

Name of Protected Area: Kamiali Wildlife Management Area

Part 1: Basic information about the protected area

Table 1. Protected area information

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| Name, organisation and contact details for person(s) conducting the assessment <i>Person 1: Name, Organisation, Address, Email, Phone</i> | Ann Peterson, SPREP/Protected Area Solutions, 283 Madill Road, Tandur, Q4570, Australia, a.peterson@uq.edu.au, 0414300955 |
| <i>Person 2: Name, Organisation, Address, Email, Phone</i> | Vaghi Rei, CEPA, vrei@dec.gov.pg |
| Today's Date | 31/08/2016 |
| Name (or names) of protected area | Kamiali Wildlife Management Area |
| Size of protected area (ha) | 47,413 (29,285ha terrestrial and 18,128ha marine) |
| PNG Code or number | |
| World Database of Protected Areas site code (these codes can be found on www.unep-wcmc.org/wdpa/) | 220242 |
| What level or kind of protected area is it? (National Park, Wildlife Management Area, Sanctuary, Reserve, Locally Managed Marine Area etc) | Wildlife Management Area |
| IUCN Category | |
| International protected area? e.g. World Heritage or Ramsar? | |
| Country | Papua New Guinea |
| Province/s | Morobe |
| District/s | Huon |
| Local level governments | Salamaua |
| Ward/s | 7 (Lababia) |
| Nearest big town | Lae |
| Location of protected area (brief description) | Kamiali (Lababia) is located on the Huon Coast about 60km south-south-east from Lae. The boundary follows the left bank of the Buyawin River and extends about 17km westward to the catchment divide. The marine component extends about 12 km from the high water mark into the Solomon Sea including all of Lababia Island. There is some disagreement as to whether Jawani and Batteru Islands are included in the WMA. It ranges in height from 1,080m below sea level up to 2,012m above mean sea level. It is accessible by boat and includes a wide range of lowland and mid-montane rain forest, inshore marine areas including coral reefs, and diverse plants, animals and ecosystems. Biomes include open sea, coral reef, mangrove, beach, sago swamp, riparian areas, tropical forest and cloud forest. It provides habitat for many rare and threatened species. The area is an important nesting site for the endangered leatherback turtle and many species are found nowhere else in the world. |
| Map references | 1:100,000 Wau and Nasau sheets |

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| When was the protected area gazetted or formally established? | 19/9/1996 |
| Reference for gazettal or Memorandum of Understanding (MoU) | |
| Who owns the protected area? please enter Government Private Community/ customary landowners, private, Other (name) and include Clan name(s) | Customary landowners: Gara and Tabale |
| Number of households living in the protected area | 150 |
| Population size within the protected area | 1503 |
| Who manages the protected area? (e.g. please enter government, customary landowners [add clan names] management committee [how many and what gender]) | Management Committee (5 men and 1 woman) |
| Total number of staff (this means anyone working on the protected area in paid jobs – whether NGOs, community, rangers or customary landowners | 0 |
| <i>Temporary paid workers</i> | 0 |
| <i>Permanent paid workers</i> | 0 |
| Annual budget (US\$) – excluding staff salary costs | 0 |
| Operational (recurrent) funds | 0 |
| Project or special funds | 0 |
| Reason for park establishment | To look after the land for future generations, improve our sustainable livelihoods and generate income opportunities. |
| What are the main values for which the area is designated (Fill this out after data sheet 2) | Subsistence livelihoods, leatherback turtle nesting site, marine environment, forest and animals, culture and tradition, clean water. |
| List the primary protected area management objectives (add lines if needed after the most important objectives): <i>Management objective 1</i> | Maintain terrestrial biodiversity |
| <i>Management objective 2</i> | Maintain marine biodiversity, including coral reefs and leatherback turtles. |
| <i>Management objective 3</i> | Maintain clean drinking water for the Kamiali community. |
| Number of people involved in answering the assessment questions | 5 |
| Name/organisation/contact details of people participating the assessment (<i>Please do not insert return/enter or dot points</i>) | <i>Semi Wenis</i> , Kamiala Wildlife Management Area, c/- Kamiali Foundation Association PO Box 4771, Lae, 70759090; <i>Yaeng Tana</i> , Chairman, KWMA (as above), 70086633; <i>Lini Keputong</i> , Committee member KWMA (as above), 71701214; Apen Keputong, KWMA, c/- Box 313 Lae Police Station, 71488248; Issac Lazarus, Gara Clan, Deputy Chairman. |
| Customary landowners/other community; CEPA, Other national government agency; Provincial govt; local level govt; Protected | Customary landowners |

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| area staff (anyone working on the protected area in paid jobs; NGO; Donors; External experts; Others | |
| Please note if assessment was carried out in association with a particular project, on behalf of an organisation or donor. | SPREP through the PNG Protected Area Assessment Project, which is a component of the GEF Community-based Forest and Coastal Conservation and Resource Management Project in PNG. |

Part 2: What makes this protected area special and important?

We were visited by Dr David Suzuki who encouraged us to establish the WMA because of its global importance. We had traditional management practices in place (i.e. using taboos etc) before gazettal and looked after our land. We also wanted to stop logging extending into our area and decided to put a WMA in place. The WMA complements what we have been doing traditionally for many years. We are just building on what we have already done – together with CEPA, the Village Development Trust and all the other groups that have helped us in the past. The WMA extends from the Deneruba River to the Saia River. The traditional boundary was beyond the Saia River, but the common understanding of the villagers has resulted in this boundary moving to the Saia River (map is correct). The people in our neighbouring village of Salus (to the north) originated inland and moved to the coast. It is a resettlement area and there is some conflict over the extraction of resources from our WMA. We have three lakes (salt water). There are crocodiles here and they are sometimes hunted. There are fish in the lakes, including tilapia and mangrove jack. South of Salus village is the delta of the Bitoi River. There is gardening on both sides of the river. We have secret tambu places here near Salus village. You must be initiated to go in there, otherwise there will be a problem for you (there are three tambu areas in the delta, and more than five others further along the coast). Between the Bitoi River (i.e. 1 and 2) there are swamps and these are important for birds. There are mountains at the back, then swamp and coastline with small gardens along the coast. Lababia village is on the coast. There is a guest house and from this point to the southern border of the WMA are fringing reefs. There are dolphins, including false killer whales, melon headed whales and pygmy whales. On the ridge behind the guest house is the site of ongoing research conducted by Dr Allison. To the west of the village are the Aravure and Saia Rivers and this where exploration for chromite is happening. Some people in the WMA are starting to think that mining will provide secure and regular income to the community. The guesthouse and turtles are seasonal and at the moment this is not operating (as the facilities have run down). We need a more consistent income to improve our livelihoods. The challenge for us is to provide alternative income generation for the community. We want to maintain our traditional sacred sites and not have our WMA mined or logged. Since it was established in 1999 the WMA has not changed much. The environment is still good.

Table 2. Key values of the protected area

| No. | Key values | Brief description | Note if endangered species or ecosystem (IUCN) |
|-----|---------------------------------|---|--|
| 1 | Subsistence livelihoods | There are gardens between the Tabali and Bitoi Rivers, mainly in the swampy land. It is brackish water at the back of the garden which are also being flooded (rains in the mountains cause landslides and this affects our gardens). Some coastal gardens are affected by sea level rise. We hunt wild pigs, bandicoots, wallabies, cassowary, cuscus and wildfowl. There are laws concerning hunting. We are mainly fishers and not hunters, and take many species from this environment (see below). | |
| 2 | Leatherback turtle nesting site | Extends from Tabali River to Bitoi 2 River and then to Salus. People traditionally used to eat the turtle eggs. Research started in the 1999 and it indicated the importance of protecting the turtle and conserving the beach. There were large numbers of turtles in the past, but now they are decreasing (2000-2016). We are not sure why this is happening (e.g. due to fishing nets or hunting in other places). We do not take turtle eggs. Green turtle and hawksbill turtles are eaten, although they do not nest on our beach (nest further north). | Leatherback turtle (critically endangered) |
| 3 | Marine environment | We are mainly fishermen and fish selectively. We know the places to fish (e.g. red emperor, etc). Some are eaten and some sold. Tuna is mainly sold. Each river has endemic species: rainbow fish (they are threatened by tilapia); fresh water clown fish (Saia R); freshwater snapper (different from the salt water snapper). We have six reefs | |

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| | | (pinnacle reefs/bommies) and they play host to the majority of fish in the area. Fish can only be taken for subsistence use and not for sale, but outsiders are entering our area and taking fish (e.g. Salus people come and take turtle eggs and fish – they are a major enemy of us). We also look after the coral reefs, but Salus is a major lime producing village and they harvest all the corals along the coast – this is a large pressure and is very destructive of our reefs. | |
| 4 | Forest and animals | There are diverse species. There is a long term research project (Allan Allison) in the area. Trees e.g. acorobo (for fruit), pomtia, galip nut, sarua. | |
| 5 | Customs and traditions | We practice our culture and when we look after our environment it continues to strengthen our culture. We have learned from our ancestors and we also learn from the modern ways and it improves our practices (e.g. shifting agriculture is now improved). | |
| 6 | Clean water | WMA boundary is along the catchment boundary. Most of our streams are within the WMA catchment and provide water to the community. | |

Table 3. Checklist of values/benefits

Not important 0; Important 1; Very important 2; Don't know DK

| How important is the protected area for each of the listed values/benefits? | Score (0,1,2, DK) | Comment |
|---|-------------------|--|
| 1. Biodiversity – the presence of many different kinds of plants, animals and ecosystems | 2 | High biodiversity in both terrestrial and marine environments. There has been little change in biodiversity since gazettal. The WMA performs a critical landscape function, with connections to the outside terrestrial environment and linkages between marine and terrestrial environments. Communities depend on the WMA resources for their subsistence (e.g. fish). There is some community development through sustainable resource use and ecotourism, based around leatherback turtles. |
| 2. Presence of rare, threatened, or endangered species (plants and animals) | 2 | High levels of endemism. Leatherback turtle is the most widely known threatened species in the area. Several rare fish and plant species recorded in the area, but not well known. The area has ultrabasic substrate which is the cause of high plant species diversity. The area also features the massenerhebung effect (compressed mountain ranges). |
| 3. Ecosystems (e.g. wetlands, grasslands, coral reefs etc) that are rare because they have been cleared or destroyed in other areas | 2 | Forest, wetlands, mangrove, sea grass, coral reef are important to the environment and the community. This is a proposed Ramsar wetland site (it has all the required Ramsar elements). The southern shoreline has important fringing reefs (Capes Dinga and Roon). |
| 4. Protecting clean, fresh water | 2 | Water is from the three main streams to the west (i.e. Siai and Tabari). The water comes from the mountains and is clean. The other rivers are murky due to sediment input. |
| 5. Sustaining important species in big enough numbers that they are able to survive here | 2 | The area has wetlands, turtle nesting areas and many endemic species (both marine, fresh water and terrestrial). The surrounding area is also largely forested and this provides ample habitat for a diverse range of species. |
| 6. Providing a source of employment for local communities now | 2 | Now there is no local employment, but it is important for our future. |
| 7. Providing resources for local subsistence (food, building materials, medicines etc.) | 2 | It provides marine resources (e.g. fish, clam fish, prawns, sea cucumber, turtle, crayfish, eels, dugong), terrestrial (see above), timber for housing, firewood, sago palms for roof and walls, black palms for flooring, pandanus (mats, ropes, walls, fruit), mangas, tulip and bia for making bilums, galip nut, medicinal plants (noni for fruit, leaves and bark; salat – has needles on the leaf and this helps with back ache and head ache); ceremony – bird of paradise (2 types – red and white- raggiana; and sickle bil) is no longer used, but we do |

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| | | use cockatoo, hornbill, parrots (parakeets) and frigate bird (these are not killed); pig tusk, shells (trochus, clam), and teeth from the domestic dog. |
| 8. Providing community development opportunities through sustainable resource use | 2 | Important income earning activities focus on the guesthouse and fishing. The leatherback turtle is of interest to tourists. Leatherback turtle funds assist with the school. Research (Dr Allison) provides income – he brings books to stock the library; installed water tanks at the primary school. People work as porters for the researchers who pay a user fee (K1000) and this goes into the community fund to fund activities. The money is split between the clans and each clan spends it according to their needs. In the past fees were paid by researchers involved in leatherback turtle conservation and “this money ‘changed the village’” This research is no longer undertaken, although we are in discussion with a Swedish NGO to look at how to assist with this project. |
| 9. Religious or spiritual significance (e.g. tambu places) | 2 | There are several tambu places. |
| 10. Plant species of high social, cultural, or economic importance | 2 | |
| 11. Animal species of high social, cultural, or economic importance | 2 | See above list for subsistence uses and commercial uses. Leatherback turtles play an important role in local cultures and traditions and are a source of protein and economic benefit. |
| 12. Attractive scenery | 2 | |
| 13. Tourism now | 2 | No tourism now, but tourism is considered important to the community. |
| 14. Potential value for tourism in the future | 2 | Need to develop a package to attract tourists – with assistance from the Provincial Government. Tourist infrastructure is needed (existing guest house is run down and needs refurbishment). |
| 15. Educational and/or scientific value | 2 | Yes. Research conducted on migratory movement of female leather back turtles. This included an aerial survey of 2,800km of northern PNG coastline and New Britain Island (Benson et al. 2007). |
| 16. Maintaining culture and tradition on customary land and passing this on to future generations | 2 | Yes |

Part 3: What are the threats to the protected area?

Table 4: Threats to the protected area

- H** **High** significance threats are seriously degrading values. This means they are badly damaging some value –it might be a kind of animal or plant, or your traditional gardens
- M** **Medium** threats are having some negative impact – they are damaging values but not so badly
- L** **Low** threats are present but not seriously damaging values
- 0** **N/A** where the threat is not present in the protected area or where something is happening but is not threatening the values at all

| Threat type | Score (H,M,L,0) | Notes |
|--|-----------------|---|
| 1.1 Housing and settlement | H | Settlement is mainly along the coast and gardens are here also and due to population increase both the area for housing and for gardens is expanding and this has the potential to cause impact on the environment. |
| 1.1a Population increase in the protected area community | H | Increased pressure on resource extraction. |
| 1.2 Commercial and industrial areas | 0 | |
| 1.3 Tourism and recreation infrastructure | 0 | |

| Threat type | Score (H,M,L,O) | Notes |
|---|--------------------|---|
| 2.1 Customary land owner and community gardens and small crops | L | Gardens are restricted to the Bitoi delta area (2km from houses). The ultrabasic soils to the south are not suitable for gardening. The area floods annually and this helps to raise the fertility of the soil. |
| 2.1a Drug cultivation | 0 | |
| 2.1b Commercial plantations | 0 | |
| 2.2 Wood and pulp plantations | 0 | Logging to the south has stopped and there is no pressure from logging on the WMA currently. |
| 2.3 Livestock farming and grazing | 0 | |
| 2.4 Marine and freshwater aquaculture | 0 | |
| 3.1 Oil and gas drilling | 0 | |
| 3.2 Mining and quarrying | L | Chromite mining exploration is occurring and has been taking place for at least 10 years. They cut trees, make roads into the forest, and undertake drilling. The impacted areas recover quickly, but there are potential impacts if the mining proceeds. Some in the community would like a more regular income and may support mining and this would impact severely on our environment and culture. |
| 3.3 Energy generation | 0 | |
| 4.1 Roads and railroads (include road-killed animals) | 0 | |
| 4.2 Utility and service lines (e.g. electricity cables, telephone lines) | 0 | |
| 4.3 Shipping lanes | 0 | Only dinghies along the coast. |
| 4.4 Flight paths | 0 | |
| 5.1 Hunting, killing and collecting terrestrial animals (including killing of animals as a result of human/wildlife conflict) | L | |
| 5.2 Gathering terrestrial plants or plant products (non-timber) | 0 | |
| 5.3a Logging and wood harvesting for local/customary use | L | No commercial logging, but some customary take. |
| 5.3b Logging and wood harvesting – commercial logging | 0 | Logging takes place in the Buso and Kui areas to the south and the WMA. We do not want the logging to extend into our area. Following logging many species from Buso and Kui moved into the WMA. |
| 5.4a Fishing, killing and harvesting aquatic resources for local/customary use | L | . |
| 5.4b Fishing, killing and harvesting aquatic resources for commercial use | H | Salus people take coral material (<i>Acropora</i>) for sale for lime production (for use with betel-nut) and this has a very significant impact on the reef and associated marine life. It is not sustainably or efficiently harvested. "Socio-economic conditions at Lababia, PNG make it unlikely that coral harvest for betel-nut lime production will stop within KWMA" (Longenecker et al. 2015:12). It provides essential income for many families. |
| 6.1 Recreational activities and tourism | 0 | Currently there are no tourists. |
| 6.2 War, civil unrest and military exercises | 0 | |
| 6.3 Research, education and other work-related activities in protected areas | L | Some research activity takes place but the impact is very low. |
| 6.4 Activities of protected area managers (e.g. construction or vehicle use) | 0 | |
| 6.5 Deliberate vandalism, destructive activities or threats to protected area staff and visitors | 0 | |
| 7.1 Fire and fire suppression (including arson) | 0 | |

| Threat type | Score (H,M,L,0) | Notes |
|---|-----------------|---|
| 7.2 Dams, hydrological modification and water management/use | 0 | There are a couple of small dams, but there are no impacts from this. |
| 7.3a Increased fragmentation within protected area | 0 | |
| 7.3b Isolation from other natural habitat (e.g. deforestation) | 0 | |
| 7.3c Other 'edge effects' on park values | 0 | |
| 7.3d Loss of keystone species (e.g. top predators, pollinators etc.) | 0 | |
| 8.1 Pest plants | L | Piper tree (but it is considered a benefit as it is used as a medicinal plant; people cut the tree and the roots fertilise the soil); strangling vines (purple flower) in the garden area and starting to impact on native trees. |
| 8.1a Pest animals | L | Localised in gardens (e.g. wild pigs, some caterpillars). |
| 8.1b Diseases such as fungus or viruses that make native plants or animals sick | L | Disease destroys the beetle nut. A beetle is eating the taro and it is affecting where it is grown. We need some pesticide to help grow the taro. Now we have to eat cassava and banana, which are not the preferred food. |
| 8.2 Introduced genetic material (e.g. genetically modified organisms) | 0 | |
| 9.1 Household sewage and urban waste water | 0 | Only latrines are used. There are no over-water toilets and the impact from this is low. |
| 9.1a Sewage and waste water from protected area facilities | 0 | The sewage from the guest house goes into a septic system, but it is not operational. |
| 9.2 Industrial, mining and military effluents | 0 | |
| 9.3 Agricultural and forestry effluents (e.g. excess fertilizers or pesticides) | 0 | |
| 9.4 Garbage and solid waste | M | Garbage is entering the coastline. |
| 9.5 Air-borne pollutants | 0 | |
| 9.6 Excess energy (e.g. heat pollution, lights etc.) | 0 | |
| 10.1 Volcanoes | 0 | |
| 10.2 Earthquakes/Tsunamis | 0 | |
| 10.3 Avalanches/Landslides | M | The rain on the mountains causes landslides and the impact is localised to the base of the mountains. It does not extend to the coast. Some sediment enters the waterways and impacts on the inshore reefs. |
| 10.4 Erosion and siltation/deposition (e.g. shoreline or riverbed changes) | H | There is high coastal erosion along the entire coastline. There is less erosion on areas of the coast that have adjacent fringing reefs. Sediment is carried in the rivers and deposited on the coast and this is causing the loss of inshore reefs, especially in the south. |
| 11.1 Habitat shifting and alteration | L | |
| 11.2 Droughts | 0 | |
| 11.3 Temperature extremes | L | Experienced higher temperatures in the 1997 El Nino, but otherwise there is little experience of higher temperatures. |
| 11.4 Storms and flooding | H | Annual flooding of the main rivers. 1983, 2002 were major floods. These did not cause serious damage, although the gardens along the coastline were affected. There are strong winds from the Solomon Sea to the Bismark Sea and this affects the village. The weather is unpredictable. The wet season is changing and the time of the winds is changing. The flood time is also changing e.g. the rain happens in other areas and the rivers flood in our area and we are not expecting this. Currently there has been significant damage to the community's gardens. |
| 11.5 Coral bleaching | 0 | |
| 11.6 Intrusion by saltwater into gardens etc. | L | |

| Threat type | Score (H,M,L,O) | Notes |
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| 11.7 Sea level rise | M | This may be associated with higher levels of erosion, which occurs along the entire coastline. |
| Other (please explain) | | |
| 12.1 Loss of cultural links, traditional knowledge and/or management practices | M | Some cultural sites have been lost and in other places people just walk anywhere and have no respect for the taboo places. Traditional knowledge is not being passed on – the elders and parents are teaching their children, but the children are affected by western culture. |
| 12.2 Natural deterioration of important cultural site values | L | |
| 12.3 Destruction of cultural heritage buildings, gardens, sites etc. | L | |
| Other (please explain) | | Lack of income generating activities; Development (e.g. mining) |

Table 5. Worst threats and ways forward

| Threat No. | Threat (Most significant first) | Threat number or name (copy no. from Table 4) | Nature of the threat, impact and how to reduce the impact. |
|------------|--------------------------------------|---|--|
| 1 | Population | 1.1a | Increases demand for housing and gardens and pressure on extraction of resources, particularly fish and other marine species. |
| 2 | Development e.g. mining | Other | Mining and logging may come in the future and threaten our culture and environment. Mining exploration has occurred for the last 10 years. |
| 3 | Lack of income generating activities | Other | The population is increasing and there are few income generating activities. This will place pressure on extraction of resources from the WMA. Assistance is needed to identify and progress some alternative income generating projects e.g. re-establish the guest house and promote ecotourism. |

Part 4: What is the management like in the protected area?

Table 6. Management effectiveness scores, comments, next steps

| Issue | Score (0,1,2,3, NA) | Comment | Next steps |
|--------------------------------|---------------------|---|--|
| 1a. Legal status | 3 | Legally gazetted WMA. | |
| 1b. Legal status | | | |
| 2a. Protected area regulations | 3 | Rules were identified at gazettal, and there are traditional rules relating to fishing and hunting. | Need to strengthen the wildlife management rules and the Management Committee. |
| 2b. Protected area regulations | | | |
| 3. Law enforcement | 1 | There is a lack of people to assist in enforcement and a lack of capacity to enforce the regulations. Offenders must go to the Village court, but this is a long way away (not in the village) and there are insufficient funds to do this. There is little respect for the Village court in the village and as a result people are harvesting coral and taking fish. | Need to increase capacity through training, including village magistrates and court officials. Strengthen the Management Plan and revise the penalties for offences within the Plan (in line with the new Protected Area Policy Bill). |

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| 4. Protected area objectives | 1 | The objectives aim to protect biodiversity and the environment, but management is not effective in achieving this, due to several limitations (e.g. funding, equipment, capacity etc). | The Policy Bill is important to assist the customary landowners in their management and prosecution capacity. Funding and capacity building are also required. |
| 5. Protected area design | 3 | The layout and configuration of the WMA help to conserve the environment and biodiversity. There is a traditional land use plan that identifies where gardening and other activities take place and this helps to protect the environment. Land use in surrounding area enables effective WMA management; the WMA is linked to mostly forested and untouched land, providing a larger home range for species; and the WMA extends from the catchment boundary into the marine environment, providing capacity to integrate land and sea management. | We are currently negotiating with the Buso people to expand the WMA to the south (to where the traditional boundary used to be). This includes green turtle nesting areas. |
| 6. Protected area boundaries | 1 | The gazettal document includes Jauani and Batteru Islands as being within the WMA, but the customary landowners indicated that these two islands are not in the WMA and are the responsibility of the Kui and Buso communities. There is no on-ground demarcation of the terrestrial boundary, other than along the river boundaries. | There needs to be clarification of the boundaries of the WMA through negotiation with the WMA Committee and Kui and Buso communities. CEPA needs to make note of the boundary and update the boundaries and re-gazette the WMA. The terrestrial boundary needs to be identified on the ground. |
| 7. Management plan | 1 | A Management Plan was developed with the assistance of the Village Development Trust (1999), but it is not implemented. | Assistance is needed to revise and update the Management Plan and implement the actions. |
| 7a. Planning process | 0 | Lack of support after 2012 and the committee has been struggling to raise their profile and implement the management plan activities, including meetings. | Need capacity building and funding. |
| 7b. Planning process | 0 | No regular plan review and updating. | |
| 7c. Planning process | 0 | Monitoring and research is not being integrated into the planning process currently. | |
| 8. Regular work plan | 1 | There is a work plan, and the six committee members are actively watching what happens in the WMA. | |
| 9. Resource inventory | 3 | The knowledge is mainly traditional knowledge but there is some new research information on rare species (e.g. fish and plants.) There is no strategy for addressing threats. Information was collected at the time of gazettal and this has not been updated to the knowledge of the customary landowners. | |

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| 10. Protection systems | 1 | Outsiders enter the WMA and take resources (e.g. coral material for lime production and also fish and marine resources). | |
| 11. Research and monitoring | 1 | There is some research and monitoring being undertaken in the terrestrial mountain areas on a regular basis. | |
| 12. Resource management | 2 | No formal plan, but a traditional resource plan is in place – people continue to use their traditional practices both on land and sea. | |
| 13a. Staff numbers | 0 | | |
| 13b. Other people working on the protected area | 1 | Members of the management committee do work in the WMA, but few others in the community. | Increase the awareness and capacity of the landowners and encourage their engagement in management activities. |
| 14. Training and skills | 2 | The committee does not have the basic skills to be able it to manage funding and projects. There has been some training in the past. | Training needed is in: tourism and hospitality, administration, finance, ranger training, training for marine management e.g. reef check. |
| 15. Current budget | 0 | | CEPA to provide guidance and advice on linkages and networking in relation to funding opportunities with potential donors. |
| 16. Security of budget | 0 | | |
| 17. Management of budget | NA | | |
| 18. Equipment | 1 | Guesthouse and related equipment is run down and there is little equipment for managing the park. There is no dinghy and only a little diving equipment (compressor etc) and a small solar panel (insufficient to run a computer). | Need dinghy, generator, new guest house, power boats, cooking utensils, stoves, gardening equipment to manage the boundary. |
| 19. Maintenance of equipment | 0 | | |
| 20. Education and awareness | 1 | In the first 10 years there was an education program, but now there is nothing. It has all been lost due to lack of funding. There was Canadian then Norwegian funding and then it stopped (for eco-forestry projects); NOAA (US Fish and Wildlife Service) provided funds for leatherback turtle; wetlands funding from Aaron Jenkins. Now there is no funding of these projects. | Need to develop mutual trust and confidence that the project will run when the donors leave. These projects need to tie in with Provincial Government priorities – i.e. WMA should work closely with the Local Level Government Manager and Provincial Government to build a business plan for the WMA – and be supported through the Provincial Administration. There is a Provincial officer, but their focus is on income generation (e.g. mining and logging). Provincial tourism operators focus on cultural festivals. |
| 21. Planning for land use or marine activities | 0 | No one appears to be taking into account the needs of the WMA. | There needs to be improved consultation and engagement with all levels of government to minimise impacts on the WMA. |
| 22. State and commercial neighbours | 0 | | |
| 23. Indigenous people/ Customary landowners | 1 | Landowners have some input into decision making, but formal process have been inactive for some time. | |

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| 24a. Impact on communities | 0 | Lack of transparency in management decision making. | |
| 24b. Impact on communities | 0 | | |
| 24c. Impact on communities | 1 | The two clans support the WMA, but have different views on long term income generating activities. | |
| 25. Economic benefit | 0 | | |
| 26. Monitoring and evaluation | 1 | | |
| 27. Visitor facilities | 1 | Existing facilities are run-down. | Need canoes, boats, walking tracks, rest huts in the wilderness etc. |
| 28. Commercial tourism operators | 1 | Cruise boats bring in tourists who pay K30 per person (once per year and only about 30 people). This is insufficient to protect our area. | We need to organise a festival that may bring in more ships at one time. |
| 29. Fees | 2 | Fee structure is in place, but few tourists come; researchers come irregularly and pay the required fee | |
| 30. Condition of values | 2 | | |
| 30a. Condition of values | 0 | | |
| 30b. Condition of values | 0 | | |
| 30c. Condition of values | 0 | | |

Part 5: Condition and trends of protected area values

Table 7. Values, condition and trend

| Key value (from Table 2) | Condition Score (VG, G, F, P, DK) | Trend Score (I, S, D, DK) | Information source and justification for Assessment and HOW the condition can be IMPROVED |
|---------------------------------------|--------------------------------------|------------------------------|--|
| Subsistence livelihoods (terrestrial) | G | D | The community is able to sustain their livelihoods from the environment. However, for the land it is good, but for the marine areas there are some pressures, especially the loss of our coral reefs which are mined for lime and are impacted by the increasing population, causing a potential loss of marine species in the future. |
| Leatherback turtle nesting site | F | D | Before conservation there were many turtles; turtle monitoring; then the numbers decreased and we don't know why. Only one or two turtles nest each night on the beach now. It is not regular like in the past. |
| Marine environment | F | D | Impacts on inshore reefs due to sediment input; loss of coral (for limestone); laws need to be strengthened and penalty provisions revised in the Management Plan, and supported by improved surveillance (e.g. through trained rangers who have sufficient equipment to monitor the area). |
| Forest and animals | VG | S | |
| Customs and traditions | F | D | Stop using language |
| Clean water | VG | S | |

Table 8. Recommendations and ways forward

| 1. | 2. | 3. |
|--|---|--|
| <p>Improve management and administration e.g. update the Management Plan and improve capacity and skills through training and provide funding to support the committee and to provide on-ground support for conservation (e.g. rangers to patrol and enforce the rules).</p> | <p>Improve networks and communication with all levels of government and provide a sufficient budget for conservation. Then we will be able to enforce our laws e.g. illegal harvest of corals or other species. There must be increased power to prosecute offenders.</p> | <p>Restore the guest house as a revenue generating incentive to give support to conservation for the community to benefit as whole. Sources of funding need to be identified. Also organise an 'eco-community' where houses are constructed together and do not expand into important natural areas.</p> |

Table 9. Strengths and challenges (facilitator/recorder synthesis)

| | Strengths | Challenges |
|---|---|--|
| 1 | An area of high biodiversity importance, with several rare and threatened species, including the leatherback and some freshwater fish. | There are competing views on the future of the WMA, with some preferring ongoing environmental conservation and others looking to alternative income generating activities such as mining and logging. |
| 2 | The WMA extends from the catchment boundary in the mountains to the coast and extends about 2km in the marine environment. This is forms a very strong basis for management enabling the integration of terrestrial and marine planning and management. | Retaining traditional customs and knowledge in the face of constant pressures and influences. |
| 3 | There is high value and importance for ongoing research (both terrestrial and marine), which can provide income generation to the community. | The land boundary in future may change to allow income generating activities to enter the current WMA boundaries, such as chromite mining in the southern areas of the WMA. |
| 4 | Provides for the subsistence livelihoods of the community. | |
| 5 | The whole community supports the concept of the WMA. | |