

## Script Brief

### “Awareness on Proper Solid Waste Management Practices for Rural Communities in PNG”

#### *Box 1: Introduction*

Papua New Guinea is truly a beautiful country, with pristine creeks and rivers, sun-warmed untouched sandy beaches, warm tropical seas, and cool mountainous regions. The breathtaking Bird of Paradise is unique to the mainland of Papua New Guinea and is depicted as the national emblem.

Papua New Guinea became independent in 1975. Its relatively short history of development has seen drastic changes to its natural environment. The mining and forest sectors particularly have ushered in the new challenge to keep the natural environment intact. Sad to say little has been done to address the destruction to the environment as the result of such exploitation. With the trend of development comes the creation of townships and cities. It is a global phenomenon that with any settlement comes, the deeply entrenched issue of daily refuse disposal. Papua New Guinea is no exception, where the creation of towns and cities, have created an enormous burden to the environment, in so far as solid waste management is concerned. Conventional methods of solid waste collection and disposal are used in towns and cities of Papua New Guinea, similar to other developing countries in the World. The commonly adopted method of refuse or solid waste disposal in Papua New Guinea is the landfill or dump system.

A growing concern in Papua New Guinea is the lack of proper management of solid waste in the squatter settlements and traditional communities within the city or town limits. Many such communities are often left to struggle with their own environmental problems, often compounded by the lack of government support. The villages of Hanuabada, located in the National Capital District and Hula located some 120 km East of Port Moresby have been selected for a closer look at solid waste practices and the impact on the environment and public health.

The village of Hanuabada is unique, in that, it is not a squatter settlement by definition, although it is within the Port Moresby City boundary. The community traditionally lives over the sea, but has progressively spread inland. It is ironic that the traditional landowners of the prime land of Port Moresby town live at Hanuabada. Despite the development of Port Moresby, the Hanuabada Community has continued to maintain their traditional uniqueness. However the increasing population, which stands at about 15,000 people and, the influence of town life have ushered in the same environmental problems as faced by the towns and cities, insofar as refuse disposal is concerned. Unfortunately the typical waste management methods as practised in towns and cities may not readily be accepted in outlying communities. The adoption of these collection methods are often compounded by the lack of environmental awareness, financial constraints of the systems, and the adaptability of an environmental system to a culturally oriented community.

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The Hula Village has a population of about 3,500. It has a strong influence from Port Moresby despite the three hours drive from the capital city. Most of the houses at Hula can be classified as permanent. Like Hanuabada, the community spreads from the coastline to over land. To some extent Hula has evolved from a typical traditional village to a developing community, very much dependent on Port Moresby for its economic growth. The environmental and health issues in Hula are no different to that of Hanuabada. Whilst Hanuabada with the assistance of the City Authority has adopted a collection and disposal system to handle its solid waste, Hula's solid waste practice has been confined to individual household management. Both collection and disposal are done by the individual households.

### *Box 2: Current Practices*

The city's waste management services are provided by the NCDC. Private organisations are contracted to do the collection and disposal. For the Motu and Koitabu villages, which includes Hanuabada, local contractors are engaged in the collection and disposal of refuse. In addition the business arm of Motu Koita Council has two dump vehicles that are engaged in the waste management contract. According to the Manager in charge of the Waste Management Division, there is still not enough dump trucks to handle the amount of waste volume generated by the residents.

Generally, and perhaps a major problem is that not all collection sites are being properly looked after by residents especially within the different communities with the city. The main disposal sites at Baruni and Six Mile are also not well managed, as displayed by the increasing scavenging and indiscriminate dumping. Scavenging has also promoted illegal squatting on customary land. The Six Mile dumpsite, the biggest landfill in Port Moresby was recently closed due to non-payment of land by the government.

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*This is one of the dump sites at Port Moresby, where the refuse not only comes from the city residents but also from the squatter settlements and traditional communities like Hanuabada. At the dump site, the waste is either burnt and/or compacted and finally buried. The use of landfills is the most common method of solid waste disposal used in the Nation's Capital. The waste is dumped in trenches or dumped on land and then covered with topsoil. Unfortunately there are still problems at the dumpsite as you can see. There is wind scattering traces of refuse beyond the dump site and the potential threat of diseases and leachate intrusion into the ground water system.*

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Another common threat or environmental concern is the production of gases at the landfill. Methane and carbon dioxide are considered as common gases at the dumpsite, and produced as the result of the digestion of organic waste. These gases can create odour problems and as well as contribute the greenhouse effect.

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*At Hanuabada the waste is collected from households and deposited at collection sites that are located beside the road system. There are many of these depositary sites located within the community. The sites are conveniently selected to enable daily accessibility, and a few minutes walk from houses. The depositary sites are managed*

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*by the residences. Contractors collect the refuse at the depositary sites two times a week, for disposal at the city landfill.*

*Despite the proper services being provided by NCDC, solid waste is still indiscriminately disposed off and often end up at road sides, drains, water ways, beachfront and at the sea. This phenomenon is prevalent throughout Papua New Guinea, including the major city of Port Moresby.*

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*I am standing at a beach front in the Nation's Capital, Port Moresby. At the background is the usual daily sight. This may be an eyesore, but it also tells us a lot about development and the need for communities to adapt to changes and still maintain a clean environment. No single factor is responsible for this solid waste problem. However the undeniable primary factor is the change of lifestyle.*

*If you look closely enough, you will notice that much of what makes up this solid mass is typical of households, industry and commercial centre waste. There is organic material such as food and garden wastes, worn out furniture and clothing, newspapers & magazines, office refuse, metals, plastics, glass containers, wood and glass from construction sites. The big question that needs to be asked is: How did this waste end up here?*

*This mass of debris is not the result of a single event but rather the accumulation through the process of time, and other contributing factors such as wind and tidal movements.*

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*Enactment of typical rubbish disposed over the sea.*

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*Scene of a drainage or waterway system linking to the sea.*

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### Box 3: Health & Environmental Risks

The indiscriminate disposal of solid wastes regardless of its small size can still contribute adversely to the environment and increase health related problems.

The improper disposal of broken glass and rusting metals pose a physical threat to the community. Children playing near vehicle wrecks are often in danger of receiving injuries. Severe cuts from these rusting wrecks require urgent medical attention.

The National a daily news paper in Papua New Guinea reported at the beginning of this year – (quote)

“A significant level plastic waste finally ends up in the open seas. There have been many stories of birds and sea creatures stuffed with colourful plastic caps and wrappers mistaken for food. Hungry gulls are seen feasting upon barnacles and crabs attached to plastic debris. Plastic not only kills wildlife but also poisons seafood. The poisons in sea food may be harmful for people to eat due to the fact that plastics act as sponges for poisons such as PCBs (poly-chlorinated biphenyl). Plastic ingredients are linked with various cancers and reproductive problems. For instance, a chemical

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known as BIS phenol A which is found in water bottles is associated with obesity and diabetes” (Moore 2008) (unquote) *The National* –Date\_\_\_\_\_

For the communities living over the sea, the sea itself has become the disposal site for household and other solid wastes. Such practices are not often condemned due to their alignment as cultural habits. An issue with communities over the sea is the discharge of human waste into the sea. This practically makes the waters unsuitable for recreation, fishing, and the survival of marine life.

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### *Scene of a household toilet arrangement over the sea*

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Certain shellfish can be toxic because they concentrate pathogenic organisms in their tissues, making the toxicity levels in the shellfish much greater than the levels in the surrounding water. There have been examples of people being ill due to consuming contaminated sea food, in the community.

According to a Health Official from the Lawes Road Clinic in the Port Moresby area, gastro intestinal problems are a common occurrence. This year there have been over 10 cases of food poisoning due to consumption of contaminated fish in the area.

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### *Scene of the inside of the Clinic with patients sitting to be attended and medical personnel working.*

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Also in areas where pit latrines and night soils are poorly looked after, diarrheah and typhoid are a common occurrence. This is due to breeding of flies and scattering of waste by scavengers.

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### *Scene of a site in the community where there is flies and poor land deposit centres.*

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In some areas of the rural communities livestock like chickens and pigs are allowed to roam freely and coexist with the community. Pigs are kept in cages over the sea with all animal waste flushed daily into the sea. In many areas of the community the solid wastes are unattended for a lengthy period thus causing bad odours.

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### *Scene of pigs in cages over the sea.*

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Organic or inorganic particles from waste solids are referred to as suspended solids. When the speed of the water in rivers or creeks is reduced by flowing into a pool or a lake, many of these particles settle to the bottom as sediment. As excessive sediment loads are deposited into lakes and reservoirs, their usefulness is reduced. These sediments destroy many ecological habitats for aquatic organisms. For example, Salmon eggs can only develop and hatch in loose gravel stream beds. As the pores

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between the pebbles are filled with sediment, the eggs suffocate and the salmon population is reduced. It is therefore not surprising to see small population of fish along the coast of the village.

.Plastic contamination in the worlds oceans is worse than previously imagined and no amount of technology can clean it up, according to Charles Moore, an oceanographer (*National, February, 2008*). Moore has spent more than a decade investigating Pacific plastic pollution. In the Pacific alone, heavily polluted plastic zones amount to the size of the continent of Africa, Moore estimated. On his last trip in February this year he found out that bobbing in waters, especially closer to shore, are left overs of everyday consumer products like plastic bags, toothbrushes, cigarette lighters, bottles and their caps, toys and fast food wrappers.

Eighty percent of garbage within waterways, most of it plastic, begins its journey on land according to the Algal Ita Marine Research Foundation (founded by Moore) in Long Beach, California.

Moore sees no way to eliminate the plastic pollution, and therefore urges consumers to change their habits to keep plastics out of water ways.

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*Scene – traverse along the beach front and to the sea to view the abundance of plastics.*

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### Box 4 Conventional Disposal Practices

Various methods are currently used for the disposal of solid waste. Appropriate methods widely used in developing countries are: Composting, Incineration, Landfill and Recycling.

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*Scene at the PNG Gardener composting area, Waigani.*

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*Interview at site – method of composting and where they are used.*

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~~Another method of reducing the amount of litter that ends up at the disposal sites is through removing food and organic matter from the waste stream and using these for composting. Composting is the biological breakdown of organic matter under humid conditions. The organic compost resulting from this process makes a nutrient rich soil conditioner that aids water retention, slows soil erosion and improves crop yields. A home compost pile is an easy and inexpensive way to dispose of organic waste in an interesting and environmentally friendly way. All one has to do is pile up lawn clippings, garden and food wastes, fallen leaves wood chips and organic wastes at your backyard, keep it moist and turn it over every week. After a few months naturally occurring microorganisms will decompose the organic material into a rich pleasant smelling compost. Composting material can be used as soil conditioners for farming and subsistence gardening. Before composting is allowed to take place, it is essential that separation takes place. This allows the removal of metal, rubber, plastics and glass.~~

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Burning is simply the reduction of refuse. It is extensively used in many developing countries including Papua New Guinea, however not in a control manner.

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### *Scene of a typical site of rubbish burning*

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Recycling is a better alternative to either dumping or burning of wastes, from an environmental point of view. It has become economically attractive in the major cities of Papua New Guinea. It drastically reduces pressure on landfills and burning. It saves money, energy, raw materials and land space. It also encourages individual awareness and responsibility and provides income as well. Various options in recycling include, reuse for same purpose, reuse for different purpose, process and use for same purpose, and process and use for different purpose. The metal recycling industry has become a success in the country because of its economic value rather than simply an environmental drive. Another major recycling success is the reuse of bottles. Plastic reuse is mostly in the informal sector.

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### *Scene of interview with Barny Metals Recycling, Gordons*

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### *Scene of bottle reuse, Gordons*

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The use of landfill is the most common method of disposing of solid waste in Papua New Guinea. All forms of waste may be deposited. Basic landfill methods include open dumping, controlled tipping, and sanitary landfill.

Open dumping is viewed as detrimental to the environment as little public health consideration is given. Such landfills are fast disappearing in developed countries as compared to developing countries. Controlled tip is a controlled area, which refuse, upon deposited and spread out to a maximum depth, is consolidated by front-end loaders. Maximum depth may be in the order of 2.4 m. Systematic covering is done with the laying of ordinary soil to a depth of at least 200 mm. Although there is a marked improvement as compared to the previous landfill method, there is the danger of ground water pollution or running streams by leachate seepage. Controlled tip is common in PNG. Sanitary landfill is a more carefully arranged land disposal method, where leachate is intercepted for collection and treatment.

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### *Scene – quick succession of landfills in Port Moresby*

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### Box 5 The Challenge

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*Scene at Hanuabada – end of walkway, where last house is.*

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As Papua New Guinea develops, more communities will be faced with the same environmental and health issues as a result of poor solid waste disposal practices. Global environmental and health issues are now demanding for specific local actions. Many local communities in Papua New Guinea are likely to face such challenges alone, and therefore the need to create responsible communities – communities that will not wait for government action, but rather rely on self-help.

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*Further work on text and scenes to be done – as work progressed to completion -*

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