



**THE EFFECTIVENESS OF SOLID WASTE MANAGEMENT
IN
PAPUA NEW GUINEA**



Office of the Auditor-General
of Papua New Guinea
Performance Audit Report No. 01/2010

**THE EFFECTIVENESS OF SOLID WASTE MANAGEMENT
IN
PAPUA NEW GUINEA**

Department of Environment & Conservation

Department of Health

National Capital District Commission

Office of the Auditor-General of Papua New Guinea

30th October, 2010

The Honourable Jeffery Nape, MP
The Speaker of National Parliament
Parliament House
WAIGANI
National Capital District

Dear Mr. Speaker,

In accordance with the provisions of Section 214 of the Constitution of the Independent State of Papua New Guinea, and the *Audit Act 1989 (as amended)*, I have undertaken an audit of a number of public entities involved in the management of waste, focusing on whether they have used their resources in carrying out their responsibilities for the management of solid waste in Papua New Guinea in an economical, efficient, and effective manner.

I submit the report of this audit and the report is titled “*Effectiveness of Solid Waste Management in Papua New Guinea*”.

Following its tabling in Parliament, the report will be placed on the Auditor General’s Homepage – <http://www.ago.gov.pg>.

Yours sincerely,



GEORGE W. SULLIMANN
Auditor-General of Papua New Guinea

AUDITING FOR PAPUA NEW GUINEA

The Auditor-General is head of the Auditor-General's Office of Papua New Guinea (PNGAGO). The Auditor-General's Office assists the Auditor-General in carrying out his duties under the National Constitution and is further elaborated in the *Audit Act, 1989 (as amended)* to undertake audits of the public sector bodies and to provide independent reports and advice to the Parliament, the Government of Papua New Guinea and the community. The aim is to raise awareness of issues with a view to improving public sector administration and accountability.

For further information contact:

The Corporate Services Branch
Auditor-General's Office of Papua New Guinea
P.O Box 423
WAIGANI, NCD, PNG

Telephone : (675) 301 2200
Fax : (675) 325 2872
Email : agopng@ago.gov.pg

The audit reports and information about the PNGAGO are available at our internet address:

<http://www.ago.gov.pg>

Audit Team
Andy Vui
Yambo Goso

CONTENTS

Abbreviations	7
EXECUTIVE SUMMARY.....	9
AUDIT OBSERVATIONS & CONCLUSIONS.....	29
1.0 BACKGROUND & CONTEXT.....	31
1.1 Introduction	31
1.2 Definition of Waste.....	31
1.3 Waste Management	31
1.4 The need for Effective Waste Management	32
1.5 Pacific Region Waste Management Strategy	32
1.6 Present Status of Solid Waste Management in PNG	33
1.7 Life Cycle of a Product	34
1.8 Audit Objectives & Scopes	35
1.9 Responsibilities of the Major Entities Audited	36
1.10 Audit Methodology	37
1.11 About the Audit	38
1.12 Audit Reporting Structure	38
2.0 EXISTENCE OF LEGAL/REGULATION AND POLICY FRAMEWORK FOR SOLID WASTE MANAGEMENT.....	40
2.1 Introduction	40
2.2 Applicable Legislation	40
2.3 Environment Act, 2000	40
2.4 Organic Law on Provincial & Local Level Government (as amended) 1995	42
2.5 Public Health Act, 1973 and the Public Health (Sanitation & General) Regulation	44
2.6 National Capital District Commission Act (as amended), 2001.....	44
2.7 Completion of Solid Waste Management Strategy - PNG	46
2.8 Conclusion	47
3.0 PROCESS BY WHICH THE LEGAL & POLICY FRAMEWORK IS IMPLEMENTED, INCLUDING WHETHER RISK TO IMPLEMENTATION HAVE BEEN CONSIDERED	48
3.1 Introduction	48
3.2 Priority given by DEC to Management of Waste	48
3.3 Waste Management Legislative and Policy Vacuum	50
3.4 Establishment of Solid Waste Management Division at NCDC	50
3.5 Management of Waste Stream in Port Moresby	51
3.6 Funding of Waste Management	61
3.7 Environmental and Health Risks	65
3.8 Conclusion	65

4.0	COMPLIANCE WITH LEGAL/REGULATION AND POLICY FRAMEWORK INCLUDING MONITORING ARRANGEMENTS.....	67
4.1	Introduction.....	67
4.2	Compliance with the requirements under Public Health Act, 1973 and Public Health (Sanitation & General) Regulation	67
4.3	New initiatives to develop a new approach to Waste Management in Port Moresby	70
4.4	Monitoring of Compliance Activities	70
4.5	Provision of Contractual Services for Waste Collection/Disposal	73
4.6	Conclusion	77
5.0	OPERATION OF LANDFILL – BARUNI DUMP	78
5.1	Introduction	78
5.2	Operation of Baruni Landfill/Dump Site	78
5.3	Future Dump Site Planning	81
5.4	Monitoring and Inspection of Open Dump Site	83
5.5	Medical Waste and Incineration	84
5.6	Conclusion	88
 APPENDICES		
Appendix 1:	Audit Recommendations and Management Responses	91
Appendix 2:	Provisions for Making Regulations under the Public Health Act, 1973	103
Appendix 3:	NCDC Municipal Responsibility provided under the Draft Policy	105
Appendix 4:	Contractor’s Scope of Works/Product Requirements Provided for Under the Contract Documents	106

Abbreviations

ADB	Asian Development Bank
AGO	Auditor-General's Office
DEC	Department of Environment & Conservation
DNPM	Department of National Planning & Monitoring
DoH	Department of Health
ECOP	Environmental Code of Practice
IDI	INTOSAI Development Initiative
INTOSAI	International Organization of Supreme Audit Institutions
JICA	Japan International Cooperation Agency
NEC	National Executive Council
NCDC	National Capital District Commission
NCD	National Capital District
PASAI	Pacific Association of Supreme Audit Institutions
PCS	Plasma Converter System
PICs	Pacific Islands Countries
PNG	Papua New Guinea
POMGH	Port Moresby General Hospital
SPREP	South Pacific Regional Environment Programme
SWM	Solid Waste Management

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Introduction

Waste is a product that is no longer suited for its intended use. It may either be worn out or an unwanted by-product of a process. The different categories of waste are listed below:

- *Non-hazardous (Solid Waste)* “or garbage.”¹ which can cause harm or damage to people and environment;
- *Hazardous waste* has inherent chemical and physical characteristics (toxic, ignitable, corrosive, and carcinogenic), and can cause significant adverse effects; and
- *Radioactive waste* is highly toxic; exposure to radiation can cause illness and even death.

Various types of waste require different treatments and final handling due to both the physical and the chemical composition of the waste and associated levels of hazards. The composition of the waste will have an impact on the collection processes and on whether the waste can be reused, for example, for energy production and composting.

Waste management is the practice of using several techniques to manage and dispose of specific components of solid waste. Waste management techniques include avoidance, reduction, reuse, recycling, recovery, and disposal.

Waste management, including *Solid Waste Management (SWM)* is widely recognised as a major concern for Pacific Island Countries (PICs) as the generation and disposal of waste has direct and indirect linkages to economic development as well as the health and welfare of the community.

Waste materials could represent wasted money in terms of the original cost of the materials, the costs of disposal, and the potential value of the materials, as a recyclable and reusable resource. Poorly managed waste can have a negative impact on the health, welfare and general wellbeing of the community including economic impacts on tourism, as a result of infections and vector-borne diseases.

There is also the potential for contamination of food supplies, which can have an impact on local markets or revenue from export crops. There are also increased risks associated with health and environmental hazards that arise when waste is poorly managed and disposed of.

Conversely, the benefits of good waste management can include reduced raw material costs, enhancement of the tourism experience, reduced health care costs and maximizing the value of expensive infrastructure such as engineered landfills. Further timely effective waste management measures now will also avoid the need for expensive clean-up operations in the future.

The Papua New Guinea Government has passed several legislations which in general refers to term of waste management.

¹ Garbage includes household and commercial waste, glass materials, aluminum cans, scrap metal and ‘green’ waste, that is, waste that can be re-used for other purposes.

The various stages of the waste stream consists of the following:

- (i) **Prevention** - Information/education that is available to the community and businesses to increase awareness of how they can limit the amount of solid waste that is produced;
- (ii) **Generation** – *This refers to the* generators of waste, households, businesses and government and the measures that are in place to minimize the generation of solid waste;
- (iii) **Recycle, Reuse and Recover** - This refers to policies and/or procedures that are in place to assist waste generators to recycle waste products. It also includes what processes there are, as part of the collection process, to maximize opportunities for recycling and reuse of components of solid waste;
- (iv) **Collection** - This includes the process of waste collections from the generators, the means of collection, the fee structure established and the frequency of collection;
- (v) **Transport** - This aspect of the waste stream refers to the transportation of waste once collected from the generators;
- (vi) **Treatment/Disposal** - This covers the treatment and disposal of waste and the suitability of areas designated for these activities. Disposal at landfills is the most common solution for handling either all of the waste or the residual waste that cannot be treated as a part of other waste-processing methods, such as composting, incineration, or recycling. There is a wide range of landfills varying from open, uncontrolled dumps to sanitary landfills that are a fully acceptable environmental solution. The main differences are in the way they are operated and the level of adverse environmental effects they produce;
- (vii) **Illegal dumping** - Waste that is illegally dumped, which may occur at waste disposal sites, on private or public land or in the sea. This may involve the large-scale dumping of inert wastes, such as medical or chemical waste, or litter in the form of small quantities of non-hazardous waste; and
- (viii) **Contaminated sites** - Illegal dumping and the incorrect disposal of waste can often result in. contaminated sites. These sites may still be in use or they may have been used for dumping of waste at some earlier time.

At each of these eight stages, the government may intervene to ensure sound management. A good waste management policy should include all of the stages through which waste passes.

Audit objective

The objective of the waste management performance audit was to assess how efficiently, effectively and economically the operations and activities were over the management of solid waste in PNG, by auditing through three lines of enquiries:

- *the existence of legal and policy framework for solid waste management;*
- *the process by which the legal and policy framework is implemented, including whether risks to implementation, had been considered; and*
- *compliance with the legal and policy framework including monitoring arrangements.*

Audit scope and focus

The audit examined the existence of legislation/regulations, policies and strategies for the management of solid waste in the country and the regulatory roles played by key Government Agencies in relation to various aspects of the solid waste streams represented which ranged from the waste generation, collection to disposal and illegal dumping;

The audit focused mainly on the Department of Environment and Conservation (DEC) since it is the lead agency of the Government of Papua New Guinea responsible for planning, coordinating and providing the national legal/policy framework in relation to the environmental protection at all sectors, national, provincial and Local Level Governments level; and

In respect of implementation and management of solid waste at the provincial levels, Port Moresby was selected as a case study, focusing primarily on the role of the NCDC and the operations of Port Moresby's major Open Dump at Baruni.

The audit also focussed on the Department of Health's waste management processes as the Department plays a key role at the national level in developing policies and formulating laws for waste generation through the health sector and the adverse impacts of waste to human health. The Department is also responsible for collection, incineration and disposal of medical waste produced by the public hospitals, clinics and medical centres in Port Moresby and at the Provincial and Local Level Government level.

Key Audit Findings

Existence of Legal/Policy Framework for Solid Waste Management (Chapter 2)

Applicable Legislation and responsible agencies

At the national level

The Environment Act, 2000 is administered by the DEC. Other government agencies, including provincial and local level governments are also responsible for implementation of the referred Act.

Section 39 of the *Act* gives powers to the Provincial Governments to make Provincial Environment Policies and by-laws in relation to environmental issues, including waste management.

The *Public Health Act 1973* and the *Public Health (Sanitation & General) Regulation 1973* are managed and implemented by the Department of Health. The Department of Health, using the *Act* and the Regulations, deals with the management of medical waste produced by the hospitals and clinics.

At the provincial level

At the provincial level, the National Capital District Commission (NCDC) is the lead agency for the management of solid waste in the National Capital District (NCD). In accordance with *Section 39* of the *Environment Act 2000*, NCDC is responsible for making policy and the management of waste. The Commission has a Waste Management Section which has adopted the *Public Health Act, 1973* and the *Public Health (Sanitation & General) Regulation, 1973* to guide management of waste in the absence of a clear law and approved waste management policy.

Process by Which the Legal/Policy Framework is implemented (Chapter 3)

The DEC, the national lead agency for environmental issues, has established a Division that deals with waste management. No specific budget lines or accounts have been established specifically to fund waste management activities undertaken by the Department. Any waste management activity that warrants funding through the Department would currently be allocated through the recurrent budget.

The NCDC also has a Waste Management Division. Its main function is to manage the collections and disposals of waste in Port Moresby including the Baruni Dump. It was evident that the Waste Management Division is inadequately funded or staffed to manage all elements of the waste stream.

Prevention of waste

The issue of public awareness and public education on solid waste management at all levels have not been given prominent status to convince decision makers to allocate more funds for prevention waste disposal. There are neither proper plans nor provision of sufficient funding in the budget for waste management prevention or awareness programs.

Generation of waste

An important step in any waste management strategy is the development of an accurate waste inventory or database on the different types of waste that are generated by all sectors.

The NCDC does not have complete data about the various kinds of waste being generated by the city. The data on waste generation held by the Commission at the time of audit were not accurate because the information system was not comprehensive enough to capture all the waste placed in or outside the designated dumps. For example, collection of waste gathered from the settlements around Port Moresby.

Collection

Collection means the collection of waste from generators, fee structure established and the frequency of collection.

NCDC, as the local authority in Port Moresby, is responsible for the collection of all waste generated within the city area and the three electorates. However some properties and premises have privately arranged collection and disposal services.

Private contractors are engaged through contractual arrangements to collect and transport waste to the Baruni Dump site and to manage the Baruni Dump.

Recycle, Reuse, Recover

The NCDC has no policy on recycling of waste material. However the draft *Solid Waste Management Policy* provides for the Commission to regulate the recycling industry and the export of recycled materials to overseas countries. The only recycling activity taking place in Port Moresby is scrap metal, tin cans, plastics and glass bottles. Scrap metal is crushed and shipped overseas for recycling.

Recycling of waste can either be done at source by the waste generator or at a central waste processing facility. There is no segregation of waste at point of generation or at the dump site in Port Moresby. All waste, regardless of whether it is green waste, medical waste, or hazardous waste, is dumped at the Baruni Dump site thus causing damage to the environment and impacting the health and welfare of the surrounding population.

NCDC formally approves the dumping of waste, especially building materials, into the sea at designated spots and as provided for by the *Dumping at Sea Act, 1979*. However, there are no controls around the amount of waste material dumped so the volume or type of waste dumped in this way cannot be determined.

Illegal dumping and contaminated sites

A lack of policy for the management of waste and the inadequate approach to waste prevention, collection and treatment and disposal, and the lack of adequate services in the settlements, means that, there is indiscriminate dumping of refuse in all parts of Port Moresby into waterways, drains, roadsides and other public places.

The NCDC waste management section posts environmental inspectors in certain hotspots for illegal dumping to apprehend the offenders but the offenders now dump their waste at night. The NCDC waste management section has insufficient funds and resources to combat illegal dumping done at night times.

Compliance with Legal/Policy Framework including Monitoring Arrangements (Chapter 4)

Compliance with Public Health Act/Regulation

Although there is no legislation in Papua New Guinea that specifically deals with solid waste management, the *Public Health Act, 1973*, the *Public Health (Sanitation & General) Regulations, 1973*, and the *Environment Act, 2000* cover some aspects of waste management.

Provision/maintenance of refuse bins

Section 40 of the Public Health (Sanitation & General) Regulation stipulates that the owner or occupier of premises must provide sufficient or specified number of water-tight bins for the reception of the refuse arising from, or existing on the premises.

No proper garbage bins are provided by the households or premises in the city as the law requires, although the NCDC provides proper wheelie-bins for some residents, premises and common public places. Public places, such as shopping centres, parks, road sides, flats, beach fronts, sports stadiums, barracks, and other institutions, in most parts of the city are provided with 44 gallon drums, painted green/yellow and labelled, "NCDC".

Illegal dumping

Section 68 of the Public Health Regulation also stipulates that; a person who deposits any '...empty or partly empty tin, bottle, or other receptacle, on a street, road, foreshore or other public place is guilty of an offence and can be fined K50.00.' Despite the provisions of the above laws, there continues to be illegal dumping of garbage into drains, roadsides, waterways, backyards, in front of beaches, sea, buildings, sports fields and other public places in most areas of Port Moresby. Many of these areas are littered or dumped with beer and soft drink cans, bottles, plastic soft drink containers, plastic bags, beetle nut skins, and tyres.

Further, no regular educational and awareness programmes are carried out by NCDC.

The current Governor of National Capital District is trying to improve the beautification of the city by seeking to reduce the level of littering and the volume of waste produced by the city's inhabitants. The Governor has declared a Zero Waste Concept to be achieved by 2020, which would mean that by 2020, there will be no waste going into landfills as all waste will be recycled. While this is a worthwhile aspiration, the AGO could see no tangible efforts made by the NCDC to start work on this concept.

Monitoring compliance activities

There are significant weaknesses in the current systems and arrangements that are in place for ensuring proper monitoring of compliance requirements of municipalities' responsibilities for the management of solid waste.

Provision of contractual services

The NCDC has recently outsourced the waste management and disposal operations with the intention of improving service quality and reducing costs. There are no written contracts in place which means that it is difficult for the NCDC to control and monitor the contractor's performance and ensure compliance with the requirements of the terms and conditions of the respective contracts for the collection, transportation and disposal of solid waste, including proper management of the landfill.

Although there were no proper control systems to adequately monitor the compliance requirements of the contractors, the NCDC has used other practices, such as physical inspections of the contractor's work, to monitor and assess their performance.

Operation of Landfill – Baruni Dump (Chapter 5)

Operation of landfill

Port Moresby does not have a modern landfill with proper facilities for the disposal of the city's large volume of solid waste. As a result, the Baruni Dump, where the City's waste disposal takes place, is an open dump managed by NCDC through a private contractor. The dump is uncontrolled and waste is disposed of in the dump without proper segregation or treatment. Scrap metal, bottles or tin cans are collected by foragers or scavengers and sold to recycling companies.

Because it is an uncontrolled dump site, the Baruni dump creates a number of serious public health and safety problems including adverse environmental impacts.

Future dump site planning

Although the NCDC and other stakeholders, including DEC, have recognised the need for a new modern facility to cater for disposal of waste in the city, there is a lack of information to make timely decisions on future planning. As a result, there is no formal plan for the closure of the Baruni dump or the opening of a new dump site.

The NCDC is currently trying to identify a location for the construction a new dump site but this will take some time, given issues surrounding the purchase of land.

Monitoring & inspection of dump site

There are no specific provisions in any of the legislations or regulations for the management of the dumpsite. Since it is an open dumping site, formal procedural compliance monitoring and checking requirement of various environmental and health parameters have not been developed and implemented.

The landfill is inspected by inspectors on a daily basis and the dump supervisors are stationed at the dump site every day. The inspectors' reports are prepared on a weekly and monthly basis. Should an incident occur it is usually reported on the same day.

Medical waste/incineration

In addition to the general waste disposed at the Baruni Dump, the AGO observed that medical waste from the hospitals and clinics is also disposed of there.

Due to the high risk of danger to human health, hazards, Infectious medical waste is best disposed of by incineration or sterilisation. Up until 2006, segregation of medical care waste occurred at source with general non-risk waste collected as part of the municipal waste collection system and medical waste burnt in specially designed incinerators which were generally managed by the health authorities. The residual waste from the incineration process was either taken to the common disposal facility or buried.

However, since 2006 medical waste is no longer incinerated but is disposed of in areas allocated specifically for it within the Baruni Dump because the designated incinerators are no longer functioning.

Dump operators, nearby residents and inhabitants of the Baruni Dump are exposed to high health risks, specifically the community who live adjacent to the medical waste disposal site. Indiscriminate dumping of medical waste and the practice of burying it in shallow pits, partially burning it with kerosene, and partly covering it with soil (some of the pits were left exposed as shown in the slides below) is considered as a serious health hazard..

Summary of Agency's Formal Responses on the Proposed Report

The proposed report containing the audit findings and the recommendations was forwarded to the three audited entities in a draft form for their comments. All the audited entities had an opportunity to respond to the AGO findings and have since provided their formal responses. The AGO has taken into account their management's responses in the preparation of the final report where considered appropriate.

The detailed formal responses to the recommendations from the respective entities are included in the body of the report while the respective entities summary versions are reproduced in the subsequent paragraphs.

Department of Environment & Conservation

Firstly, on behalf of the Department, I want to acknowledge the efforts and close co-operation of DEC management and staff in contributing to developing this Performance Audit Report. I note the importance of this report in terms of its contribution to improve the efficiency and effectiveness of solid waste management in the country. While the report provides a status of waste management activities including initiatives at national level, it further identifies problems and makes recommendations which stakeholders such as DEC and NCDC who should develop short to long term measures to effectively and timely address the key waste management issues at the National Government level.

It is in my view that the Report identifies key recommendations for DEC as one of the key government agencies that is involved in environmental protection, and as Focal Point to the Stockholm and Basel Conventions, to firstly ensuring that a review of appropriate laws and regulations including By-Laws are conducted to ensure that they are consistent, and complementary while recognizing the need for an overarching law.

Further, the report recommends DEC as lead agency, takes a more proactive lead role in coordinating waste management related activities at national level, working together with key stakeholders. In addition, the need for appropriate mechanisms to be established for monitoring and compliance is further noted, including provisions for internal institutional strengthening and capacity building.

The need for allocation of proper resources, including financial and human resource for waste management, as well as developing systems for monitoring and compliance are key aspects of this Performance Audit Report.

We look forward to working together with stakeholders in implementing the attached recommendations highlighted in this Report.

National Capital District Commission

We have reproduced your recommendations and our responses to your recommendations below. However, please note that the recommendations are included in good faith without prejudice with the primary objective of facilitating the improvement of solid waste management in the Capital City. As any other Government agencies, we also experience similar resource constraints and as such we will prioritize them for implementation.

We thank you for your initiatives and selecting NCDC to conduct the performance audit.

Department of Health

Thank you for providing the Department of Health with the opportunity to comment on this first performance audit report on solid waste management in this country by the Auditor General.

We fully agree with the findings that although the DoH has existing legislations in place that is managed by different sectors that influence the management of solid waste, there is an urgent need to have a single consolidated, uniform and dominant legislation that deals with solid waste management in the country. In this regard, we fully support recommendation 2.1 which calls for legislation to be developed by DEC in consultation with other sectors which the Department stands ready and willing to be part of that process.

The DoH also understand that DEC has a draft policy on solid waste management in place and once this policy is approved, we will adopt this policy as a basis for developing our sectoral strategies particularly with regard to medical waste management in this country. As you have noted that the Department has started working with hospitals and clinics in the country in effectively managing medical waste but the momentum needs to be maintained and this is an area that we will be focusing our efforts into in the next 10 years.

Our other comments are contained in the report under the heading “management comments” particularly in relation to recommendations 4.1, 4.4, 5.3 and 5.4.

Audit Recommendations

During the course of this report, the AGO has provided twenty-one (21) recommendations. The various recommendations were directed to the three entities audited, the DEC, NCDC, and the National Department of Health.

The recommendations and a shortened response follow. All three entities acknowledged and supported the recommendations in the AGO report. The full texts of the responses made to the recommendations by the respective entities are contained in the body of the report under the heading of audit findings/conclusions, and Appendix 1.

Chapter 2

Recommendation #2.1, page 43

The AGO recommends that the Department of Environment & Conservation considers formulating a consolidated single/dominant National Solid Waste Management Legislation that deals with the management of solid waste in the country, including all municipalities in all sectors, national, provincial & local level government levels, in consultation with its stakeholders.

Management's Comments:

Department of Environment & Conservation proposes to develop specific regulations under the Environment Act, 2000 on solid waste management, although the AGO recommends a formulation of a single/dominant national law that deals with solid waste management and supported by regulations. Refer to the above Chapter for details.

Recommendation #2.2, page 43

The AGO recommends that after formulating a national solid waste management policy, the Department of Environment & Conservation takes a leading role in developing a framework by which Provincial and Local-Level Governments can establish their own respective solid waste management strategies.

Management' Comments:

DEC agreed.

Refer to the above Chapter for details.

Recommendation #2.3, page 43

The AGO recommends that the Department of Environment & Conservation, in consultation with the Department of Provincial & Local Level Government Affairs, establish a formal system to monitor the progress of the development of provincial and local level governments by-laws and report back to the Environment Council through the Secretary of DEC for alteration and improvement.

Management's Comments:

DEC agreed.

Refer to the above Chapter for details.

Recommendation #2.4, page 45

The AGO recommends that the National Capital District Commission:

- (i) implements the policy on the management of waste including solid waste management, after its approval;*
- (ii) develops a mechanism by which the referred policy can be implemented effectively; and*
- (iii) develops a by-law that addresses solid waste management effectively, and implements the legislation for the management of waste.*

Management's Comments:

NCDC took note and explained actions to be taken.

Refer to the above Chapter for details.

Recommendation #2.5, page 46

The AGO recommends that the Department of Environment & Conservation, in consultation with other stakeholders, takes immediate steps to ensure that the formulation of the proposed strategy on the management of solid waste in the country is given high priority.

Management's Comments:

DEC agreed.

Refer to the above Chapter for details.

Chapter 3**Recommendation # 3.1, page 49**

The AGO recommends that the Department of Environment & Conservation urgently review its current arrangements with the resource allocations, and gives its priority for the effective management of waste in the country.

Management's comments:

DEC took note for appropriate action.

Refer to the above Chapter for details.

Recommendation# 3.2, page 51

The AGO recommends that the National Capital District Commission:

- (i) conducts a formal review of its workforce to effectively address whether the Waste Management Division is able to meet its corporate goals and objectives in relation to waste management and to ensure that the current and future workloads are adequate to meet its key goals and objectives; and*
- (ii) addresses the capacity issues effectively through a performance management system including, staff training and development to address gaps and to enhance their performance.*

Management's comments:

*The Commission noted and acknowledged actions taken.
Refer to the above Chapter for details.*

Recommendation # 3.3, page 53

The AGO recommends that the National Capital District Commission institutes and funds adequately a public awareness and education program to make the public fully aware of the benefits of preventing the generation of unnecessary waste.

Management's comments:

*The Commission acknowledged action to be taken.
Refer to the above Chapter for details.*

Recommendation #3.4, page 55

The AGO recommends that the National Capital District Commission develops data collection methodology to assess the volume of waste collected and disposed of, and to be used for informing future planners and designers of waste management.

Management's comments:

*The Commission agreed.
Refer to the above Chapter for details.*

Recommendation # 3.5, page 58

The AGO recommends that:

- (i) the Department of Environment & Conservation initiates the formation of a Committee at the national level, including both the public and the private sector, regarding this important issue of recycling, and addresses the issues appropriately in the long run; and*

- (ii) *after approval of the draft waste management policy, the National Capital District Commission, in consultation with stakeholders, develops and implements a recycling policy in Port Moresby with funding from the National Government.*

Management's comments:

*The DEC and NCDC agreed.
Refer to the above Chapter for details.*

Recommendations # 3.6, page 64

The AGO recommends that the National Capital District Commission:

- (i) *seeks specific funding for the implementation of a waste management system and the operation of the Baruni dump;*
- (ii) *reviews the structure for waste collection fees based on cost incurred by the Commission; and*
- (iii) *enforces the payment of collection fees.*

Management's comments:

The NCDC acknowledged and explained the current funding situation and action to be taken to seek external funding of Baruni Dump. Refer to the above Chapter for details.

Chapter 4

Recommendation # 4.1, page 69

The AGO recommends that the National Capital District Commission takes immediate action and develops appropriate mechanisms in consultation with the Department of Environment & Conservation, Education, Police, Health and other relevant agencies to ensure compliance with the requirements in relation to illegal dumping and littering in public places.

Management's Comments

*The Commission and National Department of Health agreed.
Refer to the above Chapter for details.*

Recommendation # 4.2, page 71

The AGO recommends that the Department of Environment & Conservation takes immediate action by taking full control of compliance monitoring and reporting issues and:

- (i) develops a suitable national solid waste management monitoring and reporting system/program which covers the entire sector, Provincial and the Local Level Governments;*
- (ii) makes it mandatory for all sectors to submit performance reports monthly or quarterly per annum at an acceptable quality, and that all their annual reports should include strategic issues and progress to date; and*
- (iii) takes appropriate measures to deal with non compliance at all levels of government and they should be incorporated in the relevant laws/regulations.*

Management's comments:

DEC agreed.

Refer to the above Chapter for details.

Recommendation # 4.3, page 71

The AGO recommends that the National Capital District Commission Management reviews, and improves the effectiveness of its current systems, processes/practices, and the guidelines for monitoring management, of solid waste management.

Management's comments:

The Commission agreed.

Refer to the above Chapter for details.

Recommendations # 4.4, page 72

The AGO recommends that the Department of Health, in consultation with the Department of Environment & Conservation reviews and updates the Public Health Act, 1973 and the Public Health (Sanitation & General) Regulation, 1973 and consider improving the provisions where appropriate, as both regulations appears to be out of date.

Management's Comments:

National Department of Health agreed.

Refer to the above Chapter for details.

Recommendation # 4.5, page 76

The AGO recommends that the National Capital District Commission:

- (i) reviews its current processes for the awarding of contracts to competent contractors who have tendered for providing services to the Commission in accordance with tender procedures;*
- (ii) enters into legally binding contracts of the current nine major contractors for the balance of the five years term of engagement, clarifying, amongst other things, the definition of services and the key performance issues;*

- (iii) *signs all contractual documents/agreements in future which formally binds the Commission and the contractor prior to the commencement of work; and*
- (iv) *makes available sufficient funding for effective monitoring and control of the collection process and also for the implementing and enforcement of the contractual agreement.*

Management's Comments:

NCDC while acknowledging the recommendations, explained of actions taken and what else needs to be done to address the issues.

Refer to the above Chapter for details.

Chapter 5

Recommendations # 5.1, page 82

The AGO recommends that the National Capital District Commission:

- (i) *immediately develops a plan to upgrade/improve the existing open dumpsite to a controlled landfill site in order to minimize the problems caused by uncontrolled open dumping of waste;*
- (ii) *plans and designs in the short to medium term, a proper new sanitary landfill in consultation with the Department of Health and other stakeholders, and through the Department of Environment & Conservation raise the issue with the National Executive Council (NEC) for ownership, support and continuous annual government funding for sustainability;*
- (iii) *in consultation with the Department of Environment & Conservation, and other stakeholders, secures funding from external sources for funding the design/plan and initial development of a proper new modern landfill; and*
- (iv) *takes immediate steps to either find the documents relating to the purchase of the land identified for a new dump or recover the funds from the landowners.*

Management's comments:

The Commission agreed, while the National Department of Health suggested provision of technical support.

Refer to the above Chapter for details.

Recommendations # 5.2, page 84

The AGO recommends that the National Capital District Commission:

- (i) *controls and monitors the operation of Baruni Dump in accordance with the relevant provisions of the Environment Code of Practice for Sanitary Landfill; and*

- (ii) *develops proper monitoring guidelines and procedures for effective management of solid waste in the City's landfill.*

Management's comments:

*The Commission agreed.
Refer to the above Chapter for details.*

Recommendation # 5.3, page 87

The AGO recommends that the Department of Health takes immediate action, in consultation with the National Capital District Commission and the Department of Environment & Conservation, to build the incinerator for incinerating medical waste at an appropriate and safe site.

Management's comments:

*National Department of Health agreed and explained the cause of the delay in building the incinerator.
Refer to the above Chapter for details.*

Recommendation # 5.4, page 87

The AGO recommends that the Department of Health, in consultation with the National Capital District Commission takes appropriate measures to dispose medical waste in Baruni dump with due diligence and care than is currently being done, until the new incinerator comes into service.

Management's comments:

*National Department of Health agreed with a minor qualification.
Refer to the above Chapter for details.*

Overall Conclusion

There are three significant pieces of legislation in Papua New Guinea which influence the management of solid waste. However there is no dominant legislation that deals with solid waste management either nationally or at the provincial and local government levels.

The AGO concluded that in the absence of a clear national policy or a specific legislation covering all levels of government and the national lead agency taking ownership, waste management in PNG will continue to be ineffective and fragmented as responsible jurisdictions may give little priority to waste management.

The *National Capital District Commission Act, 2001* gives NCDC the responsibility for the management of sanitation and garbage in Port Moresby. There is no regulation to authorise these activities or to monitor their implementation. The NCDC relies on the provisions of the *Public Health Act 1973* and the *Public Health Regulation, 1973*. The respective *Acts* were in force before independence to manage waste in Port Moresby, while the funding for waste management is considered inadequate.

The NCDC has developed a draft Solid Waste Management Policy which, when approved, will assist the Commission to manage solid waste activities in a more co-ordinated manner. However, the AGO concluded that unless the implementation strategy is adequately funded, there will be little improvement of the management of waste in Port Moresby.

The AGO concluded that until the NCDC complies with the relevant provisions of the *PNG Environment Code of Practice for Sanitary Landfill* for the management of the Baruni dump, including the rehabilitation of the current open dump, and the Department of Health develops a facility to deal with the disposal of infectious waste, the serious shortcomings which have resulted in environmental and public health risks for the immediate locality (and the population which lives close to and within the boundaries of the dump), will not be alleviated.

The lack of data on all the various kinds of waste being generated by municipalities, and waste management monitoring activities limits the capacity of the responsible agencies to identify areas for improvement in the performance of solid waste management activities, and also to inform future planning of these activities.

The AGO finally concluded that in the absence of proper waste processing facilities and well developed landfills in Port Moresby and other parts of the country, open/uncontrolled dumping of waste is likely to continue, leading to harmful impacts on the health and welfare of the people and the environment.

**AUDIT
OBSERVATIONS
AND
CONCLUSIONS**

CHAPTER 1.0 BACKGROUND & CONTEXT

1.1 Introduction

This Chapter provides the background information in relation to the management of solid waste. It covers the definition of waste management, and the need for effective waste management, a brief explanation of Pacific Region Waste Management Strategy, the reasons for conducting the audit, the current status of solid waste management in the country, explanation of the waste stream, and the audit objectives/scope.

The Chapter also covers the responsibilities of the major entities audited, and briefly describes the reporting structure, followed by the audit findings and recommendations.

1.2 Definition of Waste²

Waste is a product that is no longer suited for its intended use. It may be worn out or may be an unwanted by-product of a process. The different categories of waste are listed below:

- *Non-hazardous (Solid Waste) “or garbage”³*, Non- hazardous waste can cause harm or damage to people’s health and environment;
- *Hazardous waste* have inherent chemical and physical characteristics (toxic, ignitable, corrosive, and carcinogenic) and can cause significant adverse effects; and
- *Radioactive waste* is highly toxic; exposure to radiation can cause illness and even death.

Different kinds of waste require different treatment and final handling because of the physical and the chemical composition of the waste, and associated levels of dangerousness. The composition of the waste will have an impact on the collection process and on whether the waste can be reused, for example, for energy production and composting.

1.3 Waste Management

Waste management is the practice of using several techniques to manage and dispose of specific components of solid waste. Integrated waste management techniques include avoidance, reduction, reuse, recycling, recovery and disposal.

² The Background section of this report has drawn heavily on the *Solid Waste Management Strategy for the Pacific Region* and the INTOSAI guidance paper on *Toward Auditing Waste Management*

³ Garbage includes household and commercial waste, glass materials, aluminum cans, scrap metal and ‘green’ waste, that is, waste that can be re-used for other purposes

1.4 The need for effective waste management

Waste management, including *Solid Waste Management (SWM)* is widely recognised as a major concern for Pacific Island Countries (PICs) as the generation and disposal of waste has direct and indirect linkages to economic development.

Waste materials represent wasted money, in terms of the original cost of the materials, the costs of disposal, and also the potential value of the material as a recyclable and reusable resource. Poorly managed waste can have negative effects on tourism, and by association with health warnings about infectious and vector-borne diseases.

There is potential for contamination of food supplies, which can have impacts on local markets or revenue from export crop. There are numerous health and environmental hazards that arise when waste is poorly managed and disposed of.

Conversely, the benefits from good waste management can include reduced raw material costs, enhancement of the tourism experience, reduced health care costs and maximizing the value of expensive infrastructure like landfills. Effective measures now will also avoid the need for expensive clean-up operations in the future.

1.5 Pacific Region Waste Management Strategy

In 2005, a number of countries in the Pacific Region, including PNG⁴, adopted a Waste Management Strategy⁵ which sets out a long-term programme for addressing waste management issues in the region. The proposed programme, designed to avoid the adverse effects of poorly managed waste, would be implemented at both national and regional levels.

The participating nations agreed that the Strategy should provide a mechanism for coordination of the future activities of donor agencies with interests in this area. The agreed strategy is based around the following three major activities:

- Institutional activities by all key stakeholders, including policy development, capacity building, information exchange, public education and awareness;
- Development and/or enhancement of waste minimisation activities such as recycling, so as to reduce the quantities of waste produced at the national level; and
- Improvement and upgrading of existing waste management and disposal systems.

The proposed activities are intended to assist PICs in moving towards the development of effective waste management systems within their countries in accordance with their specific needs.

⁴ The other countries were American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, France, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United States of America, Vanuatu, Wallis and Futuna.

⁵ At the conclusion of the meeting, a Report, Solid Waste Management Strategy for the Pacific Region was written, and published in 2006 and was endorsed by member countries in 2009.

The programme would be implemented over a period of ten or more years in recognition that many of the required changes will only be achieved through gradual improvements over long periods of time.

In addition, emphasis is given to the development of activities embodying some of the key requirements for sustainability, including the use of appropriate technologies and management systems, and with a strong focus on self-help and in-country capacity building.

1.6 Present status of Solid Waste Management in PNG - who is responsible?

The Papua New Guinea Government has enacted several Acts that refer to waste management in general terms.

The *Environment Act, 2000*, managed and implemented by the DEC at the national level, deals with all issues relating to, and affecting the environment. *Section 39 of the Act* gives powers to the Provincial Governments to make Provincial Environment Policies and by-laws in relation to environmental issues, including the management of waste.

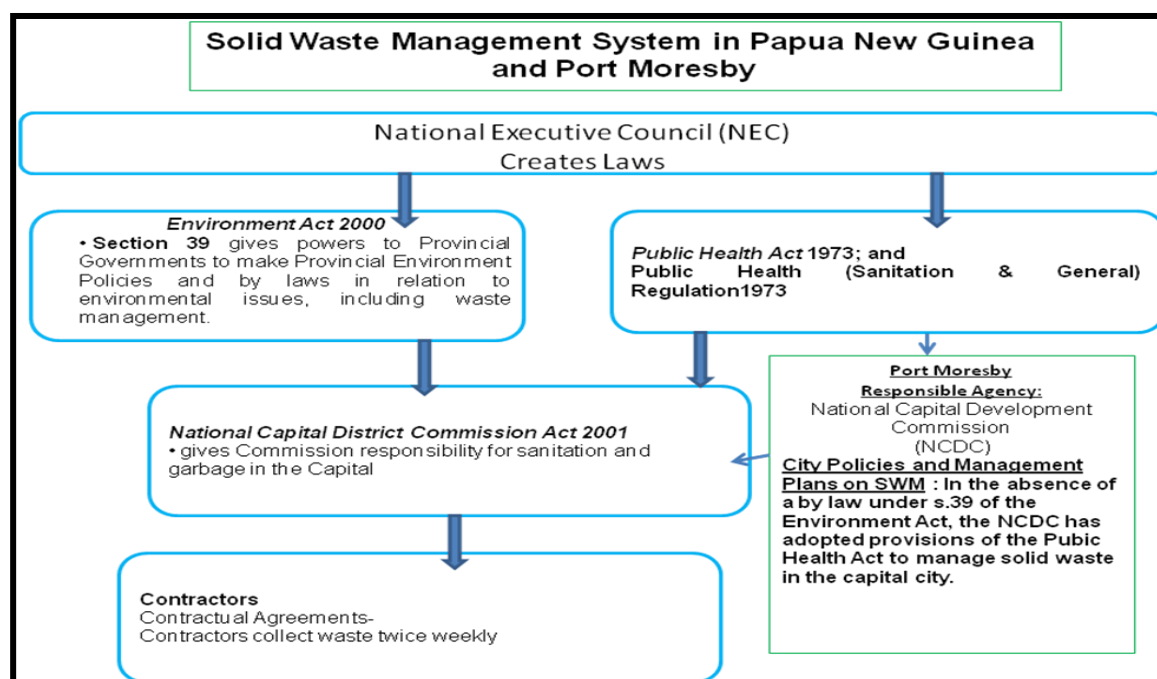
At the national level, the *Public Health Act, 1973* and the *Public Health (Sanitation & General) Regulation 1973*, are managed and implemented by the Department of Health. The Department of Health, using the *Act* and the *Regulation* deals with management of medical waste produced by the hospitals and clinics.

At the provincial level, the NCDC is the lead agency in Port Moresby. In accordance with *Section 39* of the *Environment Act 2000*, the Commission is responsible for the management of waste. It has a Waste Management Section which has adopted the *Public Health Act, 1973* and the *Public Health (Sanitation & General) Regulation 1973* to guide the management of waste in the absence of a clear law and approved waste management policy. The system explained above is shown in **Figure 1.1** below.

Further, the Department of Health expressed its concern that poor waste management in the country has resulted in unsightly and unfriendly environment with continuous crude dumping and tipping by waste contractors, companies, and individuals on the selected sites.

The waste dump sites in the main cities and towns are becoming operational for 24 hours a day, open to greenhouse gas emissions from open burning of all categories of waste such as general waste, infectious health care waste, papers, plastics, and other building and commercial or industrial waste materials. This also applies to the Port Moresby landfill which is currently an uncontrolled open dumping site. The dump sites are available all the time for access by a large number of foragers and scavengers including human beings, domestic birds/chicken and animals.

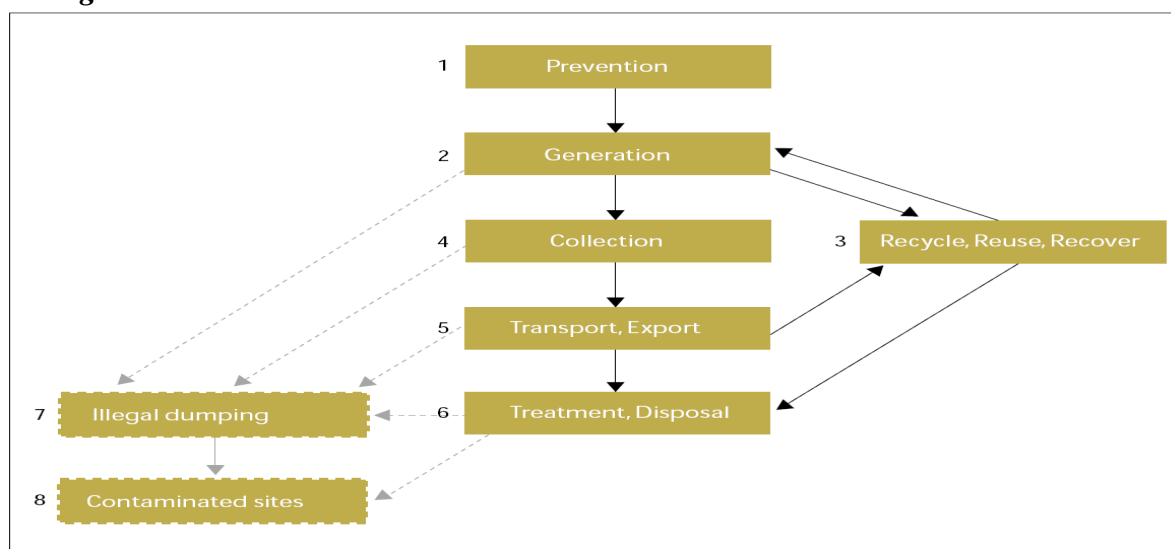
Figure 1.1: Solid Waste Management in Papua New Guinea & Port Moresby



1.7 Life cycle of a product

Each product has a lifecycle that generates waste at a certain point in time. The description of the physical stages through which waste passes (called the waste stream) helps understand the waste management process as shown in **Figure 1.2**.

Figure 1.2: The Waste Stream



SOURCE: INTOSAI WORKING GROUP ON ENVIRONMENTAL AUDITING (WGEA), TOWARDS AUDITING WASTE.

The various stages of the process described above, and explained further in the subsequent paragraphs apply to most products and waste, whether hazardous or non-hazardous.

Prevention - Information/education that is available to the community and businesses to increase awareness of how they can limit the amount of solid waste that is produced.

Generation - This covers the generators of waste – households, businesses and government, and the measures that are in place to minimize the generation of solid waste.

Recycle, Reuse and Recover - This aspect includes the policies or procedures that are in place to assist waste generators to recycle waste products. It also includes what processes there are, as part of the collection process, to maximize opportunities for recycling and reuse of components of solid waste.

Collection - This includes the process of waste collections from the generators, the means of collection, fee structure established and the frequency of collection.

Transport - This aspect of the waste stream refers to the transportation of waste once collected from the generators.

Treatment/Disposal - This covers the treatment and disposal of waste and the suitability of areas designated for these activities. Disposal at landfills is the most common solution for handling either all of the waste or the residual waste that cannot be treated as a part of other waste-processing methods, such as composting, incineration, or recycling. There is a wide range of landfills varying from open, uncontrolled dumps to sanitary landfills that are a fully acceptable environmental solution. The main differences are in the way they are operated and the level of adverse environmental effects they produce.

Illegal dumping - Sometimes the waste is illegally dumped, which may occur at waste disposal sites, on private or public land or in the sea. This may involve the large-scale dumping of inert wastes, such as medical waste or chemicals, or litter in the form of small quantities of nonhazardous waste.

Contaminated sites - Illegal dumping and the incorrect disposal of waste will often result in contaminated sites. These sites may still be in use or they may have been used for dumping of waste at some earlier time.

At each of these eight stages, the government may intervene to ensure sound and effective management. A good waste policy should include all of the stages through which waste passes.

1.8 Audit Objectives & Scope

Audit objective

The objective of the audit was to assess how efficiently, effectively and economically the operations and activities of the management of solid waste were conducted in PNG by auditing through three lines of enquiries:

- *the existence of legal and policy framework for solid waste management;*
- *the process by which the legal and policy framework is implemented, including whether risks to implementation have been considered; and*
- *compliance with the legal and policy framework, including monitoring arrangements.*

Audit Scope

The audit examined the existence of legislation/regulations, policies and strategies for the management of solid waste in the country and the regulatory roles played by key Government Agencies in relation to various aspects of the Waste Stream represented earlier in **Figure 1.2**.

In respect to implementation and management of solid waste, Port Moresby was selected as a case study, focusing primarily on the role of the NCDC and the operations of Port Moresby's major Open Dump site at Baruni.

1.9 The Responsibilities of the Major Entities Audited

The responsibilities of the major entities audited are shown below:

The Department of Environment & Conservation:

The Department of Environment & Conservation was established in 1985 and vested with powers to protect the environmental values of air, water, soil, and biodiversity and the sustainable use of natural resources, as mandated by the Fourth Goal of the National Constitution, and guided by the directive principles of the Fourth Goal of the National Constitution. The Fourth Goal stipulates that:

“Papua New Guinea’s natural resources and environment to be conserved and used for the collective benefit of all and are replenished for the benefit of future generations”.

The DEC, which reports directly to the Minister for Environment & Conservation, has statutory obligations to formulate policies and legislation for the National Executive Council (NEC) to enact bills in relation to environmental protection.

DEC’s mission statement is *“to ensure that natural and physical resources are managed to sustain environmental quality and human well-being.”*

DEC is also responsible for evaluating environmental plans, issuing water use permits under the *Water Resources Act, 1982* for the abstraction of water for domestic and industrial uses, and for controlling the disposal of industrial and domestic effluents into the waterways and marine environments.

DEC is tasked to monitor the compliance and enforce environmental legislation.

The DEC is the national government lead agency responsible for providing the national legal/policy framework in relation to the management of waste in the country which covers all sectors including; national, provincial and local level government level. It also has a primary role to play in ensuring that the legal/policy framework is adequately planned, managed controlled, monitored and reported back to the National Department through each sector management for its purpose.

National Capital District Commission

The functions and the legislative powers of the Commission are stipulated in the *National Capital District Commission Act*. Section 37 of the Act gives powers to the Commission to legislate, and gives mandate to the agency for management of municipal waste collection and disposal.

Other responsible departments

The other responsible departments consulted were the National Department of Health, and the Department of Provincial & Local Level Governments Affairs.

1.10 Audit Methodology

The audit methodology included;

- developing lines of enquiry and audit criteria by which to compare audit expectations with audit findings;
- interviewing senior departmental staff at various levels;
- physically verifying and inspecting the Baruni dumpsite, including waste collection and transportation;
- examining the enabling legislations/policy documents, strategies, contract documents/ agreements, guidelines, procedures, operational documents;
- analysing data; and
- assessing a sample of agreements for compliance with Tender Guidelines and Public Finances and Management Act

Limitation of Scope

This audit excluded the following:

- The management of waste services in provincial and local level government level with the exception of NCDC. The study provides a yard stick to conduct such audits in other provincial and local level governments;
- Solid waste produced in Port Moresby by industries, construction companies, business houses/commercial activities, markets, institutions, and nearby villages, which may also include *liquid, hazardous, and radioactive* waste; and
- Medical waste produced by hospitals/clinics, apart from the disposal and incineration in Port Moresby Hospital. A comprehensive audit on the generation of medical waste and disposal in Port Moresby and other centres in the country may be covered in future audits.

1.11 About the Audit

The Pacific Association of Supreme Audit Institutions (PASAI) Congress in 2008 agreed, as part of a Regional Pacific Audit Initiative sponsored by ADB, there would be benefits in conducting a program of cooperative performance audits to promote cooperative auditing and increase capacity building by learning from each other.

Performance audits are concerned with the audit of economy, efficiency and effectiveness, and embrace the audit of the:

- (a) economy of administrative activities in accordance with sound administrative principles and practices, and management policies;
- (b) efficiency of utilisation of human, financial and other resources, including examination of information systems, performance measures and monitoring arrangements, and procedures followed by audited entities for remedying identified deficiencies; and
- (c) effectiveness of performance in relation to achievement of the objectives of the audited entity, and audit of the actual impact of activities compared with the intended impact.

Cooperative audits involve the audit institutions of a number of countries working together on a single audit with joint planning, but different approaches/ standards/ methods in each jurisdiction, and producing separate individual reports in each jurisdiction. However, the requirement of PASAI is that final reports of the respective audit institutions in the region are consolidated into a PASAI report.

Based on that agreement, the 12th PASAI Congress in July, 2009 endorsed the performance audit on Solid Waste Management (SWM). The Congress also endorsed the specific audit objective of the cooperative performance audit. The Supreme Audit Institutions involved in the cooperative performance audit include; *Cook Islands, Federated States of Micronesia, Fiji, Guam, Marshall Islands, Palau, Papua New Guinea, Samoa, Tonga, and Tuvalu.*

The arrangements for carrying out the cooperative performance audit in the region was co-funded by INTOSAI Development Initiative (IDI) and Asian Development Bank (ADB).

1.12 Audit Reporting Structure

The structure of the remainder of the report is as follows:

- Chapter 2 covers Audit Objective One, that is the existence of a legal framework governing waste management;
- Chapter 3 deals with Audit Objective Two that examines the process by which the legal and policy framework for waste management is administered and implemented;

- Chapter 4 deals with Audit Objective Three and covers compliance with the legal and policy framework for waste management; and
- Chapter 5 covers landfill management in Port Moresby.

The audit expectations are set out under each of the three lines of enquiries specified in the audit objectives, followed by audit work performed, audit findings, and the issues observed.

The causes of the particular issues and their possible implications are summarized, followed by appropriate recommendations to rectify the situation, and general management comments highlighted for each of the recommendation.

CHAPTER 2.0 EXISTENCE OF LEGAL & POLICY FRAMEWORK FOR SOLID WASTE MANAGEMENT

2.1 Introduction

To ensure the effective management of solid waste in the country, the AGO expected that there would be an overarching national legal and policy framework on solid waste that provide clear direction, and mandates which agencies are responsible for solid waste management. In order to confirm this expectation, audit examined the laws and policies that are currently in operation in relation to the management of solid waste, especially in the NCDC.

2.2 Applicable Legislation

The AGO found that there is no dominant or single legislation for the Management of Solid Waste activities in Papua New Guinea. However, there are several legislations and regulations that make general provisions for management of waste, including solid waste. These are shown in **Table:2.1** and are discussed in the subsequent paragraphs.

Table 2.1 Legislations/Regulations that provides for Management of Waste in PNG

Legislation/Regulation	Responsible Ministry/Department	Coverage Level
<i>Environment Act 2000</i>	Department of Environment & Conservation	National level
<i>Organic Law on Provincial & Local Level Governments, (as amended.) 2003</i>	Ministry of Provincial & Local Level Governments	National
<i>Public Health Act, 1973</i>	Ministry of Health	National level
<i>Public Health (Sanitation & General) Regulation, 1973</i>	Ministry of Health	National
<i>National Capital District Commission Act (as amended), 2001</i>	National Capital District Commission	National Capital District
Provincial & Local Level Governments By-Laws	Ministry of Provincial & Local Level Governments	Provinces, Districts/Towns

2.3 *Environment Act 2000*

The AGO's review of the Act reveals that the *Environment Act 2000* is the principle national level legislation that addresses environment protection in relation to development projects. The Act gives specific provisions for development of appropriate policy and regulations on waste management. The Act does not cover solid waste management specifically.

The *Environment Act, 2000* gives power to the Department of Environment & Conservation to be the lead government Agency, and policy maker on issues relating to the environment protection.

Part 4 of the *Environment Act* makes provisions for formulation of *Environmental Policies*. Section 31 stipulates that:

- (1) *An Environment Policy may be made in relation to the environment or anything that affects or may affect the environment, in accordance with this Part.*
- (2) *Without limiting the generality of Section 31, an Environment Policy may apply to the whole country or to a segment or element of the environment and may be made in respect of any of the following matters:-*
 - (a) *contaminant;*
 - (b) *an industry or activity;*
 - (c) *a technology or process;*
 - (d) *a beneficial value;*
 - (e) *loss of a beneficial value relating to the environment;*
 - (f) *waste management or minimisation;*
 - (g) *contamination control practice;*
 - (h) *land, air or water quality;*
 - (i) *noise;*
 - (j) *litter;*
 - (k) *management of surface and underground water; and*
 - (l) *decommissioning and rehabilitation requirements.*

Despite the implied requirement for DEC to formulate environmental policies, the DEC has yet to develop a Strategy and a specific national policy, including regulations on waste management. However, at the time of audit, the DEC and its key stakeholders were embarking on developing a National Solid Waste Management Strategy which will basically provides for a policy focus on how solid waste should be managed in the country.

The AGO noted during the review that the development of the national Strategy is to complement the Regional Solid Waste Management Strategy, adopted as part of the *South Pacific Regional Environment Programme (SPREP)* to assist PIC countries to address waste management issues and meeting their international obligations under the various waste related Conventions. Papua New Guinea as a ratified member to the Pacific Regional Environment Programme (SPREP) Convention is obligated to ensure its national Strategy is developed in accordance with the provision of the Regional Strategy.

Section 39 of the *Environment Act 2000* gives powers to the Provincial Governments to make *Provincial Environment Policies* in relation to environmental issues. This provision will then enable provinces and town authorities to develop *by-laws* to deal with the management of waste under the respective jurisdictions. *Subsection (1) (b)* specifically mentions the inclusion of *litter, hygiene, contaminant and sanitation*.

The AGO considers that, given the diverse nature and size of the country, the development and review of the provincial and local level governments laws and policies would be carried out in accordance with national laws and policies to ensure consistency.

The AGO noted during the audit that, to date, the DEC has little input towards the development of provincial and local government policies and legislations including by-laws.

2.4 Organic Law on Provincial & Local Level Governments, (as amended) 1995.

The *Organic Law on Provincial and Local-Level Governments* became operational in July 1995, and was later amended in 2003.

The AGO's review of the Organic Law revealed that no clear/direct provisions have been made in the *Act* for the management of waste, including solid waste. However, the *Act* has provisions which allow for provincial and local governments to develop appropriate policy, legislation and by-laws in relation to waste management.

Section 42 refers to law making powers of the Provincial Legislature and provides for the issues of which laws may be made by the Provincial Government; however, no provisions are made in relation to management of solid waste.

Section 44 stipulates the issues under which the Local Level Governments (Councils) may make by-laws and rules to cover waste management in each municipality. Generally, this Section is also silent on waste management, although *Section 44 (1)(x)* mentions *hygiene* and *sanitation* while *Section 44 (1) (i)* mentions *local environment*.

The AGO noted that the Organic Law provides the mechanisms and give powers to the Local Level Governments and the City/Urban or Town Authorities to set up by-laws to cover municipal waste management.

Although the waste management operations in the Provinces were not the focus of this audit, the AGO considers that DEC should develop a framework for the development of policies for the management of waste at all levels in PNG, as soon as DEC has developed a national policy. This should be done in consultation with the Department of Provincial & Local Level Governments Affairs, and the officials of the respective provincial and local level government. The Provincial Governments would then be able to develop their own policies and incorporate them in local regulations so that they can be enforced.

Once the legislation is formulated, the DEC should develop a monitoring framework to confirm that provinces are developing their own policies. The current situation is that with completion of a national solid waste management strategy, a policy will then follow at national level. The development of the policy should basically guide provincial/ local governments, departments, and other entities, to develop their own policies and by-laws, consistent with the national initiatives.

Recommendation #2.1:

The AGO recommends that the Department of Environment & Conservation considers formulating a consolidated single/dominant National Solid Waste Management Legislation that deals with the management of solid waste in the country, including all municipalities in all sectors, national, provincial & local level government levels, in consultation with its stakeholders.

Management Comments:

The DEC responded as follows;

Recommendations noted and that DEC as a major part of its work to develop appropriate regulations under the Environment Act 2000 on solid waste management. The Regulations including the Code of Practice would then form the basis for provincial/local governments to develop their own policy, sub-laws on waste management. DEC is of the view that given the current situation on the legal framework on waste management, all existing By-laws including national legislations be harmonised to ensure consistency and for effective coordination and implementation by key agencies.

Recommendation #2.2:

The AGO recommends that after formulating a national solid waste management policy, the Department of Environment & Conservation takes a leading role in developing a framework by which Provincial and Local-Level Governments can establish their own respective solid waste management strategies.

Management Comments:

DEC notes and agrees fully with the above recommendations.

Recommendation #2.3:

The AGO recommends that the Department of Environment & Conservation, in consultation with the Department of Provincial & Local Level Government Affairs, establish a formal system to monitor the progress of the development of provincial and local level governments by-laws and report back to the Environment Council through the Secretary of the Department of Environment & Conservation for alteration and improvement..

Management Comments:

The DEC responded as follows;

DEC takes note of the recommendations and will continue to work towards establishing a system to monitor development of by-laws at provincial level and to report back on this at national level.

To achieve this, the Department firstly needs to be adequately funded and working together with all stakeholders in order to assist in achieving this recommendation. As an initial attempt in addressing the issue, an inventory of existing provincial by-laws and Regulations at all levels on waste management be carried out.

2.5 Public Health Act, 1973 and the Public Health (Sanitation & General) Regulation⁶

There are number of other pieces of legislation that deal with waste disposal and management in Papua New Guinea. These legislations, particularly the *Public Health Act, 1973* and the *Public Health (Sanitation & General) Regulation, 1973* were put in place before independence, make provisions for regulating and controlling domestic refuse, health, sanitation, cleaning, scavenging, and disposal of waste at proper dump sites as discussed later.

Part X of the *Public Health Act* makes provisions for the formulation of *Health Regulations*. *Section 141 of the Act* states that; “the Head of State, acting on advice may make regulations, not inconsistent with the Act, prescribing all matters that by that Act are required or permitted to be prescribed, or that are necessary or convenient to be prescribed for carrying out or given effect to the Act, and in particular prescribing matters providing for and in relation to health matters in general” as summarized in **Appendix 2** of the report.

The *Public Health (Sanitation & General) Regulation 1973* provides for the controlling of domestic refuse and the establishment of refuse points. It also covers health, sanitation, cleaning, scavenging, and disposal of waste. Further, this Regulation prohibits the disposal of waste in an area other than the designated dumping sites, and provides for offenders to be fined. The implementation, compliance, and monitoring aspects of the provisions of the Regulation are covered under Chapters 3 and 4 of this Report.

2.6 National Capital District Commission Act (as amended), 2001 (NCDC Act)

Section 2 of the NCDC Act states that the purpose of the National Capital District Commission is to ‘...give effect to the public interest in;

- (a) *public welfare; and*
- (b) *the development of under-privileged or less advanced groups, through greater and more effective and meaningful participation and representation of the people of the National Capital District, affected by the activities of the National Capital District Commission, in the decisions and affairs of the Commission...*

The NCDC advised that there is no specific law or regulation for the management of solid waste activity in the City. The *NCDC Act* does not make specific provisions for the management of solid waste in the City.

⁶ *The Act and the Regulations were enacted during the Self Governing period, prior to Papua New Guinea’s political Independence in 1975. .*

In the absence of provisions in the Act and of a national policy, the NCDC is adopting the relevant provisions under the *Public Health Act, 1973*, and the *Public Health (Sanitation & General) Regulation, 1973*, for solid waste management. The application and compliance part of these respective legislations and regulations are discussed under Chapters 3 and 4 of this Report.

Further, the AGO found that the Waste Management Section of NCDC does not have proper policies, management manuals, and procedural guidelines, to provide guidance to perform their normal daily duties for the management of solid waste activities. The next Chapter discusses this issue in more detail.

However, in the absence of waste management legislation, the Commission has developed a *Waste Management Policy*, which is still in draft form at the time of preparing this Report. The drafting of the policy was an outcome of an “*Action Plan*” that was developed in 2008, specifically for the formulation of a ‘*NCDC Waste Management & Public Cleansing Policy*’.

The Policy notes that NCDC has the responsibility to ensure that all waste is managed and disposed of responsibly, and in an environmentally friendly manner, using the best available management practices and disposal methods.

The aim of the Policy is to provide instructions on the classification, management, training and audit with respect to waste management. The Policy also set forth the waste responsibilities of citizens, the business community, and the municipality or its agent, government, and the contractors who deal with waste collection and disposal.

Further, the issues in relation to the responsibility by the City Municipality are summarized in **Appendix 3** of the Report.

Under the current situation described in the proceeding paragraphs, there is immediate need for the NCDC to give priority to implement the draft policy after its approval.

Recommendation #2.4:

The AGO recommends that the National Capital District Commission:

- (i) implements the policy on the management of waste, including solid waste management, after its approval;*
- (ii) develops a mechanism by which the referred policy can be implemented effectively; and*
- (iii) develops a by-law that addresses solid waste management effectively, and implements the legislation for the management of waste.*

Managements Comments:

The NCDC took note of the recommendations and responded as follows;

- (i) The development of the policy is now in its final draft stage;*
- (ii) In the absence of specific provisions in NCDC Act in terms of solid waste management; NCDC relies primarily on the provisions in the Public Health Act wherever reference is made to the “local medical authority”. The DEC is empowered with adequate powers to legislate on the solid waste management in the country must take the lead role in enacting regulations or laws for integrated solutions to the urban centres including the NCD;*

Nevertheless, NCDC is empowered under Section 41(1)(f) of the NCDC Act to legislate on sanitation and garbage. NCDC may rely on this provision to make by-law on the two matters and include solid waste as a part. The Commission is planning to convert the current policy on the city’s waste management into a by-law when it becomes full-fledged, thereby it will be a law for residents and NCDC to follow; and

- (iii) The current NCDC by-law on Garbage and Sanitation only regulates issues on garbage services and fees. Alternatively, the by-law may be also expanded to address all issues relating to solid waste management.*

2.7 Completion of Solid Waste Management Strategy for PNG

As discussed earlier, PNG has been part of the *South Pacific Region Environment Programme* that was responsible for developing the *Solid Waste Management Strategy for the Pacific Region*

Using the guidance from the Strategy and as part of the programme, the DEC is in the process of formulating the *Solid Waste Management Strategy for PNG*, in line with the requirement of the *South Pacific Region Environment Programme*.

Since the provisions made in the current legislations/regulation in the country do not give clear direction for the solid waste management, the AGO considers that the formulation of the strategy for the management of solid waste will have a positive impact on national , provincial & local-level governments.

Recommendation #2.5:

The AGO recommends that the Department of Environment & Conservation, in consultation with the other stakeholders, takes immediate steps to ensure that the formulation of the proposed strategy on the management of solid waste in the country is given high priority.

Managements Comments:

The DEC responded as follows;

We agree to the recommendations and as a way forward immediate steps are now being taken to develop a national solid waste management Strategy consistent with the Regional Solid Waste Management Strategy.

2.8 Conclusion

There is neither a national policy, nor a dominant legislation/regulation nor a national strategy in relation to the management of solid waste in Papua New Guinea. However, there are provisions made in other existing legislations and regulations for the management of waste in general.

The *Environment Act, 2000* gives powers to the Provincial Governments to make *Provincial Environmental Policies* in relation to environmental issues, including *litter, hygiene, contaminant, and sanitation*.

The *Organic Law on Provincial & Local Level Governments, 1995*, gives powers to the Provincial and Local Level Governments to develop policies and by-laws while the Regulation on Public Health makes provisions for waste in general including some types of solid waste. The Public Health Act and Public Health Regulation also talks about waste in general.

The AGO concludes that the current requirements under the *Environment Act, and the Organic Law on Provincial & Local Level Governments*, for Provincial & Local Level Governments to formulate by-laws and develop environmental policies do not seem to be working well since the *Laws* became effective. There is no timeframe given, no control and monitoring from the central lead agency, and there is no guarantee that all provincial and Local Level Governments will formulate any by-laws to manage waste under their respective jurisdiction.

As a consequence of having fragmented legislations and, regulations, and no clear policies, the management of solid waste is likely to be inadequate and ineffective at all levels of Government, including the NCDC.

3.1 Introduction

This Chapter discusses the process by which the legal and policy framework for solid waste management is implemented with proper planning for accomplishing the desired goals and objectives in relation to solid waste management.

The process also requires proper arrangement of functions and allocation of resources within implementing agencies for effective management. The implementation and enforcement of the relevant legislations and the regulations currently in operation for the management of waste is discussed in the subsequent paragraphs.

3.2 Priority given by DEC to the Management of Waste.

Existence of Waste Management Section at DEC

The AGO expected that the DEC being the national lead Agency would have a dedicated and adequately resourced section within the Department to carry out its functions and responsibilities for the management of solid waste in the country.

The DEC has established a Division that deals with waste management. The audit findings in relation to the related issues, including resourcing, are discussed in the subsequent paragraphs.

Main functions

The main functions of the Industrial Standards Branch in the DEC are to develop Standards which includes waste management. Currently some of the Branch roles and responsibilities include:

- *Review and standardize Environment Policy under Environment Act, 2000;*
- *Develop Environmental Guidelines on Sewerage Treatment and Disposal;*
- *Review and update Environmental Code of Practice for Oil Palm processing industry;*
- *Develop National Solid Waste Management Strategy;*
- *Develop PNG/SPREP/ICA Waste Management Project Proposal and Implement;*
- *Ratify Rotterdam Convention; and*
- *Implement NIP (National Implementation Plan) to meet obligations of the Stockholm Convention.*

Further, the AGO review indicated that the DEC has formulated a Corporate Plan for the period from 2009 – 2012. This Plan was the first to be developed following a Cabinet Decision (147/2008), which transferred climate change functions from DEC to a new organization called, the “Office of Climate Change and Environmental Sustainability”, which falls under the Prime Minister’s Department responsibility.

There are five corporate objectives. The 4th objective is related to *environment protection*, which aims to improve the regulation and management of major development projects to reduce the risk of environmental damage.

The DEC's Corporate Plan, in a broader perspective, captures environmental protection issues. However, no specific provisions were made to deal with any activities for the management of waste during the period of the Plan.

Resource allocation

The AGO's review of the resource allocation of the Division that deals with waste management issues at the DEC revealed that the responsible Division was inadequately resourced. There are four positions created under the *Industry Standards Branch*, of which three are filled and is headed by a Manager while one position is still vacant.

As far as the funding of waste management related tasks are concerned, the AGO observed that all funds are channelled through one line item to cater for all expenditure. No specific budget lines or accounts have been established specifically to fund waste management activities undertaken by the Department. Any waste management activity that warrants funding through the Department would currently be allocated through the recurrent budget.

The Department has over the years committed financial resources especially for officers to attend regional and international meetings or Conference such as the Stockholm Convention, the Basel Conventions, and SPREP.

Recommendation # 3.1:

The AGO recommends that the Department of Environment & Conservation urgently reviews its current arrangements with the resource allocation and gives its priority for the effective management of waste in the country.

Management's comments:

The DEC took note of the audit recommendations and responded as follows;

The Management takes note of the audit recommendations and will attend to them through some of the following actions, including:

- *Reviewing its current staff strength;*
- *Review of its current activities pertaining to solid waste management in particular appropriate laws and regulations relating to waste management;*
- *Ensure adequate level of budgetary allocation especially through seeking funding assistance from other donors and developing appropriate economic instruments for waste management; and*
- *Enhance and improve national coordination of waste management work at all levels of governments.*

3.3 Waste Management Legislative and Policy Vacuum

As discussed in the previous Chapter, the AGO observed that, although the *Environment Act* provided for the formulation of policies at all levels of government, there was still a legislative and policy vacuum covering the management of waste.

The *Act* has provisions for policy and regulations to be developed at national level. It also has provisions for delegation of powers to provincial administrations. *The Organic Law on Provincial & Local Level Government* provides for laws and policies to be developed at provincial level for waste management.

In the absence of proper legislation and policy framework at any level of Government, the AGO reviewed the process by which the NCDC manages solid waste in Port Moresby.

The AGO was advised that the NCDC Waste Management Division is being guided by the relevant provisions of the *Public Health Act 1973*, and the *Public Health (Sanitation & General) Regulation, 1973*, for the management of solid waste in Port Moresby to guide its work.

As discussed in the preceding Chapter, there is a draft policy in place which addresses the issues on classification, management, training and audit with respect to waste management. The AGO considers it important for NCDC to review and approve the Waste Management Policy at the earliest possible.

3.4 Establishment of Solid Waste Management Division at NCDC

The NCDC has established a Solid Waste Management Section within its organizational structure in order to carry-out the waste management function adequately. The main functions of the Division are:

- Management of Collection and Disposal of Waste in the city;
- Dump Management; and
- Management of Classified Waste.

The classified waste category basically deals with waste generated from the city that needs further treatment such as chemical, medical waste⁷, oil, and metal, before its final disposal,. The Division also deals with issues relating to illegal dumping and surveillance, refuse dump project and garbage query investigation.

Capacity and staff constraints

The Division is headed by a Manager and currently resourced with eight staff of which six are senior technical and environmental health officers. At the time of the audit, the AGO noted that all the staff members possess some basic qualifications and skill. However, considering the heavy work load of the Division, some staff members lack the capacity to adequately cope with the allocated tasks.

⁷ Disposal of medical waste is discussed further in Chapter Five

In particular, as discussed later in the report, the poor management of the landfill in Port Moresby needs to be addressed with some urgency by staff dedicated to deal with the issues.

The AGO was also informed during the audit that two of the senior officers were on study leave, and their responsibilities were distributed amongst the existing staff. We were informed further that the workload does not match the available staff.

The AGO considers that it is important for the Commission to build up its required capacity at the earliest stage to meet the current and future requirements.

Recommendation# 3.2:

The AGO recommends that National Capital District Commission:

- (i) conducts a formal review of its workforce to effectively address whether the Waste Management Division is able to meet its corporate goals and objectives in relation to waste management, and to ensure that the current and future workloads are adequate to meet its key goals and objectives; and*
- (ii) addresses the capacity issues effectively through a performance management system, including staff training and development to address gaps and to enhance their performance.*

Management comments:

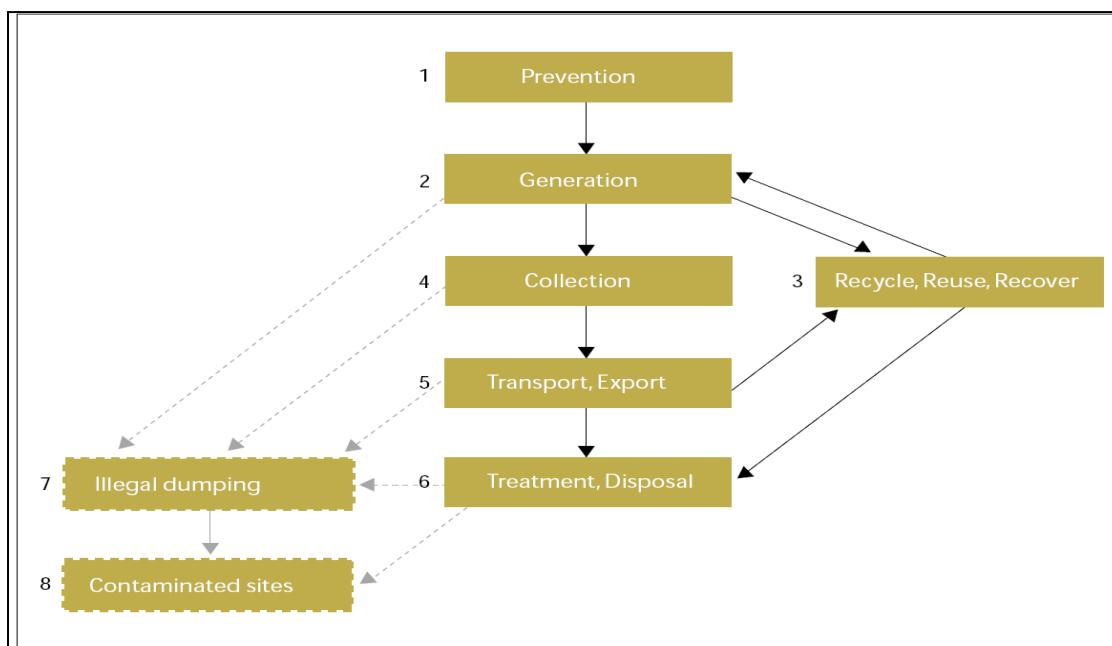
The NCDC noted and responded as follows;

- (i) The restructure of the Waste Management Division has been adequately addressed in the current review which might take effect beginning of next year;*
- (ii) Yes, the capacity issues of the current and may be proposed staffs is that matters. Even with the current strength, the division could be well managed given that all its functions such as collection and disposal of waste, illegal surveillance of waste disposal, dump management etc have been completely outsourced. Due to the lack of skills within the division, it lacks foresights and forward planning.*

The Commission has included the capacity building of waste management Division into the Hetura Project (a CLGF project between NCDC and Townsville City); the Commission has invited the experts from Townsville City Council to visit NCD and help develop long term activity plans for the city's waste management.

3.5 Management of Waste Stream in Port Moresby

In conducting the audit of the process of managing waste in Port Moresby, the AGO examined the solid waste management activities in Port Moresby against the reference points in the waste stream as shown in the diagram below and discussed earlier in Chapter One.

Figure 3.1: The Waste Stream

Prevention

Prevention is aimed at reducing the waste generated at the generation points. The aim is to find better ways to reduce the amount of waste created, which in turn reduces the harmful effects waste has on the environment and also the associated health related issues.

One of the key prevention strategies is continuous public awareness and public education programmes on solid waste management. The awareness and education programmes should target/focus on the communities, children and the settlements and should include major issues such as:

- *Reduce, Reuse, Recycle;*
- *Environment and financial benefits of waste minimization;*
- *Illegal dumping and unnecessary dumping;*
- *Payment of fees for services provided; and*
- *Co-operation from consumer/public.*

The AGO observed during the audit that NCDC and DEC carry out public awareness and educational programmes at their own levels respectively. However, more needs to be done with stakeholders on public awareness. Further, funding needs to be provided to address the issue effectively. The awareness programme also requires more/better coordination with provincial governments' and local level governments' on rising the awareness of the benefit of good waste management work.

The issue of public awareness and public education on solid waste management at all levels has not been given prominence status to convince decision makers to allocate more funds. Decision makers also need to be made aware of the need for waste management.

The AGO also noted that there is no plan or funding in the budget for prevention or awareness programs. The AGO considers that effective community based education and awareness is vital in the area of solid waste management. There is a need to educate the public on the environmental and financial benefits of waste minimisation. The NCDC Waste Management Section confirmed that the Section has not seriously pursued the matter of prevention of waste generation.

Recommendation # 3.3:

The AGO recommends that National Capital District Commission institutes and funds adequately a public awareness and education program to make the public fully aware of the benefits of preventing the generation of unnecessary waste.

Management's comments:

The NCDC responded as follows;

Although specific funds are not made available for awareness within the Waste Management budget; we do have funds within the Public Relations well over K2 million for all awareness programs of the Commission including Waste Management. We will explore possibility of decentralising the awareness budget.

Generation

An important step in any waste management strategy is the development of an accurate waste inventory or database on the different types of waste that are generated at all sectors. This inventory provides the designers/planners the necessary baseline information they need to effectively formulate their waste management strategy.

Waste in general is generated by the following; residential, business house, industries, schools, markets, hospitals/clinics, settlements and the public population in general. The volume of waste generated by the above mentioned generation points, and the plans to deal with waste, cannot be accurately ascertained unless there is an accurate data collection system.

The Waste Management Section advised that the data on waste generation were not accurate because the information system was not comprehensive enough to capture all the waste placed in the dumps or the waste not placed in the dumps, for example from the settlements around Port Moresby.

The AGO observed during the audit that NCDC does not have any current reports on the volume of waste generated by the various generators and disposed of at the dump site.

However, to give some indication of the volume of waste that goes into the dump site, the estimated average monthly, quarterly and yearly tonnage of waste generated and disposed off, by various sources in Port Moresby from January to December, 2003 (the latest available) is given in **Table 3.1** below.

The figures are based on the number of visits to dump sites done by the contractors for waste disposal and the weight of the vehicles. The age of the data and the method of measuring waste generation cannot be relied upon.

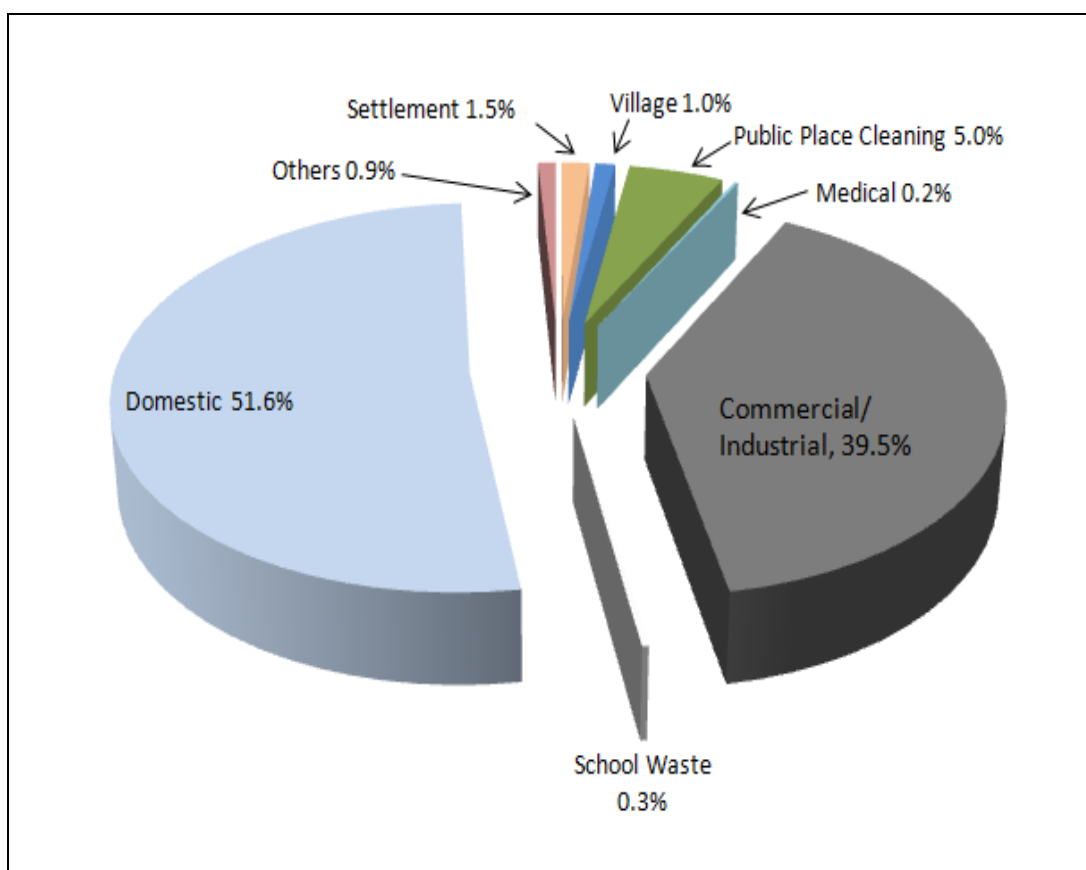
Table 3.1: Volume/the waste generators in Port Moresby from January to- December, 2003.

No.	Type of Waste Generators	Monthly Tonnage	Quarterly Tonnage	Yearly Tonnage
1	Settlement	67.20	201.60	806.40
2	Village	48.00	144.00	576.00
3	Public Place Cleaning	230.40	691.20	2,764.80
4	Medical	9.60	28.80	115.20
5	Commercial/Industrial	1,824.00	5,472.00	21,888.00
6	School Waste	12.00	36.00	144.00
7	Domestic	2,381.28	7,143.84	28,575.36
8	Others	43.20	129.60	518.40
	TOTAL	4,615.68	13,847.04	55,388.16

Source: NCDC Waste Management Section

In percentage terms the chart below shows that in 2003 domestic household waste was the most predominant form of waste, followed by commercial and industrial. However, the volume of waste from the settlements is more difficult to determine.

Figure 3.2: Volume of waste generation in percentage



Recommendation #3.4:

The AGO recommends that the National Capital District Commission develops data collection methodology to assess the volume of waste collected and disposed of, and to be used for informing future planners and designers of waste management.

Management's comments:

The NCDC noted and responded as follows;

This is an issue the management is also emphasising with the responsible Division. The points well taken.

Collection

Collection covers the waste collections from the generators, the means of collection, fee structure established and the frequency of collection.

NCDC, as the local authority, is responsible for the collection of all wastes generated within the city area and the three electorates. However some properties and premises have privately arranged collection and disposal services.

There is a collection system in which private contractors are engaged through contractual arrangements to collect and transport waste to the Baruni Dump site. Under the current period of contract, nine big contractors have been engaged for providing waste management services. However, two firms have been either terminated due to poor performance of the firms, or have voluntarily withdrawn their services. As a result, there are only seven contractors left, of which six are for collecting and dumping garbage while the seventh is managing the Baruni Dump.

Collection is done twice weekly. Contractual arrangements for the outsourcing of the collection and transportation functions are discussed later.

Domestic Waste Collection:

The Domestic Waste Collection Schedule serves the residential areas within and around the city where there is better city planning. The intention is for waste to be stored in bins and put out on the bin stands on collection days to be collected by the contractors.

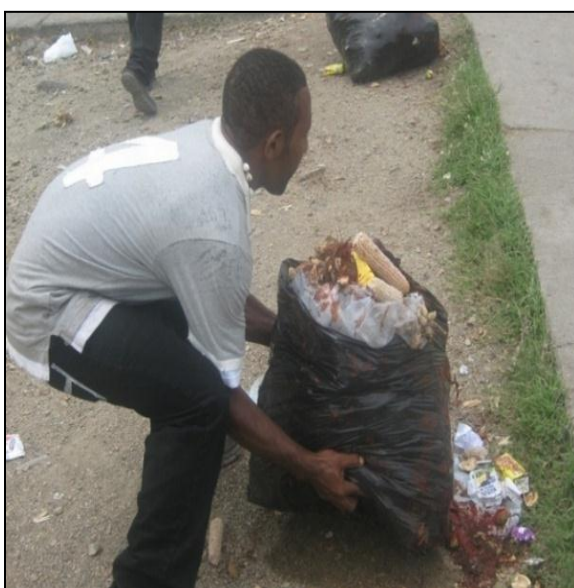
The bin stands have been erected to prevent scavengers (dogs, cats) from having access to the waste. The AGO observed that often waste was directly dumped in the refuse ramp or thrown around the stand, allowing the scavengers access to the waste and resulting in litter being strewn around in area as shown in the slide below.



AGO Photo Slide #1: Refuse Ramp not properly used, April, 2010.

Commercial/Industrial Waste collection schedule.

This schedule serves the commercial and industrial sector. However the AGO was advised that the majority of the commercial/industrial sector uses the user pay system and disposes of waste in Port Moresby's current official dump at the Baruni dumpsite. The *Six Mile dump* was closed some years ago and is under-going environmental rehabilitation program.



AGO Photo Slide #2: Contractors at work, April, 2010. AGO Photo Slide #3: Contractors at work, April, 2010.

The slides above and below showing contractors at work in the city during collection period. The garbage load on one of the dump trucks heading for the dump site is not covered.



AGO Photo Slide #4: Contractor truck at work, April, 2010.

Recycle, Reuse, Recover

This aspect of the waste stream includes the policies or procedures that are in place to assist waste generators recycle waste products. It also includes what processes are there, as part of the collection process, to maximize opportunities for recycling and reuse of components of solid waste.

The AGO was advised that, there is a small market for recycling of metal and aluminium products only. Although no current data is available, the only recycling activity taking place in Port Moresby is scrap metal, can, plastic and glass bottles. Scrap metal is crushed and shipped overseas for recycling. There is also opportunity for paper recycling, either in the country or pack them and ship overseas for recycling.

The NCDC has no policy on recycling of waste material. The AGO was further advised that the economic benefit to be derived from recycling is marginal and transport costs alone outweigh any benefits to be derived. According to the draft *Solid Waste Management Policy*, the NCDC is to regulate the recycling industry and the export of recycled materials to overseas countries.

Recycled materials are purchased at certain points in the NCD. Most of the waste material is collected by scavengers who live in and around the dump site. As observed by the AGO at the dump site, this involved a public health risk for a number of reasons including as the Baruni scavengers had very minimal clothes on their bodies. Metal and aluminium is collected and is sold on the roadside.

The risk of not having a recycling policy is that some companies established to deal with recycled products run out of materials. This provides an incentive for sellers to find other sources of supplies such as by cutting down power post and telephone cables and sell them to the recycling companies.

Recommendation # 3.5:

The AGO recommends that:

- (i) the Department of Environment & Conservation initiates the formation of a Committee at the national level, including both the public and the private sector on this important issue of recycling, and addresses the issues appropriately in the long run; and*
- (ii) after approval of the draft waste management policy, the National Capital District Commission, in consultation with the stakeholders, develops and implements a recycling policy in Port Moresby with funding from the National Government.*

Management's comments:

The DEC took note of the recommendation;

- (i) The management takes note of the recommendation and the need to urgently initiate a national Working Committee to coordinate such initiatives at national level. To promote recycling issues at national level, a national 4 R Strategy needs to be developed to promote such work particularly having to strengthen and promote government-private partnership;*
- (ii) The NCDC agrees:*

Currently there is a committee or rather an interim team that is working on a project on waste management for NCDC under JICA technical co-operation.

That a recycling policy be developed to cater for the recycling of all forms of recyclable matter and end products markets be established to compliment the efforts that may be put in by the citizens to collect and manage the recyclables.

Segregation of Waste

There are two basic approaches to recycling. The first involves separating recyclable materials at source (by the waste generator) and separately collecting and transporting these materials to recycling markets. The key factors in the success of separating recyclable material source are the cooperation and willingness of the waste generators to participate in the programme over the long term, and the additional collection and transport costs that may be required.

The second approach involves collecting mixed wastes and separating these at a central processing facility. According to the *Environment Code of Practice for Sanitary Landfills in PNG 2001*, this is the ideal method.

There is no segregation of waste at point of generation or at the dump site in Port Moresby. All waste, regardless of whether it is green waste, medical waste, or hazardous waste, is dumped at the Baruni Dump site, causing damage to the environment and health of the surrounding population.

The AGO was advised that at present there is a need for public (government) and private partnership to support the implementation of recycling in Port Moresby.

The National Government may need to be prepared to subsidise the cost of recycling in support of its *Environmental Act 2000*. However given the environmental, health and long term financial benefits of recycling waste, the AGO considers that a subsidy to encourage the recycling of waste would be a worthwhile initiative for NCDC to consider.



AGO Slide # 5: Shows part of Baruni Open Dump Site, April, 2010

Treatment and Disposal

The areas designated for the treatment and disposal of waste should be suitable and accessible to the inhabitants of the region. This deters them from dumping of waste on land not designed for the purpose or without adequate controls in place, which can result in serious public health and safety problems, and adverse environmental impacts.

Currently, all waste collected from Port Moresby City is disposed at Baruni Dump which is located in the west about 30 minutes drive from the city to the west, and is legally gazetted. It is in a valley bordered by hills all around except at the entrance. The Dump has been used for the last 20 years⁸ The Dump's operation is covered by the Environment Code of Practice for Sanitary Landfills in PNG 2001.

NCDC gives approval for the dumping of waste, especially building materials, into the sea at designated spots and as provided for by the *Dumping at Sea Act 1979*. However, there are no controls around the amount of waste material dumped so the volume or type of waste dumped in this way cannot be determined.

The AGO observations on the operations of the Baruni Dump site are discussed in Chapter 5.

Illegal dumping and contaminated sites

Given a lack of policy for the management of waste and the inadequate approach to waste prevention, collection and treatment and disposal, and the lack of adequate services in the settlements, the AGO considers it not surprising that there is indiscriminate dumping of refuse in all parts of Port Moresby into water ways, drains, roadsides and other public places as shown under Slides 6 & 7 below. This is illegal and offenders, if caught, can be charged under the *Public Health (Sanitation & General) Regulation 1973*.

The AGO was advised that the NCDC waste management section posts environmental inspectors in certain hotspots for illegal dumping to apprehend the offenders but the offenders now dump their waste at night. The NCDC waste management section has insufficient funds and resources to combat illegal dumping done at night times. Audit findings and suggestion are made in Chapter 4.



AGO Slide # 6: Illegal dumping or littering drain in the city, April, 2010.

⁸ Until recently, the Dump at 6 mile Dump was used. The dump has been closed and dumping prohibited



AGO Photo Slide # 7: Littering & Illegal Dumping back road to North Waigani, April, 2010.

The slide above shows garbage being dumped at the roadside on vacant State land between Waigani Government Centre and North Waigani, with the National Parliament on the background. This type of practice would reflect bad image of Nation's Capital and the country. Further, dumping of garbage would also cause risk to public health in respect to leachates that will flow into the drains.

3.6 Funding of Waste Management

Budget Appropriation & Expenditure

The AGO audit review indicated that the funding of the Solid Waste Management Section is done mainly through the Commission's annual budgetary appropriation process.

The NCDC Management explained that the budget for funding the implementation of solid waste management system, and the *Baruni Dump* is submitted by the Waste Management Section to NCDC Executive Management for its perusal and approval.

The Commission also advised AGO that the funding for solid waste management is solely borne by the Commission, and the National Government does not allocate any funding. The NCDC believes that the State funding must come in the areas of recycling feasibility study, building of transfer station, and installation of an incinerator at the Dump to dispose of hazardous waste.

Table 3.2 below explains the budget appropriations and the expenditure of the City's operations and management for the fiscal years 2006 to 2009. However, the AGO did not perform a detailed analyse of the figures to establish what portion of the budget goes to what expenditure items. Since NCDC is a self funding entity, there is no such issue as over or under funding, as shown in the Table because what is budgeted for is all used for the fiscal year.

Table 3.2: NCDC Budget Appropriation & Expenditure for the five years from 2006 – 2009

Year	2006	2007	2008	2009
	(K'000)	(K'000)	(K'000)	(K'000)
Budget Appropriation	105,400	125,180	128,327	177,810
Actual Expenditure	105,400	125,180	128,327	177,810
Variance	Nil	Nil	Nil	Nil

Source: NCDC Accounts Section

Table 3.3 below indicates that the Waste Management Section has exceeded its Annual Year Budget allocation for the respective years under review. This reflects that there is a need for proper budget planning by the Waste Management Section in future. The actual total expenditure figures for the year 2010 will be available at the end of the fiscal year.

Table 3.3: Waste Management Budget Comparison for the five years from 2006 – 2009.

Year	2006	2007	2008	2009	2010
	(K'000)	(K'000)	(K'000)	(K'000)	(K'000)
Budget	3,860	6,390	6,310	6,430	6,920
Actual	3,963	6,756	6,543	6,831	
Variance	(113)	(364)	(233)	(401)	

The major activities under which separate annual budget allocations made within the Waste Management Section for the last five years are shown in **Table 3.4** below.

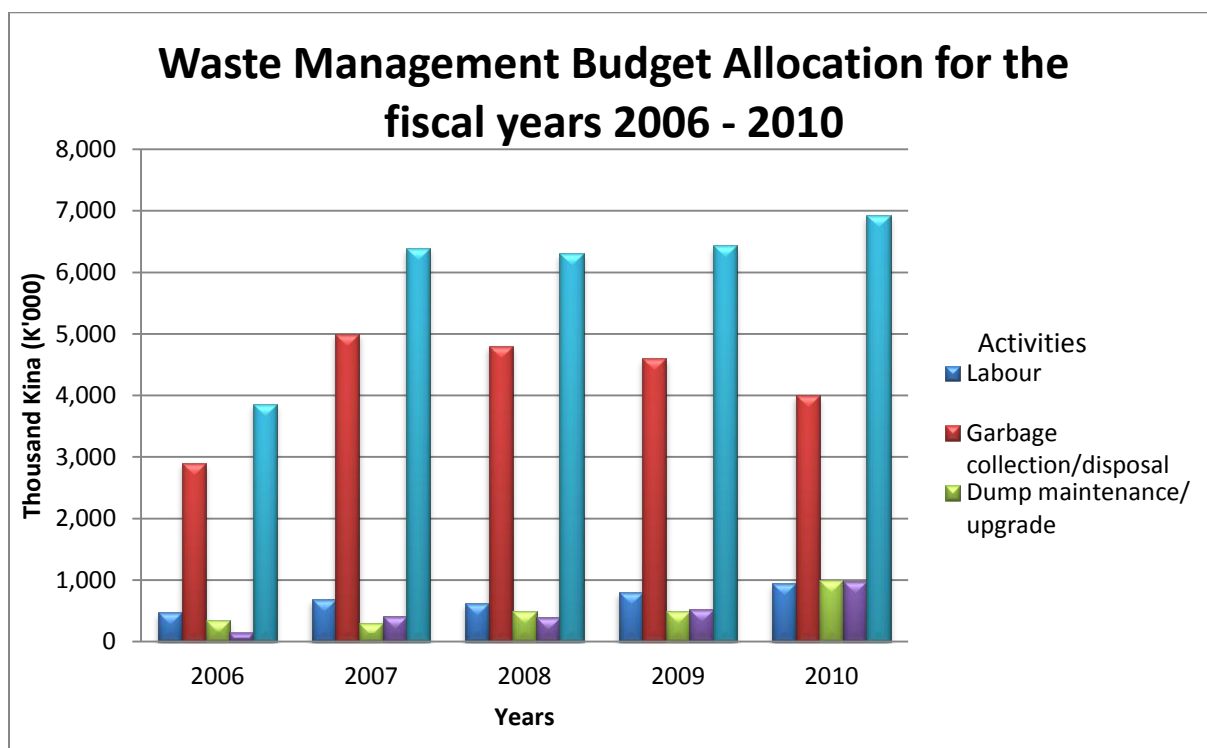
Table 3.4: Waste Management Budget Allocation per major items for the fiscal years 2006- 2010.

Activity	2006 (K'000)	2007 (K'000)	2008 (K'000)	2009 (K'000)	2010 (K'000)
Labour	476	680	620	805	940
Garbage collection/disposal	2900	5000	4800	4600	4000
Dump maintenance/upgrade	340	300	500	500	1000
Other	144	410	390	525	980
Total budget	3860	6390	6310	6430	6920

As the table referred to above shows, more than 80% of the budget has been allocated for garbage collection and maintenance, and upgrade of the Baruni Dump. However, some of the other waste stream activities, such as prevention and treatment discussed earlier, are not allocated separate budgets.

The **Figures 3.3** below shows clearly that the garbage collection and disposal activity accounts for a large percentage of the overall budget.

Figure: 3.3 Waste Management Budget Allocation for the fiscal years 2006 - 2010



Source: NCDC Budget Documents

Revenue generation

The NCDC receives revenue from levies or charging of fees for the collection of waste in the City. The industrial/commercial users have an alternative user-pay system whereby in order to have rubbish/waste dumped at the dump site, a fee of the prescribed rate must be paid at the NCDC and then the tickets are issued to the entity which must be presented at the dump site to allow access to the waste area for dumping. The AGO noted a weakness in control as dump supervisors can allow dumping without receipts or with payment tickets at a rate lower than the prescribed rates.

The residential areas that are serviced by NCDC receive garbage bills and are billed per premises per quarter per bin. As an incentive for the rate payers, NCDC introduced in 2006 supply of free wheelie bins to those who pay their rates on time.

Table3.5: Revenue Collection from land and Garbage Rates/Disposals for the years 2006 – 2009.

Years	2006	2007	2008	2009
	(K'000)	(K'000)	(K'000)	(K'000)
Receivables	7,725	7,577	7,833	10,149
Actual Receipts	2,368	2,813	3,693	5,320
Variance	5,357	4,764	4,140	4,829

Source: NCDC Accounts Section

As can be seen in **Table 3.5** above, the amount that is received for collection and disposal of garbage is significantly less than that was billed.

In addition to the loss of revenue through the non payment of bills by the residential areas, the majority of the city population live within the unplanned settlements, generate significant volume of waste but do not pay for its removal, nor do they dispose of it at designated waste collection points for private contractors to collect.

This loss of revenue by the waste management section hinders the development of an efficient waste management system.

The AGO was also advised that the rates were established without proper consideration of the costs involved and as a result were too low to support the activities of the Waste Management Section.

Table 3.6: Waste collection/disposal rates effective of March 01, 2010.

Type of wastes	Old Rates per ton (K)	New Rates per ton (K)
Brewery Wastes	68.20	85.25
Steel/Scrap metal Wastes	68.20	85.25
Chemical Waste	97.50	121.00
Medical Waste	97.50	121.00
Sawdust Waste	68.20	85.25
Oil Waste	95.70	121.00
Commercial Wastes	33.00	41.80
Other Waste	33.00	41.80

Source: NCDC Waste Management Section

Recommendations # 3.6:

The AGO recommends that National Capital District Commission:

- (i) seeks specific funding for the implementation of a waste management system and the operation of the Baruni dump;*
- (ii) reviews the structure for waste collection fees based on cost incurred by National Capital District Commission; and*
- (iii) enforces the payment of collection fees.*

Management's comments:

The NCDC took note of the recommendations and responded as follows;

- (i) The Commission will make proposal to DNPM and seek funding for the implementation of a waste management system and the operation of the Baruni dump.*

We do have specific funding for the operation cost of Baruni Dump – K1 million in 2010 budget.

- (ii) *Some of the fees that were imposed are to discourage certain types of waste going to the Dump for landfill. The fees as a formula of cost recovery is under consideration, however, pending implementation until reliable and consistent services are provided to the residents.*

3.7 Environmental and Health Risks

The AGO noted that although the DEC, Department of Health and NCDC are fully aware of the risks posed by waste, there is no focus on the management of solid waste.

The DEC has a permit system in place under the *Permits Act* which requires major resource developers and manufactures in the country to observe certain approved practices and waste dump sites to reduce environmental and health risks.

However, the issue of non permit holders indiscriminately disposing of waste in unapproved locations within the city means that much of the disposal of waste is uncontrolled.

The Department of Health manages its own waste system and dumps at the Baruni dump. The AGO's physical observation at the Baruni dumpsite highlighted the seriousness of the environmental and health risk posed by the dumping of infectious medical waste which has been left exposed to the open air. This issue is covered under Chapter 5 of the report.

3.8 Conclusion

There is a need for the draft waste management policy to be approved and implemented, and appropriate funding to be provided to ensure that all aspects of the waste stream is adequately covered.

There is no segregation of waste at the generation or at the Baruni dumpsite point and waste is not recycled. All waste is indiscriminately dumped and there is no proper management of the dump which poses severe environmental and health risks to the population who live in and around the dump.

Sufficient funding must be obtained by NCDC to fully implement the programs as well as the education and awareness programs and illegal dumping.

The major issues faced by the NCDC waste management section are:

- inadequate funding for the day to day operations of the Waste Management section;
- financial constraints which hinder the funding of the dump and new landfill;
- inadequate short term and long term planning; and
- lack of technical expertise.

Further, there is a need to review the current level of resourcing by DEC of the Division that is responsible for waste management work.

The AGO considers that without political will and support, and an appropriate legal and policy framework, the management of solid waste is unlikely to improve in the short to medium term.

CHAPTER 4.0 COMPLIANCE WITH LEGAL / REGULATION & POLICY FRAMEWORK INCLUDING MONITORING ARRANGEMENTS

4.1 Introduction

Although there is no legislation in Papua New Guinea that deals with solid waste management specifically, there are a number of pieces of legislation that deal generally with waste disposal and management.

For the purpose of addressing the audit objective of compliance with legal, regulatory and policy framework, the AGO focussed on the following relevant legislations; – the *Public Health Act, 1973*, the *Public Health (Sanitation & General) Regulations, 1973*, and the *Environment Act, 2000*. Other relevant Acts, regulations, contractual documents for outsourced functions, and policies were also examined.

4.2 Compliance with the requirements under Public Health Act, 1973 & Public Health (Sanitation & General) Regulation, 1973

Provision and Maintenance of Refuse Bins.

Section 40 of the *Public Health (Sanitation & General) Regulation* stipulates clearly that the owner or occupier of premises must provide sufficient or a specified number of water-tight bins for the reception of the refuse arising from or existing on the premises.

The above Section further states that the refuse bins:

- (a) *Shall be constructed of impervious or non-absorbent material and fitted with two handles for carrying and lifting and with a close-fitting fly-proof cover or lid; and*
- (b) *Shall not have a holding capacity of more than 0.1m³, or such greater amount, not being more than the holding capacity of a 200 litre drum, as is approved by an inspector in any particular case.*

The offenders should be fined K100.00 in each case and additional K10.00 for everyday during which the offence continues.

The AGO discussion with senior management staff of the Waste Management Section of NCDC, and physical inspection of certain parts of the city and some settlements revealed that no proper garbage bins are provided by the households or premises in the city as the law requires.

However, the Commission provides proper *wheelie-bins* for some residents, premises and common public places. Public places, such as shopping centres, parks, road sides, flats, beach fronts, sports stadiums, barracks, and other institutions, in most parts of the city are provided with 44 gallon drums, painted green/yellow and labelled, “NCDC”.

The majority of residents living outside the settlements put their refuse in plastic bags in the wire tray-stands erected by NCDC outside the residences. The tray-stands were put up in front of each residence and premises for the purpose of providing proper garbage bins, for collection on scheduled days. The lack of secure containers in which to place rubbish means that it is common to find dogs pulling down plastic bags in search for food, and litter the surrounding area.

The NCDC advised that rates for the collection of garbage are only paid by the residents and properties with title deeds in conjunction with the annual land rates. There is no clear indication that garbage rate is collected from mortgaged properties under the government home ownership scheme. The AGO found that no action is taken against those people who fail to comply with the requirements of the regulation.

The settlement population in various corners of the city boundary constitutes more than the genuine work force in the city, covering both public and private sector. Under the circumstances, it is not easy for the Commission to provide the basic needs like water, sewerage and electricity but all attempts are made to include these settlements in the services plan.

While there are range of issues with regards to the urbanization and provision of basic services, the creation of waste has increased significantly in these settlements, markets and the city where the informal selling of goods is the major source of revenue for most of the settlers. The management recognized that public littering or creating rubbish in the city is mostly done by the city vendors who live in the settlements, and has provided the bins at suitable locations in the city, including the settlements.

The AGO visited several highly populated settlements and confirmed that 44 gallon drums are placed at convenient locations. The AGO also observed that most of the refuse was left lying everywhere. The habit of betel nut chewing and the resulting waste disposal issue also leads to a health and hygiene problem.

Illegal Dumping and Littering:

Section 68 of the Public Health Regulation also stipulates that; a person who deposits any empty or partly empty tin, bottle, or other receptacle, on a street, road, foreshore or other public place is guilty of an offence and can be fined K50.00.

The AGO's interviews with key staff in the NCDC and DEC, reviews of the provisions of the respective regulations mentioned above and physical inspections of the drains/waterways, sports fields, drive ways, foot paths, fronts of shops, markets, beach fronts and taking of photographs revealed that despite the provisions of the above laws, stipulating clearly that an offender found littering or dumping refuse illegally can be fined, there has been continuous illegal dumping of garbage into drains, roadsides, waterways, backyards, in front of beaches, sea, buildings, sports fields and other public places in most areas of Port Moresby.

These areas are littered or dumped with beer and soft drink cans, bottles, plastic soft drink containers, plastic bags, beetle nut skins, and tyres as shown in **Table 4.1** below.

Table 4.1: Solid waste that has become common in the City

Class of Solid Waste	Example of Waste
<i>Metal</i>	<i>Beer/soft drink can drink, tinned food can, old vehicle parts,</i>
<i>Glasses</i>	<i>Soft drink/beer bottles, wine bottles, other glasses</i>
<i>Plastics</i>	<i>Cooking oil plastic bottles, packing plastics</i>
<i>Papers</i>	<i>News papers, magazines, card boards, office papers</i>
<i>Clothes</i>	<i>Various clothing, man's, women's etc</i>
<i>Others</i>	<i>Car/truck batteries, construction/building waste</i>

Further, no regular educational and awareness programmes are carried out by the Commission.

Recommendation # 4.1:

The AGO recommends that National Capital District Commission takes immediate action and develops appropriate mechanisms in consultation with the Department of Environment & Conservation, Education, Police, Health and other relevant agencies to ensure compliance with the requirements in relation to illegal dumping and littering in public places.

Management's Comments

The NCDC took note of the recommendation and responded as follows:

We do have a policy on littering on public places, however, we will develop the policy on the illegal dumping.

Illegal dumping is a big and serious issue with regard to waste management and that is really based on people's attitude and knowledge about waste and its impact on the environment and health in the future if not properly controlled and managed.

Alternatively, illegal disposals can be controlled and managed if and when the contracts are properly reviewed and valued proportionately to the type and volume of waste arising in the city, to allow for 100% collection coverage with proper and effective monitoring mechanisms put in place to avoid any privately arranged collection and disposal.

The Department of Health noted the recommendations and the relevant agencies to enforce compliance, particularly the contractors to ensure that waste is disposed at the designated sites.

4.3 New initiatives to develop a new approach to Waste Management in Port Moresby

The current Governor of National Capital District is trying to improve the beautification of the city by trying to reduce the level of littering and the volume of waste produced by the city's inhabitants. The Governor has declared a Zero Waste Concept to be achieved by 2020. This would mean that by 2020, there will be no waste going into landfills but all the waste generated will be recycled and put for reuse. This concept requires segregation in the carting of waste by residents, its collection by NCDC contractors and sorting of waste at the dump sites for re-use and recycling. While this cannot be achieved overnight an awareness of the concept should be created now. While this is a worthwhile aspiration, the AGO could see no tangible effort by the NCDC to start work on this concept.

The Commission has also held discussions with an overseas firm with the view of inviting the firm for establishing plants to convert waste into energy products. Such initiatives have not progressed because the estimated volume of waste possibly generated from NCD would be less than the minimum requirements to make such an operation financially viable.

4.4 Monitoring of Compliance Activities.

Monitoring is a means of ensuring that compliance to regulations/rules is taking place. Since municipalities, hospitals, provincial and local level governments all over the country are responsible for the management of waste, it is important to ensure, through monitoring, that implementing bodies at all levels are following the prescribed regulations.

Monitoring is also a key prerequisite for keeping track of changes in waste quantity and quality, and their resultant impact on health and environment. As standard setting and monitoring are key elements essential for gaining control over waste related pollution, Governments should develop and apply methodologies for national- level waste monitoring.

Monitoring of the landfill in Port Moresby is covered in Chapter 5.

Monitoring the overall performance at National Level:

The AGO's discussion during the audit with DEC revealed significant weaknesses in the current systems and arrangements in place for ensuring proper monitoring of compliance requirements of municipalities' responsibilities for the management of solid waste.

DEC advised further that it was aware of the requirement to establish an appropriate monitoring framework but had insufficient funds and appropriately skilled staff to do so.

In the absence of such a clearly defined, control and monitoring system, DEC will not be able to adequately take full control of the development and implementation of the relevant by-laws, policies and the implementation strategies at the Provincial & Local Government level and monitor their progress.

Recommendation # 4.2 :

The AGO recommends that the Department of Environment & Conservation takes immediate action by taking full control of compliance monitoring and reporting issues and;

- (i) develops a national solid waste management monitoring and reporting system/program which covers the entire sector, Provincial and the Local Level Governments;*
- (ii) makes it mandatory for all sectors to submit performance reports monthly or quarterly per annum at an acceptable quality, and that all their annual reports should include strategic issues and progress to date; and*
- (iii) takes appropriate measures to deal with non compliance at all levels of government and they should be incorporated in the relevant laws/regulations.*

Management's comments

The DEC agrees and responded as follows;

*We agree to the recommendations and opt to take the following actions;
Mechanisms for monitoring and enforcement need to be developed at all levels of government particularly at national level. The best DEC as a government agency can do is to ensure the Strategy highlights the issue as priority and ensure this provision is captured within provincial and local government policies. DEC needs to be proactive in terms of national coordination working with all stakeholders on waste management.*

We further agree to recommendations that for non-compliance issues, this will require appropriate actions to be taken at all levels of government.

Monitoring the overall performance of solid waste related activities by NCDC.

The AGO also found that the NCDC's current systems and arrangements in place for proper monitoring of the legislations/regulations and policies for solid waste management in Port Moresby were inadequate because of staff shortage and lack of expertise.

Recommendation # 4.3:

The AGO recommends that the National Capital District Commission Management reviews, and improves the effectiveness of its current systems, processes/practices, and the guidelines for monitoring management, of solid waste management.

Management's comments:

The NCDC responded as follows;

The Management agrees that proper guidelines will have to be developed to monitor and manage the City's waste and the Division will be tasked to do that.

Monitoring Compliance with the Public Health Act, 1973 & Public Health (Sanitation & General) Regulation, 1973.

The AGO's review indicated that performance/compliance monitoring activities of the various provisions under the *Public Health Act* and *Public Health (Sanitation & General) Regulation* were not carried out as shown in **Tables 4.2**.

Table 4.2 Monitoring of Compliance.

Public Health Act & Regulation Section	Description	Monitored? (Yes/No)	Monitoring Systems? (Yes/No)
Health Regulation, S42	Burning of Refuse	No	No
Health Regulation S40	Provision of Refuse Bins	No	No
Health Regulation S41	Cleaning of Refuse Bins	No	No
Health Regulation S44	Emptying of Refuse Bins	No	No
Health Regulation S45	Excess to Refuse Bins	No	No
Health Regulation S 47	Entry Of Premises	No	No
Health Regulation S72-76	Medical Waste Entering Dump	Yes	Yes

The above Table indicates clearly that except for the checks to ensure medical waste enters the dump, NCDC enforcement of compliance under the Public Health Act and Regulation is poor.

Non-enforcement of regulations and rules impacts on the effectiveness of the intent of the regulations. However, the AGO considers that some of the rules or regulations are not easy to implement or enforce given the low penalties for illegal behaviour compared with the cost of enforcing compliance.

Recommendations # 4.4:

The AGO recommends that the Department of Health, in consultation with the Department of Environment & Conservation reviews and updates the Public Health Act, 1973 and the Public Health (Sanitation & General) Regulation, 1973 and consider improving the provisions where appropriate because both regulations appears to be out of date.

Management's Comments:

The Department of Health agreed to the recommendations as follows;

Yes! These legislations (the Public Health Act 1973, and the Public Health (Sanitation General) Regulation 1973) are in fact needs to be reviewed and updated in order to accommodate present developments and its negative impacts on human health and the physical environment from the following categories of waste, (General solid waste, Industrial toxic & hazardous chemical waste and Health care waste/medically infectious waste).

Secondly the Public Health Branch has identified the need to review and updating of these legislations as one of the major challenge and should be a must.

Further, aided by global warm up and climate change and the diseases associated with poor waste management such as water, food and vector borne related disease (both existing and emerging conditions) are on an increase, for example cholera now outbreak.

The Department of Health will immediately work on these regulations in the light of the present situations to make provision for appropriate waste management, health impact assessment and public health protection and prevention through waste management.

4.5 Provision of Contractual Services for Waste Collection/Disposal⁹

The NCDC used to carry out all waste collection and disposal function, except when the need arose for it to outsource some of its waste management activities.

However, the Commission has recently outsourced the waste management and disposal operations with the intention of improving service quality and reducing cost to the Commission. The AGO review of the current contractors reveals that nine (9) large contractors were appointed per **Contract 01/2006** as shown in **Table 4.3**. For the purpose of effectively managing contract works, the Commission has formulated Standard Contract Documents with clearly defined work scope, specification and minimum performance services requirements to be provided by the pool of contractors in the city.

The NCDC's policy is that when an existing contract comes to an end, tender bids are sent to appropriate parties and businesses from the pool for quotation. In receipt of the quotations, initial tender evaluation is carried out by the responsible Division within the NCDC to prepare an initial shortlist to be considered and deliberated in more detail by the NCDC Supply & Tenders Board.

⁹ According to the Document on "World Health Organization – Healthy Cities & Healthy Islands, page 39"; outsourcing of solid waste management services by private companies is on the rise throughout the world. This practice is also happening in many Pacific Island countries as well. It in part, reflects the inability of the public solid waste management authority to keep up with the rapid pace of urbanization and the consequent demand for the solid waste management services.

After deliberation, the Commission's Tenders Board, submits a final summary of recommendations of the tender applicants to the Minister of Finance, (a requirement of the *Public Finances (Management) Act*) for approval.

The AGO examined the procedures that led to the appointment of the current contractors to form a view on whether the process was transparent and in accordance with the legislation, and whether the process for letting the contract had any impact on the performance of the waste collection and disposal process.

Table 4.3 Large Waste management contractors for a term of five years.

	Contract	Name of Contractor	(a) Minister's Approved Value (K)	(b) NCDC Revised Value (K)	(c) Variance (K)
1	Contract 01/2006	Jneadzz Construction-MNW	382,000.00	269,472.00	112,528.00
2	Contract 01/2006	Tabudubu-MNW	384,000.00	269,472.00	114,528.00
3	Contract 01/2006	Ten Makers PNG Ltd-MNE	384,000.00	222,564.00	161,436.00
4	Contract 01/2006	Ashan Plant Hire-NME	384,000.00	222,564.00	161,436.00
5	Contract 01/2006	Five Stare Enterprise Ltd-MS	384,000.00	192,000.00	192,000.00
6	Contract 01/2006	Hevasea Cleaners	384,000.00	192,000.00	192,000.00
7	Contract 01/2006	Peator Enterprise Ltd???	500,000.00	500,496.00	(496.00)
8	Contract 01/2006	Edgecorp.Pacific Ltd	788,000.00	432,252.00	355,748.00
9	Contract 01/2006	Mr.Trashman	300,000.00	180,00.00	120,000.00
	TOTAL:		3,890,000.00	2,480,820.00	1,409,180.00

The AGO observed that the tender process was in accordance with legislative requirements. However, the NCDC Tenders Board at that time appointed two contractors that were not on the short list and had not submitted any quotations at all. In reviewing the contracts approval documents, the AGO observed that the Minister's approval under *Section 61* of the *Public Finances (Management) Act*, (the normal requirement for certain contracts) had been granted. However, even though the total annual value of the contracts was for K3.9 million per annum as shown under column (a) of the **Table 4.3**, and was for a period of five years, there were no formal contractual Agreements in existence between the nine (9) contractors and the Commission. The AGO is of the view that although the Minister's approval provides the authority for the contract to be let, the approval itself is not a binding contract between the NCDC and the contractor. Further, the implication of poor contractual arrangements means that liabilities exist where there is no formal contract created between parties.

What liabilities exist where there is no formal contract executed between the parties?

A legally binding contract is an exchange of promises or an agreement between parties that the law will enforce, and there is an underlying presumption for commercial agreements that parties *intent* to be legally bound. There are also liabilities exist where there is no formal contract executed between the parties and an intention to create legal relations is an essential element to a contract. If there are no formal contractual agreements in place, then the possible consequences that may exist between the parties as illustrated in the present case are as follows:

- *Lack of contractual requirement to enforce for breach of contract for non performance or improperly performing party open to a claim for damages by the other party. (May claim for damages under parole agreement);*
- *Allows the non performing party to make excuses for their conduct and find ways to blame the other party;*
- *Unable to foresee the possibility of non performance, intentional or unintentional as there is no written contract to rely on;*
- *Claims for damages can be inflated over and above the value of the contract;*
- *Fertile ground for fraudulent activities to occur with the submission of invoices for payment for services that may not exist at all; and*
- *The monitoring requirements on the scheduled service of waste removal are non existent.*
- *The compliance requirements are also compromised as there is no agreement requiring immediate cure to any issues arising out of the contract.*

The AGO brought the issue to the attention of the Commission, and was informed that the formal contracts were not signed because the then administration approved contracts to; (a) persons who have not applied for the job; (b) inconsistency in the rates bid by contractors and the rates approved by the Board/Minister; (c) the approved rates on certain contracts were more than double the rate the Commission was paying by then; and (d) some approved contractors did not possess adequate resources to perform alternative job placements.

The Commission also advised the AGO that based on the aforementioned reasons, the Minister's approval amount per each contractor was revised subsequently, as shown under column (b) of the **Table 4.3**, in consultation with the Contractors.

Ensuring Compliance & Monitoring Contractors Performance.

Effective monitoring and control is the key to success in contracting out work. The mechanism for monitoring and control should be thoroughly examined and appropriate provision for their implementation and enforcement should be provided in the contract agreement.

The AGO is of the view that the lack of a formal contractual Agreement means that it is difficult for the NCDC to control and monitor the contractor's performance and ensure compliance with the requirements of the terms and conditions of the respective contracts in relation to collection, transportation and disposal of solid waste, including proper management of the landfill.

The NCDC advised that the minimum requirements expected from a contractor is provided for in the contract document, as shown in **Table 4.4** below.

Table 4.4: Dump management Contract Document Extracts.

<i>Contract Sections & Provisions</i>	<i>Page</i>	<i>Particulars</i>
5 - 28	16 - 29	General Condition of the Contract
6	16	Monitoring/evaluating performance of contractors
11	18	Quality System to meet
12	18	Commencement & Completion of Contract
14	19	Workplace Health & Safety
15	20	Insurance – Kina (K1,000,000.00)
16	21	Dispute/resolution
24	24	Payments
SCH.	S1.1	Defined Terms
SCH.	S2.2	Scope of Works/Product Requirements

Source: Standard Contract Tender “05/2006”

As a consequence, the AGO observed that, although there were no proper control systems to adequately monitor the compliance requirements of the contractors, the NCDC has used other best practices, such as physical inspections of the contractor’s work, to monitor and assess their performance.

Further, the AGO review of the contract process indicated that without the formal contracts in place, it has been quite difficult to take appropriate measures against non performing contractors. Subsequently, the services of two of the contractors were eventually terminated. One of the contractors was terminated and was replaced by another contractor while the second contractor voluntarily stood down from operations and was replaced as well.

Recommendation # 4.5:

The AGO recommends that the National Capital District Commission:

- (i) reviews its current processes for the awarding of contracts to competent contractors who have tendered for providing services to the Commission in accordance with tender procedures;***
- (ii) enters into legally binding contracts of the current nine major contractors for the balance of the five years term of engagement, clarifying, amongst other things, the definition of services and the key performance issues;***
- (iii) signs all contractual documents/agreements in future which formally binds the Commission and the contractor prior to the commencement of contract work; and***
- (iv) makes available sufficient funding for effective monitoring and control of the collection process and also for the implementing and enforcement of the contractual agreement.***

Management's Comments:

The NCDC while noting the recommendations responded as follows;

- (i) The process of awarding contracts has been strengthened. With regard to tender documentation, calling of tenders, closing of tenders, screening and awarding of contracts to successful bidders or competent bidders is the prerogative of the management based on the approved tender procedures.*
- (ii) The Commission has developed generic contracts that will be used for all future engagements.*
- (iii) The current administration weighed the risk of executing formal contracts and the resultant financial outlays against the non-performance of the contractors due to the non-existence of the formal contracts and decided to choose to save the financial outlay. The Commission can still deal with the contractors for non-performance irrespective of formal contracts; in fact, the Commission is penalising the non-performing contractors.*
- (iv) And funding will be made available to service the contractual obligations.*

4.6 Conclusion

The AGO observed that compliance with the legal and the policy framework is a problem for effective management of solid waste in the country, including the Nation's Capital. This has been due to either non compliance in full with the provisions of the relevant legislations and the health regulation that deals with waste management activities.

Further, since the waste management legislations, and regulations, or strategies are not available, making the system fragmented, there is no regulation in place to be complied with. For example, the waste stream is not regulated because there is no laws to manage the waste management system.

Secondly, the monitoring of the legal and policy framework in relation to all waste management activities at national level, and in Port Moresby is ineffective and inadequate. This has been caused by the absence of formal arrangements in place, in respect of the monitoring/reporting systems, providing clear management/monitoring guidelines that provide efficiency due to lack of capacity, and the scarcity of resources. Other than monitoring the general performance requirements of waste management systems in the city, the NCDC monitors the performance of the contractors through the terms and conditions provided in the respective contracts documents.

Under the current situation, both the NCDC and the DEC need to develop and improve the monitoring systems at their respective levels in order for the right information/data to filter through the information systems at all levels for effective management.

5.1 Introduction

This Chapter discusses the current operation of the Baruni Open Dump waste disposal and the problems associated with open dumps. In comparison to a sanitary landfill that is well constructed with proper facilities which are acceptable to the environment, the Baruni landfill in which all waste from Port Moresby City goes, is classified as an open dump.

5.2 Operation of Baruni Landfill/ Dump Site

The Baruni Open Dump is managed by NCDC through a private contractor. The contractor's terms and conditions are stipulated in the "*Standard Contract for Management & Operation of Commission Dumps, Tender #05/2006*". The scope of work is provided for under the reference schedules of the Contract as stipulated in *Appendix 4* but, as reported earlier, the contract has not been signed by either party.

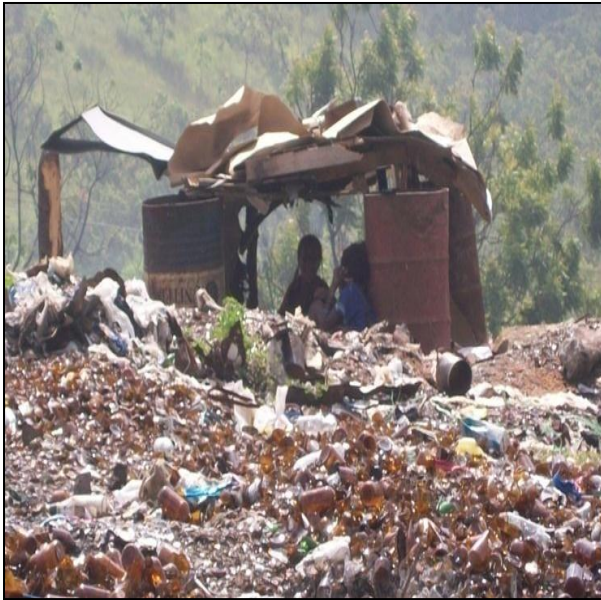
The Baruni Dump Site is an open dump site. The AGO found that the dump was uncontrolled and that waste is disposed of in the dump without proper segregation or treatment. However, scrap metal, bottles or tin cans are collected by scavengers and sold to recycling companies.

The AGO also found that because it is an uncontrolled dump site, the Baruni Dump creates a number of serious public health and safety problems, and adverse environmental impacts. The common problems are listed below:

- the site has become a breeding ground for flies vermin;
- open burning of refuse creates air pollution and fire hazards;
- ground water pollution caused by leaching;
- activities of scavengers or waste pickers make it dangerous to their own health; and
- biogas generation from the site may create unexpected fire hazards.

Further, there are other negative impacts caused by the dump as a result of having open dumping as listed below:

- No register is maintained at the dumpsite to record the volume of waste entering the dump;
- The dump is not sprayed or no action at all to eradicate mosquitoes, flies and rodents;
- No fence is put around the open dump to keep people away;
- No signboards are put up to advise people of no go zones, other than at the main entrant's notice, a kilometre away from the dump; and
- A community of around 100 people live off or within the dump as shown in the slides below for their day to day survival. The conditions of the dump make it dangerous for the inhabitants.



AGO Photo Slide # 8: Shows inhabitants, April, 2010.



AGO Photo slide # 9: Shows inhabitants, April, 2010



AGO Photo Slide # 10: Shows waste dumped indiscriminately at Baruni Dump, April, 2010.

- Continuous burning of waste and smoke as shown in the slides below causes environmental damage and air pollution.



AGO Photo Slide # 11: Burning of waste at Baruni dump site, April, 2010

- The AGO's physical inspection of the dump noted that there is minimum levelling of the waste done by the bulldozer. The dump has no proper compaction with soil cover, nor does it have protective lining to collect leachates. The waste is only spread or levelled by the bulldozers to make way for more waste to come in as shown under Slides 10,11, 12 & 13.



AGO Photo # 12: Dump Site Bulldozer at work, April, 2010.



AGO Photo Slide #13: Part of Baruni Open Dump, April, 2010

5.3 Future Dump Site Planning

The above audit findings indicate that there is an immediate need for NCDC and DEC to design and develop a plan to upgrade the current open dump at Baruni, and to develop a plan for another dump.

The NCDC and other stakeholders, including DEC, have recognised the need for a new modern facility to cater for disposal of waste in the city, but as discussed in Chapter 3, there is a lack of information to make timely decisions on future planning. As a result there is no plan for closure of the Baruni Site or the opening of a new dump site.

The NCDC advised that a new site for the landfill/dump had been purchased a few years ago for 200,000 Kina from traditional landowners. However, the purchase documents have been misplaced.

The NCDC advised further that it is currently trying to identify a location for a new Dump but this will take some time given the issues surrounding the purchase of land.

Given the health hazards faced by the inhabitants of the Dump, consideration should also be given to removing the Dump's occupants and relocating them to another area.

Recommendations # 5.1:

The AGO recommends that the National Capital District Commission:

- (i) *immediately develops a plan to upgrade/improve the existing open dumpsite to a controlled landfill site in order to minimize the problems caused by uncontrolled open dumping of waste;*
- (ii) *plans and designs, in the short to medium term, a proper new sanitary landfill in consultation with the Department of Health and other stakeholders, and through the Department of Environment & Conservation raise the issue with the National Executive Council (NEC) for ownership, support and continuous annual government funding for sustainability;*
- (iii) *in consultation with the Department of Environment & Conservation, and other stakeholders, secures funding from external sources for funding the design/plan and initial development of a proper new modern landfill; and*
- (iv) *takes immediate steps to either find the documents relating to the purchase of the land identified for a new dump or recover the funds from the landowners.*

Management's comments:

The NCDC agrees with the recommendations as follows;

- (i) *A working committee consisting of members from DEC and the NCDC have submitted a project proposal to JICA relating to the above recommendations. Consultation visit with JICA team took place from the 23rd to 27th May, 2010 and a Plan of Operation was done and submitted by the Committee to JICA office.*

The JICA's involvement is still in the planning phase to help the NCDC rehabilitate the existing open dumping system into a sanitary land to comply with the DEC requirements.

- (ii) *The new land acquired for the new dump will have to be properly designed to be an engineered landfill system but that is still a long way to go with regard to sight studies.*
- (iii) *Funding will be an issue for management to pursue.*
- (iv) *We will locate the documents relating to acquisition of land for the new dump.*

The National Department of Health responded as follows:

The recommendation is noted and the Department of Health will provide technical support and advice or maintain close consultation with NCDC in designing of the modern landfill site plan.

5.4 Monitoring and inspection of the Open Dump Site

The AGO observed during the audit that there are no specific provisions in any of the legislations or regulations for the management of the dumpsite. Since it is an open dump, formal procedural compliance monitoring and checking requirement of various environmental and health parameters are not carried out.

The NCDC explained that the landfill is inspected by the inspectors on a daily basis and the dump supervisors are stationed at the dump site every day. The inspectors' reports are prepared on a weekly and monthly basis. If any incident occurs it is reported on the same day.

The *PNG Environment Code of Practice for Sanitary Landfill* lists the conditions that must be met if the landfill is to meet the required standards of operation. The AGO review of the *Code of Practice* revealed that there are some relevant monitoring requirements that should be applicable to both open dumping and properly developed sanitary landfill. These provisions were not complied with as shown in the **Table 5.1** below.

Table 5.1 *Monitoring Requirements of a Controlled Open Dump.*

Environment code of Practice for Sanitary landfills	Existing	Non-existing	Remarks
1. Is there a system in place to measure the volume of waste entering the dump site? Is it reliable?		✓	truck loads counted
2. Is there any a Register maintained at the Dump site to record the volume and types of waste entering the site?		✓	No Registers.
3. How often is the rubbish covered, sprayed for mosquitoes & flies and rodents? (ECOP 18)		✓	Cover thin soil layer
4. Is there proper controls surrounding the physical security of the dump i.e. erecting a fence around it?(ECOP 18)		✓	Nothing at all
5. Are there proper sign posts in the Dumpsite indicating prohibited areas/areas for disposing of waste by public?		✓	Nothing at all.
6. Is the landfill/dump site inspected by Health Inspectors and if so, how often is the inspection done?	✓		Twice daily inspection
7. Are there site operators/supervisors to monitor the dumping? (ECOP 18)	✓		Daily
8. Are proper protective gears worn by the contractors and site supervisors?		✓	NCDC indicated nil
9. Is there an operational procedure manual at the landfill which covers emergency situations?		✓	Nil
10. Is there an operational procedure manual at the landfill which covers emergency situations?		✓	Nil
11. Are procedures in place to prevent incidents at the site?		✓	NCDC to develop
12. Are the emergency response measures effective?		✓	Nil
13. Are the procedures in place to reduce long term risks?		✓	Nil
14. Is there a plan to build a new landfill site after the current one reaches its useful life in compliance with the Code of Practice?	✓		No evidence.

Recommendations # 5.2:

The AGO recommends that the National Capital District Commission:

- (i) controls and monitors the operation of Baruni Dump in accordance with the relevant provisions of the Environmental Code of Practice for Sanitary Landfill; and*
- (ii) develops proper monitoring guidelines and procedures for effective management of solid waste in the City's landfill.*

Management's comments:

The NCDC agreed as follows;

JICA has proposed that a training will be conducted to train the operators to properly manage the landfill instead of contractors for compliances and continuity so that we are not seen to be training every new contractor that is awarded a contract to manage the landfill and other activities that related to proper management of such landfill system.

JICA's involvement in this respect is to technically assist the NCDC rehabilitate the current dump and they will assist in putting in place operational and monitoring guidelines to help us properly manage it.

5.5 Medical Waste and Incineration

In addition to the general waste disposed at the Baruni Dump, the AGO found that medical waste from the hospitals and clinic are also disposed off there.

The AGO understands that infectious medical waste is best disposed of by incineration or sterilisation. Whichever method is used the waste collection should be carefully controlled and the transporters must be aware of the risks involved.

The Department of Health advised that health care waste or bio-medical waste is infectious waste containing live micro organisms, parasites and body parts likely to infect new hosts and can even cause some health and environmental problems. The health institutions also generate hazardous chemical waste and general solid waste.

The AGO found that up until 2006, segregation of health care waste occurred at source with general non-risk waste collected as part of the municipal waste collection system and the medical waste burnt in specially designed incinerators, usually managed by the health authorities. The residual waste from the incineration process was either taken to the common disposal facility or buried.

However, since 2006 the medical waste is no longer incinerated but is disposed of in areas allocated specifically for it in the Baruni Dump because the incinerators are no longer functioning.

The AGO's inspection of the open dump revealed that there are high level of risks facing the Dump operators, nearby residents and inhabitants of the Baruni Dump, some of whom live adjacent to the medical waste disposal site. Indiscriminate dumping of medical waste and the practice of burying it in shallow pits, partially burning it with kerosene, and partly covering it with soil (some of the pits were left exposed as shown in the slides below) can be physically damaging to health.



AGO Photo Slide # 14: *Expired unused pharmaceutical fluids and stock in a hole at Baruni Dump, April, 2010*



AGO Photo Slide #15: *Medical Waste burning at Baruni Dump- April, 2010*

As shown in the slide above, improper incineration included needles, sharps and syringes not properly destroyed. Further, no signs or risk and safety classifications were available for display in and around the burning area.



AGO Photo Slide #16: Medical Waste dumping hole at Baruni Dump- April, 2010

Incinerators non functional

During the audit, the Department of Health indicated that it had started a “Care Waste Management Program” in 2000. Through these programs, the major hospitals were improving their waste management, colour coding, waste characterization, and on site treatments reinforcement. However, the AGO considers that the Program has lost some momentum as almost all public hospital incinerators are non functional because of their age and lack of proper maintenance.

The AGO noted that the incinerator procured some years ago for the Port Moresby General Hospital is in the country and the infrastructure plan is complete, and the Environment Impacts Statement has been tendered out for General Public view. The NCDC Building Board will then have to give approval to the building plan prior to the construction of the facility. After this process, the DEC will issue permit/licence to install the incinerator for use.

The DEC advised the AGO that it had issued the permit for the setup of the incinerator. DEC explained further that an environmental permit issued under the *Environmental Act, 2000* would basically regulate use of the incinerator. As one of the condition under the permit, is to ensure the incinerator is located in an area which is not inhabited by the public as the fumes etc, are likely to cause human health effects in the long term, especially if the incinerator does not function to its maximum efficiency.

This is the condition the Health Department could not comply with and is the reason why the incinerator was never put into use. The AGO considers that the Health Department and the Port Moresby General Hospital should either install fully functioning incinerators, or some other medical waste disposal facility with some urgency.

Recommendation # 5.3:

The AGO recommends that the Department of Health takes immediate action, in consultation with the National Capital District Commission and Department of Environment & Conservation, to build the incinerator for incinerating medical waste at an appropriate and safe site.

Management's comments:

The National Department of Health Responded as follows;

The submission for Environmental Permit for the installation of Port Moresby General Hospital Incinerator was submitted to the Department of Environment & Conservation with the Infrastructure plan and we are waiting DEC for the issuance of the Environmental Permit.

With this the Department is prepared with the infrastructure plan, site selection and new two chambers incinerator ordered and is ready for construction and installation.

Recommendation # 5.4.

The AGO recommends that the Department of Health, in consultation with the National Capital District Commission takes appropriate measures to dispose medical waste in Baruni dump with due diligence and care than is currently being done, until the new incinerator comes into service.

Management's comments:

- (i) *Department of Health responded as follows:*

Recommendation is noted.

Currently, there is a close consultation with the National Capital District Commission, Department of Health and Port Moresby General Hospital for the use of Baruni waste dump site for the infectious waste disposal.

While awaiting installation of the incinerator for Port Moresby General Hospital, the medical waste are applied with onsite treatment such as microwaving and autoclaving before transferring to designated hospital waste burial site for burning and land filling.

- (ii) *The NCDC responded as follows:*

NCDC outsourced the incineration of medical waste to POMGH and assisted with the purchase of incinerator; its installation is pending approval by the DEC.

5.6 **Conclusion**

The Open Dump at Baruni is an uncontrolled dump which means that the waste is not segregated on disposal and is not treated in an environmentally acceptable manner. In particular, there are a number of health and safety issues common with the unregulated dumping waste. This is exacerbated as the dump is now inhabited by about 100 people who live off the waste disposal site.

The dump is managed by a contractor but the conditions of the contract are not enforced effectively because there is no written contract between the NCDC and the contractor.

The AGO concluded that the NCDC's monitoring of the management of the dump site in accordance with certain provisions of the *PNG Environment Code of Practice for Sanitary Landfills* was not effective. In the absence of effective monitoring, violation of the relevant provisions of the Code of Practice has escaped detection.

The AGO concluded that there was an urgent need for the NCDC and DEC to design and develop a new dump site which is in keeping with the modern standards for waste management.

The incinerator at the Port Moresby General Hospital broke down some years ago. As a result, the infectious medical waste is disposed of at the Baruni Dump without being properly incinerated or treated in an acceptable manner. The AGO concluded that the Department of Health needs to develop an infectious waste disposal facility immediately so that the health risk posed by the poor disposal of medical waste is minimised.

GEORGE W. SULLIMANN
Auditor-General

Port Moresby, NCD

30th October, 2010

APPENDICES

Appendix 1: Audit Recommendations and Formal Management Responses

Formal comments on the proposed audit recommendations by the Department of Environment & Conservation, the Department of Health, and the National Capital District Commission are reproduced in full.

Chapter 2

Recommendation #2.1

The AGO recommends that the Department of Environment & Conservation considers formulating a consolidated single/dominant National Solid Waste Management Legislation that deals with the management of solid waste in the country, including all municipalities in all sectors, national, provincial & local level government levels, in consultation with its stakeholders.

Management's Comments:

DEC proposes to develop appropriate regulations under the Environment Act, 2000 on solid waste management although the AGO recommended for formulation of a single/dominant national law that deals with solid waste management.

Recommendations noted and that DEC as a major part of its work to develop appropriate regulations under the Environment Act 2000 on solid waste management. The Regulations including Code's of Practice would then form the basis for provincial/local governments to develop their own policy, sub-laws on waste management. DEC is of the view that given the current situation on the legal framework on waste management, all existing By-laws including national legislations be harmonised to ensure consistency and for effective coordination and implementation by key agencies.

Recommendation #.2.2

The AGO recommends that after formulating a national solid waste management policy, the Department of Environment & Conservation takes a leading role in developing a framework by which Provincial and Local-Level Governments can establish their own respective solid waste management strategies.

Management' Comments:

DEC agreed.

Recommendation #2.3

The AGO recommends that the Department of Environment & Conservation, in consultation with the Department of Provincial & Local Level Government Affairs, establish a formal system to monitor the progress of the development of provincial and local level governments by-laws and report back to the Environment Council through the Secretary of DEC for alteration and improvement.

Management's Comments:

DEC agreed.

DEC takes note of the recommendations and will continue to work towards establishing a system to monitor development of by-laws at provincial level and to report back on this at national level. To achieve this, the Department firstly need to be adequately funded, and working together with all stakeholders in order to assist in achieving this recommendation. As an initial attempt in addressing the issue, an inventory of existing provincial by-laws and Regulations at all levels on waste management be carried out.

Recommendation #2.4

The AGO recommends that the National Capital District Commission:

- (i) implements the policy on the management of waste, including solid waste management, after its approval;*
- (ii) develops a mechanism by which the referred policy can be implemented effectively; and*
- (iii) develops a by-law that addresses solid waste management effectively, and implements the legislation for the management of waste.*

Management's Comments:

NCDC took note and explained actions to be taken.

- (i) The development of the policy is now in its final draft stage.*
- (ii) In the absence of specific provisions in NCDC Act in terms of solid waste management; NCDC relies primarily on the provisions in the Public Health Act wherever reference is made to the "local medical authority". The DEC is empowered with adequate powers to legislate on the solid waste management in the country must take the lead role in enacting regulations or laws for integrated solutions to the urban centres including the NCD.*

Nevertheless, NCDC is empowered under Section 41(1)(f) of the NCDC Act to legislate on sanitation and garbage. NCDC may rely on this provision to make by-law on the two matters and include solid waste as a part. The Commission is planning to convert the current policy on the city's waste management into a by-law when it becomes full-fledged, thereby it will be a law for residents and NCDC to follow.

- (iii) The current NCDC by-law on Garbage and Sanitation only regulates issues on garbage services and fees. Alternatively, the by-law may be also expanded to address all issues relating to solid waste management.

Recommendation #2.5

The AGO recommends that the Department of Environment & Conservation, in consultation with the other stakeholders, takes immediate steps to ensure that the formulation of the proposed strategy on the management of solid waste in the country is given high priority.

Management's Comments:

DEC agreed.

We agree to the recommendations and as a way forward immediate steps are now being taken to develop a national solid waste management Strategy consistent with the Regional Solid Waste Management Strategy.

Chapter 3

Recommendation # 3.1

The AGO recommends that the Department of Environment & Conservation urgently reviews its current arrangements with the resource allocations and gives its priority for the effective management of waste in the country.

Management's comments:

DEC took note for appropriate action.

The Management takes note of the audit recommendations and will attend to them through some of the following actions, including:

- Reviewing its current staff strength;
- Review of its current activities pertaining to solid waste management in particular appropriate laws and regulations relating to waste management;
- Ensure adequate level of budgetary allocation especially through seeking funding assistance from other donors and developing appropriate economic instruments for waste management;
- Enhance and improve national coordination of waste management work at all levels of governments.

Recommendation# 3.2

The AGO recommends that the National Capital District Commission:

- (i) *conducts a formal review of its workforce to effectively address whether the Waste Management Division is able to meet its corporate goals and objectives in relation to waste management, and to ensure that the current and future workloads are adequate to meet its key goals and objectives; and*
- (ii) *addresses the capacity issues effectively through a performance management system, including staff training and development to address gaps and to enhance their performance*

Management's comments:

NCDC noted and acknowledged actions taken.

- (i) *The restructure of the Waste Management Division has been adequately addressed in the current review which might take effect beginning of next year.*
- (ii) *Yes, the capacity issues of the current and may be proposed staffs is that matters. Even with the current strength, the division could be well managed given that all its functions such as collection and disposal of waste, illegal surveillance of waste disposal, dump management etc have been completely outsourced. Due to the lack of skills within the division, it lacks foresights and forward planning.*

The Commission has included the capacity building of waste management Division into the Hetura Project (a CLGF project between NCDC and Townsville City); the Commission has invited the experts from Townsville City Council to visit NCD and help develop long term activity plans for the city's waste management.

Recommendation # 3.3

The AGO recommends that National Capital District Commission institutes and funds adequately a public awareness and education program to make the public fully aware of the benefits of preventing the generation of unnecessary waste.

Management's comments:

NCDC acknowledged of action to be taken.

Although specific funds are not made available for awareness within the Waste Management budget; we do have funds within the Public Relations well over K2 million for all awareness programs of the Commission including Waste Management.

We will explore possibility of decentralising the awareness budget.

Recommendation #3.4

The AGO recommends that the National Capital District Commission develops data collection methodology to assess the volume of waste collected and disposed of, and to be used for informing future planners and designers of waste management.

Management's comments:

NCDC agreed.

This is an issue the management is also emphasising with the responsible Division. The points well taken.

Recommendation # 3.5

The AGO recommends that:

- (i) the Department of Environment & Conservation initiates the formation of a Committee at the national level, including both the public and the private sector on this important issue of recycling, and addresses the issues appropriately in the long run; and*
- (ii) after approval of the draft waste management policy, the National Capital District Commission, in consultation with the stakeholders, develops and implements a recycling policy in Port Moresby with funding from the National Government.*

Management's comments:

- (i) The DEC agreed.*

The management takes note of the recommendation and the need to urgently initiate a national Working Committee to coordinate such initiatives at national level. To promote recycling issues at national level, a national 4 R Strategy needs to be developed to promote such work particularly having to strengthen and promote government-private partnership.

- (ii) The NCDC agreed:*

Currently there is a committee or rather an interim team that is working on a project on waste management for NCDC under JICA technical co-operation.

That a recycling policy be developed to cater for the recycling of all forms of recyclable matter and end products markets be established to compliment the efforts that may be put in by the citizens to collect and manage the recyclables.

Recommendations # 3.6

The AGO recommends that National Capital District Commission:

- (i) seeks specific funding for the implementation of a waste management system and the operation of the Baruni dump;*
- (ii) reviews the structure for waste collection fees based on cost incurred by] NCDC; and*
- (iii) enforces the payment of collection fees.*

Management's comments:

The NCDC acknowledge and explains the current funding situation and action to be taken to seek external funding of Baruni Dump.

- (i) The Commission will make proposal to DNPM and seek funding for the implementation of a waste management system and the operation of the Baruni dump.*

We do have specific funding for the operation cost of Baruni Dump – K1 million in 2010 budget.

- (ii) Some of the fees that were imposed are to discourage certain types of waste going to the Dump for landfill. The fees as a formula of cost recovery is under consideration, however, pending implementation until reliable and consistent services are provided to the residents.*

Chapter 4

Recommendation # 4.1

The AGO recommends that the National Capital District Capital takes immediate action and develops appropriate mechanisms in consultation with the Department of Environment & Conservation, Education, Police, Health and other relevant agencies to ensure compliance with the requirements in relation to illegal dumping and littering in public places.

Management's Comments :

The NCDC and National Department of Health agreed.

We do have a policy on littering on public places, however, we will develop the policy on the illegal dumping.

Illegal dumping is a big and serious issue with regard to waste management and that is really based on people's attitude and knowledge about waste and its impact on the environment and health in the future if not properly controlled and managed.

Alternatively, illegal disposals can be controlled and managed if and when the contracts are properly reviewed and valued proportionately to the type and volume of waste arising in the city, to allow for 100% collection coverage with proper and effective monitoring mechanisms put in place to avoid any privately arranged collection and disposal.

The Department of Health noted the recommendations and the relevant agencies to enforce compliance, particularly the contractors to ensure that waste is disposed at the designated sites.

Recommendation # 4.2

The AGO recommends that the Department of Environment & Conservation takes immediate action by taking full control of compliance monitoring and reporting issues and;

- (i) develops a national solid waste management monitoring and reporting system/program which covers the entire sector, Provincial and the Local Level Governments;*
- (ii) makes it mandatory for all sectors to submit performance reports monthly or quarterly per annum at an acceptable quality, and that all their annual reports should include strategic issues and progress to date; and*
- (iii) takes appropriate measures to deal with non compliance at all levels of government and they should be incorporated in the relevant laws/regulations.*

Management's comments

DEC agreed.

We agree to the recommendations and opt to take the following actions; Mechanisms for monitoring and enforcement need to be developed at all levels of government particularly at national level. The best DEC as a government agency can do is to ensure the Strategy highlights the issue as priority and ensure this provision is captured within provincial and local government policies etc. DEC needs to be proactive in terms of national coordination working with all stakeholders on waste management.

We further agree to recommendations that for non-compliance issues, this will require appropriate actions to be taken at all levels of government.

Recommendation # 4.3

The AGO recommends that the National Capital District Commission Management reviews, and improves the effectiveness of its current systems, processes/practices, and the guidelines for monitoring management, of solid waste management.

Management's comments:

NCDC agreed.

The Management agrees that proper guidelines will have to be developed to monitor and manage the City's waste and the Division will be tasked to do that.

Recommendations # 4.4

The AGO recommends that the Department of Health, in consultation with the Department of Environment & Conservation reviews and updates the Public Health Act, 1973 and the Public Health (Sanitation & General) Regulation, 1973 and consider improving the provisions where appropriate, as both regulations appears to be out of date.

Management's Comments:

National Department of Health agreed.

Yes! These legislations (the Public Health Act 1973, and the Public Health (Sanitation General) Regulation 1973) are in fact needs to be reviewed and updated in order to accommodate present developments and its negative impacts on human health and the physical environment from the following categories of waste, (General solid waste, Industrial toxic & hazardous chemical waste and Health care waste/medically infectious waste).

Secondly the Public Health Branch has identified the need to review and updating of these legislations as one of the major challenge and should be a must.

Further, aided by global warm up and climate change and the diseases associated with poor waste management such as water, food and vector borne related disease (both existing and emerging conditions) are on an increase, for example cholera now outbreak.

The Department of Health will immediately work on these regulations in the light of the present situations to make provision for appropriate waste management, health impact assessment and public health protection and prevention through waste management.

Recommendation # 4.5

The AGO recommends that the National Capital District Commission:

- (i) reviews its current processes for the awarding of contracts to competent contractors who have tendered for providing services to the Commission in accordance with tender procedures;*
- (ii) enters into legally binding contracts of the current nine major contractors for the balance of the five years term of engagement, clarifying, amongst other things, the definition of services and the key performance issues;*

- (iii) *signs all contractual documents/agreements in future which formally binds the Commission and the contractor prior to the commencement of contract work; and*
- (iv) *makes available sufficient funding for effective monitoring and control of the collection process and also for the implementing and enforcement of the contractual agreement.*

Management's Comments:

NCDC while acknowledging explained of actions taken and what else needs to be done to address the issues.

- (i) *The process of awarding contracts has been strengthened.
With regard to tender documentation, calling of tenders, closing of tenders, screening and awarding of contracts to successful bidders or competent bidders is the prerogative of the management based on the approved tender procedures.*
- (ii) *The Commission has developed generic contracts that will be used for all future engagements.*
- (iii) *The current administration weighed the risk of executing formal contracts and the resultant financial outlays against the non-performance of the contractors due to the non-existence of the formal contracts and decided to choose to save the financial outlay. The Commission can still deal with the contractors for non-performance irrespective of formal contracts; in fact, the Commission is penalising the non-performing contractors.*
- (iv) *And funding will be made available to service the contractual obligations.*

Chapter 5

Recommendations # 5.1

The AGO recommends that the National Capital District Commission:

- (i) *immediately develops a plan to upgrade/improve the existing open dumpsite to a controlled landfill site in order to minimize the problems caused by uncontrolled open dumping of waste;*
- (ii) *plans and designs, in the short to medium term, a proper new sanitary landfill in consultation with the Department of Health and other stakeholders, and through the Department of Environment & Conservation raise the issue with the National Executive Council (NEC) for ownership, support and continuous annual government funding for sustainability;*

- (iii) *in consultation with the Department of Environment & Conservation, and other stakeholders, secures funding from external sources for funding the design/plan and initial development of a proper new modern landfill; and*
- (iv) *takes immediate steps to either find the documents relating to the purchase of the land identified for a new dump or recover the funds from the landowners.*

Management's comments:

NCDC agreed, and the National Department of Health suggests provision of technical support.

- (i) *A working committee consisting of members from DEC and the NCDC have submitted a project proposal to JICA relating to the above recommendations Consultation visit with JICA team took place from the 23rd to 27th May, 2010 and a Plan of Operation was done and submitted by the Committee to JICA office.*

The JICA's involvement is still in the planning phase to help the NCDC rehabilitate the existing open dumping system into a sanitary land to comply with the DEC requirements.

- (ii) *The new land acquired for the new dump will have to be properly designed to be an engineered landfill system but that is still a long way to go with regard to sight studies.*
- (iii) *Funding will be an issue for management to pursue.*
- (iv) *We will locate the documents relating to acquisition of land for the new dump.*

The recommendation is noted and the Department of Health will provide technical support and advice or maintain close consultation with NCDC in designing of the modern landfill site plan.

Recommendations # 5.2

The AGO recommends that the National Capital District Commission:

- (i) *controls and monitors the operation of Baruni Dump in accordance with the relevant provisions of the Environmental Code of Practice for Sanitary Landfill; and*
- (ii) *develops proper monitoring guidelines and proper procedures for effective management of solid waste in the City's landfill.*

Management's comments:

NCDC agreed.

JICA has proposed that a training will be conducted to train the operators to properly manage the landfill instead of contractors for compliances and continuity so that we are not seen to be training every new contractor that is awarded a contract to manage the landfill and other activities that related to proper management of such landfill system.

JICA's involvement in this respect is to technically assist the NCDC rehabilitate the current dump and they will assist in putting in place operational and monitoring guidelines to help us properly manage it.

Recommendation # 5.3

The AGO recommends that the Department of Health takes immediate action, in consultation with the National Capital District Commission and the Department of Environment & Conservation, to build the incinerator for incinerating medical waste at an appropriate and safe site.

Management's comments:

National Department of Health agreed and explains the cause of the delay in building the incinerator.

The submission for Environmental Permit for the installation of Port Moresby General Hospital Incinerator was submitted to the Department of Environment & Conservation with the Infrastructure plan and we are waiting DEC for the issuance of the Environmental Permit.

With this the Department is prepared with the infrastructure plan, site selection and new two chambers incinerator ordered and is ready for construction and installation.

Recommendation # 5.4

The AGO recommends that the Department of Health, in consultation with the National Capital District Commission takes appropriate measures to dispose medical waste in Baruni dump with due diligence and care than is currently being done, until the new incinerator comes into service.

Management's comments:

National Department of Health agreed with a minor qualification. Recommendation is noted.

Currently, there is a close consultation with the National Capital District Commission, Department of Health and Port Moresby General Hospital for the use of Baruni waste dump site for the infectious waste disposal.

While awaiting installation of the incinerator for Port Moresby General Hospital (POMGH), the medical waste are applied with onsite treatment such as microwaving and autoclaving before transferring to designated hospital waste burial site for burning and land filling.

NCDC expresses concern over the delay in granting approval of permit by DEC.

NCDC outsourced the incineration of medical waste to POMGH and assisted with the purchase of incinerator; and its installation is pending approval by the DEC.

Appendix 2: Provisions for Making Regulations under the Public Health Act, 1973

Under Section 141 of the Public Health Act, 1973, the Head of State, acting on advice, may make regulations, not inconsistent with this Act, prescribing all matters that by this Act are required or permitted to be prescribed, or that are necessary or convenient to be prescribed for carrying out or giving effect to this Act, and in particular prescribing matters providing for and in relation to

- (a) the prevention of disease; and
- (b) the maintenance of health; and
- (c) sanitation in respect of places, premises and receptacles; and
- (d) defining nuisances for the purposes of this Act, and providing for their prevention and abatement; and
- (e) the care and treatment of sick persons; and
- (f) the promotion of public health by the establishment of special clinics for the treatment and prevention of disease; and
- (g) the medical and dental inspection of school children, and measures to be instituted for the remedy and prevention of diseases and dental defects in children; and
- (h) subject to the *Building Act 1971*
 - the declaration of buildings as dangerous or unfit for human habitation, occupation or use; and
 - the prohibition of the habitation, occupation or use of any such building after the making of any such declaration; and
 - the measures to be taken by the persons who own, inhabit, occupy or use any such building after the making of any such declaration, and providing, in default, power for the prescribed authority to do the work and recover the cost from the owner or occupier of any such building; and the licensing, control and inspection of –
 - (i) *the preparation, sale, distribution and possession of food and drugs; and*
 - (ii) *the keeping of animals used for food or for the production of food products, and the food products of those animals; and*
 - (iii) *dairies and milk supply; and*
 - (iv) *eating houses and food shops; and*
 - (v) *food manufactories; and*
 - (vi) *boarding houses; and*
 - (vii) *subject to the Medical Registration Act 1980 – hospitals; and*
 - (viii) *barbers' shops and hairdressing establishments; and*
 - (ix) *laundries, cleaning establishments and dye works; and*
 - (x) *the housing of birds and animals and the conditions under which they may be kept; and*
- (i) defining offensive trades and regulating the conditions under which they may be carried on; and
- (j) the disposal of garbage, refuse and night-soil; and
- (k) measures for the control or destruction of vermin; and
- (l) measures for the prevention or destruction of mosquitoes; and

- (m) subject to the *Cemeteries Act 1955* – the establishment, control and inspection of cemeteries, burial grounds, crematories, mortuaries and morgues; and
- (n) the care, treatment and detention of persons of unsound mind, including;
 - (i) *the conditions and circumstances under which mechanical means of restraints or seclusion may be applied to patients; and*
 - (ii) *the books and records to be kept in mental hospitals; and*
 - (iii) *the duties of visitors appointed for mental hospitals under this Act; and*
- (o) the charges to be made for services supplied or rendered under the regulations; and
- (p) the purposes for which and the conditions on which licenses, certificates and other documents may be issued, and the fees payable.

Appendix 3: National Capital District Commission Municipal Responsibility Provided for Under the Draft Policy

- The Municipality shall endeavour to expand and improve in the type and quality of service provided as mandated.
- The municipality shall specify forth a waste management plan in line with this policy.
- The municipality shall notify the business community to cease any private collection arrangements unless express approval is obtained from this authority and reasons that satisfy.
- National Capital District Commission (herein referred to as the Commission or the Municipality) is required to collect all waste arising within the municipal boundary and transport it to the dump for disposal by self or through its appointed agents. (contractors)
- The Commission in conjunction with the Business Community must establish end product markets to compliment the citizen's efforts in waste segregation and recycling.
- Provide advice for corporate citizens on waste management through the 3Rs concept. Even then a fourth R' should be included and promoted parallel to the 3Rs and that is 'Repair'.
- Municipality shall advice citizens to keep all receptacles and contents in their respective yards until the schedule collection days. Tenants of units and apartments are required to provide individual receptacles or communal storage facility within the premises.
- In this policy, the National Government and the municipality shall be required to impose restriction on the importation and use of disposable goods or one use items like the foam or plastic cups, foam takeaway food packs and diapers by way of taxes.
- Contractors and casually engaged groups shall be required under this policy to provide personal protective equipments and safety gears in the course of their duties.
- Contractors shall also be required to provide fringe benefits in the form of medical checkups and treatments for those employed to collect waste and or are exposed to any wastes.

Appendix 4: Contractor's Scope of Works / Product Requirements provided for under the Contract Documents

- The operations and management of the dump will commence on 01st day of February 2007.
- Wet waste disposed in the dump must be spread, levelled and compacted.
- Dry waste includes household waste such as food waste, empty food cans, etc.
- Bulky objects and waste material must be cleared to one section of the dump.
- Bulky objects include tyres, old metals and rods, old electrical appliances such as freezers, television parts, building construction waste etc.
- Tenderer must cover waste.
- Tenderer must provide approved cover material (soil).
- Tenderer must clean and keep the excess road in and out of the dump free of obstruction at all times.
- Low Hazardous Health Care Waste must be burnt in open dug out trenches and buried.
- Low Hazardous Health Care Waste includes;
 - General (non risk) waste uncontaminated waste similar to domestics, may represent 80% of total waste from health care establishment; and
 - Hazardous or infectious health-care waste.
- Tenderer must not allow into the dump site for the purpose of disposal, waste under *“highly hazardous or infectious waste”* category without approval from appropriate authorities including Department of Environment & Conservation, Health Department and NCDC.
- Tenderer must ensure all hazardous and toxic waste must have approval from appropriate authorities prior to disposal at the dump.
- Tenderer must provide security and ensure dump fee receipts from NCDC Cashier is presented before allowing access into the dump for public.

Toxic waste includes oil, chemicals, car batteries, flammable and combustible materials and any other waste defined as toxic under relevant laws regulating toxic and hazardous waste.

- A documented process will be required to deal with missed services and a quality control system put in place to ensure it is carried out.
- The successful tenderer will be required to present a monthly report at the completion of the tender specifying volumes of waste received, types of waste received and any other information that would assist Commission in future.
- Tenderer is to provide a payment plan or schedule.
- Tenderer is to provide details of all plant and equipment to be supplied to complete the tender.
- Tenderer must provide security at the and collect dump fees to be remitted to the Commission.
- Tenderer is to provide details of all human resources to be supplied to complete the tender.
- Tenderer is to provide details of how the plant and human resources are to be utilized to complete the tender.

