




## Faleolo International Airport: Design & Construct: Pavements, Drainage & Service Infrastructure

# Waste Management Plan

<b>Project:</b>	<b>Samoa Aviation Investment Project (SAIP)</b> Faleolo International Airport Design & Construct, Physical Works: Pavement, Drainage & Service Infrastructure	
<b>Contract No:</b>	ICB: SAA/ICBW/S-A15.4	
<b>Employer:</b>	Samoa Airport Authority	
<b>World Bank:</b>	P 143308	
<b>Contract Plan Issue Date</b>	<b>Document Preparation &amp; Control Safeguards Specialist</b>	<b>Document Authorisation Project Manager Major Projects North</b>
<b>May 2018 Rev 4</b>	<b>Craig Smart</b>	<b>Peter Murr</b>

### Copyright

This Contract Plan is owned by Downer New Zealand Ltd ("Downer") and may not be copied (in whole or part) without Downer's prior written consent.

This Contract Plan contains confidential information belonging to Downer. Downer's information contained in this document may only be used for the purpose of managing the contract (referred to on page 1). Downer's written consent must be obtained before disclosing any of the information to other parties

## Distribution

Copy No	Holder
01	Peter Murr – Project Manager (Downer)
02	Craig Smart – Safeguards Specialist (Downer)
03	Employer - SAA represented by LYON

## Revision Register

Revision No	Description	Date
01	Draft for Consideration	
02	Draft for Consideration 2	April 18
03	Above Draft Reviewed	April 18
04	Approved for Implementation	May 18

## Approvals

	Name & Position	Sign	Date
Downer Originator	Craig Smart Safeguards Specialist		
Downer Submission	Peter Murr Project Manager		
Employer Acceptance			

## **Table of Acronyms and Abbreviations Commonly Used on the Faleolo Project**

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
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
HSM	Health & Safety Manager (ref Technical Requirements - synonymous with
OHSO)	
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
OHSO	Occupational Health & Safety Officer (ref Bid Doc - synonymous with HSM)

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
PAP	Recycled Asphalt Pavement
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
WMA	Waste Management Act 2010

## Table of Contents

1	Background.....	6
2	Ambit, Objectives & Sources of This Plan .....	6
2.1	Ambit .....	6
2.2	Objectives .....	6
2.2.1	Proper Handling and Storage .....	6
2.2.2	Waste Reduction .....	6
2.3	Sources.....	6
3	Responsibilities .....	7
4	Identification of Waste Streams and Disposal Locations .....	7
4.1	Waste Streams .....	7
4.2	Percentage of Waste by Type Forecast .....	8
4.3	On site Waste Storage Systems.....	8
4.4	Waste Hazardous Substances .....	9
4.5	Reuse and Recycling Plans .....	10
4.6	Disposal Locations .....	11
4.6.1	Recyclables .....	11
4.6.2	Reuse .....	11
4.6.3	Biodegradable .....	11
4.6.4	Refuse .....	12
4.7	Prohibitions .....	12
4.8	Septic Waste Disposal Methods.....	12
5	Worker Induction and Training: .....	12
6	Monitoring & Audit.....	12
	Appendix 1: Extracts from PESMP (v6 April 2017).....	13
	Appendix 2: Key Extracts From Waste Management Act 2010 .....	16
	Appendix 3: IFC General EH & S Guidelines – Section 1.6 Waste Management .....	18
	Appendix 4: Waste Management Register .....	23
	Appendix 5: Emergency Spill and Runoff Response Procedure .....	24
	Appendix 6: Site Compliance Assessment.....	25

## **1 Background**

Downer New Zealand Ltd (Downer) has been contracted by the Samoa Aviation Authority (SAA) through the World Bank's Samoa Aviation Investment Project (SAIP) to Design and Construct the Pavement, Drainage and Service Infrastructure Physical Works for Faleolo International Airport.

The contract has an expected duration of 20 months from December 2017.

## **2 Ambit, Objectives & Sources of This Plan**

### **2.1 Ambit**

This plan covers the management of waste generated by Downer and its subcontractors while undertaking work on the project, including its office, asphalt plant, stockpile and physical construction sites within the Faleolo airport perimeter, and at the Olo Quarry site).

Some references within the CESMP ask for a Waste Management Plan (WMP) while others refer to a Solid Waste Management Plan (SWMP). Some of the wastes generated by the Project will be liquid and this plan is titled "Waste Management Plan" to make it clear that it is intended to cover all waste arising from the Project whether liquid or solid.

Downer will not be establishing an accommodation camp for workers for this project.

This Waste Management Plan (WMP) is a sub-plan to the Contractor's Environmental, Social Management Plan (CESMP).

This Plan does not cover waste generated at commercial accommodation facilities, or waste from airport operations that are not under Downer control.

### **2.2 Objectives**

This Plan has two objectives;

#### **2.2.1 Proper Handling and Storage**

To detail how the various waste streams/materials will be handled and stored to prevent them becoming an environmental or health hazard or adversely affecting the environment, until they are properly disposed of long term.

#### **2.2.2 Waste Reduction**

To outline measures intended to minimise the volume of waste to be disposed of as refuse and foster the reuse and recycling of materials.

### **2.3 Sources**

This plan is based on the provisions of;

- Downer NZ Environmental Policies & Procedures
- SAIP Technical Requirements – specifically SWMP provisions on pg 96PESMP v6 (April 2017) with extract of Sections 8.8, 8.9 & App G provided as Appendix 1
- Samoa Waste Management Act 2010 (WMA) – key extracts provided as Appendix 2
- IFC General EH & S Guidelines – Section 1.6 Waste Management – provided as Appendix 3
- Olo Quarry Development Consent – relevant conditions, namely #45 Hazardous materials shall only be disposed of at an approved hazardous waste disposal facility. The consent holder shall seek approval from the Agency and the Division of Environment and Conservation of the Ministry of Natural Resources and Environment to

dispose of any hazardous waste, AND # 46 On completion of works, all debris, rubbish and any other waste material brought on site during construction shall be removed from the site and disposed of at the Tafaigata Landfill

- Contractor's Compound Development Consent – relevant conditions, namely #31 All waste materials shall be disposed of at Tafaigata landfill AND #35 All wastes generated on the premises shall be stored and disposed of in an environmentally acceptable manner. An adequate number of suitable waste containers shall be kept on the premises for storage of garbage.

### 3 Responsibilities

The **Health & Safety Manager (HSM)** - reporting directly to the **Project Manager (PM)** - will be responsible for implementing this WMP and monitoring its effectiveness. S/he will be assisted by site staff as required.

**All site staff** have a role in maintaining general site tidiness and persistent or serious infractions will be addressed through the employee disciplinary or subcontractor administration system as applicable.

The **security guards** on duty in the Contractor's compound will also be tasked with keeping this area tidy and keeping the various recycling and rubbish bins clean and orderly. They will be especially required to secure anything that could become Foreign Object Debris (FOD) in areas where aircraft operate. This particularly applies to objects prone to wind uplift.

Specialist local businesses (waste contractors) will be engaged to handle (collect, remove and dispose of) various components of the waste stream. To reduce the risk of irresponsible handing of wastes and any non-compliance with this plan and the requirements of the project (as set out in the CESMP and PESMP) all waste contractors will need to be approved waste management operator in accordance with the provisions of the WMA.

## 4 Identification of Waste Streams and Disposal Locations

### 4.1 Waste Streams

The anticipated division of the waste streams is as follows;

#### Reusable

- Clean fill - Inert surplus construction material e.g. asphalt millings, broken concrete, rubble, waste aggregate, asphalt plant scrubber sludge, spoil or surplus excavated material etc
- Surplus/unused materials in good condition eg aggregate for pavement construction or asphalt manufacture and line marking paint.

#### Recycleable or reusable

- Bottles, tins, some plastic, clean paper, cardboard packaging, scrap metal etc
- Food wastes – first consider compost or pig food options otherwise
- Other biodegradable wastes

#### Refuse



- Dirty paper, soiled articles, items broken beyond repair and unable to be recycled, reused or broken down into elements that may be recycled or reused.
- Septic waste – the sludge from the septic tank and pump out of site portable toilets.

#### Hazardous

- Waste oils
- Bitumen containers – NB when hot [cold bitumen is not a hazardous substance].
- Oil drums and chemical containers
- Other hazardous wastes
- Contaminated soils, spill clean-up materials etc

## 4.2 Percentage of Waste by Type Forecast

The vast bulk of the project wastes waste (by both weight and volume) covered by this plan will be clean fill or surplus/unused construction materials. The percentage of other waste streams by comparison are a very small volume of the total project wastes.

A proposed approach to documenting the project waste streams and gathering data to inform the waste reduction, reuse and recycling plans (see Sec 4.5 below) is to use the Waste Management Register given in Appendix 4.

## 4.3 On site Waste Storage Systems

As noted above the bulk of the expected waste will be inert aggregate of various types (eg basecourse, sealing chip or asphalt millings) or inert spoil (ie left over earthworks material, broken concrete or soil from excavations etc). Earthworks spoil and fine aggregate will be stored in bunded stockpiles to contain any runoff which may include entrained fine particles as well as prevent overland flow reaching the stockpile area.

Spoil stockpiles may be located on the airfield as approved by the Airport Manager (and compatible with the MOWP) for use in SAA landscaping/recontouring work. Coarse aggregates will primarily be stockpiled in the Contractor's site compound or at the quarry of origin.

Initial sorting of refuse and recycling materials will be effected by site personnel using colour coded service bins labelled in Samoan & English, similar to the examples below. Service bins will be present at all work sites. The service bins will be regularly emptied with each waste stream (recyclable plastic or cans or bottles or whatever) being resorted and consolidated into much larger storage containers at a site within the Contractor's Compound. This storage area will be secure to prevent FOD.

When sufficient quantity of any type of material (eg plastic, cans, bottles, paper, refuse etc) has accumulated it will be disposed of by a commercial operator appropriately licensed under the WMA as detailed in Section 4.6 below.





#### 4.4 Waste Hazardous Substances

Waste hazardous substances will be stored in accordance with the requirements for hazardous substances and clearly labelled as to what the substance is and the fact that it is waste.

Waste oils will usually be disposed of using local contractors participating in the recently developed scheme for the bulk export of waste oils. The project –will also consider reuse options for waste oil (eg chainsaw bar oil etc) otherwise store as a hazardous substance and then use a local contractor.

Waste oil will be kept in 200 L drums on self bunded pallets with spill kit nearby (see Appendix 5 for Spill Response Procedure) - until either disposed of under bulk export scheme for waste oils to an overseas recycling facility, reused locally or returned to NZ for ultimate disposal.

Empty drums & containers that have contained hazardous waste will be considered to be contaminated and disposed of in association with the hazardous waste.

It is important to note that bitumen is not a hazardous substance when it is cold and the specialist proprietary TERMOCOTANK shipping containers that the bitumen is delivered in are designed for reuse. After being emptied, the small residue left inside becomes solid as the container cools down. The container is then returned to the supplier for refilling. Any washing or internal cleaning required is done by the supplier after return and no internal cleaning is required in Samoa.



*Examples of bunding systems for 200 L drums. Above two options 240 L capacity – which exceeds both 110% of largest tank and 25% of combined volume. Below 250L capacity. All made of chemically resistant material and sheltered to prevent rain water accumulation.*



Hazardous wastes will be stored in spill protected labelled containers. Any wastes that cannot be properly disposed of in Samoa will be returned to NZ for ultimate disposal in line with the relevant provisions of the Basel and Waigani conventions. Any required export/import permits details will be provided during the demobilisation phase once the type and volume material concerned, and its ultimate destination, has been established and shipping arrangements made.

## 4.5 Reuse and Recycling Plans

Section 4.6 below outlines how each stream of waste is expected to be disposed of. In addition to ensuring proper ultimate disposal of all waste materials, a further objective of this WMP is to foster a reduction in the volume of waste created and an increase in the proportion of waste is reused or recycled instead of being disposed of as refuse.

The Waste Management Register will be updated each month and the information used to review the streams of waste produced during the month. The quantity measures for bulk materials such clean fill will be very approximate but it is expected that better figures will be available for the refuse and recycling streams where material is carted off site and the number of loads can be determined from records.

Once the size and contents of the refuse, reuse and recycling streams are known, plans to reduce the former in favour of the later will be reviewed each month.

## **4.6 Disposal Locations**

The materials within the identified waste streams will be disposed of as follows;

### **4.6.1 Recyclables**

Recyclable materials will be sold to a recognised recycler or recyclers depending on whether separate specialist recyclers are required for each constituent or one can deal with the three main constituents, ie

- metals (aluminium cans and tins etc)
- glass (bottles and other beverage containers)
- plastics (subdivided into the various grades of plastic/types of bottles)

Once identified the recycler name(s) will be provided to the Employer/PUMA for consideration as to acceptability once commercial terms have been agreed but before a contract is signed. The selected recycler(s) will uplift the material(s) from the appropriate site bins.

If recycling facilities are not available locally for wastes then they will be classified as refuse and managed accordingly.

### **4.6.2 Reuse**

There are several subcategories of the inert materials, the most desirable will be any clean unused basecourse or asphalt aggregate.

#### **4.6.2.1 Surplus Unused Materials**

These materials have commercial value (and are not strictly waste as they are “wanted” and not intended to be disposed of) and once the type and volumes are known, they will be sold on commercial terms.

#### **4.6.2.2 Clean Fill**

Any clean spoil or other surplus inert clean fill material will be used for landscaping or recontouring on the airport land. The need and extent of this will be established with the Airport Manager and details provided to the Employer’s Engineer for consideration.

In the event the Airport Manager does not want to utilise such material it will offered to other GoS agencies, such as Ministry of Works, Transport & Infrastructure (MWTI) for approved use.

No clean fill will be removed from Olo Quarry.

### **4.6.3 Biodegradable**

Careful attention will be paid to the containers which food scraps are kept in to prevent odour or insect nuisance. They will be emptied and cleaned on a daily basis.

Management of food wastes will first consider compost or pig food options (if permitted locally) otherwise it becomes refuse and disposed of accordingly.

Management of other biodegradable wastes will first consider compost or mulch or offer to locals for their use. If these options prove unworkable then biodegradable materials will become refuse and will be disposed of accordingly.

#### **4.6.4 Refuse**

Waste that cannot be reused or recycled is refuse and will be carted to the Tafaigata Landfill for disposal by a suitably licenced commercial operator.

#### **4.7 Prohibitions**

No compounds classified under Schedule 2 of the WMA (pesticides, PCBs etc) will be required for the work or kept on site.

Disposal of any wastes into drainage ditches, rivers, other watercourses, agricultural fields and public areas is prohibited. Refuse may only be disposed of at the Tafaigata Landfill.

Disposal by burning is not anticipated or authorised and is also prohibited.

#### **4.8 Septic Waste Disposal Methods**

As no reticulated sewerage system is available, septic or holding tanks will need to be installed where the Contractor's site establishment includes ablution facilities (quarry and laydown area).

Any temporary toilets and disposal or treatment of wastewater will be in accordance with the MNRE SWM Department & Employer's Engineer requirements and approved by SAA and PUMA.

Any septic tanks will have suitably scaled infiltration fields with the tank being periodically emptied by an approved waste removal contractor using specialist trucks and taken to the designated area at Tafaigata landfill.

At some times portable toilets may be considered for use while work is underway in the remoter parts of the Faleolo site. These will be regularly emptied by a licensed commercial septic operator.

### **5 Worker Induction and Training:**

The objectives and provisions of this WMP will be included in the Project Induction require to be completed by all personnel working on the Faleolo project sites. This induction will educate and inform all project employees about the waste management provisions established to give physical effect to the WMP. The Project Induction will be delivered in Samoan for Samoan speakers.

### **6 Monitoring & Audit**

Effective implementation of this Plan will be monitored by the HSM and documented by periodic inspections and audits, including the Downer Site Condition Assessment (SCA), a copy of which is given in Appendix 6.

Operators tasked with removing waste of the various types identified above will be subject to commercial arrangements and any non-performance may result in termination of service and engagement of another operator.

***Persistent non-compliance by Downer staff will be handled by the employee disciplinary process.***



## **Appendix 1: Extracts from PESMP (v6 April 2017)**

### **Mitigation Measures: Section 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.

### **Mitigation Measures: Section 8.9 SOLID WASTE MANAGEMENT**

The Contractor will develop a Solid Waste Management Plan (SWMP) 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.

## **Appendix G PESMP Implementation Plan Guidelines**

### **WASTE MANAGEMENT IMPLEMENTATION 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.



## Appendix 2: Key Extracts From Waste Management Act 2010

**8. Designation of approved waste management operators – (1)** At the commencement of this Act and subject to subsection (2), the Ministry shall be the approved waste management operator for all areas of Samoa.

**(2)** The Minister, acting on the advice of Cabinet, may determine any appropriate entity to be a waste management operator for any designated waste management service area, and may replace a waste management operator with another appropriate entity.

**9. Registration and licensing of waste operators – (1)** All landfill sites and waste dumps in Samoa must be licensed by the Ministry, which may impose any conditions in relation to the operation of the site or dump under the licence.

**(2)** The registration and licensing of other waste management facilities and operators may be required in accordance with Regulations made under this Act.

**(3)** The Minister may authorise an approved waste management operator to discharge the responsibilities of registering and licensing any facility or operation under this Act or the Regulations made under this Act, except a facility or activity of that approved operator.

**(4)** It is a condition of a licence issued under this section that the licensee shall comply with all legal requirements, applying to development controls, environment protection and the health and safety of workers in the workplace.

**(5)** A person who operates a landfill site, a waste dump or any waste facility of operation which is required to be licensed under subsection (2):

(a) without a licence issued by the Chief Executive Officer; or

(b) in breach of any condition of a licence granted under this section, –

commits an offence and is liable to a fine not exceeding 100 penalty units or to imprisonment for a term not exceeding 1 year, or both.

**20. General offences related to wastes – (1)** A person who deposits or dumps wastes at a place other than an approved landfill or waste dump so as to cause pollution to a public area or to land belonging to the government or to another person commits an offence and is liable upon conviction to a fine:

(a) not exceeding 50 penalty units or to imprisonment for a term not exceeding 3 months, or both, for an individual; or

(b) not exceeding 100 penalty units, or to imprisonment for a term not exceeding 6 months, or both, for a corporation, or an individual who has committed an offence against this section on a previous occasion.

**(2)** A person who:

(a) throws or deposits any waste;

(b) discharges or permits the discharge of any waste; or

(c) causes the depositing or discharge of any waste,

on or in the vicinity of a roadway, vacant land or foreshore, or into any river, stream, creek, pool, well, lake, mangrove or the sea commits an offence and is liable upon conviction to a fine—

(i) not exceeding 50 penalty units, in the case of an individual; or

(ii) not exceeding 100 penalty units, in the case of a corporation, or an individual who has committed an offence against this section on a previous occasion.

**(3)** A person who disposes of wastes from residential or commercial premises in a public waste receptacle that is designated as not being for the disposal of such wastes, commits an offence and is liable upon conviction to a fine:

(a) not exceeding 5 penalty units, for an individual; or

(b) not exceeding 20 penalty units, for a corporation, or an individual who has committed an offence against this section on a previous occasion.

**(4)** Any person who:

- (a) damages, interferes with or removes any property or sign at an approved landfill or waste management facility; or
  - (b) enters any approved landfill or waste management facility without authority, – commits an offence and is liable upon conviction to a fine not exceeding 10 penalty units.
- (5) A person who impedes, hinders or obstructs:
- (a) an officer of an approved authority in the exercise of a function or power under this Act; or
  - (b) any contractor engaged by an approved waste management operator to undertake a waste management service, –
- commits an offence and is liable upon conviction to a fine not exceeding 10 penalty units.

**21. Offences related to hazardous wastes – (1)** A person who imports into Samoa any toxic or hazardous wastes, except in compliance with international obligations applying to Samoa, commits an offence and is liable upon conviction to a fine not exceeding 1,000 penalty units or to imprisonment for a term not exceeding 5 years, or both.

**(2)** A person who arranges for the movement of toxic or hazardous wastes into, out of or within Samoa, or for their storage or disposal so as to cause a breach of an international obligation applying to Samoa commits an offence and is liable upon conviction to a fine not exceeding 1,000 penalty units or to imprisonment for a term not exceeding 5 years, or both.

## **PART 4**

### **WASTE MANAGEMENT OPERATIONS**


**24. Functions relating to waste management operations** – The functions of approved waste management operators may include responsibilities to:

- (a) provide commercial, industrial and residential waste collection services;
- (b) the management and operation of waste disposal facilities;
- (c) the sound management of landfill areas and approved dumping and waste storage sites that incorporate comprehensive environmental management systems, including leachate containment and management measures;
- (d) the provision of appropriate waste treatment, storage and disposal facilities;
- (e) the provision of waste management services to aircraft and ships;
- (f) the promotion of recycling and the implementation of measures to minimise wastes having particular adverse implications for human health and the environment;
- (g) monitoring and reporting on the effects of wastes on human health and the environment, and cooperating with public health and environment officers in the discharge of their responsibilities relating to regulating and monitoring wastes and monitoring waste management processes and facilities;
- (h) the preparation, adoption and enforcement of rules, operating manuals, codes of practice and standards relating to the wastes management services and facilities provided by or under the control of the operator;
- (i) implementing litter and waste control measures;
- (j) the preparation of reports and the compilation of statistics relevant to the management of wastes in Samoa, and the regular reporting of such matters in accordance with this Act;
- (k) raising public awareness of matters concerning the minimisation of the generation of wastes and the effective management of wastes;
- (l) the formulation and implementation of policies, programs and initiatives aimed to reduce the generation of wastes; and
- (m) performing any other functions provided for by law or vested in the operator by the Ministry.

## Appendix 3: IFC General EH & S Guidelines – Section 1.6 Waste Management

**IFC**  
International  
Finance  
Corporation  
a World Bank Group

Environmental, Health, and Safety (EHS) Guidelines  
GENERAL EHS GUIDELINES: ENVIRONMENTAL  
WASTE MANAGEMENT

  
WORLD BANK GROUP

## 1.6 Waste Management

Applicability and Approach .....	46
General Waste Management .....	47
Waste Management Planning .....	47
Waste Prevention .....	47
Recycling and Reuse .....	48
Treatment and Disposal .....	48
Hazardous Waste Management .....	48
Waste Storage .....	48
Transportation .....	49
Treatment and Disposal .....	49
Commercial or Government Waste Contractors .....	49
Small Quantities of Hazardous Waste .....	50
Monitoring .....	50

### Applicability and Approach

These guidelines apply to projects that generate, store, or handle any quantity of waste across a range of industry sectors. It is not intended to apply to projects or facilities where the primary business is the collection, transportation, treatment, or disposal of wastes. Specific guidance for these types of facilities is presented in the Environmental Health and Safety (EHS) Guidelines for Waste Management Facilities.

A waste is any solid, liquid, or contained gaseous material that is being discarded by disposal, recycling, burning or incineration. It can be byproduct of a manufacturing process or an obsolete commercial product that can no longer be used for intended purpose and requires disposal.

*Solid (non-hazardous) wastes* generally include any garbage, refuse. Examples of such waste include domestic trash and garbage; inert construction / demolition materials; refuse, such as metal scrap and empty containers (except those previously used to contain hazardous materials which should, in principle, be managed as a hazardous waste); and

residual waste from industrial operations, such as boiler slag, clinker, and fly ash.

*Hazardous waste* shares the properties of a hazardous material (e.g. ignitability, corrosivity, reactivity, or toxicity), or other physical, chemical, or biological characteristics that may pose a potential risk to human health or the environment if improperly managed. Wastes may also be defined as "hazardous" by local regulations or international conventions, based on the origin of the waste and its inclusion on hazardous waste lists, or based on its characteristics.

Sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial operations needs to be evaluated on a case-by-case basis to establish whether it constitutes a hazardous or a non-hazardous waste.

Facilities that generate and store wastes should practice the following:

- Establishing waste management priorities at the outset of activities based on an understanding of potential Environmental, Health, and Safety (EHS) risks and impacts and considering waste generation and its consequences
- Establishing a waste management hierarchy that considers prevention, reduction, reuse, recovery, recycling, removal and finally disposal of wastes.
- Avoiding or minimizing the generation waste materials, as far as practicable
- Where waste generation cannot be avoided but has been minimized, recovering and reusing waste

APRIL 30, 2007

APRIL 30, 2007

46



**Environmental, Health, and Safety (EHS) Guidelines**  
**GENERAL EHS GUIDELINES: ENVIRONMENTAL**  
**WASTE MANAGEMENT**



- Where waste can not be recovered or reused, treating, destroying, and disposing of it in an environmentally sound manner

- Definition of procedures and operational controls for on-site storage
- Definition of options / procedures / operational controls for treatment and final disposal

## General Waste Management

The following guidance applies to the management of non-hazardous and hazardous waste. Additional guidance specifically applicable to hazardous wastes is presented below. Waste management should be addressed through a Waste management system that addresses issues linked to waste minimization, generation, transport, disposal, and monitoring.

## Waste Management Planning

Facilities that generate waste should characterize their waste according to composition, source, types of wastes produced, generation rates, or according to local regulatory requirements. Effective planning and implementation of waste management strategies should include:

- Review of new waste sources during planning, siting, and design activities, including during equipment modifications and process alterations, to identify expected waste generation, pollution prevention opportunities, and necessary treatment, storage, and disposal infrastructure
- Collection of data and information about the process and waste streams in existing facilities, including characterization of waste streams by type, quantities, and potential use/disposition
- Establishment of priorities based on a risk analysis that takes into account the potential EHS risks during the waste cycle and the availability of infrastructure to manage the waste in an environmentally sound manner
- Definition of opportunities for source reduction, as well as reuse and recycling

## Waste Prevention

Processes should be designed and operated to prevent, or minimize, the quantities of wastes generated and hazards associated with the wastes generated in accordance with the following strategy:

- Substituting raw materials or inputs with less hazardous or toxic materials, or with those where processing generates lower waste volumes
- Applying manufacturing process that convert materials efficiently, providing higher product output yields, including modification of design of the production process, operating conditions, and process controls<sup>50</sup>
- Instituting good housekeeping and operating practices, including inventory control to reduce the amount of waste resulting from materials that are out-of-date, off-specification, contaminated, damaged, or excess to plant needs
- Instituting procurement measures that recognize opportunities to return usable materials such as containers and which prevents the over ordering of materials
- Minimizing hazardous waste generation by implementing stringent waste segregation to prevent the commingling of non-hazardous and hazardous waste to be managed

<sup>50</sup> Examples of waste prevention strategies include the concept of Lean Manufacturing found at <http://www.epa.gov/epaoswer/hazwaste/minimize/lean.htm>





**Environmental, Health, and Safety (EHS) Guidelines**  
**GENERAL EHS GUIDELINES: ENVIRONMENTAL**  
**WASTE MANAGEMENT**



### *Recycling and Reuse*

In addition to the implementation of waste prevention strategies, the total amount of waste may be significantly reduced through the implementation of recycling plans, which should consider the following elements:

- Evaluation of waste production processes and identification of potentially recyclable materials
- Identification and recycling of products that can be reintroduced into the manufacturing process or industry activity at the site
- Investigation of external markets for recycling by other industrial processing operations located in the neighborhood or region of the facility (e.g., waste exchange)
- Establishing recycling objectives and formal tracking of waste generation and recycling rates
- Providing training and incentives to employees in order to meet objectives

### *Treatment and Disposal*

If waste materials are still generated after the implementation of feasible waste prevention, reduction, reuse, recovery and recycling measures, waste materials should be treated and disposed of and all measures should be taken to avoid potential impacts to human health and the environment. Selected management approaches should be consistent with the characteristics of the waste and local regulations, and may include one or more of the following:

- On-site or off-site biological, chemical, or physical treatment of the waste material to render it non-hazardous prior to final disposal
- Treatment or disposal at permitted facilities specially designed to receive the waste. Examples include: composting operations for organic non-hazardous

wastes; properly designed, permitted and operated landfills or incinerators designed for the respective type of waste; or other methods known to be effective in the safe, final disposal of waste materials such as bioremediation.

### *Hazardous Waste Management*

Hazardous wastes should always be segregated from non-hazardous wastes. If generation of hazardous waste can not be prevented through the implementation of the above general waste management practices, its management should focus on the prevention of harm to health, safety, and the environment, according to the following additional principles:

- Understanding potential impacts and risks associated with the management of any generated hazardous waste during its complete life cycle
- Ensuring that contractors handling, treating, and disposing of hazardous waste are reputable and legitimate enterprises, licensed by the relevant regulatory agencies and following good international industry practice for the waste being handled
- Ensuring compliance with applicable local and international regulations<sup>51</sup>

### *Waste Storage*

Hazardous waste should be stored so as to prevent or control accidental releases to air, soil, and water resources in area location where:

<sup>51</sup> International requirements may include host-country commitments under the Basel Convention on the Control of Transboundary Movements of Hazardous Waste and their disposal (<http://www.basel.int/>) and Rotterdam Convention on the prior Inform Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (<http://www.pic.int/>)



**Environmental, Health, and Safety (EHS) Guidelines**  
**GENERAL EHS GUIDELINES: ENVIRONMENTAL**  
**WASTE MANAGEMENT**



- Waste is stored in a manner that prevents the commingling or contact between incompatible wastes, and allows for inspection between containers to monitor leaks or spills. Examples include sufficient space between incompatibles or physical separation such as walls or containment curbs
- Store in closed containers away from direct sunlight, wind and rain
- Secondary containment systems should be constructed with materials appropriate for the wastes being contained and adequate to prevent loss to the environment
- Secondary containment is included wherever liquid wastes are stored in volumes greater than 220 liters. The available volume of secondary containment should be at least 110 percent of the largest storage container, or 25 percent of the total storage capacity (whichever is greater), in that specific location
- Provide adequate ventilation where volatile wastes are stored.
- Preparing and implementing spill response and emergency plans to address their accidental release (additional information on Emergency Plans is provided in Section 3 of this document)
- Avoiding underground storage tanks and underground piping of hazardous waste

### *Transportation*

On-site and Off-site transportation of waste should be conducted so as to prevent or minimize spills, releases, and exposures to employees and the public. All waste containers designated for off-site shipment should be secured and labeled with the contents and associated hazards, be properly loaded on the transport vehicles before leaving the site, and be accompanied by a shipping paper (i.e., manifest) that describes the load and its associated hazards, consistent with the guidance provided in Section 3.4 on the Transport of Hazardous Materials.

### *Treatment and Disposal*

In addition to the recommendations for treatment and disposal applicable to general wastes, the following issues specific to hazardous wastes should be considered:

#### **Commercial or Government Waste Contractors**

In the absence of qualified commercial or government-owned waste vendors (taking into consideration proximity and transportation requirements), facilities generating waste should consider using:

Hazardous waste storage activities should also be subject to special management actions, conducted by employees who have received specific training in handling and storage of hazardous wastes:

- Provision of readily available information on chemical compatibility to employees, including labeling each container to identify its contents
- Limiting access to hazardous waste storage areas to employees who have received proper training
- Clearly identifying (label) and demarcating the area, including documentation of its location on a facility map or site plan
- Conducting periodic inspections of waste storage areas and documenting the findings
- Have the technical capability to manage the waste in a manner that reduces immediate and future impact to the environment
- Have all required permits, certifications, and approvals, of applicable government authorities



## Environmental, Health, and Safety (EHS) Guidelines GENERAL EHS GUIDELINES: ENVIRONMENTAL WASTE MANAGEMENT



- Have been secured through the use of formal procurement agreements

In the absence of qualified commercial or government-owned waste disposal operators (taking into consideration proximity and transportation requirements), project sponsors should consider using:

- Installing on-site waste treatment or recycling processes
- As a final option, constructing facilities that will provide for the environmental sound long-term storage of wastes on-site (as described elsewhere in the General EHS Guidelines) or at an alternative appropriate location up until external commercial options become available

### Small Quantities of Hazardous Waste

Hazardous waste materials are frequently generated in small quantities by many projects through a variety of activities such as equipment and building maintenance activities.

Examples of these types of wastes include: spent solvents and oily rags, empty paint cans, chemical containers; used lubricating oil; used batteries (such as nickel-cadmium or lead acid); and lighting equipment, such as lamps or lamp ballasts. These wastes should be managed following the guidance provided in the above sections.

### Monitoring

Monitoring activities associated with the management of hazardous and non-hazardous waste should include:

- Regular visual inspection of all waste storage collection and storage areas for evidence of accidental releases and to verify that wastes are properly labeled and stored. When significant quantities of hazardous wastes

are generated and stored on site, monitoring activities should include:

- Inspection of vessels for leaks, drips or other indications of loss
- Identification of cracks, corrosion, or damage to tanks, protective equipment, or floors
- Verification of locks, emergency valves, and other safety devices for easy operation (lubricating if required and employing the practice of keeping locks and safety equipment in standby position when the area is not occupied)
- Checking the operability of emergency systems
- Documenting results of testing for integrity, emissions, or monitoring stations (air, soil vapor, or groundwater)
- Documenting any changes to the storage facility, and any significant changes in the quantity of materials in storage

- Regular audits of waste segregation and collection practices
- Tracking of waste generation trends by type and amount of waste generated, preferably by facility departments
- Characterizing waste at the beginning of generation of a new waste stream, and periodically documenting the characteristics and proper management of the waste, especially hazardous wastes
- Keeping manifests or other records that document the amount of waste generated and its destination
- Periodic auditing of third party treatment, and disposal services including re-use and recycling facilities when significant quantities of hazardous wastes are managed by third parties. Whenever possible, audits should include site visits to the treatment storage and disposal location

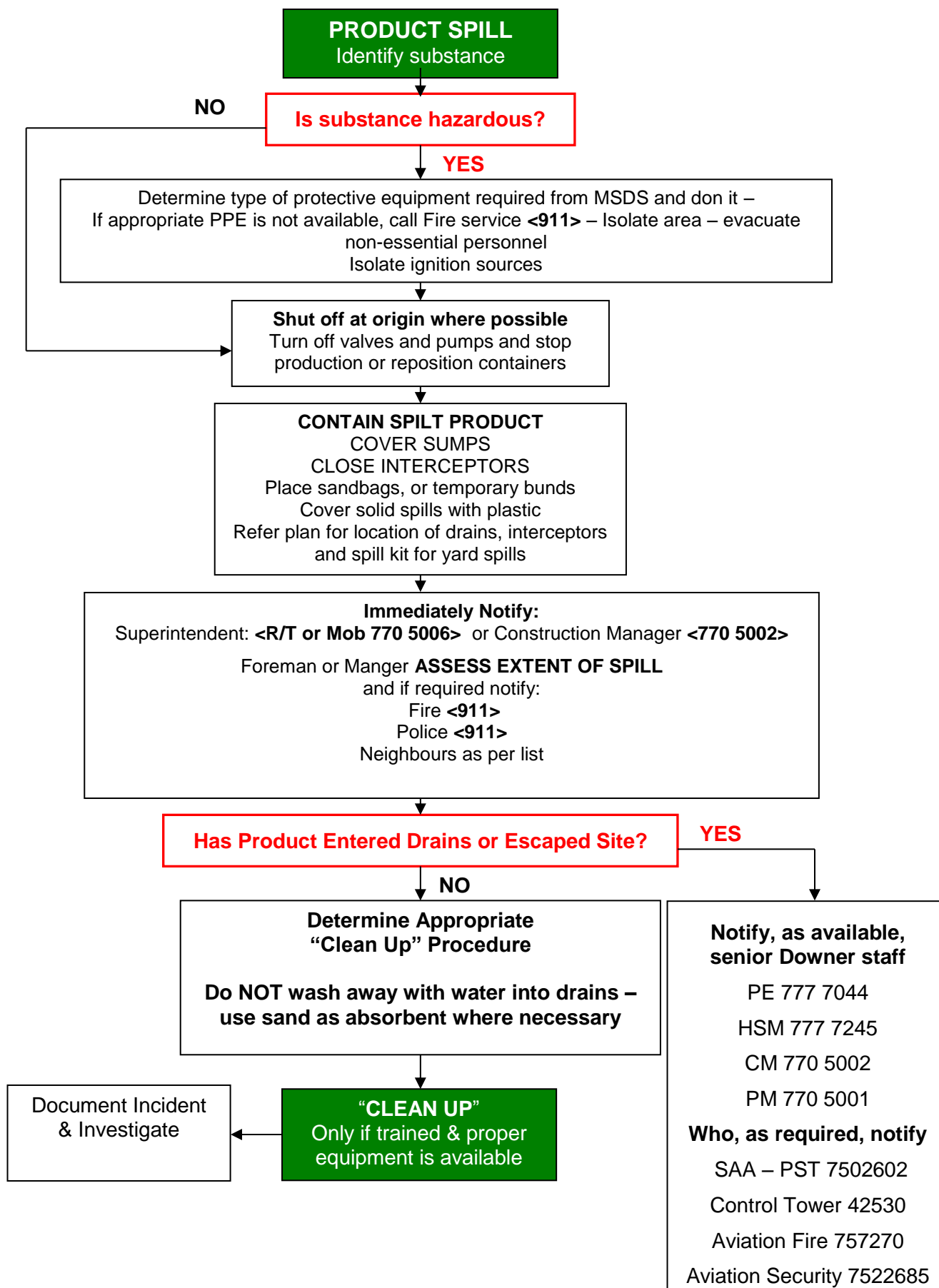


## Appendix 4: Waste Management Register

### Waste Management Register

Waste Generated	From Activity	Approx. Quantity / month	Onsite Storage	Disposal/Treatment collected by	Disposal Site	Reduction Target	Reduction Actions
Populate table with known waste quantities; then use information to identify areas where reductions can be made.							
General office waste							
Commercial waste							
Secure waste							
Clean fill							
Recyclables							
Metals							
Organic							
Hazardous Waste: Total/Waste Oil							
Septic Sludge							
Other							

## Appendix 5: Emergency Spill and Runoff Response Procedure



## Appendix 6: Site Compliance Assessment



### SITE COMPLIANCE ASSESEMENT

Contract **Faleolo International Airport**

Project Manager

Inspection Date

Time

MANAGEMENT	Compliance	Non Compliance	Comments
Are the CESMP & Quality Management Plan on site?			
Are Job START/Tool Box Meetings being held at designated intervals?			
Is the Site Supervisor on site? Who?			
Are the Emergency Contacts and Emergency Responses sheets on site and visible?			
Have all employees been Inducted as to Site Safety and Hazards?			
Have subcontractors been inducted as to Site Safety and Hazards?			
Are there relevant safety analysis and work instructions on site?			
TRAFFIC MANAGEMENT	Compliance	Non Compliance	Comments
Has a Traffic Management Plan been established?			
Is site laid out in accordance with the TMP? Is it effective?			
Is a person in charge of Traffic Management? Who?			
Are signs & cones etc clean and in good condition?			
Are unnecessary traffic controls removed at the end of each shift?			
Are traffic routes clearly and properly defined?			
Is the pavement maintained & clear of potholes, loose metal & debris?			
Are signs & provisions for pedestrians clear?			
ENVIRONMENTAL MGMT			

Has the CESMP been approved & briefed to staff?			
Is a copy of the Erosion & Sediment Control Plan, inc layout diagrams, on site?			
Are silt fences, sediment/grit traps, diversion drains etc in correct ESCP location and maintained?			
Any noise or dust nuisance?			
Replanting and restoration work done as required?			
Are all containers labelled & without leaks?			
Hazardous materials stored in safe & appropriate manner? Bunds & signs?			
Spill kits present? Any visible spills?			
Are MSDS sheets available?			
<b>WORK SITE</b>	<b>Compliance</b>	<b>Non Compliance</b>	<b>Comments</b>
Tidy & free of trip hazards, obstacles & clutter? Good housekeeping?			
Pedestrian ways clearly indicated and accessible?			
Are safety barriers& warning signs erected where necessary?			
If working at night, is adequate lighting provided?			
Buoyancy aids/life jackets provided when working adjacent to water?			
<b>PERSONNEL</b>	<b>Compliance</b>	<b>Non Compliance</b>	<b>Comments</b>
Have site staff been briefed and inducted on CESMP?			
Is high visibility clothing provided & being worn?			
Is adequate Personal Protective Equipment & clothing provided?			
Is the PPE provided being worn?			
Workers trained in work underway?			
<b>VEHICLES</b>	<b>Compliance</b>	<b>Non Compliance</b>	<b>Comments</b>
Do all vehicles have current WoF/CoF/road worthiness?			
Are vehicles painted in high visibility colours?			

Are vehicles clean and tidy?			
Are vehicles and plant not in use parked away from work area?			
<b>FACILITIES</b>	<b><u>Compliance</u></b>	<b><u>Non Compliance</u></b>	<b><u>Comments</u></b>
Are the site office/smoko sheds clean and tidy?			
Is there a toilet on site, and is it clean, maintained, and emptied?			
Is there a first – aid kit available and in a known location?			
Is there a fire extinguisher available, certified and in a known location?			
Is there fresh drinking water available on site?			
Are there hand washing cleaning materials on site?			
<b>WASTE MANAGEMENT</b>	<b><u>Compliance</u></b>	<b><u>Non Compliance</u></b>	<b><u>Comments</u></b>
Is General Waste being sorted into recycling, reuse and refuse streams? [with the recycling stream sorted into plastics, tins bottles and paper etc]			
Are the components of the General Waste stream appropriately stored? [Containers labelled & of adequate size (no overflow or FOD potential)].			
Is waste (whether recycle, reuse, refuse, septic or hazardous) being securely transported in suitable vehicles by operators approved under the WMA when taken off site for disposal?			
Are Hazardous Wastes appropriately identified and stored? [Labels & banded containers]			

## FORMULA

Use the following to calculate compliance rate:

$$\frac{\text{No. of complying items}}{\text{No. of relevant items checked}} = \frac{\quad}{\quad} \times 100 = \quad \% \text{ Compliance rate as a percentage}$$

## INSPECTED BY

Name:

Signed:

Date:

## **NON COMPLIANT ITEMS HAVE BEEN RECTIFIED**

Name:

Signed:

Date:

.....

.....