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ACRONYMS

CCD	Climate Change Division
CEMA	Commodities Export marketing Authority
DSE	Development Services Exchange
ECD	Environment and Conservation Division
EHD	Environmental Health Division
EMSEP	Emergency Management Special Events Planning
HCC	Honiara City Council
HCW	Health Care Waste
JICA	Japan International Cooperate Agency
MECM	Ministry of Environment, Conservation and Meteorology
MHMS	Ministry of Health and Medical Services
NCSA	National Capacity Self Assessment
NGO	Non Government Organization
NRH	National Referral Hospital
NSWMS	National Solid Waste Management Strategy
PET	Polyethylene Terephthalate
SIBC	Solomon Islands Broadcasting Cooperation
SICHE	Solomon Islands College of Higher Education
SIG	Solomon Islands Government
SIRPF	Solomon Islands Royal Police Force
SMFS	School of Marine and Fisheries Studies
SNR	School of Natural Resources
SPREP	Secretariat of the Pacific Regional Environment Programme
TA	Technical Assistant
TOR	Terms of Reference
TWG	Technical Working Group
UNDP	United Nation Development Programme
WWF	World Wide Fund
WHO	World Health Organization
UNESCO	United Nations Educational, Scientific and Cultural Organization

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- Bobby Pattison- Chief Environmental Health Management Officer (MHMS)
- Alison Sio- Infection Control Officer (National Referral Hospital MHMS)
- Esther Richards- Solid Waste Officer (SPREP)

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Most important we extend our words of thanks to the funding organization, JICA through SPREP. Without your financial support the development of this strategy through the workshop would not be possible.

FOREWORD



Solid waste management is becoming an acute problem in Solomon Islands as urban population increases and the quantities of waste materials requiring management increases. These problems involve the uncontrolled dumping of rubbish in public places, a lack of effective planning and implementation of existing waste management plans, lack of sustainable funding, ineffective legislations and many more.

In response to the increasing problems and concerns on solid waste management, the government through my ministry is developing this strategy as an approach to improving the management of solid waste in the long term. However the management of waste will continue to be a key challenge for present and future generations.

The government in establishing the Ministry of Environment, Conservation and Meteorology recognize the need for better environment management in which waste management is a major priority, as stated in its 2008 - 2010 Corporate Plan. The ministry is therefore collaborating with partner organizations; the SPREP and JICA to help facilitate the development of this national solid waste management strategy.

The NSWMS has involved extensive consultation throughout its development with other ministries, civil societies and in particular, with provincial government representatives. The NSWMS outlines the solid waste priority issues in Solomon Islands and identifies strategies to address them.

The strategy is a step forward to ensuring sound environmental management in the area of solid waste management in Solomon Islands.

The Government is grateful for the financial and technical support provided by JICA and SPREP in facilitating workshops for the development of the National Solid Waste Management Strategy for Solomon Islands.

I urge the participation and support of bilateral and multilateral donors in the implementation of this strategy to ensure that both economic growth and environmental quality are maintained for present and future generations.

Hon Gordon Darcy Lilo (MP)
Minister for Environment, Conservation and Meteorology

EXECUTIVE SUMMARY

Effective solid waste management has been a major concern for Solomon Islands for a very long time and a number of attempts have been made to develop a National Solid Waste Management Strategy for the country. The concerns about waste have been raised by various stakeholders and community members in the city and the wider provinces. The generation and disposal of wastes has direct and indirect linkages to human welfare and economic development. For instance, potential for contamination of food supplies can have impacts on local markets or revenue from export crops. Moreover, there are numerous health and environmental hazards that arise when wastes are poorly managed and disposed.

The challenges of solid waste management in the country faces multiple and complex issues such as; improper waste receptacles, collection schedule not adhered to, lack of waste segregation or minimization of waste to dump, dump live past their normal life span due to inability to find another suitable site for sanitary landfill, land tenure problems, rapid growth of population, lack of data on waste volumes and of course the human attitude problems. The challenges require a corporate and practical approach from all national, provincial and community stakeholders which includes the government ministries, private sectors, civil society and different community groups such as men, women, youth and children.

Currently, Solomon Islands do not have any national solid waste management strategy in place to coordinate the issue of solid waste. In addition to that, there is no waste management legislation of its own. Waste issues are addressed under different legislations of different government ministries and divisions. These need to be incorporated into one waste management legislation to increase its effectiveness.

The strategy describes the current waste management practices in Solomon Islands, outlines priority waste management issues, identifies key objectives, and draws the proposed way forward in the action plan. The proposed action plan details programs that are to be implemented at national, provincial and community levels. The strategy is developed to provide a mechanism from which waste management activities can be developed in the future.

The strategy focuses on the following major priority themes, which were identified by the working groups:

- National Legislation/Policy
- Waste Characterization
- National (and Provincial) Waste Management committee
- Waste Minimization
- Improper disposal facilities
- Lack of Political will and support
- Research and Development

- Awareness, Communication and Education
- Technical capacity
- Public-private partnership/community participation
- Sustainable financing and resourcing
- Acquisition of land
- Supporting infrastructure and equipment
- Inter-agency meetings
- Human resources, capacity building, commitment
- Collection Systems

The priority themes and their implementation strategies are detailed in the Action Plan with a broad aim and specific objectives. This strategy has been developed with the understanding that it is an evolving document, therefore, the programs are to be implemented over the next 4-5 years and will have to be reviewed periodically as and when appropriate and may need to be adapted to address practical realities, changing needs and new priorities.

The NSWMS will initiate action by the government, private sectors and civil society and will conclude in the implementation of a solid waste management system for Solomon Islands. Critical factors that might affect the successful implementation of the strategy will be securing the necessary financial and human resources, and receiving the commitment, support and input of all stakeholders.
The NSWMS is presented in three parts. These are as follows:

- **Part One:** sets out the motivation for a NSWMS, introduces the background of its development, explains the strategy development process, sets out the scope of the strategy, identifies key objectives, and charts the proposed way forward.
- **Part Two:** describes the background of waste management in Solomon Islands. This includes the existing scenario, existing policies and guiding principles.
- **Part Three:** is the action plan that provides detailed actions to deal with the priority initiatives, proposed time schedules, requirements and implementation process.

PART ONE

1.0 INTRODUCTION

The Solomon Islands are currently faced with environmental, social and economic risks directly related to waste. Therefore, there is an urgent need to develop better ways to manage waste in a more sustainable approach. The absence of such strategy for the last 30 years in the Solomon Islands has contributed to problems such as lack of proper landfill, lack of coordination and management, outdated legislation and lack of implementation of existing legislation, unsustainable methods of waste disposal and many more.

The development of this solid waste management strategy is an urgent priority for Solomon Islands as it faces increased and complex problems linked to solid waste. The development of this strategy will help Solomon Islands to collate its solid waste issues into one document which can help the government, private sector, civil society, communities and individuals to access and be able to identify their priority issues and find ways to address those issues. This strategy was produced after widespread consultation with various stakeholders during a national solid waste management workshop held in early March 2008 and the finalization workshop in March 2009.

Through the workshops we were able to collect ideas and information from government ministries and departments, private sectors, NGOs and specialist bodies. These workshops provided the way forward to carefully consider emerging issues and new ways of managing wastes, including key issues and action plans prepared by the working groups of the workshops.

1.1 The Need and Purpose for a National Solid Waste Management Strategy

The generation and disposal of waste has direct and indirect linkages to social and economic development and most adversely to the environment. Solid waste is generated by social and economic activities, and solid waste in turn also affects these activities that originally give rise to it. Poor waste management has numerous health risks such as water-borne diseases relating to polluted water. Also contamination of food can lead to other health problems. Economically, poorly managed wastes incur cost on cleanup campaigns and disposal operations and can have negative effects on tourism. These risks need to be taken into account and plans for mitigation measures need to be considered.

Currently, waste is being thrown anywhere without regard to the environment and it is now affecting our reefs, lagoons, inshore fisheries, beaches and land. Household and municipal wastes are usually piled on backyards and roadsides without using proper

receptacles, and existing receptacles are usually overflowing with waste due to lack of waste minimization activities and the irregular collection schedule.

On the other hand, the benefits from proper waste management include the enhancement of tourism, reduced health care cost and the maximization of infrastructures such as landfill and collection systems.

The purpose of this strategy is to set targets and identify actions on ways to address the existing issues regarding solid waste management in the country. In addition, the strategy will make provision for solid waste management services for all by improving the standard of solid waste collection, as well as transportation, treatment and disposal services and awareness to all communities.

The strategy sets the way forward for all stakeholders including Government ministries and departments, local authorities, producers of commercial and industrial wastes and the civil society to take action.

1.2 Scope

The strategy covers solid wastes generated from these sources: household, commercial, industrial, agricultural, demolition, construction and ships wastes. The solid waste issue is the most pressing and visible one, which is currently affecting other sectors of development such as health and tourism.

While liquid, gaseous, chemical and hazardous wastes may not be the focus of this strategy, the mechanisms in this strategy must also consider the mitigation of their impacts, many of which, should be addressed through other initiatives.

1.3 Key Objectives

The key objectives of the National Solid Waste Management Strategy are to:

- Develop and implement a national waste management policy
- Review all existing regulations relating to waste management and draft specific legislation on waste management.
- Promote waste minimization in all aspects of development.
- Improve and upgrade existing waste management and disposal systems
- Look at ways of improving waste management awareness and education activities
- Provide relevant documented information for politicians and stakeholders and make them aware of the need for their support in waste management
- Provide a guideline template for rural and community level to practice waste management

PART TWO

2.0 BACKGROUND

2.1 Country Information

Solomon Islands is located in the Southwest Pacific about 1,900kms northeast of Australia. It comprises of a scattered archipelago of mountainous islands and coral atolls with a total land area of 27,556 square kilometers, and an Exclusion Economic Zone (EEZ) of 1.34 million square kilometers. Estimates place the population at more than half a million.

Under the independence constitution of 1978, the Solomon Islands is a parliamentary democracy with a ministerial system and a unicameral national parliament. Members of the parliament are elected to four-year terms. The prime minister, who must command a parliamentary majority, selects the cabinet members and the head of state is the British monarch, represented by the governor-general.

The country is divided into 9 provinces, each of which is administered by a Provincial Government. The provinces are: Malaita, Makira-Uluwa, Western, Choiseul, Isabel, Temotu, Renbel, Guadalcanal, and Central. Honiara, located on Guadalcanal Province is the Solomon Islands largest municipal centre, with an estimated population of 54,600 (2003 estimate) and since urban migration is increasing, the population of Honiara is growing rapidly.

The country has a tropical climate and throughout the year it is usually humid with an annual mean temperature of 27 ^{o}C (81 ^{o}F). From December to March, northwest equatorial winds bring hot weather and heavy rainfall; from April to November, the islands are cooled by drier southeast trade winds. Damaging cyclones occasionally strike during the rainy season.

The country has only one international airport which is the Honiara International Airport, formerly known as Henderson International Airport. This is located on the Guadalcanal Island and is eight kilometers from the capital Honiara.

2.2 Institutional Arrangements

At the national level, the Ministry of Health and Medical Services (MHMS) is responsible for waste management operations through the Environmental Health Division (EHD). In Honiara, the Honiara City Council Environmental Health Division is responsible for the management of wastes. This is also similar to the rest of the provinces in which health officials seconded from the Environment Health Division of the MHMS are also directly involved in the management of wastes.

The Environment and Conservation Division in the Ministry of Environment, Conservation and Meteorology is mostly responsible for the waste regulatory and policy issues. It therefore works closely with the Environment Health Division and other stakeholders in coordinating the development of the waste strategies, policies and regulations.

There is no institutional arrangement with rural areas outside of the provincial towns and therefore this is a gap that needs to be addressed.

2.3 Waste Generation

A characterization study done by Sinclair and Knight in 1998 summarizes a household survey of the solid waste stream undertaken in Honiara in 1990. The waste composition that was recorded during that study is given in table 2.1

Table 2.1: Waste Composition in Honiara in 1990

Waste Type	Weight %
Vegetable /Putrescible Material	16.7
Paper	2.2
Metals	8.2
Glass/Ceramics	1.9
Textile	0.1
Plastics	3.9
Bones	0.7
Miscellaneous (small pieces of mostly organic matter)	66.3

The data in the table 2.1 shows that there is approximately 83% organic waste in the domestic waste stream. All of this material could be composted. Based on the results of the study above, it was estimated that the average daily waste generation by the domestic sector was 0.38kg/person/day and its bulk density was 270kg/m^3. There was no data generate for commercial and industrial waste.

2.4 Waste Types

The most common types of solid wastes generated in urban as well as rural areas are the following:

Plastic Bags

Plastic pollution is quite common in public areas especially in urban centers where commercial activities are located. It is one of the major environmental pollutants and a

key concern in Solomon Island. Since it takes longer time for plastic to degrade, it persists in the environment and causes visual impacts to the tourism industry.



Plastics pile along public areas Honiara © Hirome H/2008



Ranadi dumpsite © Hirome H/2008

PET Bottles

PET bottles include plastic bottles such as mineral water bottle, Schweppes bottles lemonade bottles etc. In Solomon Islands, Szetu Enterprises Limited is one of the major producers of such products. These plastic bottles are common in rubbish piles everywhere. Plastic containers are rapidly replacing many of the local traditional packaging materials. They are often reused for storing water, or other forms of liquid or solid grain products.

Aluminum Cans

Aluminum cans are usually collected for recycling. However, it is evident that aluminum cans are still found lying on roadsides, valleys, rubbish piles and all around town. This is due to various reasons. For instance, people are not aware of existing buyers of aluminum can. Another reason may be that there is lack of incentive for selling aluminum cans. Price per empty can paid by recycling companies are sometimes usually not attractive. In general, there is no public awareness for the public on the importance and value that aluminum can recycle has on the economic development of our country.

Biodegradable Wastes

Biodegradable wastes include wastes that are capable of undergoing the process of decomposition. They consist of organic waste such as paper, kitchen waste (e.g potato peelings), waste food (e.g. left overs from restaurants, spoiled fruits or vegetables from market), and garden waste (e.g. grass clipping).

2.5 Waste Collection

Most provinces have a collection system in place coordinated by provincial departments such as Environmental Health, Works and Planning Divisions. In Honiara, collection of household wastes is often done by contractors employed by the Honiara City Council. The town is divided into residential zones for collection purposes and contractors generally use 3 tonne open trucks for collection. However the times and days for collection are not reliable and wastes are often left uncollected for longer periods of time.

In the case of rural settlements in and around Honiara, the domestic wastes produced are not collected by the Honiara City Council collectors. This may be due to poor road access to these areas. As a result, wastes that are generated in these areas are usually dumped in drains and are washed away during rainy periods into streams or rivers connected to the drains and eventually end up in the sea.

2.6 Waste Disposal

There are no sanitary landfills in the Solomon Islands. The largest dump in the country is located in Honiara and is called Ranadi Dump; it is used for domestic, commercial and industrial wastes collected by Honiara City Council as well as individual industries and the general public. Ranadi is located on flat reclaimed land adjacent to mangrove swamps, about 6 kilometers from town in the Ranadi industrial area. The dumpsite is partially fenced with a gate but there is no gatehouse. It is an open dump with an area of stagnant, anaerobic water in the middle, and with no provision for daily cover although a limited amount of covering occurs on an ad hoc basis.

There is no segregation of waste at the dump and all types of wastes are accepted. Often there are controllers on the dumpsite who direct vehicles where to dump their loads. Usually there are also scavengers working at the dump, collecting scrap metal and other goods of value.



Honiara dumpsite © Hirome H/2008

Ranadi Dump has no leachate treatment or control in place. In addition, the lack of regular soil covering has caused a significant fly problem and emission of unbearable odours. Combustible rubbish is often burnt uncontrollably at the dump to reduce its volume.

2.7 Special Wastes

Special wastes discussed here include other types of solid waste such as health care wastes, quarantine wastes, end of life tyres, fridges, car bodies, waste electronics and electronic equipments. These types of wastes are presently untreated, some of the parts may be dismantled and reused or recycled but in most cases they are discarded into the environment.

Health care wastes are the wastes generated from health facilities. The wastes generating activities include diagnosis; treatment; prevention of diseases/immunizations and associated research. Hazardous health care wastes includes; infectious; pathological; sharps; pharmaceutical; chemicals; heavy metals; pressurized containers and radioactive. The management for these hazardous wastes are not covered in the action plan of this strategy; however, it is worth mentioning that such hazardous wastes will need to have their own strategy in place to coordinate its management.

Health care wastes have their major sources which are; hospitals; clinics (including private), laboratories and research centers. The sensitivity of such wastes to the public is about visual impacts of HCW and accidents involving HCW.

In the past, there is no management of health care wastes at the National Referral Hospital. Wastes such as amputated body parts, sharps and health care equipments are thrown at the back of the hospital compound near the seashore where they are buried or burnt, leaving the site in an unhygienic environment. Health authorities are initiating ways of improving the health care management in the country.

It is important to note that Solomon Islands has launched a national health care waste management policy in early 2009. This is part recognising the importance of caring for all the clinical wastes generated daily from medical activities conducted in our clinics and hospitals. Improper handling of these harzardous items can lead to infectious diseases.

Amputated legs



Seashore NRH © Alison Sio/2003



NRH Backyard © Alison Sio

Provincial hospitals and clinics experience the same problems that have been presented by the national referral hospital. The use of incinerators might ease management of such special wastes in the provinces. However, currently there is no such provision in some of the provinces.

2.8 Financing

Generally, solid waste management is given a very low priority over the past years. Apparently there is no specific budget for waste management programmes at the national

level. As a result, very limited funds are provided to the solid waste management programmes by the national government and the level of services required for protection of public health and the environment are not attained. For instance, the Environment and Conservation Division has no budget for waste management programmes. It only draws out fund from other budget items to carry out any waste management activity.

The problem is more acute at the local government level; therefore, the financial basis for public services, including solid waste management is weak. As a result, the local municipalities do not have the financial capacity to administer waste management effectively.

2.9 Civil Society Groups and Private Sectors

Solomon Environment Beatification

This organization is addressing waste by beautifying Honiara streets with flower beds. This involves landscaping where unattractive sites in and around Honiara were planted with beautiful trees. This initiative creates an environment that cause people not to throw rubbish in public areas.

B.J.S Agencies Ltd

The local company B.J.S Agencies Ltd was involved in buying of non ferrous scrap metal such as aluminum cans, copper, brass, aluminum, lead, stainless steel etc for recycling purposes. The company then sends these scrap metals and tins overseas for recycling.

Solomon Islands Breweries Ltd

Another company that is involved in recycling was the solbrew company. The company buys empty bottles for recycling at the local factory.



Bottle collection for recycling Kakabona © E. Danitofea/ 2008

PBS Company

PBS is a newly established privately owned local company that collects metals from ship wrecks for recycling. It has been operating for almost four years now. Currently the company is demolishing the former MV Western Queen and MV Ramos III near SICHE Marine School for scrap metal. Apparently, the company has exported 20 containers of scrap metal for recycling to Malaysia.

Lecksmetal Trading

Lecksmetal Trading is another locally owned company established in 2006, which is currently buying scrap metals and aluminum cans in Solomon Islands. The company exports its scrap metals and aluminum cans to Malaysia for recycling.

Such recycling initiatives by the civil society groups and private sectors needs to be recognized and supported for removing solid waste from the country at nearly no cost to the Government but revenue for the government through export taxes.

2.10 Education and Awareness

Public awareness promotions about keeping the environment clean through radio programmes and newspaper are usually undertaken and "Keep Honiara Clean" campaigns where commercial, residential areas and the general public clean up their respective environments are often organised. However, solid waste management is still a key problem faced by the communities around the country especially in the urban centres. Littering and illegal dumping of waste is a major problem, though there is a moderate level of awareness on waste management issues. This is probably because there is lack of knowledge by the general population on the impacts of solid waste on the natural environment as well as the social and economic development of the country.

Waste minimization and management programmes are important to reduce the amount of waste produced. Therefore, public awareness and education are essential to ensure success to the programmes. Currently there is insufficient and inconsistent data which requires the need to develop and implement relevant and consistent information systems on waste minimization and management. Community programs could also be developed to enhance community understanding of waste generation issues and management. In addition other businesses, industries, government and institutions such as schools must be targeted.

2.11 Existing Policies

The following legislations covers aspects related to the management of waste in Solomon Islands:

National Legislations

The Environment Act 1998

The Act makes provision for the protection and conservation of the environment. With regards to waste control and management, section 3 (c) of the Act specifies the following as part of its objectives:

> (a)"to reduce risks to human health and prevent the degradation of the environment by all practical means, including the following-

i. regulating the discharge of pollutants to the air, water or land
ii. regulating the transport, collection, treatment, storage and disposal of wastes
iii. promoting recycling, re-use and recovery of materials in an economically viable manner

(b) to comply with and give effect to regional and international conventions and obligations relating to the environment. With regards to waste management the conventions include:

i. Waigani Convention which Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region.
ii. Stockholm Convention on Persistence Organic Pollutants is a global treaty to protect human health and the environment from chemicals that remain intact in the environment for long periods, become widely distributed geographically and accumulate in the fatty tissue of humans and wildlife.

The Environmental Health Act 1980

An Act to make provision for securing and maintaining environmental health and for matters connected therewith or incidental thereto.

Shipping Act 1998

Subject to this Act and to any other law, and subject to any such reservations as Solomon Islands may make, the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, incorporating the 1981 and 1983 amendments known as "MARPOL 73/78" have the force of law in Solomon Islands.

The MARPOL Convention is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. It is a combination of two treaties adopted in 1973 and 1978 respectively and updated by amendments through the years. The Convention includes regulations aimed at preventing and minimizing pollution from ships - both accidental pollution and that from routine operations.

Ports Act 1990

This Act provides for the establishment of a corporation to be known as the Solomon Islands Ports Authority, for the transfer to the authority of certain of the port and habour undertakings of the Government, for the functions of the authority and for purposes connected with the matters aforesaid.
As such Part VIII of the Act provides for the power of authority to make port rules which includes “regulating, whether by way of prohibition or otherwise, the floating of timber, casks or other objects in any port or the approach to any port and the casting or

depositing of any dead body, ballast, ***rubbish*** or other thing into any port or the approach to any port and providing for the forfeiture of anything found in any port or the approach to any port in contravention of this Act and for the redemption on payment of expenses and a penalty, within a time limit to be fixed, of anything so forfeited"

Agricultural Quarantine Order 1995

The order provides for the removal and disposal of any refuse or waste matter from a vessel or aircraft. The order gives provision of amenities for incineration where the Authority (Civil Aviation Division in relation to an airport and Solomon Islands Ports Authority in relation to a port) shall provide at its international ports or international airports the facilities such as an incinerator for the disposal of refuse from ships or aircrafts and means of conveyance of the refuse from such ship or aircraft to the incinerator.

Provincial/Local Government Legislation

The Honiara (Refuse Disposal) By-law 1994

This By-law is supposed to provide for the use of standard receptacles as approved by the council and the means of disposal. The receptacles must be in good condition and taken care of. Fines are also incurred for offenders to the By-law. Currently, this By- law is not enforced effectively.

The Honiara Litter By-law 1994

This By-law is supposed to prevent littering in public places, and the offenders are liable for fines if they do so. This is not enforced effectively at present.

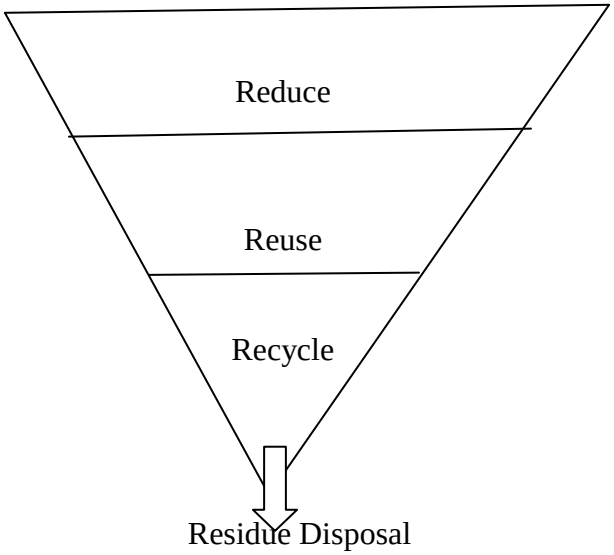
Provincial Ordinances

After consultation with provincial participants, only two provinces have litter ordinances. They are Isabel and Western Province. Though such ordinances are in place, there is no proper coordination which leads to lack of enforcement.

2.12 Guiding Principles

Waste Hierarchy

The Waste Hierarchy principle includes the 3 R's principles which are; Reduce; Re-use and Recycle. Waste minimization through reduce, separation at source, reuse and recycling prevents the creation of wastes and reduces the quantity and the impacts of waste that is generated. The waste hierarchy below emphasizes the need to concentrate on waste minimization and less on final disposal.



Polluter-Pay Principle

Those causing pollution should pay for the cost and bear full responsibility of cleaning up the environment and maintaining ecological diversity and health.

Sustainable Development Principle

Sustainable development requires that waste management be carried out in a way that does not place undue social, economic or environmental burdens on either present or future generations.

Extended Producer (Importer) Responsibility Principle

Under Extended Producer Responsibility (EPR), the producers/importers bear a degree of responsibility for the environmental impacts of their products. It includes upstream impacts arising from the choice of materials and manufacturing process and downstream impacts from the use and disposal of products. EPR encourages producers and importers to consider the entire life cycle of their products. It is especially useful for products not easily recovered from the waste stream. EPR encourages businesses to prevent wastes at source, design products to be environmentally friendly and set up take back and recycling schemes.

Consultation Principle

Government at all levels will consult and work with people and organizations throughout the development and implementation of the waste management strategies and action plan.

PART THREE

3. ACTION PLAN

The action plans in this document were developed based on the prioritized key issues identified during the national workshops. It is important to note that there was certain cross cutting issues amongst the action plans. This requires implementing agencies to identify and harmonize its implementation.

There are 12 key issues outlined according to their priorities as follows:

1. Development of National Policy/Legislation
2. Waste Characterization
3. National and Provincial Waste Management Committee
4. Waste Minimization
5. Landfill (Proper Disposal Facilities)
6. Political Will and Support
7. Research and Development
8. Awareness, Communication and Education
9. Private /Public Partnership
10. Sustainable Financing/Resourcing
11. Human Resource and technical capacity building
12. Supporting Infrastructure/Equipment

3.1 Context and Analysis of the Priority Key Issues

3.1.1 Development of National Policy/Legislation

Solomon Islands have the following existing legislations that cover aspects related to waste management.
Environmental Health Act 1980
The Public Health Ordinance 1970 & The Public Health Regulation 1980 (became a regulation under the 1980 Environmental Health Act)
The Honiara Litter By-Laws 1994
The Honiara Refuse Disposal By-Laws 1994
The Environment Act 1998 & Environment Regulation 2008
Shipping Act 1998
Ports Act 1990
Agricultural Quarantine Order 1995
Provincial ordinances (Western & Isabel Province)

However, these legislations need to be reviewed to increase their effectiveness as they lack enforcement and implementation. Some need to be amended to address the changing

nature of today's waste. Therefore, it is best to collate all waste related components of the existing legislations and develop a national policy/legislation specific to waste management.

3.1.2 Solid Waste Characterization and Segregation

In Solomon Islands one of the factors that contribute to the poor management of solid waste is the lack of consistent data on the composition and quantity of solid waste being produced. Data regarding the quantity and composition of solid waste is necessary for the setting of targets for waste reduction, reuse, recycling and will allow the measurement of success of any waste minimization activities. The data will be necessary for the design of a new landfill site for Honiara and provincial towns. Moreover waste segregation will reduce the quantity of wastes to be disposed of to the landfill and this will add a long life span of the landfill.

It is obvious that the highest amounts of waste are biodegradable. Organic wastes makes up the majority of our wastes and is an obvious target to capture resources and save landfill space. Therefore through waste characterization, such waste can be identified to be used for composting, anaerobic digestion, and shredding for direct mulching rather than disposing in the landfill.

With this issue, awareness and education is required to teach people the importance of segregation and how to conduct such activity. For example, segregating wastes at the household level. Moreover, this will get people informed and initiate new ideas on methods of addressing such issues.

3.1.3 National and Provincial Waste Management Committee

Currently there are no existing national (or provincial) waste management committees in Solomon Islands. Consequently, waste management activities are:

1. Done on an *ad hoc* basis
2. Not coordinated
3. Not seen as a priority (at national and provincial levels) and thus neglected
4. Not linked between national and provincial authorities

It is in this context that such national and provincial structured committees need to be formulated to coordinate waste management activities and programs. The committee will function as the coordinator for any waste management programmes. It will link national and provincial authorities on waste related issues and also motivate politicians to prioritize waste management programmes.

3.1.4 Waste Minimization and Cleaner Production

Current legislation for importation of foreign goods and materials needs to consider waste impact issues and therefore the inclusion of selective import of second hand goods for example, could be an option. This could be considered in the action plan for priority 1: when developing waste management legislation.

The difficulty in site acquisition for landfill due to lack of land and land ownership issue is another challenge. This requires an effective waste management system and strengthens the need for waste minimization.

Recycling is a major activity of waste minimization that should be considered. It provides an opportunity to both recover resources for economic development and reduce waste which contributes to reduce pressure on a landfill. In this context, there is a need to support existing recycling initiatives in the country and establish alternative recycling opportunities.

In addition, awareness and education is significant to carry out waste minimization. It is clear from people's attitude and activities that they do not realize the generation of wastes is becoming a threat to the economic, social and environmental livelihood. Very little action has been taken by citizens to minimize waste in all these aspects of life. In such cases, it is important that awareness, education and training on waste minimization must be undertaken at the national, provincial, community, and school levels to build capacity and motivate people to see and feel the importance of waste reduction.

Cleaner production is a concept utilized in industry, which conveys the need to minimize solid waste generation in production processes, and to minimize the impact of the wastes produced on the environment.

3.1.5 Landfill (Proper Disposal Facilities)

Honiara and all the urban centres of Solomon Islands do not have proper landfills. Currently there is the Ranadi dumpsite with no proper management. There is no control in waste disposal and all sorts of rubbish are dumped everywhere. Supporting services are ineffective. Environmental, health & aesthetic value decreases therefore land owners are reluctant to allow their land for amenities such as landfills, cemeteries and incinerators.

People's perspective of a landfill means a waste of land without any worth. That is why lack of land becomes a challenge for waste management facilities. However, there are existing methods of constructing a landfill that will enable reuse of the land at the end of the landfills lifetime. The Fukuoka method is a good example to use (see appendix B). It is a proven technology practically tested in many places in Japan and a few developing countries. It is cost effective and simple and suits a developing country such as Solomon Islands. Samoa is a Pacific Island Country that has tried this system and it works.
Since land ownership is a challenge that hinders access to suitable areas for landfill construction, it is vital that awareness to landowners must be undertaken before construction of any landfill. Through this process, landowners will have ownership of the landfill.

3.1.6 Political Will and Support

It is obvious in Solomon Islands that there is no serious thought of waste management plan in both the national and provincial level by politicians. This is reflected by the insufficient budgets for waste management activities. As a result, waste collection is often inefficient and not effective.

It is in this context that Solomon Islands government must prioritize this waste management strategy in its political agendas. There is a need for information and awareness programmes for politicians and key stakeholders on waste management issues so that they are fully aware and should include such issues in their political party manifestos and work plans. A long term investment on waste management must be in place. Government needs to increase funding for expertise, technical assistance, capacity building and training. Significantly, inclusion of politicians in decision-making boards/committee is required. Political interference in administration and financial procedures should be minimized (include in legislation review process).

3.1.7 Research and Development

In the context of waste management, possible areas of research include the following;

i. Explore alternative treatment options for organic wastes
ii. Evaluate the potential of large scale composting and anaerobic digestion
iii. Collection & Disposal of wastesCapacity of landfill; Bulk of waste; Systems in place e.g. open dumping, incinerations etc; Infrastructure/equipment
iv. Carry out a research to gauge viability of option (ii) for sustainability in light of population in Honiara and the provincial urban centers, geographical locations and current supporting services in place and make recommendations
v. Legislations
   Enforcement; Compliance; Regional/International conventions etc
vi. Behavioral changes
   Training, education, awareness etc

In this Action Plan, research for "Collection and Disposal of Waste" will be outlined as a model for research.

The issues of rubbish collection and waste disposal have been of much concern both at the national and provincial levels. Currently, there is no strategic plan in place to address the issue. For instance, no uniformity in the way waste collection and disposal are carried out. Thus, a need for a research into this issue is important to find out the effective methods of collection and disposal of waste that is suitable to our country's context.

3.1.8 Awareness, Communication and Education

High illiteracy level of the general public is an issue that hinders proper waste management. Therefore, awareness, communication and education are very important areas in addressing waste management. There have been sporadic awareness activities undertaken in the past with some degree of positive impact. e.g. ad-hoc community cleanup campaigns; school clean up; and clean up in urban centers by various groups such as church groups, youths and organizations.

In communication, it is important to know what to communicate; who to communicate with; when and how to communicate issues of waste management. In this way, the message will be effectively taken in by responsible people. However, being informed alone is not adequate for changing of attitudes towards solid wastes; as such it is useful to link these communication and awareness raising efforts to actual action on the ground such as community level demonstration of composting and segregation of wastes.

In the Education System, the existing school curriculum does not have specific subjects on waste, management: however, there is a review on the curriculum to have related topics are integrated into all subjects. Having related topics on waste management or developing a supplementary material on waste management for schools and TVET Institutions should be made compulsory to educate children on waste management issues. Training of trainers is also an important method of spreading information and making impacts on attitude and behavioral changes.

With the action of awareness, communication and education, the lack of technical and financial support usually hinders performance.

3.1.9 Private /Public Partnerships

Lack of positive participation in waste management, insufficient awareness, lack of incentives, insufficient compliance to existing regulation and legislation, inactive enforcement of current regulations, and lack of implementation/policing are some of the existing issues of waste management in relation to private/public partnership.

The establishment of partnership between private sector, public and government ministries and departments can link all these issues to create a positive participation between private and public sectors.

Strengthening this partnership will enhance cooperation and can lead to accomplishment of certain goals and aims of each sector. For instances, partnership can be in terms of financial support, sharing of human resources or technical capacity, sharing of information and sharing costs for infrastructure development.

3.1.10 Sustainable Financing/Resourcing

Current systems are inadequately supported with limited funding and thus are often ineffective. This is due to the fact that waste management was not recognized as a priority issue in the national and provincial level. Therefore grants are not provided and sometimes are diverted to other sectors of development. With such practice, there is no sustainable financing/ resourcing established to achieve long term goals of waste management activities and programs.

Establishing a self supporting financial system for waste management is significant. For instance, opening an account for waste management activities. Money from taxes and levies could go into this account. In addition, fines or fees on waste related activities can be deposited into this account.

3.1.11 Human Resource and technical capacity building

In Solomon Islands, currently there is inadequate knowledge and information about solid waste management. Since waste management is not prioritised, there is lack of awareness and information sharing. Thus people do not take the issue of waste management seriously. A contributing factor to this is due to lack of planning and capacity building. Only a few people undertake specific training and study on waste management courses.

Moreover, the lack of motivating factors and incentives to manage waste seems a challenging issue. It is time responsible authorities create incentives that will motivate people to acquire skills which will build their capacity to address the issue of waste management.

In addition, lack of technical knowledge on how to manage solid waste is an issue that needs attention. There is lack of technical skill on solid waste management. Solid waste management is becoming complex and there are changes due to technical advancement in the modern world today. As a result small island countries like Solomon Islands have to adjust to the changing technology. With this adjustment, building technical capacity and training is required for those involved in waste management activities and programs needs to be undertaken.

Existing organisation training plan on solid waste management might be outdated due to fast technology change. This requires new updated plans with the standards of today's changing technology

All public and private organization must have a designated officer to oversee solid waste management.

3.1.12 Supporting Infrastructure/Equipment

In the context of Solomon Islands the following infrastructures and equipment are identified as priorities that need to be addressed; roads, landfill, equipment such as compact refuse vehicle and incinerators, testing/monitoring equipment and facility, garbage bins and disposal containers.

The current status of road networks does not support efficient waste collection. There is no proper planning of residential locations (increasing squatter settlements in town boundary) and so services provided by the local government cannot reach that far.

Currently the equipment used for storage, collection and disposal of waste are not sufficient to cater for the increasing amount of wastes generated. Honiara City Council for example has only two compact refuse vehicle and the provinces have none. This is not adequate to meet the demands of today's waste. As a result, inappropriate types of vehicles are used to transport waste. Existing special waste incinerators are inadequate to accommodate the waste produced. Also garbage bins/containers are not available and are lacking in some areas. This is an issue that Honiara City Council and the urban centers need to address. Usually there are no proper bins with lids in some locations. Also, use of plastic bags and other available packages is often common. There is also no program in place for testing and monitoring of pollution due to waste.

3.2 Implementing Agencies

The implementing agencies of the action plans include the following:

- Ministry of Environment, Conservation & Meteorology (ECD)
- Honiara City Council
- Environmental Health Division
- Quarantine division
- Customs and Excise
- Ports Authority
- Ministry of Infrastructure and Development (Marine and Works Division)
- Ministry of Police and Justice
- Non Government Organizations
- Provincial Governments
- National Referral Hospital (Infectious Control Unit)
- Ministry of Education and Human Resource Development
- Ministry of Commerce and Trade
- Attorney General Chambers
- Prime Minister's Office (Policy Unit)

The above includes the major implementing agencies; however there are other ministries, departments and organizations that will also assist in the implementation process.

3.3 Key Priority Issues

The key issues outlined are listed accordingly as from the highest priority issues to the lowest priority issues as identified by the workshop participants.

3.3.1 Development and Implementation of National Policy/Legislation

Aim:
To review relevant sections of existing legislations that relate to solid waste management and improve, consolidate and harmonize them into a new National Solid Waste Management Legislation.

Objectives:

1. To review all existing legislation related to solid waste management.
2. Develop a legislation specific to solid waste management to administer the implementation of the solid waste management strategy.
3. To enforce existing legislation

Implementation Strategy:

1. The MECM in consultation with other key ministries will be responsible to appoint a Solid Waste Management Committee with relevant qualification and experience to carry out the review.
2. The MECM will provide the Committee with a TOR. This will include the review design, budget/resource provision and implementation plan.
3. The Committee will conduct the review process and submit final document to MECM for endorsement.
4. The Committee will develop and finalise the draft legislation.
5. Relevant agencies should take appropriate actions to improve awareness of their legislation and dedicate resources to enforcement

Timeframe:

1. Eighteen (18) months
    a. 6 months for implementation of TOR
    b. 12 months for review and draft legislation

Performance indicator:

1. Review meetings/workshops undertaken
2. Reports of review meetings/workshops compiled
3. New Waste Management Legislation in place to be endorsed by the Government

Estimated Cost:

Consultancy for development of Policy	$500 000
Administrative Costs includes logistics, stationeries, Transport etc	$400 000
Total Cost *SI* $900 000	

3.3.2 Waste Characterization and Segregation

Aim:
To characterize solid waste, evaluate potential treatment options for organics, and build capacity of key stakeholders to undertake proper waste characterization studies.

Objectives:
1. To have data on the composition of solid wastes being produced throughout the country.
2. Capacity building for waste managers at national and provincial levels and community leaders.
3. To identify potential treatment options for biodegradable wastes and recyclables suited to local conditions.
4. To educate households on how to separate their wastes.

Implementation Strategy:
1. Carry out waste auditing at the household, commercial, industrial and institutional levels and evaluate treatment options for biodegradable wastes at different levels
2. Use community talks, and the media to spread awareness

Time frame:
Twelve (12) months

Performance Indicator:
1. Waste auditing completed
2. Capacity building activities undertaken
3. Possible recycling options and treatment methods for biodegradables identified.
4. Increased separation of wastes at household level

Estimated Costs:

Consultation (national and provincial)	$200 000
Logistics, stationeries, transport etc	$300 000
Total Cost SI $500 000	

3.3.3 National and Provincial Waste Management Coordination

Aim:
Have National and Provincial Waste Management Committee in place to coordinate waste management programs.

Objectives:
1. To establish a National Waste Management Unit and get it operational
2. To establish a national and provincial waste management committee.

Implementation Strategy:

1. Identify lead Government Agency (MECM). This agency will identify potential stakeholders (government line agencies, provincial reps, NGOs, private sector, community groups, churches, etc) and invite them to serve on the Committees
2. The lead agency will formulate TOR for the committees and then make appointments. Convene an inception meeting to introduce members of the committees their tasks and responsibilities.
   TOR to also include the following considerations:
   a. Include incentives that attracts active participation and sustainability
   b. members not attending committee meetings for three (3) consecutive meetings without genuine reasons to be terminated
   c. Include job title of members not names
   d. Life span of the committee to be three (3) years
   e. Committee should include agencies under Section 3.2 page 24
   f. Strive for gender balance
3. HCC and Provincial Waste Management Committees develop their own solid waste management plans
4. Review, Monitoring, and Evaluation must be in place twice (2) a year

Time frame:
To be established 6 months after National Solid Waste Management Strategy has been endorsed by Cabinet.

Performance Indicator:

1. Lead government agency identified and leading the work
2. Relevant stakeholders identified, invited and appointed to the committees
3. Inception meeting convened with meeting recorded, Action Plan drawn up and adopted.
4. The national and provincial waste management committees operational with tangible result

Annual Estimated Costs:

National Waste Management Unit operational costs	$100 000
National Waste Management Committee operational costs	$500 000
Provincial Waste Management Committee operational costs	$900 000
	Total Costs SI $1 500 000

Other operational costs to be formulated after the committee develops their own solid waste management plan

3.3.4 Waste Minimization and Cleaner Production

Aim:
To reduce solid waste generation throughout the country to ensure only residual wastes go into the dumpsite.

Objectives:

1. To minimize waste
2. To utilize the waste characterization in waste minimization strategies
3. To practice the 3 R's principle: Reduce, Reuse, Recycling
4. To provide incentives to encourage waste minimization activities and cleaner production.

Implementation Strategy:

1. Devise awareness action plan on waste minimization, methods and practices (consider this when implementing action plan 3.3.8 awareness, communication and education)
2. Establish pilot recycle plants for recyclables (PET, aluminum cans etc) and biodegradables (composting and anaerobic digestion). Pilot projects such as promoting small-scale composting with large boarding schools (e.g. Tenaru, Selwyn College, Betikama,) and farmers through Kastom Garden Association. Encourage Sup Sup Garden initiative and pilot a project on semi-commercial composting or anaerobic digestion at the medium scale at a single location and if appropriate at the household level.
3. Develop environmental standards for clean production.

Time frame:
Awareness programmes to be on-going activity
Purchase and establish recycle plants within 6 months

Performance Indicator:

1. The amount of waste generated decreased from year to year
2. Infrastructure acquired and established/installed
3. Two pilot projects established and operational at provincial and national levels
4. Number of awareness activities conducted
5. Incentives provided to private sector

Annual Estimated Costs:

Awareness programmes	$150 000
Purchase of infrastructure and recycle plants	$850 000
	Total Cost SI $ 1 000 000

3.3.5 Landfill (Proper Disposal Facilities)

Aim:
To develop a sanitary landfill for Honiara and upgrade the management of dumpsites in the urban areas.

Objectives:
1. To identify and acquire new sites for landfills in Honiara and other urban centres
2. Construct a proper sanitized landfill in Honiara that can be effectively managed with adequate supporting services in place
3. Improve the management of dumpsites in the urban areas

Implementation Strategy:
1. Conduct feasibility study to identify appropriate sites for new landfills, and negotiate with appropriate land owners.
2. Upgrade the operations and management of dumps in the urban areas by fencing, controlled burning using incinerators, regular covering, etc.
3. Consult with relevant stakeholders from the government ministries, NGOs, private sectors and funding agencies to set up a Technical Working Group (TWG) and engage a consultant/advisor to develop a proposal for the design and construction of a sanitized landfill. TWG and consultant to work under a TOR.
4. TWG & Consultant Inception Meeting convene to develop work plan, budget, and design [with landfill experts] and develop the proposal. Submit proposal to MECM, SPREP, JICA and other possible donors. Should there be approval of any proposal, awareness to landowners, residents, businesses and industries should be carried out before construction of landfill begins.

Time frame:
Phase 1: Planning 6 months
Phase 2: Awareness & Consultation 6 months
Phase 3: Construction 12 months

Performance Indicator:
1. Site for new landfill identified and acquired.
2. Working Group formed and consultant engaged. Following that, meetings held with recorded meetings
3. Work plan, budget and design approved
4. Proposal approved
5. Awareness carried out & quarterly progress reports produced
6. Landfill completed
7. Dumpsites properly managed (no more indiscriminate dumping and dump fires)

Annual Estimated Costs:

Phase 1: Planning	$70,000
Phase 2: Awareness & Consultation	$220,000
Phase 3: Construction	$5,000,000

Phase 4: Provinces (dumpsite improvement)	$3,000,000
	Total costs SI $8 290 000

Construction costs to be finalized during proposal preparation

3.3.6 Political Will and Support

Aim:
To involve politicians in waste management programmes and proposals and gain their support.

Objectives:

1. to consult and make politicians and stakeholders aware for the need of their support in waste management by providing relevant documented information
2. to have political support for donor funding for waste management and have them agree to provide increased budget for waste management activities.
3. to have politicians and decision makers support legislation for waste management
4. to have no political interference in administration and financial procedures

Implementation Strategy:

1. Government to provide office space for politician in their provinces and politicians work together with administration and be a team player
2. Involve politicians in budget formation and operation plan (Plan of Action and schedule of activities). They should be part of the legislation review taskforce, attend and officiate meetings, educational conference, workshops, seminars and other waste management programmes locally or overseas. Such involvement will expose them to waste management issues and cause them to gain support to waste management activities or programmes.
3. Involve politicians in donors and resource negotiation.

Time frame:
Political Will and support must be ongoing

Performance Indicator:

1. Increase budget for waste management activities
2. Politicians attending conferences, workshops and other programs of waste management related issues.
3. Politicians negotiate funding from donors
4. Politicians involve in legislation review and legislation enacted

Annual Estimated Costs:

Set up office space and other related resources	$ 500 000
Conferences/Workshops	$ 500 000
	Total costs SI $ 1 000 000

3.3.7 Research and Development

Aim:
To obtain well defined information and data on current system of collection and disposal of waste to guide any future proposals for the system.

Objectives:
The objectives of this component of the action plan are:

1. To carry out research on the current system employed at national and provincial levels (including HCC) and identify the strengths and weaknesses of the system
2. To develop a comprehensive and sustainable plan to address the system of collection and disposal of waste.

Implementation Strategy:

1. The responsible authority of Environment & Conservation Division to facilitate this research. This includes designing a TOR for the research , develop and allocate budgetary support for the research
2. Research may include review of existing legislations to make provisions for the establishment of enforcement agencies as well as considering legal provisions for penalizing non compliance to legal requirements.
3. Research may review current rubbish collection and disposal systems and for the purpose of establishing and identifying enforcement agencies responsible for collection and disposal of wastes.
4. The outcome of research will be used to empower and inform agencies and the general public through education, training & awareness

Time frame:
Develop TOR for research 1 month
Data collection on existing systems that are in place at the moment 3 months
Research conducted 6 months
Implementation of research outcome 12 months

Performance Indicators:

1. TOR in place for the researcher.
2. Source of funding identified- SIG, regional and international sources
3. Data collected and analyzed
4. Final report on the research to be completed and submitted to cabinet for endorsement

Estimated costs:

Consultant to provide assistance in research	$230 000
Logistical support include transport, stationeries etc	$200 000
	Total cost SI $430 000

3.3.8 Awareness, Communication and Education

Aim:
People are aware of and adhere to good and sound waste management practices

Objectives:

1. To look at ways of improving waste management awareness activities
2. To integrate waste management awareness into the education system (Primary / Secondary/TVET/Tertiary)
3. To secure political support.
4. To include all stakeholders (church, NGOs, etc.)

Implementation Strategy:
The following are options that can be used to implement this action plan:

1. Review and evaluate current awareness programs on waste management. Establish Review Committees in Honiara and Provinces to evaluate the existing awareness waste management programs in their respective jurisdiction. Use findings of the review for purposes of improving existing waste management awareness programs. The committee established in action plan 3.3.3 could facilitate this program instead of establishing a new review committee.
2. Formulate, implement and establish pilot projects in selected schools and communities on Solid Waste Management
3. Involve relevant education authorities by arranging consultative awareness workshop for all stake holders including education authorities and organize waste management program for teachers and trainers to developing a curriculum and curriculum materials on waste management to be used in schools.
4. Create partnership with other stakeholders to gain their support and integrate their awareness programs with the national and provincial waste management awareness program.
5. Employ different media in awareness programs such as radio (SIBC, FM Stations), printed media (Solomon Star, Island Sun etc), Television, Electronic mails, newsletters and others. It is important to use the languages & method that the people can better understand and respond to.

Time frame:
Awareness, education and communication must be an ongoing programme

Performance Indicator:

1. Committee establish within time frame
2. Evaluation & Analysis reports available
3. Number of consultative meetings held
4. Curriculum and materials introduced in schools
5. Number of trainers workshops held & organized
6. Number of involvement of stakeholders in awareness campaigns

7. Involvement of media

Annual Estimated Costs:

Review & Evaluation of existing waste management awareness systems	$100 000
Convene consultative workshop with stakeholders	$100 000
Awareness programme using media and other stakeholders involvement	$600 000
Curriculum material development	$200 000

Total costs SI $1,000 000

3.3.9 Private /Public Partnership

Aim:
Private and public sectors work together in partnership with strong, effective and sustainable networking.

Objectives:

1. To establish active participation of public and private sectors in waste management.
2. To promote and improve awareness in all sectors on waste management.
3. Develop and provide incentive(s) for waste management activities
4. Improve compliance to regulator and legislation and increase active enforcement of waste management related laws and ordinances.

Implementation Strategy:

1. Facilitate formation and establishment of a Corporate body (Solomon Islands Waste Management Authority). An identified department under MECM to coordinate this body by developing a TOR including budget development, logistic support, implementation plan, design and activities.
2. Conduct awareness programs for all private and public sectors on waste management initiatives. Consider this in the section 3.3.3 action plan on awareness, communication and education.
3. Control and register import of certain products that would increase waste at the end of its lifetime by placing import characterization, tariffs and bans. On the contrary, consider providing incentives to both private and public sectors through providing tax free on environment friendly products. This could be considered in the action plan of section 3.3.1 on development of policy and legislation.
4. Review of existing legislation for the purpose of establishing private agencies as well as considering legal provision for penalizing non compliance of legal requirements

Time frame:
Establishment of the Corporate Body: 4 months after national waste management legislation enacted

Performance Indicator:

1. Corporate Body established
2. Coordinating department identified under MECM
3. Awareness program conducted
4. Import control implemented
5. Legislation implemented

Estimated Costs:

Establishment of cooperate body	$ 500 000
Import control facilitation	$ 200 000
Total cost SI	**$ 700 000**

3.3.10 Sustainable Financing and Resourcing

Aim:

To identify and implement sustainable financing and resourcing systems for waste management in Solomon Islands

Objectives:

1. To put in place a sustainable self supporting financial system for waste management
2. To formulate and implement a resource mobilization strategic plan

Implementation Strategy:

1. Consider the polluter pay system as mentioned in one of the guiding principles as an option for financing waste management. The money collected from this system could be consigned in a deposit scheme. This needs to be included in the legislation to be implemented under action plan of section 3.3.1
2. Privatization.
   2.1Carry out a research scheme to gauge viability of option of privatizing waste management.
   2.2 Financing for sustainability in light of population in Honiara and the Provincial urban centers, geographical locations and current supporting services in place.
   2.3 Make recommendations and form a proposal for the system. This will also need the support of the legislation thus be considered in the action plan of section 3.3.1

Timeframe:

To be implemented after the legislation is developed (10 months to prepare draft legislation)

Performance Indicator:

1. User pay, polluter pay and deposit scheme systems introduced

2. Privatization process completed. That includes viability research done and proposal drawn, legislated and approved by the government.
3. Finance mobilization strategic plan completed

Estimated Costs:

Carry out a research to gauge viability of option of privatization	$60 000
Formulation of a resource mobilization strategic plan	$100 000
	Total cost SI $ 160 000

3.3.11 Human Resource and technical capacity building

Aim:
To build human resource and technical capacity for those involved in waste management programmes.

Objectives:
1. To build technical capacity through provision and upgrading of training for existing human resources in waste management (to be in tune with the changes and advancement in technology)
2. To effectively manage solid waste
3. To provide incentives which motivate personnel involvement in waste management

Implementation Strategy:
1. National inventory of current skilled people involved in waste management and establish net working of all those involved in waste management
2. Develop Human Resource Development Plan for waste management. The plan will highlight activities such as; sourcing TA (locally & International) to build up local capacity, incorporating waste management training in curriculum with existing training institution e.g. SICHE and involving waste management personnel in research activities.
3. Organise national, regional & international waste management seminars, study tours and conferences.
4. Training of Personnel (Solid Waste Managers) in Solid Waste Management

Timeframe:
Inventory of waste managers 4 months
Prepare a Human Resource Development Plan 4 month
Study, seminars, tours and conferences to be ongoing activity

Performance Indicator:
1. Inventory list completed

2. Number of workshops, seminars, study tours, personnel trained and attained formal qualification, TA engaged, researchers and researches involved and done
3. Human Resource development plan in place and implemented
4. Waste management course incorporate at training institution

Annual Estimated Costs:

Inventory	$ 400 000
Human Resource Development Plan	$ 100 000
Study, seminars, tours and conferences, trainings	$ 1 500 000
Total costs SI	**$ 2 000 000**

3.3.12 Supporting Infrastructure/Equipment

Aim:
To identify suitable infrastructure and equipment for Honiara and the urban centers to support proper waste management.

Objectives:
1. To improve and extend the road network to allow access by waste collection vehicles
2. To establish transfer stations where appropriate to minimize collection costs
3. To obtain all equipment and facilities required for waste management activities.

Implementation Strategy:
1. Roads. Recommend to relevant authorities and responsible leading agency to improve road system for infrastructure development at the national and provincial levels
2. Compact Refuse Vehicle. Secure financial resources to purchase adequate number of vehicles to meet waste collection demand.
3. Incinerators. Secure funding to purchase one medical waste incinerator for provinces which do not have any and acquire land for those with incinerator to install the equipment. A province that highlights land issue for installation of incinerator is Isabel Province.
4. Garbage Bins. Provide incentive for a private company to supply standard garbage bins. Public areas, especially in city centers require adequate number of bins. Consider enforcement of relevant littering bye–laws where all households, institutions and industries provide their own garbage bins. Consider option to standardize and colour code bins for households, institutions and industries.
5. Testing and Monitoring Facility. Secure support from relevant authorities to expand functions and facilities of existing labs to accommodate testing needs for pollution caused by waste goods and products.

Timeframe:
Improve and extend road system to inaccessible areas in 1 year
Obtain all equipments and facilities required for waste management activities in 1 year

Performance Indicator:

1. Roads improved at the national and provincial levels.
2. Compact refuse vehicle, incinerators, garbage bins, and workers' personal protective equipment purchased and land acquired. Testing and monitoring facilities utilized.

Estimated Costs:

Improve and extend road network to inaccessible areas	$2m
Compact Refuse Vehicle	$3m
Incinerators	$1m
Garbage bins	$1m
Testing monitoring facilities	$2m
Personal protective equipment	$1m
	Total costs SI $10m

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Appendix A

Participants in the Development of National Solid Waste Management Strategy Workshop 10-14 March 2008

PROVINCES

Temotu Province
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George K Maere
Senior Works Officer
Kirakira

Western Province
Derrick Willie
Health Inspector
Gizo

Fredrick Naphtalae
Principle Health Inspector
Gizo

Central Province
Stanley Seni
Principle Health Inspector
Tulagi

John Rapemora
Senior Physical Planner
Tulagi

Choisuel Province
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Taro

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Field Officer

Prime Minister's Office
Luke Cheka
Chief Policy Planning Officer

Solomon Islands Visitors Bureau
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Board Member

SI National Council of Women
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Training Officer

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Principle Environment Officer
ECD

Joseph Maeke
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ECD

Josef Hurutarau
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Edward Danitofea
Environment Officer
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Agnetha Vave Karamui
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Rose Babaua
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Rosemary Apa
Senior Environment Officer
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ECD

Hudson Kauhiona
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NCSA

Appendix B

Participants in the Finalization of National Solid Waste Management Strategy Workshop 17-18 March 2009

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Guadalcanal Province
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George Titiulu
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Production Supervisor

Paul Isihanua
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Mick Saito
Program Manager

Lecksmetal Trading
Ken Fekau
Operational Manager

Appendix C

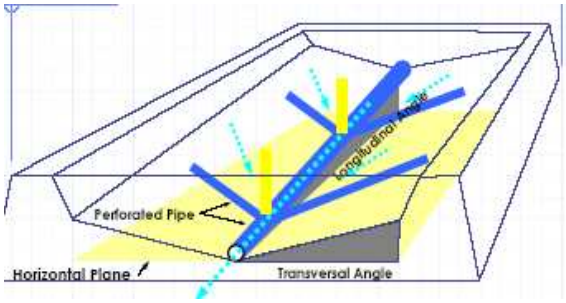
Fukuoka Method

The Fukuoka method is a semi-aerobic landfill system that was developed 20 years ago in Fukuoka University but it is not widely known to any countries around the world. It is a proven technology practically tested in Japan, and in a few developing countries such as Malaysia Iran and China.

Generally the Fukuoka method semi-aerobic landfill system can be explained as a system where the leachate and gas are continuously removed from the waste mass using leachate collection and gas venting systems, with proper engineering designs in which the ambient air flows into the waste body naturally through the leachate collection pipes, and subsequently improves the waste stabilization process and increases the leachate quality due to the enhancement of the micro-organisms activities in the waste body.

An example of this semi-aerobic system in the Pacific Islands is the Tafaigata landfill in Upolu, Samao. The Tafaiagata landfill has been transformed from a messy, smelly dump to a clean and fresh semi-aerobic landfill structure using the Fukuoka Method.

Landfill structure showing leachate flow



Leahate collection pipe



Gas venting pipe



