinary measures that the employer's managers may decide to enact are meant to be separate from any charges or sanctions that the official investigation may result into (e.g. monetary fines, detention etc.).

Annex I - Potential Procedures.

Taking into consideration the employer's policies and protocols, *this annex provides draft ideas for the **client, Contractor and Consultant** to select and finalize.*

Accountability Measures to maintain confidentiality can be achieved through the following actions:

1. Inform all employees that confidentiality of GBV/CAE survivors' personal information is of utmost importance.
2. Provide the GCCT with training on empathetic and non-judgmental listening.
3. Take disciplinary action, including and up to dismissal, against those who breach survivor's confidentiality (this is unless a breach of confidentiality is necessary to protect the survivor or another person from serious harm, or where required by law).

GBV and CAE Allegation Procedures should specify:

1. Who survivors can seek information and assistance from.
2. The process for community members and employees to lodge a complaint through the GRM should the code of conduct be violated.
3. The mechanism for how community members and employees can escalate a request for support or notification of violence if the process for reporting is ineffective due to unavailability or non-responsiveness, or if the employee's concern in not resolved.

Financial and Other Supports to survivors can include:

1. No/low interest loans.
2. Salary advances.
3. Direct payment of medical costs.
4. Upfront payments for medical costs to be recouped from the employee's health insurance.
5. Providing or facilitating access to childcare.
6. Providing security upgrades to the employee's home.
7. Providing safe transportation to access support services or to and from accommodation.

Survivor Support measures to ensure the safety of the survivor can include:

1. Changing the employee's span of hours or pattern of hours and/or shift patterns.
2. Redesigning or changing the employee's duties.
3. Changing the employee's telephone number or email address to avoid harassing contact.
4. Relocating the employee to another work site/ alternative premises.
5. Providing safe transportation to and from work for a specified period.
6. Supporting the employee to apply for an Interim Protection Order or referring them to appropriate support.
7. Taking any other appropriate measures including those available under existing provisions for family friendly and flexible work arrangements.

Leave options for survivors that are employees can include:

1. An employee experiencing GBV should be able to request paid special leave to attend medical or psychosocial appointments, legal proceedings, relocation to safe accommodation and other activities related to GBV.

2. An employee who supports a person experiencing GBV or CAE may take carer's leave, including but not limited to accompanying them to court or hospital, or to mind children.
3. Employees who are employed in a casual capacity may request unpaid special leave or unpaid carer's leave to undertake the activities described above.
4. The amount of leave provided will be determine by the individual's situation through consultations with the employee, the management and the GCCT where appropriate.

Potential Sanctions to employees who are perpetrators of GBV and CAE include:

- Informal warning
- Formal warning
- Additional Training
- Loss of up to one week's salary.
- Suspension of employment (without payment of salary), for a minimum period of 1 month up to a maximum of 6 months.
- Termination of employment.

Referral to the Police or other authorities as warranted.

APPENDIX G: PESMP IMPLEMENTATION PLAN GUIDELINES

QUARRY MANAGEMENT PLAN GUIDELINE

1. Objective

This Guideline is based on COEP 8 and is cross referenced with this COEP as it provides WB EHS requirements in addition to the government requirement set out in the COEP. The objective of this Guideline 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 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 Employer's Engineer and PUMA. 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 Samoa and the SAIP 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 run-off from stockpiles shall be intercepted by perimeter drains which shall be discharged to silt retention ponds.

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

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

3.8 Blasting Operations

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

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

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

- 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

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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.

WASTE MANAGEMENT IMPLEMENTION PLAN GUIDELINE

6. Objective

The objective of this Sub-plan is to prescribe the requirements for the development of waste management sub-plans.

7. Planning and Design

As part of the Contractors ESMP (CESMP) prepared by the contractor waste management measures will be included in a waste management plan (WMP) to cover all matters related to solid and liquid waste disposal arising from construction related activities (including storage, disposal and accidental spills).

The Contractors will prepare a WMP based on national legislation and detailed prescriptions of the PESMP which will cover the following:

i. Assign responsibility of implementing the waste management plan to one designated person;
ii. Forecast the types and percentage of waste that will be produced by the contract:
    - Divide the listed waste streams into recyclable, reusable and refuse
iii. Describe recycling/reuse methods. Identify the possibilities for reuse and recycling for each type of waste that is created and describe these – where, how, and when to handle materials. The following must be considered:
    - Agreed reuse and recycling options and locations for disposal/endorsement from PUMA;
    - Recyclables to be recovered and sold to recognized recyclers;
iv. Identify waste destinations. Only existing consented disposal sites will be used. This section should consider:
    - Methods for treatment and disposal of all solid and liquid wastes;
    - Designation of waste disposal areas agreed with local authorities;
    - Residual waste to be disposed of in disposal sites approved by local authorities and not located within 500 m of rivers or streams;
    - Disposal of solid wastes into drainage ditches, rivers, other watercourses, agricultural fields and public areas shall be prohibited; and
    - All solid waste will be collected and removed from work camps and disposed in designated local waste disposal sites.
v. Material use and handling: Use this section to describe how waste will be sorted and stored on site before collection. This section should consider:
    - Provide details of how the various waste streams will be stored and labelled in the construction camp;

- Provide instructions for the handling of all types of waste including detailed instructions for equipment needed when managing waste, as well as any safety procedures for waste crew;
- Identification of licensed service providers for waste collection;
- Establishment of regular disposal schedule and constraints for hazardous waste;
- Program for disposal of general waste / chain of custody for hazardous waste;
- Segregation of wastes to be observed. Organic (biodegradable - such as tree trimmings) shall be collected, stockpiled and given to the local community (no burning is allowed on site);
- Camp, construction offices/facilities and work's yard to be provided with garbage bins;
- Burning of construction and domestic wastes to be prohibited;

vi. Monitoring: The relevant monitoring requirements of the PESMP will be incorporated into the WMP and a designated person will be listed as being responsible for monitoring.

vii. Communication and training: Explain what will be done to educate and inform all project employees about the waste management system that has been established.

OHS IMPLEMENTATION PLAN GUIDELINE

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 Employer's 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 Employer's 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 Employer's Engineer must have a minimum level of occupational health and safety (OHS) training equivalent to the New Zealand Construction Safety Council Tier-1 training (http://tinyurl.com/ohs-tier-1-training).

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

6.3 Personal Protective Equipment (PPE)

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

The PPE requirements shall be clearly defined in the CESMP and be based on the New Zealand Transport Agency's ZeroHarm approach (http://tinyurl.com/ohs-ppe-requirements). It should be noted that these PPE requirements also apply to site visitors, based on the perceived risk.
PPE is considered to be a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection. The table below presents general examples of occupational hazards and types of PPE available for different purposes. Recommended measures for use of PPE in the workplace include: ·

- active use of PPE if alternative technologies, work plans or procedures cannot eliminate, or sufficiently reduce, a hazard or exposure;
- identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual;
- proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE should be part of the recurrent training programs for Employees

- selection of PPE should be based on the hazard and risk ranking described earlier in this section, and selected according to criteria on performance and testing established

Objective	Workplace Hazards	Suggested PPE
Eye and face protection	Flying particles, molten metal, liquid chemicals, gases or vapors, light radiation.	Safety Glasses with side-shields, protective shades, etc.
Head protection	Falling objects, inadequate height clearance, and overhead power cords.	Plastic Helmets with top and side impact protection.
Hearing protection	Noise, ultra-sound.	Hearing protectors (ear plugs or ear muffs).
Foot protection	Falling or rolling objects, pointed objects. Corrosive or hot liquids.	Safety shoes and boots for protection against moving & falling objects, liquids and chemicals.
Hand protection	Hazardous materials, cuts or lacerations, vibrations, extreme temperatures.	Gloves made of rubber or synthetic materials (Neoprene), leather, steel, insulating materials, etc.
Respiratory protection	Dust, fogs, fumes, mists, gases, smokes, vapors.	Facemasks with appropriate filters for dust removal and air purification (chemicals, mists, vapors and gases). Single or multi-gas personal monitors, if available.
	Oxygen deficiency	Portable or supplied air (fixed lines). On-site rescue equipment.
Body/leg protection	Extreme temperatures, hazardous materials, biological agents, cutting and laceration.	Insulating clothing, body suits aprons etc. of appropriate materials.

7. Monitoring

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

- **Safety inspection, testing and calibration**: This should include regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment, and tools used. The

inspection should verify that issued PPE continues to provide adequate protection and is being worn as required.

- **Surveillance of the working environment**: Employers should document compliance using an appropriate combination of portable and stationary sampling and monitoring instruments. Monitoring and analyses should be conducted according to internationally recognized methods and standards.
- **Surveillance of workers health**: When extraordinary protective measures are required (for example, against hazardous compounds), workers should be provided appropriate and relevant health surveillance prior to first exposure, and at regular intervals thereafter.
- **Training**: Training activities for employees and visitors should be adequately monitored and documented (curriculum, duration, and participants). Emergency exercises, including fire drills, should be documented adequately.
- **Accidents and Diseases monitoring**. The employer should establish procedures and systems for reporting and recording:
    - 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 Employer's 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 Employer's 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 Employer's 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.

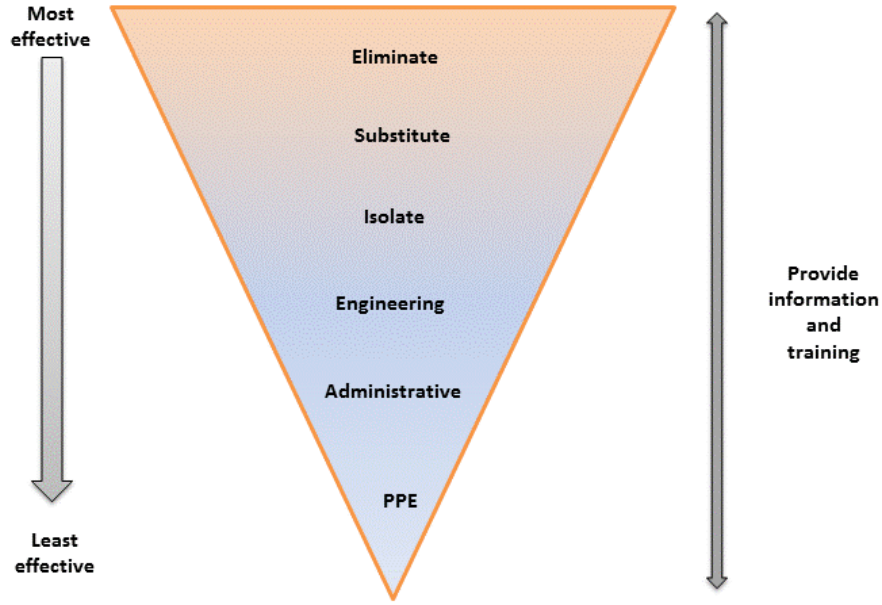
1. **Eliminate** – if it is possible, the hazard should be removed completely. For example, get rid of dangerous machines.

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:								

APPENDIX H: DEVELOPMENT CONSENTS

This section sets out a summary of Development Consent conditions for the three development consents granted by MNRE and cross references to the relevant sections of the PESMP. Copies of the Development Consents are included in this appendix, after the table.

Conditions	Quarry DC Ref	Asphalt Plant and Laydown Area DC Ref.	Runway and Apron Works DC Ref	ESMP Ref or other control*
General Management	1,17, 25	1, 18, 21, 32		7.2.10, 8.1, 8.5, 8.6, 9.1, CESMP*
Chance Find	7	-	-	7.2.12,
Timing and Operations	26	32	6	3.4, 7.2.8, MOWP*
Health and Safety	11, 17, 25	8, 9, 11, 33	8, 10	3.4.8, 7.2.8, MOWP
Waste Management	45, 46, 51	17, 22, 30, 34, 35	14, 22	3.4.7, 8.8, 8.9, WMP
Amenity	12, 31-33	12	7	7.2, 7.3, 8.10
Noise	12, 34, 35, 37	12, 13, 28,	16,	7.2.5, 7.3, QMP
Dust	12, 36	12, 29	7, 17	
Air emissions or odours	12	12, 20	7	7.2.7,
Spills & Storage	15, 16	17, 19, 23	-	7.2.2, 7.2.4,
Hazardous Substances	51	17, 19	-	7.2.4, 8.2
Stormwater Management	8, 38	10, 36	14, 23, 24, 25	7.2.9, 8.8, QMP
Water Resources	4	17	18	7.2.9, 8.4.1, QMP
Earthworks	13, 14, 19, 27-30, 47-50, 52	27, 37, 38	19, 25	7.2.6, 8.7, QMP
Erosion and Sediment	13, 18, 19, 20, 21, 22	37	19, 25, 26	7.2.6, 8.7, QMP
Environmental Monitoring	-	20, 21	13	10
Traffic Management	23, 24, 39, 40	16, 31	20, 21	7.2.8, 8.3

Social Impacts	31, 32, 33	3, 12, 26	3	7.2, 7.3, 8.10.2, 9.3

* Appendix B Mitigation and Appendix C Monitoring also summarise requirements of the ESMP. The CESMP and constituent plans (WMP, QMP, MOWP, TMP etc) have been reviewed to ensure potential impacts are minimised and requirements of both the ESMP and DC conditions are met.